





# Application of the Danish EPA's Marine Model Complex and Development of a Method Applicable for the River Basin Management Plans 2021-2027

Management Scenario 3a – Atmospheric N-scenarios (NEC prognosis)

Prepared for                      Danish EPA (Miljøstyrelsen, Fyn)  
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*Eelgrass in Kertinge Nor*  
Photo: Peter Bondo Christensen

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## Preface

This report is commissioned and funded by the Danish Environmental Protection Agency (EPA). The data, methods and results included in the report are intended to be an integrated part of the material behind the Danish River Basin Management Plans (RBMP) 2021-2027.

The work reported was managed and performed by DHI and AU/DCE. During the project, a steering committee followed the development, and was involved through dialogue and follow-up on progress, etc. The steering committee consisted of members from the Danish Ministry of Environment and Food (MFVM), the Danish EPA (MST), DHI and AU.

In addition, a follow-up group consisting of members from The Danish Agriculture & Food Council, SEGES, Sustainable Agriculture (BL), the Danish Society for Nature Conservation, the Danish Sports Fishing Association, Danish Fishermen PO (DFPO), the Danish Ports, and KL/municipalities was affiliated with the project. The follow-up group has been continuously informed about the progress of the project at meetings convened by the MFVM.

Choice of methods, data processing, description and presentation of results have been solely AU's and DHI's decision and responsibility. A draft version of this report has been reviewed by MST and the follow-up group.

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DRAFT - WORK IN PROGRESS

## 1 Introduction

When preparing the Danish River Basin Management Plans 2015-2021 (RBMP 2015-2021), DHI and Aarhus University (AU) developed a number of mechanistic (DHI) and statistical (AU) models that were used for calculating chlorophyll-a target values defining the threshold (GM) between 'Good Ecological Status' (GES) and 'Moderate Ecological Status'. The models were also used for calculating Maximum Allowable Inputs (MAIs) of total nitrogen (N) from Danish catchments based on the GM threshold value and a proxy for eelgrass depth limit. Hence, the development aimed at both the model development and the development of a method for calculating the MAIs.

As part of the political, regulatory package 'The Food and Agriculture Agreement from 2015' an international evaluation of the procedures used in the RBMP 2015-2021 was conducted. The evaluation was finalised autumn 2017 with a report (Herman *et al.* 2017) including a number of recommendations for improving the scientific background behind the RBMP 2021-2027.

To follow up on the international evaluation, the Danish EPA facilitated a range of research and development projects (R&D) projects with the overall aim of developing methods to calculate robust, transparent and differentiated chlorophyll-a reference values (and corresponding GM values) and MAIs in as many water bodies as possible for implementation into the RBMP 2021-2027.

Two central R&D projects relate to the continued model development in the assessment of reference chlorophyll-a values (and corresponding target values) and final MAI calculations. Other projects support different aspects of the final MAI calculations, but here we focus on the following two central R&D projects:

- 'Recommendations for the continued development of models and methods for use in the River Basin Management Plan 2021-2027. Follow-up on the international evaluation of marine models behind the River Basin Management Plan 2015-2021' (Erichsen & Timmermann 2018)
- 'Application of the Danish EPA's Marine Model Complex and Development of a Method Applicable for the River Basin Management Plans 2021-2027'.

The outcome of the above research projects is a set of MAIs based on a range of scenarios reflecting different assumptions regarding future developments in nutrient loading from neighbouring countries and the atmosphere as described in Erichsen *et al.* 2020. These management scenarios are based on assumptions defined by the Danish EPA and they are related to either 1) assumptions regarding international adopted treaties related to nutrient management 2) assumptions regarding future development in land-based loadings from other countries 3) assumptions regarding future development in atmospheric deposition and 4). different levels of compliance with the Water Framework Directive (WFD). In the present technical note, the assumptions and input data behind management scenario 3a and corresponding results are presented. In management scenario 3a it is assumed that atmospheric N depositions follows the country specific NEC prognosis.

## 2 Preconditions for MAI Calculations

The Danish MAIs will, among other things, also depend on future loadings from neighbouring countries and atmospheric N-depositions as described in more detail in Erichsen *et al.* 2020. In addition, some water bodies may also respond to Danish land-based P loadings, which is why one set of Danish land-based N-MAIs corresponds to a set of Danish land-based P-MAIs.

In order to calculate a set of Danish land-based N-MAIs with the developed models, we need to make assumptions on future loadings and management strategies from neighbouring countries (management scenarios), and Danish land-based P loadings.

With respect to reductions in neighbouring countries, the Danish EPA has defined a set of preconditions to be used for constructing management scenarios defining potential developments in future non-Danish land-based loadings and atmospheric deposition. For each scenario, Danish land-based N-MAIs are calculated based on 0%, 10%, 20%, 30% and 50% Danish land-based P reductions, respectively.

In this technical note, we have not assessed the feasibility of the scenarios defined by the Danish EPA, but solely provided N-MAIs that will ensure that the targets are reached given that the preconditions related to nutrient loading from other countries, atmospheric N deposition and P loading from Danish catchments are fulfilled.

### 2.1 Management Scenario Definitions

As mentioned above, the Danish EPA has defined a set of assumptions regarding nutrient inputs from other countries and the atmosphere to be used as preconditions for the Danish land-based N-MAI calculations. The preconditions are grouped into three management scenarios and one scenario related to the interpretation of the Water Framework Directive (WFD-scenario). The different assumptions are described in general terms in Erichsen *et al.* 2020, whereas the present technical note describes management scenario 3a in more detail (also see 'bold' description below).

#### 2.1.1 Management Scenario 3 - Atmospheric N-Scenarios

The third group of scenarios encompasses assumptions for the atmospheric N-depositions originating from emissions in Denmark and surrounding countries. The assumptions include:

- a) **Danish land-based N-MAIs assuming 2027 NEC-prognosis. N-depositions based on the prognosis of the NEC-implementation instead of the full implementation.**
- b) Danish land-based N-MAIs assuming synergy impacts from climate actions. As Denmark and other countries work to minimise climate changes, some synergies are expected to impact N-depositions as well.

For the above two sub-scenarios, the land-based nutrient loadings will be kept as described in management scenario 1, i.e. adopted treaties (BSAP and RBMP 2015-2021) have been implemented (see Erichsen *et al.* (2020) for details).

#### 2.1.2 Scenario Loadings

The full overview of the scenario reductions applied for management scenario 3a in other countries than Denmark, and atmospheric depositions are summarised in Table 2-1 and explained briefly in the following sections. The data on present-day Danish loadings can be found in Erichsen & Birkeland 2020a.

### Baltic Sea Action Plan (BSAP)

In Management scenario 1, the land-based nutrient loadings to the Baltic Sea are based on the BSAP. All countries around the Baltic Sea have adopted the BSAP as the regional treaty that governs nutrient reductions to the Baltic Sea. Germany has, however, adopted stricter reductions as part of the German RBMP 2015-2021, and these will be described in the following section.

The BSAP consists of national MAIs including both land-based nutrient loadings of N and P and atmospheric depositions (or Country Allocated Reduction Targets – CART). It is necessary to distinguish between land and atmospheric nutrient loading from other countries than Denmark. In order to split the total nutrient loading from the CART, we used data on land-based nutrient loading on a country-by-country level from 1997-2003. This period is consistent with the BSAP baseline period, and allows us to calculate how much of the baseline nutrient loading for each country derives from land-based sources, and how much is atmospheric deposition. We have then assumed that this relationship is constant under the BSAP future conditions, and calculated the country-specific MAIs by subtracting the atmospheric part from the CART, providing us with information on atmosphere and land-based nutrient loading under the BSAP. This calculation has been done for both total nitrogen and phosphorous.

The present-day average loading (average of 2014-2018 loadings) is then compared to the land-based MAIs within the two basins Baltic Proper (BAP) and Danish Straights (DS) and converted into a need for reduction (in %). This estimation is done excluding Danish land-based loadings, as they are the target of the present exercise.

### RBMP 2015-2021

As mentioned above, Germany is the only country (besides Denmark), that has adopted N reductions that are stricter than the CART defined in the BSAP.

According to the German RBMP 2015-2021, nutrient targets for TN are defined as average TN concentrations of 2.6 mg N/l in rivers discharging to the Baltic Sea and 2.8 mg N/l in rivers discharging to the North Sea (COWI 2018). For TP, no new targets have been defined in the RBMP 2015-2021 why German TP concentrations in rivers discharging to the North Sea are similar to present-day TP concentrations, and TP concentrations in rivers discharging to the Baltic Sea follow the reductions determined by BSAP.

Based on Gadegast & Venohr (2015), the average concentration in the rivers discharging to the North Sea was 4.04 mg N/l in 2005 why a change in concentrations to 2.8 mg N/l corresponds to an average reduction of 31% of German land-based N-loads. For comparison, COWI (2018) estimated a reduction need from German rivers of 30-48% based on 2001-2005 loadings. Here we use the 31%, as the data reported in Gadegast & Venohr (2015) also relates to the reductions used for defining reference loadings from German and Dutch rivers discharging into the German Bight.

The 31% reduction is applied to all German rivers discharging to the North Sea as well as other North Sea rivers (due to lack of knowledge) in the simulations. Applying the same reduction on all North Sea rivers is an assumption; however, as the German rivers are the governing source of nutrients impacting Danish waters, it is considered to be a good assumption.

Concerning concentrations in rivers discharging to the Baltic Sea, COWI (2018) reports a target of 2.6 mg N/l, and according to COWI (2018), this corresponds to a reduction of 44%. For management scenario 1, we adopt this reduction from German rivers discharging to the Baltic Sea.

### Allocation of Reductions

To estimate the dose-response, ie. how much the GES indicators respond to a change in nutrient load, we used model simulations based on a 30% nutrient reduction (N or P on land-based, respectively, and atmosphere N load), with the exception of Danish land-based nutrient loadings. These simulations provided us with information on the dose-response for each of the

GES indicators for the 30% reduction. Using these results, we can estimate the dose-response to a given reduction in local nutrient loading to the Baltic Proper (BAP) and Danish Straits (DS) depending on the source of the nutrient load and the location of the responding GES indicator.

According to HELCOM (2020), we can allocate reductions from BAP to DS and estimate the resulting dose-response from the above scenarios. However, we will have to assume that the impact from reductions differs between the Danish water bodies, as, eg. German reductions will have a profound impact on Flensburg Fjord, whereas the impact on the Sound is regarded as less profound. Hence, we operate with different reductions depending on the individual water bodies.

Assuming no difference in impact from reductions in BAP and DS, the combination of BSAP and German RBMP 2015-2021 equals a reduction of 4% for TN loadings and 27% for TP loadings.

Assuming difference in impacts as described in HELCOM (2020)<sup>1</sup> the corresponding TN reductions equal a 35% reduction whereas a full impact from German RBMP 2015-2021 equals a reduction of 44%.

As HELCOM (2020) defines a reduced impact from reductions as we move from one water body to another (e.g. from BAP to DS), we need to distribute the above reductions from Germany and other countries. This distribution is done according to Figure 2-1 and Table 2-1.

