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BERLING DEVELOPMENT PROJECT

Berling Umbilical installation and Seabed intervention 2025; Coral Risk Assessment

OMV (NORGE) AS

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Customer:	OMV (NORGE) AS, Fjordpiren Laberget 22 4020 Stavanger Norway	Norway Org: 945 748 931
Customer contact:	Ivar Hognestad	
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Objective:

To assess risk for cold water corals associated with 2025 Berling activities of umbilical installation and other seabed intervention activities

Prepared by:	Verified by:	Approved by:
Lars Ulvestad Principal Consultant	Steinar Nesse Vice president	Myhre, Kjersti Digitally signed by Myhre, Kjersti Date: 2025.01.15 10:50:49 +01'00' Kjersti Myhre Team leader

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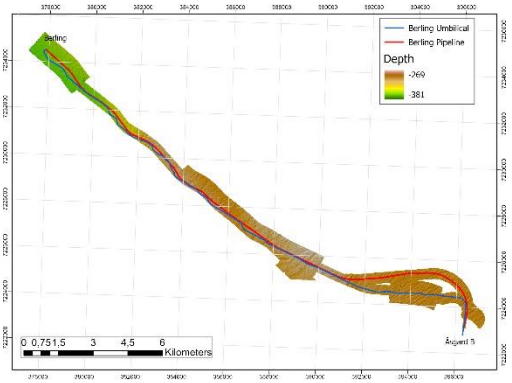
1 EXECUTIVE SUMMARY

1.1 Scope

On behalf of OMV (Norge) AS, DNV have performed a coral risk assessment of the 2025 umbilical campaign for the Berling field development, connecting the Berling field with the Åsagard B processing platform by a 24 km long pipeline for the well stream of gas/condensate, and a 24 km long umbilical for controls and chemical/electrical supply.



The Berling development is located on Haltenbanken, in an area that is known for high densities of cold water corals, and several hydrographic and visuals surveys have been performed in order to find the best route. This risk assessment helps to pinpoint the umbilical route areas and activities that poses the greatest risk to nearby corals and suggests mitigating measures.

The 2025 campaign is planned to start up in April/May 2025 and includes 2 main activities with potential impact on the seafloor and benthic fauna. The current risk assessment is, however, further including some 2024 pre-lay rock installation for the umbilical, the activity formally covered by the 2024 Berling permit, but which was then not included in the coral risk assessment. By the current assessment, all Berling 2024 and 2025 seabed intervention activities have been subject for coral risk assessment:

1. **Pre-lay rock installation**
2. **Umbilical installation & trenching**
3. **Post-lay rock installation**

1.2 Methodology

As the coral data used in the risk assessment origin from several different surveys, coral data was harmonized and all corals are categorised in accordance with industry standards (NOROG, 2019, Rev. 2024). The distance between the planned umbilical elements and corals was analysed and together with mapped coral condition the coral risk was categorized using a tailored risk matrix, with threshold distances depending on type of activity.

1.3 Results & conclusions

The main conclusions of the risk assessment are:

- A total of 62 coral areas have been identified at risk of being impacted, within different risk categories, and by one or more of the different installation elements, in 92 occasions (Table 1-1).
- One coral, BC3864, will be partly covered by the pre lay rock span 449.
- The risk assessment has used a conservative approach, and 72 of the 92 occasions are in minor risk, with negligible probability of impact.
- The post lay rock activity is posing the highest risk to the present corals with 3 corals in «Severe» risk and 7 in «Serious» risk categories.
- In total 43 of the 62 delineated potential corals within risk are not visually mapped. The majority of these (33 corals) are, however, located 20 meters or more from any planned activities, at a distance not covered by the

visual surveys. The closest corals have been mapped to full extent and the closest not visually inspected coral (BC3651) is located 15.3 meters from any planned installation activity.

- All corals with identified risk are summarized in appendix 1.

Table 1-1 *Summary of corals within risk per activity and the maximum risk of the total number of corals (several corals are within risk from more than one activity, hence the 62 corals are at risk in 92 occasions).*

	«Minor»	«Moderate»	«Serious»	«Severe»	Total
Pre lay Rock - Dec 2024	**14**	**1**	**3**	**2**	**20**
Trenching	**36**	**0**	**2**	**0**	**38**
Post lay Rock	**22**	**2**	**7**	**3**	**34**
Total	**72**	**3**	**12**	**5**	**92**

1.4 Mitigating measures

To minimize the footprint during rock installation, trenching and other activities covered by the application, the following risk-reducing measures are planned:

- At the commencement of all operations with identified environmental risks, a risk assessment will be conducted with involved personnel to increase awareness of coral presence.
- Operations will be carried out with a high degree of accuracy, and operators will be informed about known coral positions that need protection.
- Visual and acoustic aids will be employed during laying.
- Minimize sediment disturbance by maintaining a short distance from the discharge point of the fallpipe to the seabed.
- Minimize amount of rock during the laying operation.
- If possible, utilize a "deflector plate" to reduce the falling velocity during laying of the rock at the seabed (reducing the upstirring of natural sediment).
- Visual inspection will be conducted after rock installation and pipeline/trenching operations to document status and any damages.

2 INTRODUCTION

On behalf of OMV (Norge) AS, DNV have performed a coral risk assessment of the 2025 umbilical campaign for the Berling field development.

2.1 Background

The Berling development is located at Haltenbanken in the Norwegian Sea and starts at the Berling template (former Iris/Hades) with tie into the Åsgard B platform (Figure 2-1). The umbilical route is to a large extend in parallel with the pipeline route. However, as the umbilical is more flexible, in some areas - and particularly in the area approaching Åsgard, the umbilical route has some distance from the pipeline route The Berling development is located in an area that is known for high densities of cold-water corals. Hence, protecting the corals has high focus throughout the project phases, from early planning and currently in the installation work.