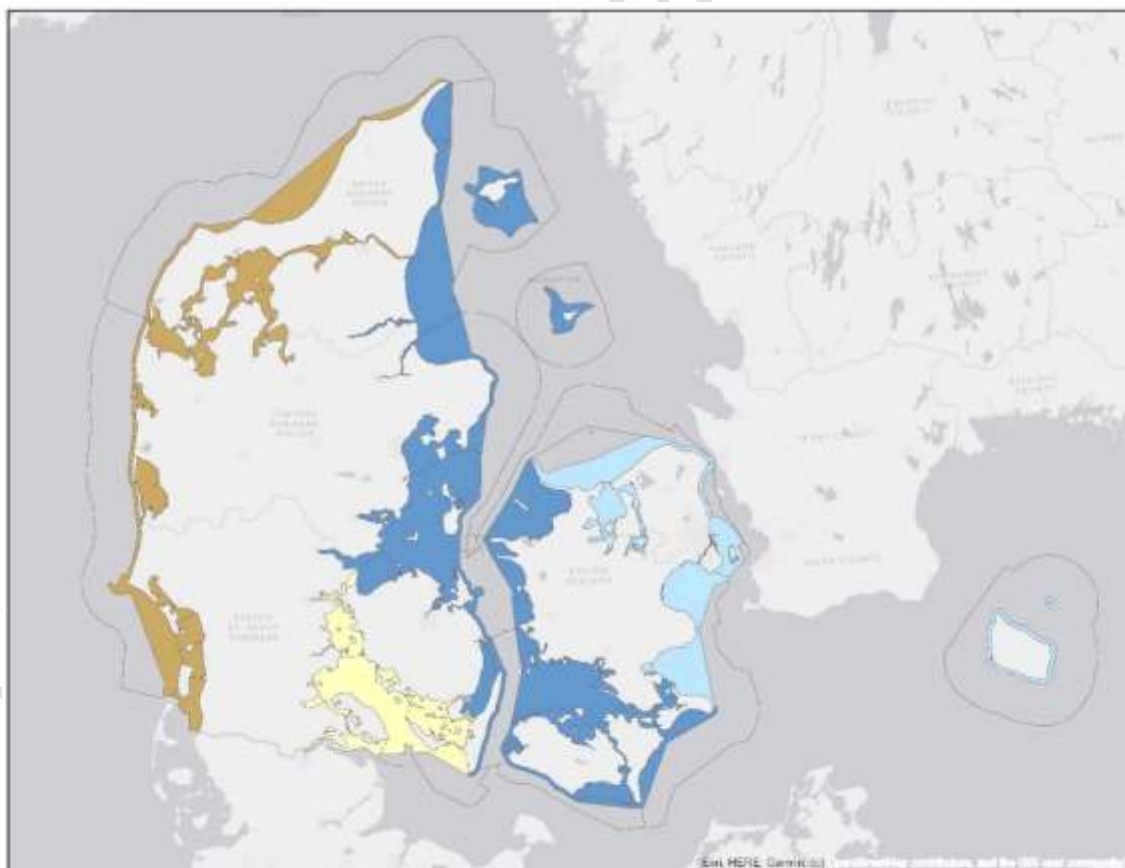


Figure 2-1 Distribution of reductions applied in scenario 3a. Nutrient reductions resulting from the German implementation of the RBMP (2015-2021) to the North Sea and Baltic Sea are applied in water bodies marked with brown and yellow, respectively. Nutrient reductions resulting from implementation of the BSAP to the BAP and DS are applied to water bodies marked in light blue. In dark blue areas BSAP reductions to BAP and DS are applied after

<sup>1</sup> Here we assume that the difference in %-reductions can be translated into a %-reduction according to HELCOM (2020). In HELCOM (2020) the effects, however, relate to tons of N and P why this is not entirely correct. As we operate in %-reductions this assumption will likely overestimate the effects of the German reductions.

taking into account effect of transport processes accounted for by the HELCOM (2020) allocation scheme.

### NEC-Directive

According to Blicher-Mathiesen & Sørensen (2020), the reductions in atmospheric N deposition after full implementation of the NEC-directive altogether amount to 16% or a 10% reduction, if the different countries' predictions are implemented. The full reduction of 16% is used for management scenarios 1 and 2, whereas the predictions of 10% reduction are used for management scenario 3a (see Erichsen *et al.* 2020 for details).

Data are delivered by AU, and the reductions are resolved on an overall water body scale and implemented in the Danish land-based N-MAIs calculations (see Figure 2-2 for data).

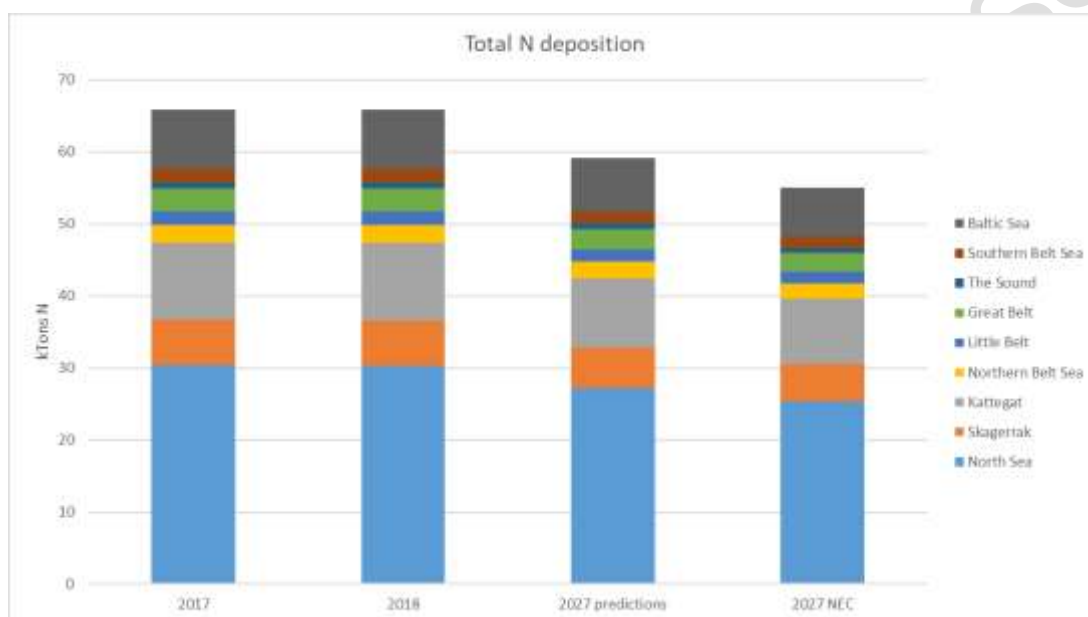


Figure 2-2 Atmospheric N-depositions summarised at overall water body level. '2017' and '2018' represent present-day atmospheric N-depositions whereas '2027 NEC' represents agreement behind the directive, and '2027 predictions' represent the different country prognosis.

Table 2-1 Overview of input data used to construct management scenario 3a.

Danish water areas affected	N-load reduction in management scenario 3a. Reductions are in % of current (2014-2018) load	P-load reduction applied in management scenario 3a. Reductions are in % of current (2014-2018) load	Adopted treaties
Western Baltic Sea (light blue area, Figure 2-1)	4%	27%	effect of BSAP to DS and BAP
Great belt and Kattegat (dark blue area, Figure 2-1)	35%	27%	effect of BSAP and German RBMP, using HELCOM allocation scheme
Southern Little Belt (yellow area, Figure 2-1)	44%	27%	Effect of German RBMP
North Sea water bodies and Limfjorden (brown area, Figure 2-1)	31%	0%	Effect of German RBMP

Atmospheric deposition, all Danish water bodies	10%	0%	NEC prognosis
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## 2.2 Method for Calculating Danish N-MAI

Based on the assumed future load reductions from neighbouring countries and atmospheric deposition as described above, N-MAIs from Danish catchments to each of the 109 water bodies is calculated. This is based on the status value of the indicators in each water body, as well as a defined target value (*Erichsen & Birkeland 2020b*). The status values for the two indicators are based on measurements. Target values are defined as a “slight deviation from reference conditions”, where reference conditions refer to a state with minimal human influence. Based on the method described in *Erichsen et al. (2020)*, each target value will have a MAI which will support the system to achieve GES.

Since all Danish water bodies are connected to a higher or lesser degree, the reduction needed for a single water body cannot be assessed in isolation. In addition, it is necessary to consider the load reduction requirement estimated for nearby water bodies. To account for connected water bodies, the following scheme was applied:

- 1) Catchments are assigned to each water body. Local catchments are assigned to the inner part (sub-catchments) of estuaries (upstream water bodies), whereas two or more local catchments (main-catchments) are assigned for downstream water bodies (e.g. the outer part of estuaries) and more open water bodies.
- 2) Load reductions (in %) for each individual water body are calculated as described in *Erichsen et al. (2020)* and transformed into a N-reduction requirement in tons using the load of the assigned catchment.
- 3) For up-stream water bodies (with local catchments) the calculated reduction is a minimum requirement that should be obtained independently of downstream waterbody requirements.
- 4) Reduction requirements for downstream water bodies are corrected, considering any minimum reduction handled by up-stream water bodies.
- 5) Reduction requirements are transformed into MAIs by subtracting the required load reduction from the average annual load and aggregated to the corresponding local and/or regional catchment.

## 2.3 Results

Based on the above-described assumption (implementation of the Baltic Sea Action Plan, German nutrient reductions according to RBMP 2015-2021 and reductions in atmospheric N-deposition according to the NEC prognosis) the different reduction requirements and corresponding MAIs are calculated.

The different reduction requirements (%-wise and in actual tons) based on the different indicators and different models are included in Appendices A-E, whereas the aggregated MAIs are reported in Table 2-2.

Table 2-2 Maximum Allowable Nitrogen Inputs (N-MAIs) for Danish water bodies given the implementation of BSAP, German nutrient reductions according to RBMP 2015-2021 and reductions in atmospheric N-deposition according to the NEC prognosis. The table shows N-MAIs in tons N per year, where 'main' denotes main-catchment and 'sub' denotes sub-catchments being part of a main-catchment. The table shows average annual loads as well as N-MAIs calculated for 5 different phosphorus reduction scenarios designated P0, P10, P20, P30 and P50, where phosphorus loadings from Danish catchments are reduced by 0%, 10%, 20%, 30% and 50%, respectively. The column 'aggregated' denotes sub-catchments included in specific MAIs.