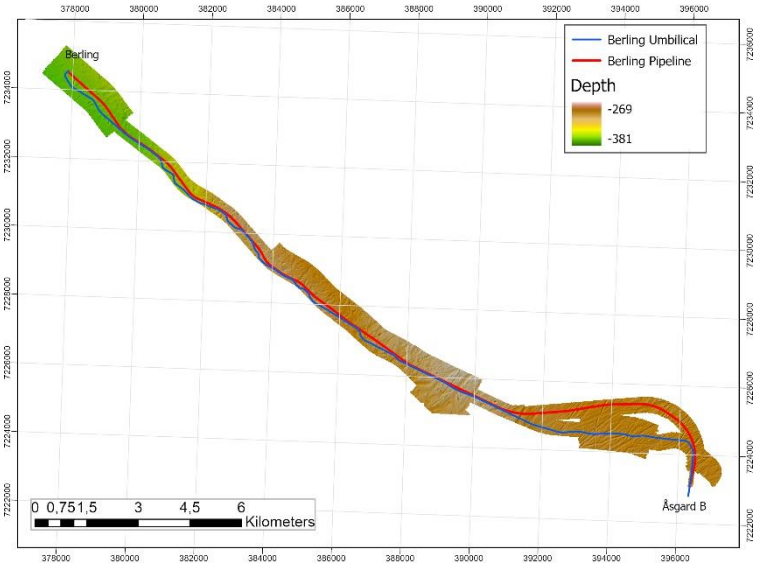


Figure 2-1 *The Berling to Åsgard B route*

2.1.1.1 Environmental studies

A list of supporting work performed by DNV throughout the planning phase are listed in Table 2-1 described below. In 2021 a coral risk assessment was performed, based on i) the expected degree of impact (distance from pipeline to coral aggregation) and ii) condition of the coral aggregation. Route specific surveys, together with previously existing data from former surveys at Iris/Hades, Cooper, Morvin, Fogelberg and Åsgard B constitutes the background data. Se table below for a complete list of surveys. The risk assessment was updated in 2022 after a new route had been proposed, and new and more detailed surveys were performed.

After the latest route updates, an additional visual survey was performed in 2023, mapping 42 coral aggregations along the altered pipeline route (DNV, 2023a) and a risk assessment was performed for the final pipeline route DNV, 2024. Where the umbilical diverges from the pipeline route, it follows the old planned route, where visual survey was performed during the 2021 Hades-Iris to Åsgård Route Survey.

Table 2-1 *Overview of geophysical and environmental surveys performed at the Berling site.*

Field	Survey	Year	Potential corals	Visually mapped	Comments
Iris/Hades	Gardline	2017	3012		Geophysical Survey
Iris/Hades	Fugro	2018	828		Geophysical Survey Some overlap with 2017 survey
Iris/Hades	DNV	2018		226	Harmonisation and visual assessment of coral data from Fugro and Gardline survey

Field	Survey	Year	Potential corals	Visually mapped	Comments
PL644	Oceaneering/DNV	2018		124	Visual mapping at well location
Berling	iSurvey/Ross Offshore	2021	1150	94	July, Siem Pride Hades-Iris to Åsgård Route Survey
Berling	DNV	2021			Risk assessment Environmental support PL644 pipeline
Berling	DNV	2021			Risk assessment OMV Corals Northernmost Pipeline Route
Berling	Gardline	2021			PL644 Pipeline Routing to Åsgard B Host Survey
Berling	iSurvey/Ross Offshore	2021	179	21	September, Hades-Iris to Åsgård Infill Route Survey
Berling	Ross Offshore /DNV	2023		42	Visual mapping of selected corals along new route
Total			8623*	344	*Some polygons are overlapping, i.e., some are counted twice or more.

2.2 Berling 2024 Campaign

Installation activities of the Berling Development Project commenced with the pipeline route in April 2024 and included pre-lay rock installation, pipeline installation, pipeline trenching, and post-lay rock installation. As part of the last post-lay rock installation (December 2024) the pre-lay rock installation for the umbilical was undertaken.

OMV (2024) applied for a permit for the 2024 activities and a permit was granted by the Norwegian Environmental Agency (Mdir, 2024).

2.3 Berling 2025 campaign

The 2025 umbilical campaign is planned to start up in May 2025 and includes 2 main activities with potential impact on the seafloor and benthic fauna (Figure 2-2). The current risk assessment is, however, further including some 2024 pre-lay rock installation for the umbilical, the activity formally covered by the 2024 Berling permit, but which was then not included in the coral risk assessment. By the current assessment, all Berling 2024 and 2025 seabed intervention activities have been subject for coral risk assessment:

1. **Pre-lay rock installation**
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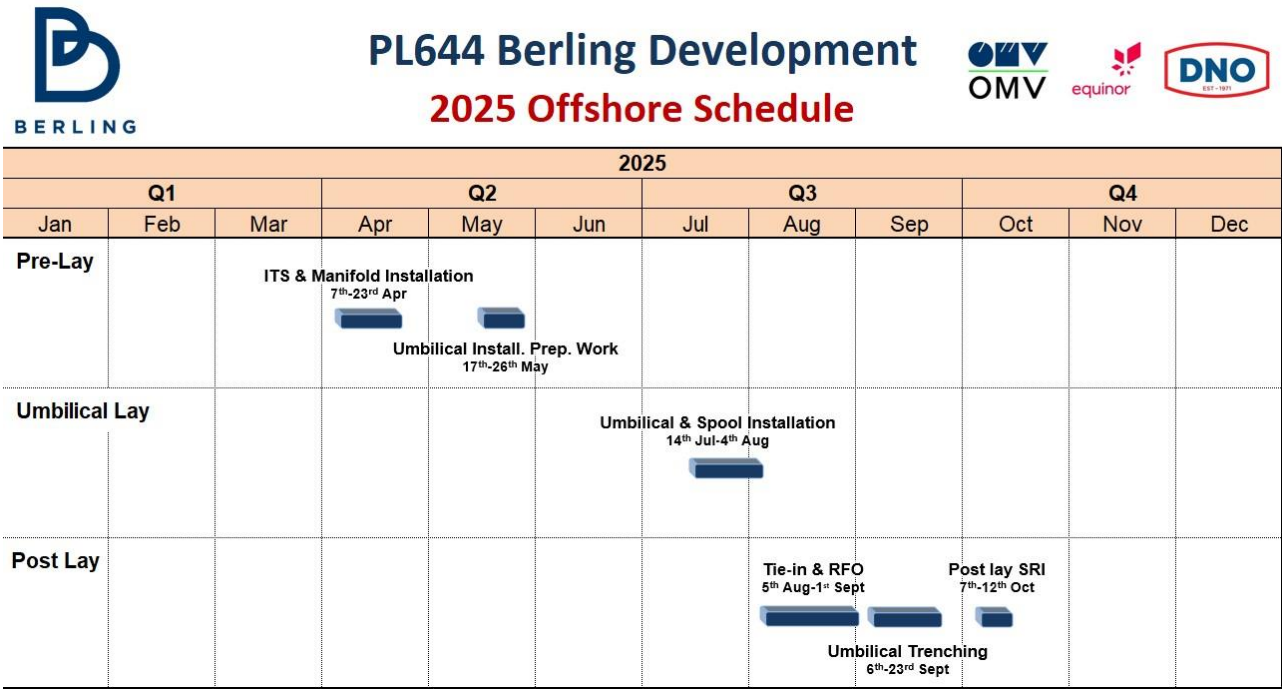

Figure 2-2 Offshore schedule for planned activities in 2025.