No.	Name	Aggregation	Average annual (main)	Average annual (sub)	P0 (main)	P0 (sub)	P10 (main)	P10 (sub)	P20 (main)	P20 (sub)	P30 (main)	P30 (sub)	P50 (main)	P50 (sub)
1	Roskilde Fjord, ydre	1,2		764		534		536		538		540		544
2	Roskilde Fjord, indre	2		388		379		380		381		382		384
6	Nordlige Øresund	6	1,098		1,098		1,098		1,098		1,098		1,098	
16	Korsør Nor	16		40		29		30		30		30		31
17	Basnæs Nor	17		69		48		49		49		49		49
18	Holsteinborg Nor <sup>e)</sup>	18		22		22		22		22		22		22
24	Isefjord, ydre	24,165		899		551		560		569		569		569
25	Skælskør Fjord og Nor	25		44		36		37		37		38		40
28	Sejerø Bugt	28	164		164		164		164		164		164	
29	Kalundborg Fjord	29	69		40a		41s		43s		44s		50	
34	Smålandsfarvandet, syd <sup>e)</sup>	34	523		523		523		523		523		523	
35	Karrebæk Fjord	35		1,272		1,003		1,033		1,061		1,088		1,140

No.	Name	Aggregation	Average annual (main)	Average annual (sub)	P0 (main)	P0 (sub)	P10 (main)	P10 (sub)	P20 (main)	P20 (sub)	P30 (main)	P30 (sub)	P50 (main)	P50 (sub)
36	Dybsø Fjord	36		61	61			61		61		61		61
37	Avnø Fjord	37		238		182		184		187		189		194
38	Guldborgsund <sup>c)</sup>	38	419		419		419		419		419		419	
44	Hjelm Bugt	44	91		91		91		91		91		91	
45	Grønsund	45	278		190		190		190		190		190	
46	Fakse Bugt	46,47	509		431		434		438		439		441	
47	Præstø Fjord	47		208		129		133		136		139		147
48	Stege Bugt <sup>c)</sup>	48,49	259		249		250		250		250		250	
49	Stege Nor	49		24		14		14		15		15		15
56	Østersøen, Bornholm	56	860		522a		522a		522a		522a		522a	
57	Østersøen, Christiansø	57	3		2a		2a		2a		2a		2a	
59	Nærá Strand	59		98	23a		29		37		47		67	
62	Lillestrand	62		11	6		6		6		6		6	
68	Lindelse Nor	68		50	50		50		50		50		50	
72	Kløven	72		43	43		43		43		43		43	
74	Bredningen	74		128	44a		49		54		60		71	
80	Gamborg Fjord	80		80	70		70		70		70		70	

No.	Name	Aggregation	Average annual (main)	Average annual (sub)	P0 (main)	P0 (sub)	P10 (main)	P10 (sub)	P20 (main)	P20 (sub)	P30 (main)	P30 (sub)	P50 (main)	P50 (sub)
82	Aborg Minde Nor	82		152		34b		34b		34b		37a		63
83	Holckenhavn Fjord	83		290		100a		109		120		132		155
84	Kerteminde Fjord	84,85		50		39		39		39		39		39
85	Kertinge Nor	85		24		19		19		20		20		21
86	Nyborg Fjord	83,86		308		119		128		139		151		174
87	Helnæs Bugt	87		216		141a		141a		141a		141a		141a
89	Lunkebugten	89		16		10a		10a		10a		10a		10a
90	Langelands-sund	83,86,89,90	768			573		582		593		597		597
92	Odense Fjord, ydre	92,93		1,358		837		855		873		891		926
93	Odense Fjord, Seden Strand	93		1,288		767		785		802		820		855
95	Storebælt SV	95	188			115a		115a		115a		115a		115a
96	Storebælt NV	96, 84, 85	227			132a		132a		132a		132a		132a
101	Genner Bugt	101		35		16a		16a		16a		16a		16a
102	Åbenrå Fjord	102		130		65a		65a		65a		65a		65a
103	Als Fjord	103,104,105		269		149a		149a		149a		149a		149a

No.	Name	Aggregation	Average annual (main)	Average annual (sub)	P0 (main)	P0 (sub)	P10 (main)	P10 (sub)	P20 (main)	P20 (sub)	P30 (main)	P30 (sub)	P50 (main)	P50 (sub)
104	Als Sund	104		68		68		68		68		68		68
105	Augustenborg Fjord	105		62		59		60		61		61		61
106	Haderslev Fjord	106		239		133		134		135		136		138
107	Juvre Dyb	107		349		119a		119a		119a		119a		119a
108	Avnø Vig	108		60		27		30		32		35		40
109	Hejlsminde Nor	109		138		93		104		109		113		122
110	Nybøl Nor	110		66		46		47		48		49		52
111	Lister Dyb	111		2,155		872		941		1,012		1,085		1,238
113	Flensborg Fjord, indre	113		51		26a		26a		26a		26a		26a
114	Flensborg Fjord, ydre	110,113,114		219		173		174		176		177		180
119	Vesterhavet, syd	119, 107, 111, 121, 120	8,538		2,878a		2,947a		3,018a		3,144a		3,934a	
120	Knudedyb	120		2,910		841a		841a		841a		841a		1,397a
121	Grådyb	121		2,920		842a		842a		842a		895		1,537
122	Vejle Fjord, ydre	122,123		968		714		718		722		726		733
123	Vejle Fjord, indre	123		561		486		493		501		507		515

No.	Name	Aggregation	Average annual (main)	Average annual (sub)	P0 (main)	P0 (sub)	P10 (main)	P10 (sub)	P20 (main)	P20 (sub)	P30 (main)	P30 (sub)	P50 (main)	P50 (sub)
124	Kolding Fjord, indre	124		493		225a		234		249		266		307
125	Kolding Fjord, ydre	124,125		528		261a		270a		285a		301a		342a
127	Horsens Fjord, ydre	127,128		833		451		456		463		469		483
128	Horsens Fjord, indre	128		782		420		422		425		428		433
129	Nissum Fjord, Ydre	129,131,130		2,412		1,079		1,199		1,344		1,501		1,924
130	Nissum Fjord, mellem	130,131		2,083		750		869		1,014		1,224		1,681
131	Nissum Fjord, Felsted Kog	131		1,938		1,300b		1,309		1,361		1,474		1,727
132	Ringkøbing Fjord	132		4,748		2,464a		2,584a		2,704a		2,823a		3,888
133	Vesterhavet, nord	133,129,130,131,132	7,237		3,620		3,860		4,125		4,401		5,889	
136	Randers Fjord, indre	136		2,925		2,201a		2,201a		2,256		2,346		2,525
137	Randers Fjord, ydre	136,137		3,078		2,137		2,235		2,332		2,429		2,619
138	Hevring Bugt	138,137,136	3,235		2,294		2,392		2,490		2,586		2,776	
139	Anholt <sup>o)</sup>	139	9		9		9		9		9		9	

No.	Name	Aggregation	Average annual (main)	Average annual (sub)	P0 (main)	P0 (sub)	P10 (main)	P10 (sub)	P20 (main)	P20 (sub)	P30 (main)	P30 (sub)	P50 (main)	P50 (sub)
140	Djursland Øst	140	856		603		603		603		603		603	
141	Ebeltoft Vig <sup>o)</sup>	141	14		14		14		14		14		14	
142	Stavns Fjord	142		5		4		4		4		4		4
144	Knebel Vig	144		18		13		13		13		13		13
145	Kalø Vig	144,145		190		184		184		184		184		184
146	Norsminde Fjord	146		140		93a		99		106		114		129
147	Århus Bugt og Begtrup Vig	144,145,147	656		593		608		623		629		629	
154	Kattegat Læsø <sup>o)</sup>	154	78		78		78		78		78		78	
157	Bjørnholms Bugt, Riisgårde Bredning, Skive Fjord og Lovns Bredning	157,158		3,632		1,267a		1,381a		1,490a		1,596a		1,883
158	Hjarbæk Fjord	158		1,795		534		607		681		757		913
159	Mariager Fjord, indre	159		516		141		162		182		201		241
160	Mariager Fjord, ydre	159,160		963		588		609		628		648		688
165	Isefjord, indre	165		812		482		482		482		482		482
200	Kattegat Nord-sjælland	1,2,24,165,200	1,857		1,243a		1,243a		1,243a		1,243a		1,243a	

No.	Name	Aggregation	Average annual (main)	Average annual (sub)	P0 (main)	P0 (sub)	P10 (main)	P10 (sub)	P20 (main)	P20 (sub)	P30 (main)	P30 (sub)	P50 (main)	P50 (sub)
201	Køge Bugt	201	1,109		765		780		796		812		844	
204	Jammerland Bugt og Musholm Bugt	204	1,327		842		843		844		846		849	
206	Smålandsfarvandet, åbne del	16,17,18,2 5,35,36,37, 206	2,014		1,650		1,683		1,715		1,747		1,783	
207	Nakskov Fjord	207		454		375		378		380		383		388
208	Femerbælt	207,208,20 9	1,530		1,192		1,192		1,192		1,193		1,193	
209	Rødsand og Bredningen	209		521		303		303		303		303		303
212	Fåborg Fjord	212		30		20a		20a		20a		20a		20a
214	Det sydfynske Øhav	68,72,212, 214	633		284a		285a		285a		286a		288a	
216	Lillebælt, syd	87,101,102 ,103,104,1 05,110,113 ,114,216	1,309		885a		885a		885a		885a		885a	
217	Lillebælt Bredningen	74,82,106, 108,109,21 7	956		446a		446a		446a		446a		446a	
219	Århus Bugt, syd, Samsø og Nordlige Bælthav	59,62,92,9 3,127,128, 142,146,21 9	2,810		1,718a		1,718a		1,718a		1,718a		1,718a	

No.	Name	Aggregation	Average annual (main)	Average annual (sub)	P0 (main)	P0 (sub)	P10 (main)	P10 (sub)	P20 (main)	P20 (sub)	P30 (main)	P30 (sub)	P50 (main)	P50 (sub)
221	Skagerrak	221	1,423		1,423		1,423		1,423		1,423		1,423	
222	Kattegat Ålborg Bugt <sup>o)</sup>	222,159,16 0	2,026		1,651		1,672		1,692		1,711		1,751	
224	Nordlige Lillebælt	122,123,22 4	1,588		988a		988a		988a		988a		988a	
225	Nordlige Kattegat ÅlbækBugt	225	706		684		684		684		684		684	
231	Lillebælt Snævringen	231,124,12 5,80	789		259a		259a		259a		266a		303a	
232	Nissum Bredning	232	880		490a		525a		542a		558a		591a	
233	Kaas Bredning og Venø Bugt	232,233		1,955		1,100		1,210		1,320		1,432		1,659
234	Løgstør Bredning	157,158,23 4, 233, 236		4,336		2,748a		2,860a		2,973a		3,085a		3,306a
235	Nibe Bredning og Langerak	157, 158, 233, 234, 235, 236, 238	11,064		6,804		6,919		7,077		7,233		7,644	
236	Thisted Bredning	236		1,091		379a		388a		398a		408a		428
238	Halkær Bredning	238		620		114b		117a		161a		206a		396
	<b>Danish N-load (National MAI)</b>		58,100		35,963		36,619		37,328		38,089		41,160	

- a) Truncated at land-based reference N-load for one indicator
- b) Truncated at land-based reference N-load for two indicators
- c) Chlorophyll-a and light GM target obtained based on measurement (and independent of reductions from neighbouring countries or atmospheric depositions)

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## 2.4 Closing Remarks

The estimated maximum allowable nitrogen input (MAI) to Danish water bodies presented in this report is based on the preconditions that the BSAP, the RBMP2015-2021, and the NEC directive will be fully implemented. These treaties have been adopted but not yet fully implemented. We have not assessed whether the implementations of the treaties are realistic or even possible.