To protect the umbilical from trawling and other seafloor intervening activities, the umbilical will be protected. This will be performed by either trenching the cable into the seabed, by rock infill in depressions, or by a combination of trenching and rock installation. Post lay rock will further ensure trawl protection and stabilise the pre-laid rock berms.

2.3.1 Pre-lay rock installation

The pre-lay rock campaign is planned to be performed in December 2024, in conjunction with the pipeline post lay rock installation. The scope will be performed by the Van Oord fall pipe vessel Nordnes and includes 14 rock berms, crossings and template foundations as listed Table 2-2 below. In total about 19000 tonnes of rock usage is estimated with a footprint of approximately 4500 m^2.

Table 2-2 *Berling Umbilical Pre-lay Rock scope*

Span	Rock support start KP	Rock support end KP	Rock quantity (Te)	Area approx (m2)
Span 37	622	632	202	143
Span 46	844	854	492	152
Span 49	945	955	12341	1938
Span 75	1402	1412	989	290
Span 129	2961	2971	182	127
Span 179	4289	4299	127	123
Span 298	8419	8429	876	301
Span 382	11542	11552	653	277
Span 409	12355	12365	94	105
Span 449	13799	13809	1 267	467
Span 507	15689	15699	338	168
Span 542	16369	16379	1 118	318
Span 619	21239	21249	53	93
TOTAL			**18732**	**4502**

2.3.2 Umbilical installation

The Berling umbilical is approx. 23.7 km long and is planned to be laid in July to August. The umbilical will in its entire length be protected, either by being trenched down or by rock placement (pre and post lay). The impact from the umbilical laying is hence exceeded by the more intrusive activities, trenching and rock laying, and risk from laying is not further assessed.

2.3.3 Umbilical trenching

Trenching is to be carried out along the umbilical in all areas where possible. At crossings, in harder seafloor and scour mark areas, rock laying must however be performed. The umbilical will be trenched using a Helix Robotics T1200 jet type trencher. The trenching equipment features water jet swords that use water to cut the sediments on each side of the pipe. The sediments are then fluidized, and the umbilical sinks down. There focus is on keeping the trench as narrow as possible (approximately 0.5 meter wide) to minimize the impact on the seabed. Direct backfilling (backwash) is considered the most environmentally friendly method relative to methods that disperse sediments into the water masses (eduction). The equipment will be operated from the multi-purpose vessel North Sea Enabler.

2.3.4 Post-lay rock installation

After pipeline installation, rocks will be installed for trawl protection / to reduce free spans and support pre laid rock berms. A total of 23 areas for post lay rock are delineated. In total 20 000 tonnes of rock with a footprint of approx. 14000 m^2 is planned for. The estimate is based on the current design, given successful trenching as planned along the route. There may come changes to the rock footprint and tonnage, based on the seafloor characteristics and success of the trenching campaign.

Table 2-3

DESCRIPTION	KP START	KP END	ROCK QUANTITY (TE)	Area approx (m2)
ASGARD B APPROACH	10	105	554	515
SPAN 37 (ROCK SUPPORT)	592	663	432	395
CROSSING 1, SPAN 46 AND SPAN 49 (ROCK SUPPORTS)	715	1016	2935	1729
CROSSINGS 2 AND 3	1147	1305	799	747
SPAN 75 (ROCK SUPPORT)	1370	1444	1150	655
CROSSINGS 4, 5 AND 6	2126	2385	1234	1169
SPAN 129 (ROCK SUPPORT)	2930	3003	516	429
CROSSING 7	3920	4064	1377	1263
SPAN 179 (ROCK SUPPORT)	4258	4329	494	451
CROSSINGS 8 AND 9	5795	5986	1303	1120
SPAN 298 (ROCK SUPPORT)	8389	8460	602	398
SPAN 374	11245	11299	331	270
SPAN 382 (ROCK SUPPORT)	11512	11584	538	413
SPAN 409 (ROCK SUPPORT)	12325	12395	391	345
SPAN 418 (ROCK SUPPORT)	12519	12578	1053	568
SPAN 449 (ROCK SUPPORT)	13769	13841	610	527
SPAN 507 (ROCK SUPPORT)	15658	15730	492	388
SPAN 542 (ROCK SUPPORT)	16337	16413	1350	669
SPAN 563 (SPAN LENGTH <25M BUT SPAN HEIGHT TOO HIGH FOR TRENCHING)	17093	17149	422	316
SPAN 619 (ROCK SUPPORT)	21209	21279	384	328
UNSUCESSFULL TRENCHING LENGTH - DISTURBED SEABED (TBC)	21337	21373	230	197
SPAN 628 (SPAN LENGTH <25M BUT SPAN HEIGHT TOO HIGH FOR TRENCHING)	21396	21465	653	420
BERM FOR BERLING APPROACH	23380	23480	1572	739
TOTAL			**19422**	**14052**

3 METHODOLOGY

3.1 Coral classification

As the coral data used in the risk assessment origins from in several different surveys, coral data was first harmonized and merged in an environmental resource map in Arc GIS Pro. Some corals / surveys were overlapping, and, in those occasions, the polygon delineated from the highest resolution bathymetry was selected for further use. Most of the polygons did not have unique coral ID, so for referencing purposes new coral IDs was created for all corals following running number convention; (*BC0001, BC0002, etc.)*, starting from west to east. The polygons are all classified following the rationale described in the NOROG Handbook (NOROG, 2019). *D. pertusum* corals are categorized as "dead" "poor", "fair", "good" and "excellent" (Table 3-1 and Figure 3-1). Number of the non-reef building gorgonian corals such as *Paragorgia arborea* was registered in semi-quantitative categories and number of individuals per 25 m^2 was counted for OSPAR Coral Garden classification. Classification criteria and are shown in Table 3-2 and Figure 3-2

Table 3-1 *Desmophyllum pertusum (*former named *Lophelia) colony classification (from NOROG,2019)*

DESMOPHYLLUM		Density of living polyps on colony front				
		< 5%	5 – 20 %	20 – 40 %	40 – 60 %	> 60 %
Total area of living *Desmophyllum* on colony front	**< 2.5 m^2** Length and height: < 1.6 m or radius < 0.9 m	Dead	Poor	Poor	Fair	Good
	2.5 – 10 m^2 Length and height: 1.6 - 3.2 m or radius 0.9-1.8 m	Dead	Poor	Fair	Good	Excellent
	10 – 25 m^2 Length and height: 3.2 - 5 m or radius 1.8 - 2.8 m	Poor	Fair	Good	Good	Excellent
	> 25 m^2 Length and height: > 5 m or radius >2.8 m	Fair	Good	Good	Excellent	Excellent