If the preconditions are fulfilled, and the MAI for Danish water bodies are reached by 2027, all Danish water bodies will most likely not have reached Good Ecological Status (GES) as defined in the WFD. This is because

- The MAI estimation is based on the depth of light as a proxy for the indicator eelgrass depth limit. Hence, even if the light has reached the target value, recovery for eelgrass is expected to take several years (and even decades). In addition, other barriers than light availability such as sediment suitability, lack of seedlings, etc. may delay or even prevent eelgrass recovery.
- With the given preconditions in management scenario 3a, one or both of the indicators (chlorophyll-a and light) may not reach the target value despite reductions from Danish catchments. In these situations, the reduction requirement for that indicator is cut off/truncated using the reference loading. A cut-off at reference loading indicates that the method applied cannot provide a specific MAI for that water body that ensures GES, and some administrative choices have to be made, like applying an average reduction from neighbouring water bodies, reductions like down-stream water bodies or a general MAI (kg/ha) for those water bodies. However, the implication is that GES for both indicators cannot be expected in these water bodies even if MAI is obtained.
- The method is not based on the one-out-all-out principle as required in the WFD but on an average of two indicators. Hence, it is expected that both indicators will be as close to the target value as possible, but one will, in some cases be above and one below the target value.
- In this scenario, we are using the boundary between good and moderate status as the target value. Due to uncertainties, there is a 50% chance that the water body will end in good status and a 50% chance that the water body will end in moderate status, once MAI has been reached.

As some ecosystems respond with significant time-lags to changes in loadings, it will take years before the full environmental effects of nutrient reductions can be observed. Hence, reaching MAI will provide the conditions for obtaining GES, but the achievement of GES will likely be delayed.

### 3 References

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**Appendix A – Maximum Allowable Nitrogen  
Inputs (N-MAIs) based on management scenario  
3a and assuming 0% reduction in Danish land-  
based P-loads**

Table A- 1 Water body-specific MAIs based on the two individual indicators chlorophyll-a (Chl-a) and light penetration depth (light) estimated from statistical models (STAT), or mechanistic models (MEK), respectively. The table shows both the individual calculations and the averaged water-specific MAIs (without any aggregation) and the corresponding need for reduction in %. The data in this table are based on management scenario 3a and Danish land-based P-reductions set at 0%.

No.	Name	Aggregation	Average annual N-load	Chl-a (STAT)	Light (STAT)	Chl-a (MEK)	Light (MEK)	N-MAI (STAT)	N-MAI (MEK)	Avg. MAI	Avg. reduction [%]
1	Roskilde Fjord,ydre	1,2	764			643	425		534	534	30
2	Roskilde Fjord, indre	2	388	388		388	353	388	370	379	2
6	Nordlige Øresund	6	1,098			1,098	1,098		1,098	1,098	0
16	Korsør Nor	16	40			40	18		29	29	27
17	Basnæs Nor	17	69			69	28		48	48	30
18	Holsteinborg Nor	18	22			22	22		22	22	0
24	Isefjord, ydre	24,165	899	469	597	510	627	533	569	551	39
25	Skælskør Fjord og Nor	25	44			35	36		36	36	19
28	Sejerø Bugt	28	164			164	164		164	164	0
29	Kalundborg Fjord	29	69	13	41	35	69	27	52	40	43
34	Smålandsfarvandet, syd	34	523			523	523		523	523	0
35	Karrebæk Fjord	35	1,272			1,272	734		1,003	1,003	21
36	Dybsø Fjord	36	61			61	61		61	61	0
37	Avnø Fjord	37	238			238	126		182	182	23
38	Guldborgsund	38	419			419	419		419	419	0
44	Hjelm Bugt	44	91			91	91		91	91	0
45	Grønsund	45	278			278	102		190	190	32

No.	Name	Aggregation	Average annual N-load	Chl-a (STAT)	Light (STAT)	Chl-a (MEK)	Light (MEK)	N-MAI (STAT)	N-MAI (MEK)	Avg. MAI	Avg. reduction [%]
46	Fakse Bugt	46,47	509			364	509		437	437	14
47	Præstø Fjord	47	208			141	117		129	129	38
48	Stege Bugt	48,49	259			259	259		259	259	0
49	Stege Nor	49	24			17	11		14	14	40
56	Østersøen, Bornholm	56	859			184	860		522	522	39
57	Østersøen, Christiansø	57	3			0	3		2	2	48
59	Nærrå Strand	59	98			23	22		23	23	77
62	Lillestrand	62	11			8	5		6	6	45
68	Lindelse Nor	68	50			50	50		50	50	0
72	Kløven	72	43			43	43		43	43	0
74	Bredningen	74	128			46	42		44	44	65
80	Gamborg Fjord	80	80			60	80		70	70	12
82	Aborg Minde Nor	82	152			34	34		34	34	78
83	Holckehavn Fjord	83	290			81	120		100	100	65
84	Kerteminde Fjord	84,85	50			28	50		39	39	22
85	Kertinge Nor	85	24	21		22	12	21	17	19	20
86	Nyborg Fjord	83,86	308			151	270		210	210	32
87	Helnæs Bugt	87	216			67	216		141	141	35
89	Lunkebugten	89	16			5	16		10	10	34

No.	Name	Aggregation	Average annual N-load	Chl-a (STAT)	Light (STAT)	Chl-a (MEK)	Light (MEK)	N-MAI (STAT)	N-MAI (MEK)	Avg. MAI	Avg. reduction [%]
90	Langelandssund	83,86,89,90	768			427	768		597	597	22
92	Odense Fjord, ydre	92,93	1,358	819	1,208	980	1,115	1,013	1,048	1,031	24
93	Odense Fjord, Seden Strand	93	1,288		687	1,288	405	687	846	767	40
95	Storebælt SV	95	188			41	188		115	115	39
96	Storebælt NV	96, 84, 85	227			38	227		132	132	42
101	Genner Bugt	101	35			13	20		16	16	53
102	Åbenrå Fjord	102	130	59		59	85	59	72	65	50
103	Als Fjord	103,104,105	269			67	230		149	149	45
104	Als Sund	104	68			68	68		68	68	0
105	Augustenborg Fjord	105	62	56		60	62	56	61	59	5
106	Haderslev Fjord	106	239			106	159		133	133	45
107	Juvre Dyb	107	349			119			119	119	66
108	Avnø Vig	108	60			32	23		27	27	54
109	Hejlsminde Nor	109	139			126	60		93	93	33
110	Nybøl Nor	110	66			41	50		46	46	31
111	Lister Dyb	111	2,155			872			872	872	60
113	Flensborg Fjord, indre	113	51	19		19	48	19	33	26	49
114	Flensborg Fjord, ydre	110,113,114	219	211		219	219	211	219	215	2

No.	Name	Aggregation	Average annual N-load	Chl-a (STAT)	Light (STAT)	Chl-a (MEK)	Light (MEK)	N-MAI (STAT)	N-MAI (MEK)	Avg. MAI	Avg. reduction [%]
119	Vesterhavet, syd	119, 107, 111, 121, 120	8,538			3,934			3,934	3,934	54
120	Knudedyb	120	2,910	841		841		841	841	841	71
121	Grådyb	121	2,920			842			842	842	71
122	Vejle Fjord, ydre	122,123	968			461	968		714	714	26
123	Vejle Fjord, indre	123	561	523	433	521	467	478	494	486	13
124	Kolding Fjord, indre	124	493	188		245	281	188	263	225	54
125	Kolding Fjord, ydre	124,125	528			278	390		334	334	37
127	Horsens Fjord, ydre	127,128	833			493	408		451	451	46
128	Horsens Fjord, indre	128	782			402	437		420	420	46
129	Nissum Fjord, Ydre	129,131,130	2,413			1,356	1,015		1,186	1,186	51
130	Nissum Fjord, mellem	130,131	2,083			898	601		750	750	64
131	Nissum Fjord, Felsted Kog	131	1,938	1,938		662	662	1,938	662	1,300	33
132	Ringkøbing Fjord	132	4,747		1,679	4,748	1,749	1,679	3,248	2,464	48
133	Vesterhavet, nord	133,129,130,131,132	7,237			7,237			7,237	7,237	0
136	Randers Fjord, indre	136	2,925	2,925	1,477	2,925	1,477	2,201	2,201	2,201	25
137	Randers Fjord, ydre	136,137	3,078	3,078	1,196	3,078	1,196	2,137	2,137	2,137	31
138	Hevring Bugt	138, 137, 136	3,207		3,235	3,122	3,235		3,179	3,179	1

No.	Name	Aggregation	Average annual N-load	Chl-a (STAT)	Light (STAT)	Chl-a (MEK)	Light (MEK)	N-MAI (STAT)	N-MAI (MEK)	Avg. MAI	Avg. reduction [%]
139	Anholt	139	9			9	9		9	9	0
140	Djursland Øst	140	856			349	856		603	603	30
141	Ebeltoft Vig	141	14			14	14		14	14	0
142	Stavns Fjord	142	5			5	3		4	4	27
144	Knebel Vig	144	18			8	18		13	13	27
145	Kalø Vig	144,145	190	190	190	190	190	190	190	190	0
146	Norsminde Fjord	146	140			140	47		93	93	33
147	Århus Bugt og Begtrup Vig	144,145,147	656	515	656	546	656	585	601	593	10
154	Kattegat Læsø	154	78			78	78		78	78	0
157	Bjørnholms Bugt, Riisgårde Bredning, Skive Fjord og Lovns Bredning	157,158	3,632			992	1,541		1,266	1,266	65
158	Hjarbæk Fjord	158	1,795			424	644		534	534	70
159	Mariager Fjord, indre	159	516			83	200		142	142	73
160	Mariager Fjord, ydre	159,160	963			783	515		649	649	33
165	Isefjord, indre	165	812	365		385	812	365	598	482	41
200	Kattegat Nordsjælland	1,2,24,165,200	1,857			1,857	629		1,243	1,243	33
201	Køge Bugt	201	1,109	821		823	594	821	708	765	31
204	Jammerland Bugt og Musholm Bugt	204	1,327			1,327	356		842	842	37

No.	Name	Aggregation	Average annual N-load	Chl-a (STAT)	Light (STAT)	Chl-a (MEK)	Light (MEK)	N-MAI (STAT)	N-MAI (MEK)	Avg. MAI	Avg. reduction [%]
206	Smålandsfarvandet, åbne del	16,17,18,25, 35,36,37,20 6	2,014			2,014	1,553		1,783	1,783	11
207	Nakskov Fjord	207	454			419	332		375	375	17
208	Femerbælt	207,208,209	1,530			854	1,530		1,192	1,192	22
209	Rødsand og Bredningen	209	521			273	334		303	303	42
212	Fåborg Fjord	212	30			10	30		20	20	33
214	Det sydfynske Øhav	68,72,212,2 14	633	176	391	176	392	283	284	284	55
216	Lillebælt, syd	87,101,102, 103,104,105, ,110,113,11 4,216	1,309			462	1,309		885	885	32
217	Lillebælt Bredningen	74,82,106,1 08,109,217	956	276		278	956	276	617	446	53
219	Århus Bugt, syd, Samsø og Nordlige Bælthav	59,62,92,93, 127,128,142 ,146,219	2,810			626	2,810		1,718	1,718	39
221	Skagerrak	221	1,423			1,423			1,423	1,423	0
222	Kattegat Ålborg Bugt	222,159,160	2,026			2,026	2,026		2,026	2,026	0
224	Nordlige Lillebælt	122,123,224	1,588			389	1,588		988	988	38
225	Nordlige Kattegat ÅlbækBugt	225	706			662	706		684	684	3