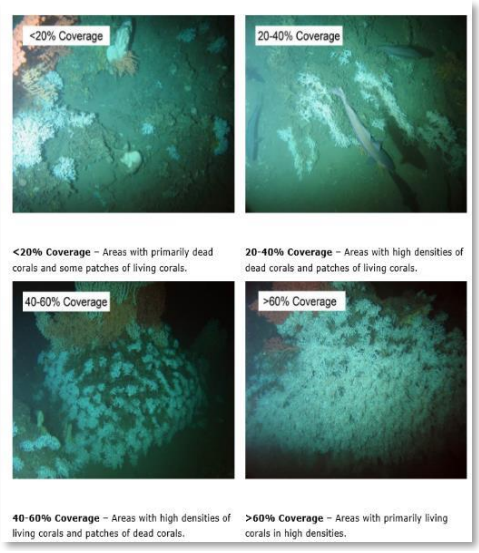

Figure 3-1 *Classification scheme for coral mapping of D. pertusum reefs.*

Table 3-2 *Criteria for gorgonian coral garden classification (from NOROG,2019)*

CORAL GARDEN	Specimens per 25m^2
Paragorgia, single on boulder	1
Poor	<5
Fair	5-10
Good	10-15
Excellent	>15

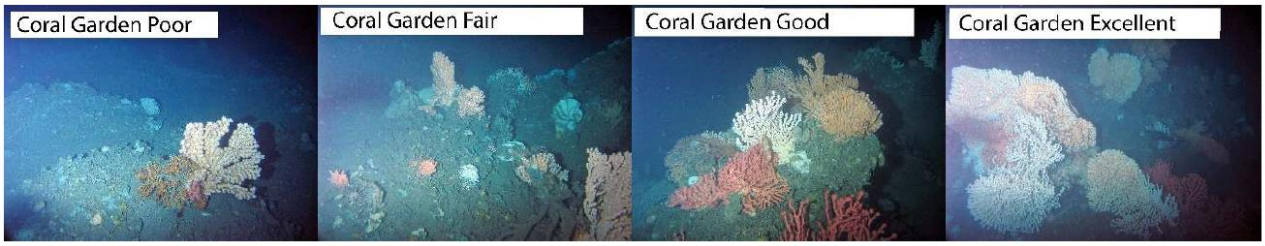

Figure 3-2 *Coral garden classification examples. Assessments are made over an area of 25m2, i.e. the immediate area surrounding the ROV (from NOROG,2019).*

3.2 Risk assessment

The impact threshold distances used in the risk assessment are updated from the 2024 campaign and is based upon Offshore Norway`s Handbook (revised issue, 2024). From the Handbook the impact distances per element are described in subchapters below and further used in the impact assessment.

3.2.1 Pre-lay rock installation

Rock laying results in direct removal of habitats usually in 5-15 meters wide corridors but can be wider depending on seabed topography and technical solutions. The effects from resuspension of sediments during rock dumping is depending on laying technique, seafloor characteristics and rock size and generally causes a transition area outside the rock laying area, with moderate impact on the seabed communities, typically <5-10m. There is always a degree of uncertainty in the final rock laying footprint and the calculated berm size is depending on the local seafloor characteristic and the laying accuracy. It is therefore used conservative impact distances in the risk assessment. Only negligible impact is expected beyond 25 meters of the planned pre lay rock berms. The conservative risk matrix used for risk assessment is presented in Table 3-3.

Table 3-3 *Risk matrix used for assessing the risk to corals related to Pre -lay rock installation.*

	Distance (m)	Poor	Fair	Good	Excellent	Not surveyed
Negligible	25-50					
Low	15-25					
Significant	10-15					
Considerable	0-10					

	Risk categories		Minor	Moderate	Serious	Severe

3.2.2 Trenching

Highest impact on benthic fauna from trenching is primarily the physical disturbance of seafloor caused by the trench (about 0.5 m wide, long-term damage) and under the trencher, which is normally propelled forward by track belts, leaving a footprint along the pipeline (short term damage). Resuspension of sediments during jetting can create a sediment plume, causing potential smothering of filter feeding sessile fauna. Risk of smothering from jetting operations decreases with increased distance from the trench and varies depending on trenching technique, sediment characteristics and current regimes etc. No significant impact is expected beyond 25 meters from the trenching operations. The risk matrix used for risk assessment is presented in Table 3-4.

Table 3-4 *Risk matrix used for assessing the risk to corals related to trenching operations.*

	Distance (m)	Poor	Fair	Good	Excellent	Not surveyed
Negligible	15-25					
Low	10-15					
Significant	5-10					
Considerable	0-5					

Risk categories	Minor	Moderate	Serious	Severe

3.2.3 Post-lay rock installation

The post-lay rock installation will be using similar methodology as the pre-lay rock and risk thresholds are shown in Table 3-5 below.

Table 3-5 *Risk matrix used for assessing the risk to corals related to Post -lay rock installation.*

	Distance (m)	Poor	Fair	Good	Excellent	Not surveyed
Negligible	25-50					
Low	15-25					
Significant	10-15					
Considerable	0-10					

Risk categories	Minor	Moderate	Serious	Severe

4 RESULTS

DNV have summarised the corals assessed to be within the risk categories for the 2025 umbilical campaign. These are presented per activity in the following sub chapters, and listed in detail in appendix a.

4.1 Pre-lay rock installation

The number of corals at risk within each rock berm is summarized in Table 4-1 and presented in detail in Table 4-2. A total of 20 coral structures have been identified as being at risk at 11 of the rock berms. One Coral structure, BC3864, a coral reef in excellent condition, is expected to be partly covered by rock at Span 449 Figure 4-2. The majority of corals are further away than 25 meters and hence at minor risk. The highest concentration of corals at risk is observed at free span, #298, where 1 coral in excellent condition is located about 7 meters from the rock berm and is in the “severe” risk category. Three corals that have not been visually surveyed are conservatively assessed as being in the “serious” risk category due to their unknown condition. They are all located relatively far away from the planned rock berms (16 to 25 m).

Table 4-1 *Summary of corals within in risk per pre-lay rock berm.*

Risk / Rock berm	«Minor»	«Moderate»	«Serious»	«Severe»	Total
Span 49	2				**2**
Span 75	1				**1**
Span 129	2				**2**
Span 179	1	1			**2**
Span 298	3			1	**4**
Span 382	1		1		**2**
Span 409	1				**1**
Span 449				1	**1**
Span 507	2				**2**
Span 542			1		**1**
Span 619	1		1		**2**
TOTAL CORALS WITHIN RISK	**14**	**1**	**3**	**2**	**20**

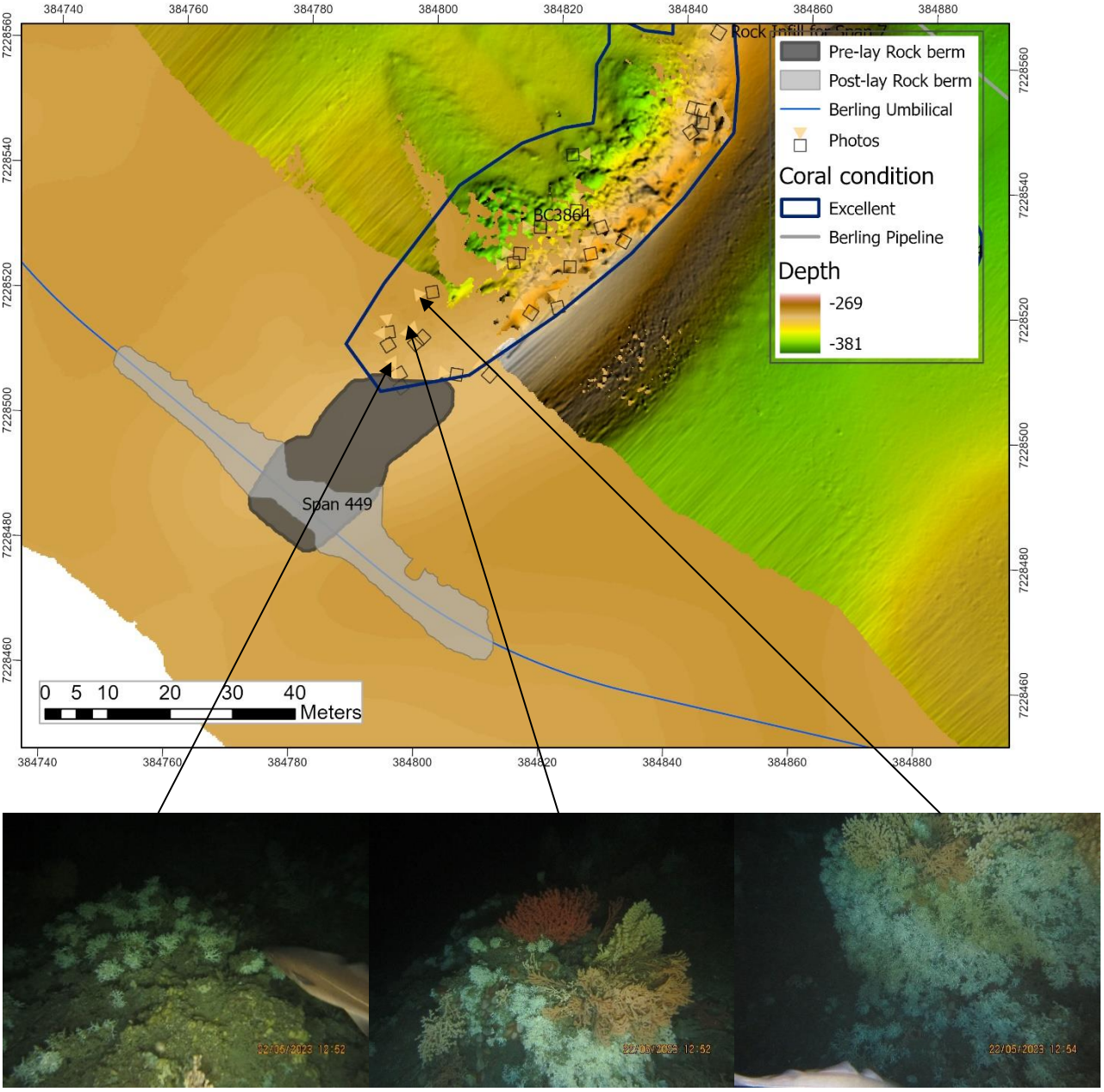

Figure 4-1 *The pre and post lay rock berm 449, with neighbouring coral structure BC3864 in excellent condition. Left photo: the outskirts of the coral structure closest to the rock berm, with smaller an less dense reef . Mid photo: Excellent reef and coral garden logged about 10m from the planned rock berm. Left photo: Larger excellent reef structure with coral garden on the top of the reef structure.*