No.	Name	Aggregation	Average annual N-load	Chl-a (STAT)	Light (STAT)	Chl-a (MEK)	Light (MEK)	N-MAI (STAT)	N-MAI (MEK)	Avg. MAI	Avg. reduction [%]
231	Lillebælt Snævringen	231,124,125,80	789		184	134	335	184	234	209	73
232	Nissum Bredning	232	880	297	604	297	762	451	530	490	44
233	Kaas Bredning og Venø Bugt	232,233	1,955			1,399	802		1,100	1,100	44
234	Løgstør Bredning	157,158,234,233,236	6,502			1,980	3,516		2,748	2,748	58
235	Nibe Bredning og Langerak	157, 158, 233, 234, 235, 236, 238	11,065		9,752	2,936	9,731	9,752	6,334	8,043	27
236	Thisted Bredning	236	1,091			269	488		379	379	65
238	Halkær Bredning	238	620			114	114		114	114	82

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**Appendix B – Maximum Allowable Nitrogen  
Inputs (N-MAIs) based on management scenario  
3a and assuming 10% reduction in Danish land-  
based P-loads**

Table B- 1 Water body-specific MAIs based on the two individual indicators chlorophyll-a (Chl-a) and light penetration depth (light) estimated from statistical models (STAT), or mechanistic models (MEK), respectively. The table shows both the individual calculations and the averaged water-specific MAIs (without any aggregation) and the corresponding need for reduction in %. The data in this table are based on Management scenario 3a and Danish land-based P-reductions set at 10%.

No.	Name	Aggregation	Average annual N-load	Chl-a (STAT)	Light (STAT)	Chl-a (MEK)	Light (MEK)	N-MAI (STAT)	N-MAI (MEK)	Avg. MAI	Avg. reduction [%]
1	Roskilde Fjord, ydre	1,2	764			643	429		536	536	30
2	Roskilde Fjord, indre	2	388	388		388	356	388	372	380	2
6	Nordlige Øresund	6	1,098			1,098	1,098		1,098	1,098	0
16	Korsør Nor	16	40			40	19		30	30	26
17	Basnæs Nor	17	69			69	28		49	49	30
18	Holsteinborg Nor	18	22			22	22		22	22	0
24	Isefjord, ydre	24,165	899	491	613	510	627	552	569	560	38
25	Skælskør Fjord og Nor	25	44			36	37		37	37	17
28	Sejerø Bugt	28	164			164	164		164	164	0
29	Kalundborg Fjord	29	69	13	47	35	69	30	52	41	41
34	Smålandsfarvandet, syd	34	523			523	523		523	523	0
35	Karrebæk Fjord	35	1,272			1,272	793		1,033	1,033	19
36	Dybsø Fjord	36	61			61	61		61	61	0
37	Avnø Fjord	37	238			238	131		184	184	22
38	Guldborgsund	38	419			419	419		419	419	0
44	Hjelm Bugt	44	91			91	91		91	91	0
45	Grønsund	45	278			278	102		190	190	32

No.	Name	Aggregation	Average annual N-load	Chl-a (STAT)	Light (STAT)	Chl-a (MEK)	Light (MEK)	N-MAI (STAT)	N-MAI (MEK)	Avg. MAI	Avg. reduction [%]
46	Fakse Bugt	46,47	509			366	509		438	438	14
47	Præstø Fjord	47	208			144	122		133	133	36
48	Stege Bugt	48,49	259			259	259		259	259	0
49	Stege Nor	49	24			18	11		14	14	40
56	Østersøen, Bornholm	56	859			184	860		522	522	39
57	Østersøen, Christiansø	57	3			0	3		2	2	48
59	Nærrå Strand	59	98			29	28		29	29	71
62	Lillestrand	62	11			8	5		6	6	44
68	Lindelse Nor	68	50			50	50		50	50	0
72	Kløven	72	43			43	43		43	43	0
74	Bredningen	74	128			50	48		49	49	62
80	Gamborg Fjord	80	80			60	80		70	70	12
82	Aborg Minde Nor	82	152			34	34		34	34	78
83	Holckehavn Fjord	83	289			87	131		109	109	62
84	Kerteminde Fjord	84,85	50			28	50		39	39	22
85	Kertinge Nor	85	24	22		22	13	22	17	19	18
86	Nyborg Fjord	83,86	308			156	274		215	215	30
87	Helnæs Bugt	87	216			67	216		141	141	35
89	Lunkebugten	89	16			5	16		10	10	34

No.	Name	Aggregation	Average annual N-load	Chl-a (STAT)	Light (STAT)	Chl-a (MEK)	Light (MEK)	N-MAI (STAT)	N-MAI (MEK)	Avg. MAI	Avg. reduction [%]
90	Langelandssund	83,86,89,90	768			427	768		597	597	22
92	Odense Fjord, ydre	92,93	1,359	819	1,208	990	1,152	1,013	1,071	1,042	23
93	Odense Fjord, Seden Strand	93	1,288		687	1,288	476	687	882	785	39
95	Storebælt SV	95	188			41	188		115	115	39
96	Storebælt NV	96, 84, 85	227			38	227		132	132	42
101	Genner Bugt	101	35			13	20		16	16	53
102	Åbenrå Fjord	102	130	59		59	85	59	72	65	50
103	Als Fjord	103,104,105	269			67	230		149	149	45
104	Als Sund	104	68			68	68		68	68	0
105	Augustenborg Fjord	105	62	58		60	62	58	61	60	4
106	Haderslev Fjord	106	239			107	161		134	134	44
107	Juvre Dyb	107	349			119			119	119	66
108	Avnø Vig	108	60			34	26		30	30	50
109	Hejlsminde Nor	109	138			138	70		104	104	25
110	Nybøl Nor	110	66			43	51		47	47	29
111	Lister Dyb	111	2,155			941			941	941	56
113	Flensborg Fjord, indre	113	51	19		19	48	19	33	26	49
114	Flensborg Fjord, ydre	110,113,114	219	219		219	219	219	219	219	0

No.	Name	Aggregation	Average annual N-load	Chl-a (STAT)	Light (STAT)	Chl-a (MEK)	Light (MEK)	N-MAI (STAT)	N-MAI (MEK)	Avg. MAI	Avg. reduction [%]
119	Vesterhavet, syd	119, 107, 111, 121, 120	8,538			3,934			3,934	3,934	54
120	Knudedyb	120	2,910	841		841		841	841	841	71
121	Grådyb	121	2,920			842			842	842	71
122	Vejle Fjord, ydre	122,123	968			468	968		718	718	26
123	Vejle Fjord, indre	123	561	538	447	522	467	492	495	493	12
124	Kolding Fjord, indre	124	493	198		250	291	198	270	234	52
125	Kolding Fjord, ydre	124,125	528			278	397		338	338	36
127	Horsens Fjord, ydre	127,128	833			501	412		456	456	45
128	Horsens Fjord, indre	128	782			404	441		422	422	46
129	Nissum Fjord, Ydre	129,131,130	2,412			1,441	1,101		1,271	1,271	47
130	Nissum Fjord, mellem	130,131	2,083			993	745		869	869	58
131	Nissum Fjord, Felsted Kog	131	1,938	1,938		662	698	1,938	680	1,309	32
132	Ringkøbing Fjord	132	4,748		1,679	4,748	2,231	1,679	3,489	2,584	46
133	Vesterhavet, nord	133,129,130,131,132	7,237			7,237			7,237	7,237	0
136	Randers Fjord, indre	136	2,925	2,925	1,477	2,925	1,477	2,201	2,201	2,201	25
137	Randers Fjord, ydre	136,137	3,078	3,078	1,392	3,078	1,392	2,235	2,235	2,235	27
138	Hevring Bugt	138, 137, 136	3,207		3,235	3,124	3,235		3,180	3,180	1

No.	Name	Aggregation	Average annual N-load	Chl-a (STAT)	Light (STAT)	Chl-a (MEK)	Light (MEK)	N-MAI (STAT)	N-MAI (MEK)	Avg. MAI	Avg. reduction [%]
139	Anholt	139	9			9	9		9	9	0
140	Djursland Øst	140	856			349	856		603	603	30
141	Ebeltoft Vig	141	14			14	14		14	14	0
142	Stavns Fjord	142	5			5	3		4	4	27
144	Knebel Vig	144	18			8	18		13	13	27
145	Kalø Vig	144,145	190	190	190	190	190	190	190	190	0
146	Norsminde Fjord	146	140			140	57		99	99	30
147	Århus Bugt og Begtrup Vig	144,145,147	656	573	656	546	656	615	601	608	7
154	Kattegat Læsø	154	78			78	78		78	78	0
157	Bjørnholms Bugt, Riisgårde Bredning, Skive Fjord og Lovns Bredning	157,158	3,633			992	1,770		1,381	1,381	62
158	Hjarbæk Fjord	158	1,795			463	751		607	607	66
159	Mariager Fjord, indre	159	516			88	235		162	162	69
160	Mariager Fjord, ydre	159,160	963			822	596		709	709	26
165	Isefjord, indre	165	812	365		385	812	365	598	482	41
200	Kattegat Nordsjælland	1,2,24,165,200	1,857			1,857	629		1,243	1,243	33
201	Køge Bugt	201	1,109	838		841	605	838	723	780	30
204	Jammerland Bugt og Musholm Bugt	204	1,327			1,327	359		843	843	36

No.	Name	Aggregation	Average annual N-load	Chl-a (STAT)	Light (STAT)	Chl-a (MEK)	Light (MEK)	N-MAI (STAT)	N-MAI (MEK)	Avg. MAI	Avg. reduction [%]
206	Smålandsfarvandet, åbne del	16,17,18,25, 35,36,37,20 6	2,014			2,014	1,553		1,783	1,783	11
207	Nakskov Fjord	207	454			421	335		378	378	17
208	Femerbælt	207,208,209	1,530			854	1,530		1,192	1,192	22
209	Rødsand og Bredningen	209	521			273	334		303	303	42
212	Fåborg Fjord	212	30			10	30		20	20	33
214	Det sydfynske Øhav	68,72,212,2 14	633	176	394	176	392	285	284	285	55
216	Lillebælt, syd	87,101,102, 103,104,105, ,110,113,11 4,216	1,309			462	1,309		885	885	32
217	Lillebælt Bredningen	74,82,106,1 08,109,217	956	276		278	956	276	617	446	53
219	Århus Bugt, syd, Samsø og Nordlige Bælthav	59,62,92,93, 127,128,142 ,146,219	2,810			626	2,810		1,718	1,718	39
221	Skagerrak	221	1,423			1,423			1,423	1,423	0
222	Kattegat Ålborg Bugt	222,159,160	2,026			2,026	2,026		2,026	2,026	0
224	Nordlige Lillebælt	122,123,224	1,588			389	1,588		988	988	38
225	Nordlige Kattegat ÅlbækBugt	225	706			662	706		684	684	3

No.	Name	Aggregation	Average annual N-load	Chl-a (STAT)	Light (STAT)	Chl-a (MEK)	Light (MEK)	N-MAI (STAT)	N-MAI (MEK)	Avg. MAI	Avg. reduction [%]
231	Lillebælt Snævringen	231,124,125,80	789		222	134	335	222	234	228	71
232	Nissum Bredning	232	880	297	639	297	866	468	582	525	40
233	Kaas Bredning og Venø Bugt	232,233	1,955			1,460	960		1,210	1,210	38
234	Løgstør Bredning	157,158,234,233,236	6,502			1,980	3,741		2,860	2,860	56
235	Nibe Bredning og Langerak	157,158,233,234,235,236,238	11,064		9,966	3,525	10,399	9,966	6,962	8,464	24
236	Thisted Bredning	236	1,091			269	508		389	389	64
238	Halkær Bredning	238	620			114	119		117	117	81

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Appendix C – Maximum Allowable Nitrogen  
Inputs (N-MAIs) based on management scenario  
3a and assuming 20% reduction in Danish land-  
based P-loads

Table C- 1 Water body-specific MAIs based on the two individual indicators chlorophyll-a (Chl-a) and light penetration depth (light) estimated from statistical models (STAT), or mechanistic models (MEK), respectively. The table shows both the individual calculations and the averaged water-specific MAIs (without any aggregation) and the corresponding need for reduction in %. The data in this table are based on management scenario 3a and Danish land-based P-reductions set at 20%.