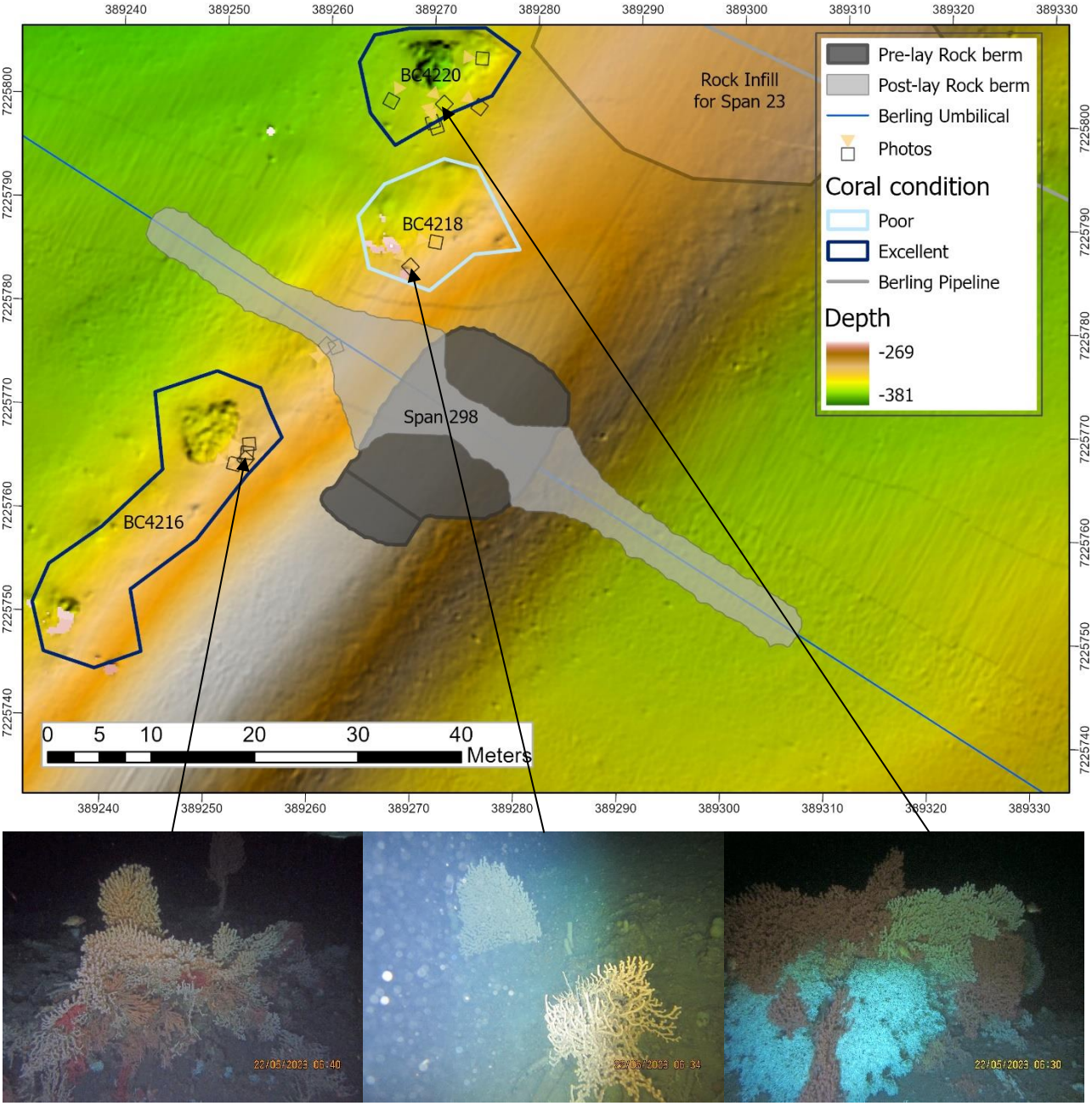

Figure 4-2 *The pre and post lay rock berm 298, with neighbouring coral structures. Left photo: Coral BC4216, housing excellent reef and coral gardens. Mid photo: BC4216, dead D. pertusum reef with coral garden in poor condition. Left photo: Larger excellent reef structure, B4220 in Minor risk.*

Table 4-2 *Details on all corals within risk from pre-lay rock installations.*

Coral_ID	Area (m2)	X (ED50UTM32N)	Y (ED50UTM32N)	Desmophyllum reef	Coral Garden	Coral Max	Distance to Pre lay Rock (m)	Pre-lay Rock berm ID	Rock Pre lay Risk
BC3864	1942	384817	7228534	Excellent	Excellent	Excellent	0,0	Span 449	Severe
BC4216	272	389244	7225759	Poor	Excellent	Excellent	6,6	Span 298	Severe
BC4043	72	386563	7227250	Not surveyed	Not surveyed	Not surveyed	16,0	Span 382	Serious
BC3561	32	382927	7230164	Not surveyed	Not surveyed	Not surveyed	24,3	Span 542	Serious
BC2032	501	379261	7233068	Not surveyed	Not surveyed	Not surveyed	24,9	Span 619	Serious
BC4341	114	393160	7224585	Dead/Not present	Good	Good	15,8	Span 179	Moderate
BC4218	126	389270	7225789	Dead/Not present	Poor	Poor	4,5	Span 298	Minor
BC4220	115	389270	7225803	Excellent	Excellent	Excellent	18,7	Span 298	Minor
BC4456	150	394484	7224552	Dead/Not present	Fair	Fair	25,4	Span 129	Minor
BC4042	174	386548	7227248	Not surveyed	Not surveyed	Not surveyed	27,3	Span 382	Minor
BC3999	18	385895	7227665	Not surveyed	Not surveyed	Not surveyed	30,0	Span 409	Minor
BC4453	42	394446	7224490	Not surveyed	Not surveyed	Not surveyed	30,1	Span 129	Minor
BC3696	798	383405	7229619	Not surveyed	Not surveyed	Not surveyed	30,6	Span 507	Minor
BC4581	23	396338	7224210	Dead/Not present	Poor	Poor	32,2	Span 49	Minor
BC3710	265	383467	7229648	Good	Fair	Good	36,2	Span 507	Minor
BC4215	357	389221	7225726	Not surveyed	Not surveyed	Not surveyed	37,2	Span 298	Minor
BC4579	75	396325	7224193	Dead/Not present	Fair	Fair	38,8	Span 49	Minor
BC4560	371	396086	7224446	Not surveyed	Not surveyed	Not surveyed	39,2	Span 75	Minor
BC2051	92	379298	7233066	Not surveyed	Not surveyed	Not surveyed	40,8	Span 619	Minor
BC4330	574	393086	7224512	Not surveyed	Not surveyed	Not surveyed	46,5	Span 179	Minor

4.2 Umbilical installation - Trenching

In total, 38 coral structures were identified within 25 meters of the planned umbilical trenching route and distributed across risk categories as summarised in in Table 4-3. No corals are expected to be crossed by the umbilical route. A total of 36 structures are located further than 15 m away from the umbilical trench and categorized as at minor risk. The two nearest corals are 11.8 meters from the planned umbilical route and classified as in 'Serious' risk. 27 of the corals are not visually surveyed but are all in “Minor” risk. A detailed overview of the number of corals within different risk categories is presented in the risk matrix in Table 4-3, and a map of the closest corals is illustrated in Figure 4-3. List of all corals in risk are presented in Table 4-4.

Table 4-3 *Risk matrix – Summary of corals at risk from the umbilical trenching.*

	Distance	Poor	Fair	Good	Excellent	Not surveyed
Negligible	15-25	1	1	2	5	27
Low	10-15	0	0	0	2	0
Significant	5-10	0	0	0	0	0
Considerable	0-5	0	0	0	0	0
	Risk categories		Minor	Moderate	Serious	Severe

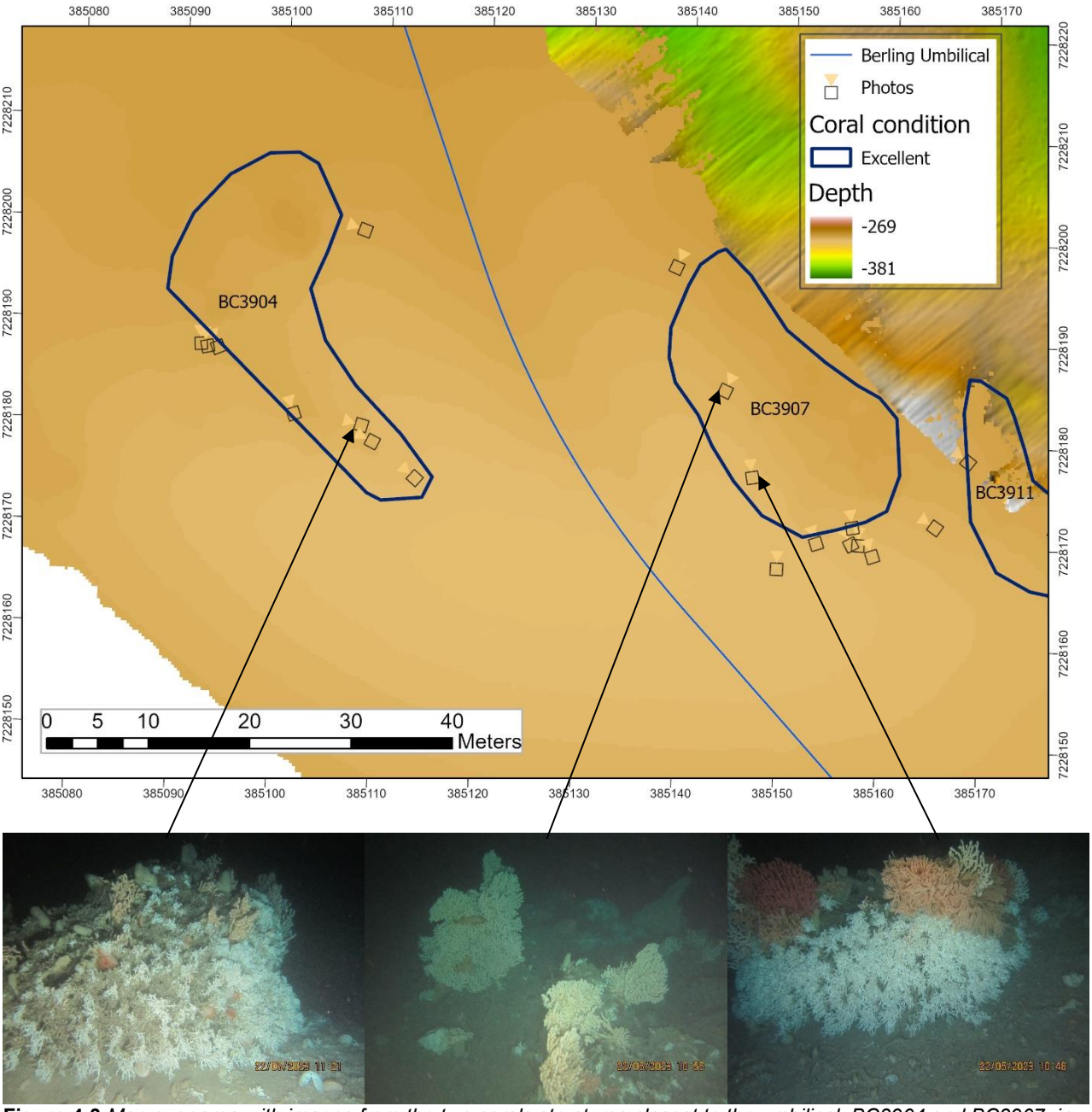

Figure 4-3 *Map over area with images from the two corals structures closest to the umbilical; BC3904 and BC3907, in excellent condition.*

Table 4-4 *Details on all corals within risk from the umbilical trenching.*

Coral ID	Area	X (ED50UTM32N)	Y (ED50UTM32N)	Desmophyllum reef	Coral Garden	Coral Max	Dist Trench (m)	Trenching Risk
BC3904	369,477285	385101	7228191	Excellent	Good	Excellent	11,771555	Serious
BC3907	370,529796	385149	7228183	Excellent	Excellent	Excellent	11,845897	Serious
BC3651	599,198216	383232	7229880	Not surveyed	Not surveyed	Not surveyed	15,294992	Minor
BC3483	997,801342	382708	7230240	Not surveyed	Not surveyed	Not surveyed	15,515404	Minor
BC3737	900,733306	383629	7229296	Not surveyed	Not surveyed	Not surveyed	15,664446	Minor
BC4216	271,895349	389244	7225759	Poor	Excellent	Excellent	16,009013	Minor
BC4095	133,866121	387410	7226676	Not surveyed	Not surveyed	Not surveyed	16,419792	Minor
BC3836	18,116836	384519	7228705	Not surveyed	Not surveyed	Not surveyed	16,520772	Minor
BC3719	227,558444	383493	7229550	Not surveyed	Not surveyed	Not surveyed	16,863308	Minor
BC3855	23,982544	384678	7228564	Not surveyed	Not surveyed	Not surveyed	16,871728	Minor
BC4443	78,932779	394350	7224516	Dead/Not present	Poor	Poor	16,983022	Minor
BC2968	232,376827	381082	7231451	Good	Good	Good	17,117471	Minor
BC4018	60,958661	386267	7227511	Poor	Fair	Fair	17,149493	Minor
BC2948	168,087288	381030	7231437	Excellent	Good	Excellent	18,472823	Minor
BC3161	1653,420212	381628	7230985	Excellent	Poor	Excellent	18,85602	Minor
BC3731	407,316067	383563	7229361	Not surveyed	Not surveyed	Not surveyed	19,667834	Minor
BC4394	103,527604	393832	7224502	Not surveyed	Not surveyed	Not surveyed	20,246641	Minor
BC3696	797,617727	383405	7229619	Not surveyed	Not surveyed	Not surveyed	20,419558	Minor
BC2032	500,995818	379261	7233068	Not surveyed	Not surveyed	Not surveyed	20,49557	Minor
BC4052	216,896591	386664	7227053	Not surveyed	Not surveyed	Not surveyed	20,901917	Minor
BC3919	21,08009	385248	7228084	Not surveyed	Not surveyed	Not surveyed	21,023826	Minor
BC3487	690,304848	382717	7230329	Not surveyed	Not surveyed	Not surveyed	21,738742	Minor
BC2828	1364,146668	380767	7231824	Not surveyed	Not surveyed	Not surveyed	22,013561	Minor
BC3400	3928,022885	382367	7230570	Not surveyed	Not surveyed	Not surveyed	22,210313	Minor
BC4242	355,106926	389630	7225634	Not surveyed	Not surveyed	Not surveyed	22,260412	Minor
BC1580	44,564207	378531	7233805	Not surveyed	Not surveyed	Not surveyed	22,280888	Minor
BC4295	116,410197	392241	7224566	Not surveyed	Not surveyed	Not surveyed	22,52971	Minor
BC4560	370,909833	396086	7224446	Not surveyed	Not surveyed	Not surveyed	22,641312	Minor
BC4497	139,947795	394887	7224482	Not surveyed	Not surveyed	Not surveyed	22,741146	Minor
BC4054	768,551	386712	7227090	Not surveyed	Not surveyed	Not surveyed	22,901438	Minor
BC3524	585,90058	382819	7230243	Not surveyed	Not surveyed	Not surveyed	23,098253	Minor
BC3972	23,563792	385700	7227790	Not surveyed	Not surveyed	Not surveyed	23,46584	Minor
BC4220	115,475952	389270	7225803	Excellent	Excellent	Excellent	23,521955	Minor
BC3638	86,287501	383197	7229919	Not surveyed	Not surveyed	Not surveyed	23,980834	Minor
BC3626	91,355116	383156	7230046	Good	Dead/Not present	Good	24,054886	Minor
BC3868	109,728739	384856	7228424	Not surveyed	Not surveyed	Not surveyed	24,368152	Minor
BC1737	408,837264	378779	7233533	Not surveyed	Not surveyed	Not surveyed	24,714542	Minor
BC3864	1941,896853	384817	7228534	Excellent	Excellent	Excellent	42,9237	Minor