No.	Name	Aggregation	Average annual N-load	Chl-a (STAT)	Light (STAT)	Chl-a (MEK)	Light (MEK)	N-MAI (STAT)	N-MAI (MEK)	Avg. MAI	Avg. reduction [%]
1	Roskilde Fjord, ydre	1,2	764			643	433		538	538	30
2	Roskilde Fjord, indre	2	388	388		388	360	388	374	381	2
6	Nordlige Øresund	6	1,098			1,098	1,098		1,098	1,098	0
16	Korsør Nor	16	40			40	20		30	30	25
17	Basnæs Nor	17	69			69	28		49	49	29
18	Holsteinborg Nor	18	22			22	22		22	22	0
24	Isefjord, ydre	24,165	899	511	628	510	628	570	569	569	37
25	Skælskør Fjord og Nor	25	44			36	39		37	37	15
28	Sejerø Bugt	28	164			164	164		164	164	0
29	Kalundborg Fjord	29	69	13	52	35	69	33	52	43	39
34	Smålandsfarvandet, syd	34	523			523	523		523	523	0
35	Karrebæk Fjord	35	1,272			1,272	850		1,061	1,061	17
36	Dybsø Fjord	36	61			61	61		61	61	0
37	Avnø Fjord	37	238			238	136		187	187	21
38	Guldborgsund	38	419			419	419		419	419	0
44	Hjelm Bugt	44	91			91	91		91	91	0
45	Grønsund	45	278			278	102		190	190	32

No.	Name	Aggregation	Average annual N-load	Chl-a (STAT)	Light (STAT)	Chl-a (MEK)	Light (MEK)	N-MAI (STAT)	N-MAI (MEK)	Avg. MAI	Avg. reduction [%]
46	Fakse Bugt	46,47	509			367	509		438	438	14
47	Præstø Fjord	47	208			146	126		136	136	35
48	Stege Bugt	48,49	259			259	259		259	259	0
49	Stege Nor	49	24			18	11		15	15	39
56	Østersøen, Bornholm	56	859			184	860		522	522	39
57	Østersøen, Christiansø	57	3			0	3		2	2	48
59	Nærrå Strand	59	98			35	40		37	37	62
62	Lillestrand	62	11			8	5		6	6	43
68	Lindelse Nor	68	50			50	50		50	50	0
72	Kløven	72	43			43	43		43	43	0
74	Bredningen	74	128			54	55		54	54	58
80	Gamborg Fjord	80	80			60	80		70	70	12
82	Aborg Minde Nor	82	152			34	34		34	34	78
83	Holckehavn Fjord	83	290			98	143		120	120	58
84	Kerteminde Fjord	84,85	50			28	50		39	39	22
85	Kertinge Nor	85	24	22		22	13	22	18	20	16
86	Nyborg Fjord	83,86	308			160	278		219	219	29
87	Helnæs Bugt	87	216			67	216		141	141	35
89	Lunkebugten	89	16			5	16		10	10	34

No.	Name	Aggregation	Average annual N-load	Chl-a (STAT)	Light (STAT)	Chl-a (MEK)	Light (MEK)	N-MAI (STAT)	N-MAI (MEK)	Avg. MAI	Avg. reduction [%]
90	Langelandssund	83,86,89,90	768			427	768		597	597	22
92	Odense Fjord, ydre	92,93	1,358	819	1,208	1,000	1,187	1,013	1,093	1,053	22
93	Odense Fjord, Seden Strand	93	1,288		687	1,288	547	687	918	802	38
95	Storebælt SV	95	188			41	188		115	115	39
96	Storebælt NV	96, 84, 85	227			38	227		132	132	42
101	Genner Bugt	101	35			13	20		16	16	53
102	Åbenrå Fjord	102	130	59		59	85	59	72	65	50
103	Als Fjord	103,104,105	269			67	230		149	149	45
104	Als Sund	104	68			68	68		68	68	0
105	Augustenborg Fjord	105	62	60		60	62	60	61	61	2
106	Haderslev Fjord	106	239			108	162		135	135	44
107	Juvre Dyb	107	349			119			119	119	66
108	Avnø Vig	108	60			36	29		32	32	46
109	Hejlsminde Nor	109	138			138	79		109	109	21
110	Nybøl Nor	110	66			44	53		48	48	27
111	Lister Dyb	111	2,155			1,012			1,012	1,012	53
113	Flensborg Fjord, indre	113	51	19		19	48	19	33	26	49
114	Flensborg Fjord, ydre	110,113,114	219	219		219	219	219	219	219	0

No.	Name	Aggregation	Average annual N-load	Chl-a (STAT)	Light (STAT)	Chl-a (MEK)	Light (MEK)	N-MAI (STAT)	N-MAI (MEK)	Avg. MAI	Avg. reduction [%]
119	Vesterhavet, syd	119, 107, 111, 121, 120	8,538			3,934			3,934	3,934	54
120	Knudedyb	120	2,910	841		841		841	841	841	71
121	Grådyb	121	2,920			842			842	842	71
122	Vejle Fjord, ydre	122,123	968			476	968		722	722	25
123	Vejle Fjord, indre	123	561	553	461	523	468	507	495	501	11
124	Kolding Fjord, indre	124	493	221		255	302	221	278	249	49
125	Kolding Fjord, ydre	124,125	528			278	403		341	341	36
127	Horsens Fjord, ydre	127,128	833			511	415		463	463	44
128	Horsens Fjord, indre	128	782			405	445		425	425	46
129	Nissum Fjord, Ydre	129,131,130	2,413			1,560	1,186		1,373	1,373	43
130	Nissum Fjord, mellem	130,131	2,083			1,146	883		1,014	1,014	51
131	Nissum Fjord, Felsted Kog	131	1,938	1,938		662	908	1,938	785	1,361	30
132	Ringkøbing Fjord	132	4,748		1,679	4,748	2,710	1,679	3,729	2,704	43
133	Vesterhavet, nord	133,129,130,131,132	7,237			7,237			7,237	7,237	0
136	Randers Fjord, indre	136	2,925	2,925	1,588	2,925	1,588	2,256	2,256	2,256	23
137	Randers Fjord, ydre	136,137	3,078	3,078	1,587	3,078	1,587	2,332	2,332	2,332	24
138	Hevring Bugt	138, 137, 136	3,207		3,235	3,124	3,235		3,180	3,180	1

No.	Name	Aggregation	Average annual N-load	Chl-a (STAT)	Light (STAT)	Chl-a (MEK)	Light (MEK)	N-MAI (STAT)	N-MAI (MEK)	Avg. MAI	Avg. reduction [%]
139	Anholt	139	9			9	9		9	9	0
140	Djursland Øst	140	856			349	856		603	603	30
141	Ebeltoft Vig	141	14			14	14		14	14	0
142	Stavns Fjord	142	5			5	3		4	4	26
144	Knebel Vig	144	18			8	18		13	13	27
145	Kalø Vig	144,145	190	190	190	190	190	190	190	190	0
146	Norsminde Fjord	146	140			140	73		106	106	24
147	Århus Bugt og Begtrup Vig	144,145,147	656	632	656	546	656	644	601	623	5
154	Kattegat Læsø	154	78			78	78		78	78	0
157	Bjørnholms Bugt, Riisgårde Bredning, Skive Fjord og Lovns Bredning	157,158	3,633			992	1,989		1,491	1,491	59
158	Hjarbæk Fjord	158	1,795			505	857		681	681	62
159	Mariager Fjord, indre	159	516			94	270		182	182	65
160	Mariager Fjord, ydre	159,160	963			869	671		770	770	20
165	Isefjord, indre	165	812	365		385	812	365	598	482	41
200	Kattegat Nordsjælland	1,2,24,165,200	1,857			1,857	629		1,243	1,243	33
201	Køge Bugt	201	1,109	855		859	616	855	738	796	28
204	Jammerland Bugt og Musholm Bugt	204	1,327			1,327	362		845	845	36

No.	Name	Aggregation	Average annual N-load	Chl-a (STAT)	Light (STAT)	Chl-a (MEK)	Light (MEK)	N-MAI (STAT)	N-MAI (MEK)	Avg. MAI	Avg. reduction [%]
206	Smålandsfarvandet, åbne del	16,17,18,25, 35,36,37,20 6	2,014			2,014	1,553		1,783	1,783	11
207	Nakskov Fjord	207	454			422	338		380	380	16
208	Femberbælt	207,208,209	1,530			854	1,530		1,192	1,192	22
209	Rødsand og Bredningen	209	521			273	334		303	303	42
212	Fåborg Fjord	212	30			10	30		20	20	33
214	Det sydfynske Øhav	68,72,212,2 14	633	176	398	176	392	287	284	285	55
216	Lillebælt, syd	87,101,102, 103,104,105, ,110,113,11 4,216	1,309			462	1,309		885	885	32
217	Lillebælt Bredningen	74,82,106,1 08,109,217	956	276		278	956	276	617	446	53
219	Århus Bugt, syd, Samsø og Nordlige Bælthav	59,62,92,93, 127,128,142 ,146,219	2,810			626	2,810		1,718	1,718	39
221	Skagerrak	221	1,423			1,423			1,423	1,423	0
222	Kattegat Ålborg Bugt	222,159,160	2,026			2,026	2,026		2,026	2,026	0
224	Nordlige Lillebælt	122,123,224	1,588			389	1,588		988	988	38
225	Nordlige Kattegat ÅlbækBugt	225	706			662	706		684	684	3

No.	Name	Aggregation	Average annual N-load	Chl-a (STAT)	Light (STAT)	Chl-a (MEK)	Light (MEK)	N-MAI (STAT)	N-MAI (MEK)	Avg. MAI	Avg. reduction [%]
231	Lillebælt Snævringen	231,124,125,80	789		260	134	335	260	234	247	69
232	Nissum Bredning	232	880	317	673	297	880	495	589	542	38
233	Kaas Bredning og Venø Bugt	232,233	1,955			1,523	1,118		1,320	1,320	32
234	Løgstør Bredning	157,158,234,233,236	6,501			1,980	3,965		2,972	2,972	54
235	Nibe Bredning og Langerak	157,158,233,234,235,236,238	11,064		10,179	4,149	11,062	10,179	7,606	8,892	20
236	Thisted Bredning	236	1,091			269	528		398	398	63
238	Halkær Bredning	238	620			114	209		161	161	74

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Appendix D – Maximum Allowable Nitrogen  
Inputs (N-MAIs) based on management scenario  
3a and assuming 30% reduction in Danish land-  
based P-loads

Table D- 1 Water body-specific MAIs based on the two individual indicators chlorophyll-a (Chl-a) and light penetration depth (light) estimated from statistical models (STAT), or mechanistic models (MEK), respectively. The table shows both the individual calculations and the averaged water-specific MAIs (without any aggregation) and the corresponding need for reduction in %. The data in this table are based on management scenario 3a and Danish land-based P-reductions set at 30%.

No.	Name	Aggregation	Average annual N-load	Chl-a (STAT)	Light (STAT)	Chl-a (MEK)	Light (MEK)	N-MAI (STAT)	N-MAI (MEK)	Avg. MAI	Avg. reduction [%]
1	Roskilde Fjord, ydre	1,2	764			643	437		540	540	29
2	Roskilde Fjord, indre	2	388	388		388	364	388	376	382	2
6	Nordlige Øresund	6	1,098			1,098	1,098		1,098	1,098	0
16	Korsør Nor	16	40			40	21		30	30	24
17	Basnæs Nor	17	69			69	29		49	49	29
18	Holsteinborg Nor	18	22			22	22		22	22	0
24	Isefjord, ydre	24,165	899	533	644	510	629	588	570	579	36
25	Skælskør Fjord og Nor	25	44			37	40		38	38	13
28	Sejerø Bugt	28	164			164	164		164	164	0
29	Kalundborg Fjord	29	69	13	58	35	69	36	52	44	37
34	Smålandsfarvandet, syd	34	523			523	523		523	523	0
35	Karrebæk Fjord	35	1,272			1,272	905		1,088	1,088	14
36	Dybsø Fjord	36	61			61	61		61	61	0
37	Avnø Fjord	37	238			238	141		189	189	20
38	Guldborgsund	38	419			419	419		419	419	0
44	Hjelm Bugt	44	91			91	91		91	91	0
45	Grønsund	45	278			278	102		190	190	32

No.	Name	Aggregation	Average annual N-load	Chl-a (STAT)	Light (STAT)	Chl-a (MEK)	Light (MEK)	N-MAI (STAT)	N-MAI (MEK)	Avg. MAI	Avg. reduction [%]
46	Fakse Bugt	46,47	509			369	509		439	439	14
47	Præstø Fjord	47	208			149	130		140	140	33
48	Stege Bugt	48,49	259			259	259		259	259	0
49	Stege Nor	49	24			18	12		15	15	38
56	Østersøen, Bornholm	56	859			184	860		522	522	39
57	Østersøen, Christiansø	57	3			0	3		2	2	48
59	Nærrå Strand	59	98			42	52		47	47	52
62	Lillestrand	62	11			8	5		6	6	43
68	Lindelse Nor	68	50			50	50		50	50	0
72	Kløven	72	43			43	43		43	43	0
74	Bredningen	74	128			58	61		60	60	53
80	Gamborg Fjord	80	80			60	80		70	70	12
82	Aborg Minde Nor	82	152			40	34		37	37	76
83	Holckehavn Fjord	83	290			109	154		132	132	55
84	Kerteminde Fjord	84,85	50			28	50		39	39	22
85	Kertinge Nor	85	24	23		22	14	23	18	20	13
86	Nyborg Fjord	83,86	308			165	282		224	224	28
87	Helnæs Bugt	87	216			67	216		141	141	35
89	Lunkebugten	89	16			5	16		10	10	34

No.	Name	Aggregation	Average annual N-load	Chl-a (STAT)	Light (STAT)	Chl-a (MEK)	Light (MEK)	N-MAI (STAT)	N-MAI (MEK)	Avg. MAI	Avg. reduction [%]
90	Langelandssund	83,86,89,90	768			427	768		597	597	22
92	Odense Fjord, ydre	92,93	1,358	819	1,208	1,009	1,221	1,013	1,115	1,064	22
93	Odense Fjord, Seden Strand	93	1,288		687	1,288	618	687	953	820	36
95	Storebælt SV	95	188			41	188		115	115	39
96	Storebælt NV	96, 84, 85	227			38	227		132	132	42
101	Genner Bugt	101	35			13	20		16	16	53
102	Åbenrå Fjord	102	130	59		59	85	59	72	65	50
103	Als Fjord	103,104,105	269			67	230		149	149	45
104	Als Sund	104	68			68	68		68	68	0
105	Augustenborg Fjord	105	62	62		60	62	62	61	61	1
106	Haderslev Fjord	106	239			109	163		136	136	43
107	Juvre Dyb	107	349			119			119	119	66
108	Avnø Vig	108	60			38	32		35	35	42
109	Hejlsminde Nor	109	138			138	88		113	113	18
110	Nybøl Nor	110	66			45	54		49	49	25
111	Lister Dyb	111	2,155			1,085			1,085	1,085	50
113	Flensborg Fjord, indre	113	51	19		19	48	19	33	26	49
114	Flensborg Fjord, ydre	110,113,114	219	219		219	219	219	219	219	0

No.	Name	Aggregation	Average annual N-load	Chl-a (STAT)	Light (STAT)	Chl-a (MEK)	Light (MEK)	N-MAI (STAT)	N-MAI (MEK)	Avg. MAI	Avg. reduction [%]
119	Vesterhavet, syd	119, 107, 111, 121, 120	8,538			3,934			3,934	3,934	54
120	Knudedyb	120	2,910	841		841		841	841	841	71
121	Grådyb	121	2,919			895			895	895	69
122	Vejle Fjord, ydre	122,123	968			483	968		726	726	25
123	Vejle Fjord, indre	123	561	561	474	524	469	518	496	507	10
124	Kolding Fjord, indre	124	493	246		260	312	246	286	266	46
125	Kolding Fjord, ydre	124,125	528			278	411		344	344	35
127	Horsens Fjord, ydre	127,128	833			519	420		469	469	44
128	Horsens Fjord, indre	128	782			407	449		428	428	45
129	Nissum Fjord, Ydre	129,131,130	2,413			1,733	1,269		1,501	1,501	38
130	Nissum Fjord, mellem	130,131	2,083			1,429	1,019		1,224	1,224	41
131	Nissum Fjord, Felsted Kog	131	1,938	1,938		906	1,115	1,938	1,010	1,474	24
132	Ringkøbing Fjord	132	4,748		1,679	4,748	3,186	1,679	3,967	2,823	41
133	Vesterhavet, nord	133,129,130,131,132	7,237			7,237			7,237	7,237	0
136	Randers Fjord, indre	136	2,925	2,925	1,768	2,925	1,768	2,346	2,346	2,346	20
137	Randers Fjord, ydre	136,137	3,078	3,078	1,779	3,078	1,779	2,429	2,429	2,429	21
138	Hevring Bugt	138, 137, 136	3,208		3,235	3,126	3,235		3,181	3,181	1

No.	Name	Aggregation	Average annual N-load	Chl-a (STAT)	Light (STAT)	Chl-a (MEK)	Light (MEK)	N-MAI (STAT)	N-MAI (MEK)	Avg. MAI	Avg. reduction [%]
139	Anholt	139	9			9	9		9	9	0
140	Djursland Øst	140	856			349	856		603	603	30
141	Ebeltoft Vig	141	14			14	14		14	14	0
142	Stavns Fjord	142	5			5	3		4	4	26
144	Knebel Vig	144	18			8	18		13	13	27
145	Kalø Vig	144,145	190	190	190	190	190	190	190	190	0
146	Norsminde Fjord	146	140			140	88		114	114	19
147	Århus Bugt og Begtrup Vig	144,145,147	656	656	656	546	656	656	601	629	4
154	Kattegat Læsø	154	78			78	78		78	78	0
157	Bjørnholms Bugt, Riisgårde Bredning, Skive Fjord og Lovns Bredning	157,158	3,632			992	2,200		1,596	1,596	56
158	Hjarbæk Fjord	158	1,795			552	961		757	757	58
159	Mariager Fjord, indre	159	516			100	303		201	201	61
160	Mariager Fjord, ydre	159,160	963			925	740		833	833	14
165	Isefjord, indre	165	812	365		385	812	365	598	482	41
200	Kattegat Nordsjælland	1,2,24,165,200	1,857			1,857	629		1,243	1,243	33
201	Køge Bugt	201	1,109	872		877	627	872	752	812	27
204	Jammerland Bugt og Musholm Bugt	204	1,327			1,327	365		846	846	36

No.	Name	Aggregation	Average annual N-load	Chl-a (STAT)	Light (STAT)	Chl-a (MEK)	Light (MEK)	N-MAI (STAT)	N-MAI (MEK)	Avg. MAI	Avg. reduction [%]
206	Smålandsfarvandet, åbne del	16,17,18,25, 35,36,37,20 6	2,014			2,014	1,553		1,783	1,783	11
207	Nakskov Fjord	207	454			424	341		383	383	16
208	Femerbælt	207,208,209	1,530			855	1,530		1,193	1,193	22
209	Rødsand og Bredningen	209	521			273	334		303	303	42
212	Fåborg Fjord	212	30			10	30		20	20	33
214	Det sydfynske Øhav	68,72,212,2 14	633	176	401	176	392	289	284	286	55
216	Lillebælt, syd	87,101,102, 103,104,105, ,110,113,11 4,216	1,309			462	1,309		885	885	32
217	Lillebælt Bredningen	74,82,106,1 08,109,217	956	276		278	956	276	617	446	53
219	Århus Bugt, syd, Samsø og Nordlige Bælthav	59,62,92,93, 127,128,142 ,146,219	2,810			626	2,810		1,718	1,718	39
221	Skagerrak	221	1,423			1,423			1,423	1,423	0
222	Kattegat Ålborg Bugt	222,159,160	2,026			2,026	2,026		2,026	2,026	0
224	Nordlige Lillebælt	122,123,224	1,588			389	1,588		988	988	38
225	Nordlige Kattegat ÅlbækBugt	225	706			662	706		684	684	3

No.	Name	Aggregation	Average annual N-load	Chl-a (STAT)	Light (STAT)	Chl-a (MEK)	Light (MEK)	N-MAI (STAT)	N-MAI (MEK)	Avg. MAI	Avg. reduction [%]
231	Lillebælt Snævringen	231,124,125,80	789		298	134	335	298	234	266	66
232	Nissum Bredning	232	880	347	707	297	880	527	589	558	37
233	Kaas Bredning og Venø Bugt	232,233	1,955			1,588	1,276		1,432	1,432	27
234	Løgstør Bredning	157,158,234,233,236	6,501			1,980	4,189		3,084	3,084	53
235	Nibe Bredning og Langerak	157, 158, 233, 234, 235, 236, 238	11,064		10,390	4,813	11,064	10,390	7,939	9,164	17
236	Thisted Bredning	236	1,091			269	547		408	408	63
238	Halkær Bredning	238	620			114	298		206	206	67

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Appendix E – Maximum Allowable Nitrogen  
Inputs (N-MAIs) based on management scenario  
3a and assuming 50% reduction in Danish land-  
based P-loads

Table E- 1 Water body-specific MAIs based on the two individual indicators chlorophyll-a (Chl-a) and light penetration depth (light) estimated from statistical models (STAT) or mechanistic models (MEK), respectively. The table shows both the individual calculations and the averaged water-specific MAIs (without any aggregation) and the corresponding need for reduction in %. The data in this table are based on Management scenario 3a and Danish land-based P-reductions set at 50%.

No.	Name	Aggregation	Average annual N-load	Chl-a (STAT)	Light (STAT)	Chl-a (MEK)	Light (MEK)	N-MAI (STAT)	N-MAI (MEK)	Avg. MAI	Avg. reduction [%]
1	Roskilde Fjord, ydre	1,2	764			643	445		544	544	29
2	Roskilde Fjord, indre	2	388	388		388	372	388	380	384	1
6	Nordlige Øresund	6	1,098			1,098	1,098		1,098	1,098	0
16	Korsør Nor	16	40			40	23		31	31	21
17	Basnæs Nor	17	69			69	29		49	49	29
18	Holsteinborg Nor	18	22			22	22		22	22	0
24	Isefjord, ydre	24,165	899	577	676	510	630	627	570	598	33
25	Skælskør Fjord og Nor	25	44			37	42		40	40	9
28	Sejerø Bugt	28	164			164	164		164	164	0
29	Kalundborg Fjord	29	69	27	68	35	69	48	52	50	28
34	Smålandsfarvandet, syd	34	523			523	523		523	523	0
35	Karrebæk Fjord	35	1,272			1,272	1,008		1,140	1,140	10
36	Dybsø Fjord	36	61			61	61		61	61	0
37	Avnø Fjord	37	238			238	151		194	194	18
38	Guldborgsund	38	419			419	419		419	419	0
44	Hjelm Bugt	44	91			91	91		91	91	0
45	Grønsund	45	278			278	102		190	190	32

No.	Name	Aggregation	Average annual N-load	Chl-a (STAT)	Light (STAT)	Chl-a (MEK)	Light (MEK)	N-MAI (STAT)	N-MAI (MEK)	Avg. MAI	Avg. reduction [%]
46	Fakse Bugt	46,47	510			372	509		441	441	14
47	Præstø Fjord	47	208			154	139		147	147	30
48	Stege Bugt	48,49	259			259	259		259	259	0
49	Stege Nor	49	24			18	12		15	15	37
56	Østersøen, Bornholm	56	859			184	860		522	522	39
57	Østersøen, Christiansø	57	3			0	3		2	2	48
59	Nærrå Strand	59	98			58	76		67	67	32
62	Lillestrand	62	11			8	5		7	7	42
68	Lindelse Nor	68	50			50	50		50	50	0
72	Kløven	72	43			43	43		43	43	0
74	Bredningen	74	128			67	75		71	71	45
80	Gamborg Fjord	80	80			60	80		70	70	12
82	Aborg Minde Nor	82	152			67	59		63	63	59
83	Holckehavn Fjord	83	290			134	177		155	155	46
84	Kerteminde Fjord	84,85	50			28	50		39	39	22
85	Kertinge Nor	85	24	24		22	15	24	18	21	11
86	Nyborg Fjord	83,86	308			175	290		233	233	25
87	Helnæs Bugt	87	216			67	216		141	141	35
89	Lunkebugten	89	16			5	16		10	10	34

No.	Name	Aggregation	Average annual N-load	Chl-a (STAT)	Light (STAT)	Chl-a (MEK)	Light (MEK)	N-MAI (STAT)	N-MAI (MEK)	Avg. MAI	Avg. reduction [%]
90	Langelandssund	83,86,89,90	768			427	768		597	597	22
92	Odense Fjord, ydre	92,93	1,358	819	1,208	1,031	1,289	1,013	1,160	1,086	20
93	Odense Fjord, Seden Strand	93	1,288		687	1,288	759	687	1,024	855	34
95	Storebælt SV	95	188			41	188		115	115	39
96	Storebælt NV	96, 84, 85	227			38	227		132	132	42
101	Genner Bugt	101	35			13	20		16	16	53
102	Åbenrå Fjord	102	130	59		59	85	59	72	65	50
103	Als Fjord	103,104,105	269			67	230		149	149	45
104	Als Sund	104	68			68	68		68	68	0
105	Augustenborg Fjord	105	62	62		60	62	62	61	61	1
106	Haderslev Fjord	106	239			111	165		138	138	42
107	Juvre Dyb	107	349			119			119	119	66
108	Avnø Vig	108	60			43	37		40	40	33
109	Hejlsminde Nor	109	138			138	107		122	122	12
110	Nybøl Nor	110	66			48	57		52	52	21
111	Lister Dyb	111	2,155			1,238			1,238	1,238	43
113	Flensborg Fjord, indre	113	51	19		19	48	19	33	26	49
114	Flensborg Fjord, ydre	110,113,114	219	219		219	219	219	219	219	0

No.	Name	Aggregation	Average annual N-load	Chl-a (STAT)	Light (STAT)	Chl-a (MEK)	Light (MEK)	N-MAI (STAT)	N-MAI (MEK)	Avg. MAI	Avg. reduction [%]
119	Vesterhavet, syd	119, 107, 111, 121, 120	8,538			3,934			3,934	3,934	54
120	Knudedyb	120	2,910	1,953		841		1,953	841	1,397	52
121	Grådyb	121	2,920			1,537			1,537	1,537	47
122	Vejle Fjord, ydre	122,123	968			499	968		733	733	24
123	Vejle Fjord, indre	123	561	561	501	526	470	531	498	515	8
124	Kolding Fjord, indre	124	493	312		270	333	312	302	307	38
125	Kolding Fjord, ydre	124,125	528			278	424		351	351	34
127	Horsens Fjord, ydre	127,128	833			538	428		483	483	42
128	Horsens Fjord, indre	128	782			411	456		433	433	45
129	Nissum Fjord, Ydre	129,131,130	2,413			2,412	1,436		1,924	1,924	20
130	Nissum Fjord, mellem	130,131	2,083			2,083	1,279		1,681	1,681	19
131	Nissum Fjord, Felsted Kog	131	1,938	1,938			1,516	1,938	1,516	1,727	11
132	Ringkøbing Fjord	132	4,748		3,336	4,748	4,131	3,336	4,439	3,888	18
133	Vesterhavet, nord	133,129,130,131,132	7,237			7,237			7,237	7,237	0
136	Randers Fjord, indre	136	2,925	2,925	2,126	2,925	2,126	2,525	2,525	2,525	14
137	Randers Fjord, ydre	136,137	3,078	3,078	2,160	3,078	2,160	2,619	2,619	2,619	15
138	Hevring Bugt	138, 137, 136	3,208		3,235	3,128	3,235		3,182	3,182	1

No.	Name	Aggregation	Average annual N-load	Chl-a (STAT)	Light (STAT)	Chl-a (MEK)	Light (MEK)	N-MAI (STAT)	N-MAI (MEK)	Avg. MAI	Avg. reduction [%]
139	Anholt	139	9			9	9		9	9	0
140	Djursland Øst	140	856			349	856		603	603	30
141	Ebeltoft Vig	141	14			14	14		14	14	0
142	Stavns Fjord	142	5			5	3		4	4	25
144	Knebel Vig	144	18			8	18		13	13	27
145	Kalø Vig	144,145	190	190	190	190	190	190	190	190	0
146	Norsminde Fjord	146	140			140	118		129	129	8
147	Århus Bugt og Begtrup Vig	144,145,147	656	656	656	546	656	656	601	629	4
154	Kattegat Læsø	154	78			78	78		78	78	0
157	Bjørnholms Bugt, Riisgårde Bredning, Skive Fjord og Lovns Bredning	157,158	3,632			1,168	2,597		1,883	1,883	48
158	Hjarbæk Fjord	158	1,795			663	1,164		913	913	49
159	Mariager Fjord, indre	159	516			114	367		241	241	53
160	Mariager Fjord, ydre	159,160	963			963	865		914	914	5
165	Isefjord, indre	165	812	365		385	812	365	598	482	41
200	Kattegat Nordsjælland	1,2,24,165,200	1,857			1,857	629		1,243	1,243	33
201	Køge Bugt	201	1,109	907		913	649	907	781	844	24
204	Jammerland Bugt og Musholm Bugt	204	1,327			1,327	371		849	849	36

No.	Name	Aggregation	Average annual N-load	Chl-a (STAT)	Light (STAT)	Chl-a (MEK)	Light (MEK)	N-MAI (STAT)	N-MAI (MEK)	Avg. MAI	Avg. reduction [%]
206	Smålandsfarvandet, åbne del	16,17,18,25, 35,36,37,20 6	2,014			2,014	1,553		1,783	1,783	11
207	Nakskov Fjord	207	454			428	347		388	388	15
208	Femerbælt	207,208,209	1,530			855	1,530		1,193	1,193	22
209	Rødsand og Bredningen	209	521			273	334		303	303	42
212	Fåborg Fjord	212	30			10	30		20	20	33
214	Det sydfynske Øhav	68,72,212,2 14	633	176	408	176	392	292	284	288	55
216	Lillebælt, syd	87,101,102, 103,104,105, ,110,113,11 4,216	1,309			462	1,309		885	885	32
217	Lillebælt Bredningen	74,82,106,1 08,109,217	956	276		278	956	276	617	446	53
219	Århus Bugt, syd, Samsø og Nordlige Bælthav	59,62,92,93, 127,128,142 ,146,219	2,810			626	2,810		1,718	1,718	39
221	Skagerrak	221	1,423			1,423			1,423	1,423	0
222	Kattegat Ålborg Bugt	222,159,160	2,026			2,026	2,026		2,026	2,026	0
224	Nordlige Lillebælt	122,123,224	1,588			389	1,588		988	988	38
225	Nordlige Kattegat ÅlbækBugt	225	706			662	706		684	684	3

No.	Name	Aggregation	Average annual N-load	Chl-a (STAT)	Light (STAT)	Chl-a (MEK)	Light (MEK)	N-MAI (STAT)	N-MAI (MEK)	Avg. MAI	Avg. reduction [%]
231	Lillebælt Snævringen	231,124,125,80	789		372	134	335	372	234	303	62
232	Nissum Bredning	232	880	412	775	297	880	593	589	591	33
233	Kaas Bredning og Venø Bugt	232,233	1,955			1,727	1,591		1,659	1,659	15
234	Løgstør Bredning	157,158,234,233,236	6,503			1,980	4,634		3,307	3,307	49
235	Nibe Bredning og Langerak	157, 158, 233, 234, 235, 236, 238	11,064		10,807	6,276	11,064	10,807	8,670	9,739	12
236	Thisted Bredning	236	1,091			271	586		428	428	61
238	Halkær Bredning	238	620			316	475		396	396	36

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