4.3 Post-lay rock installation

For the post-lay rock installation scope 34 corals have been identified within risk, 22 are in “Minor” risk, 2 in moderate, 7 in serious and 3 in severe risk category. Of the 3 in severe risk 2 are also at risk from the pre lay rock campaign and are shown in Figure 4-4. Of the corals in moderate to severe risk, 6 have not been visually mapped. The overall distribution of corals at risk is presented in Table 4-5, and corals at risk (Minor excluded) are described in detail in Table 4-8. There are 3 corals at highest risk (examples in Figure 4-4), while > 70 corals are located more than 50 meters away from the planned rock berm areas. Most of the post-lay rock berms are, however, located in the same area as for the pre-lay rock, thus many of the corals have been identified at risk already. The overall distribution of corals at risk is presented in Table 4-5, and corals at are described in detail in Table 4-6 *Details on all corals within risk from the post-lay rock installation.*Table 4-6.

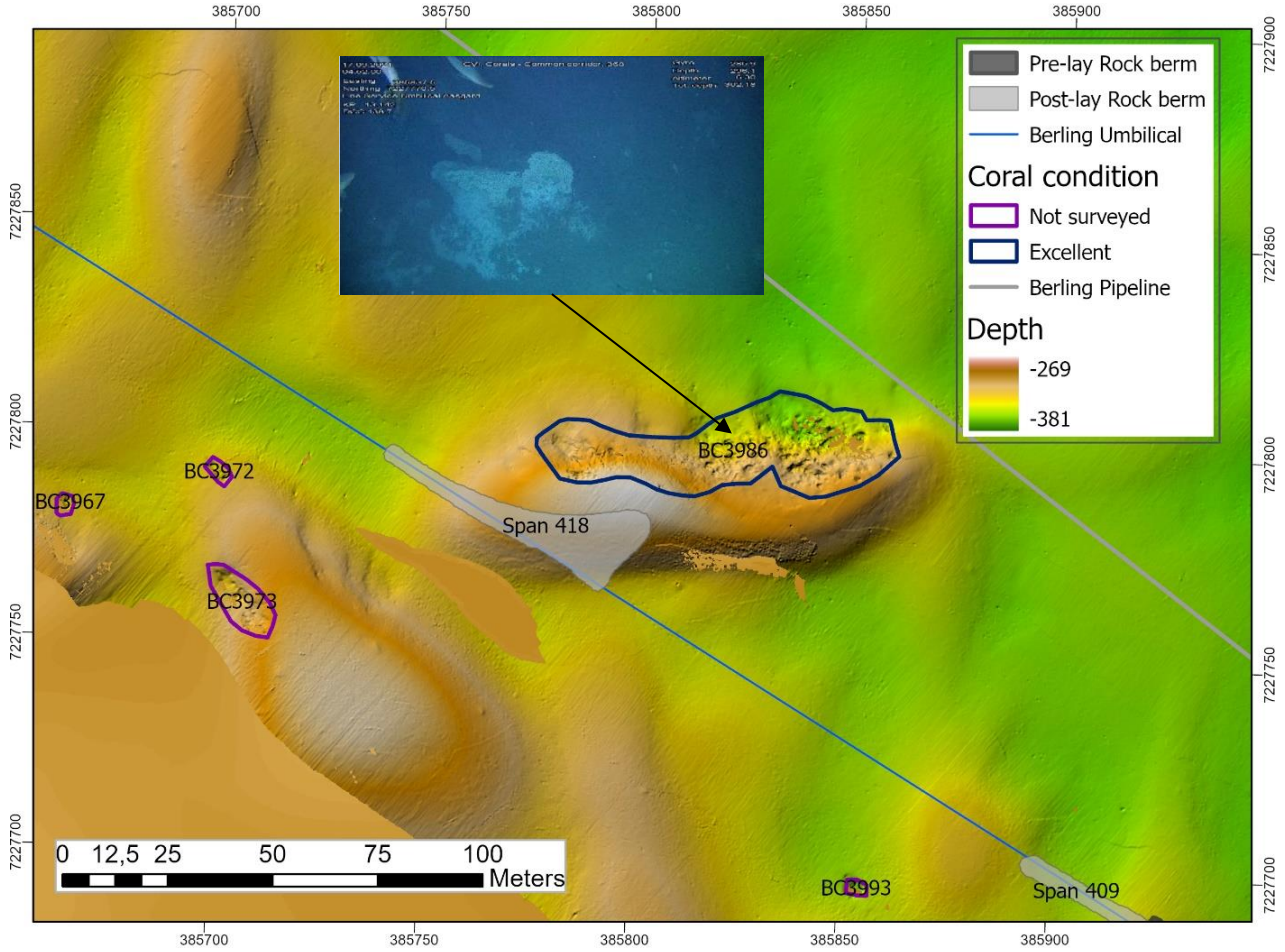

Figure 4-4 *Rock post lay Span 418, with closest coral (BC3986) in excellent condition.*

Table 4-5 *Summary of corals within in risk per post-lay rock berm.*

Rock berm \ Risk	«Minor»	«Moderate»	«Serious»	«Severe»	Total
"Berm for unsuccessful trenching"	1				**1**
"Crossing 1, Span 46, Span 49"	2				**2**
Crossing 7	1				**1**
"Crossings 2 and 3"	1				**1**
Span 75	1				**1**
Span 129	1		1		**2**
Span 179	1	1			**2**
Span 298	2		1	1	**4**
Span 374	3				**3**
Span 382	2				**2**
Span 409	2				**2**
Span 418	2			1	**3**
Span 449				1	**1**
Span 507		1	1		**2**
Span 542	2		2		**4**
Span 563			1		**1**
Span 619	1		1		**2**
Total	**22**	**2**	**7**	**3**	**34**

Table 4-6 *Details on all corals within risk from the post-lay rock installation.*

Coral_ID	Area	X (ED50UTM32N)	Y (ED50UTM32N)	Desmophyllum reef	Coral Garden	Coral Max	Postlay Rock Dist (m)	Post Rock berm ID	Rock Post lay
BC3986	1324	385822	7227799	Excellent	Excellent	Excellent	6,3	Span 418	Severe
BC4216	272	389244	7225759	Poor	Excellent	Excellent	6,3	Span 298	Severe
BC3864	1942	384817	7228534	Excellent	Excellent	Excellent	11,7	Span 449	Severe
BC4220	115	389270	7225803	Excellent	Excellent	Excellent	16,2	Span 298	Serious
BC2032	501	379261	7233068	Not surveyed	Not surveyed	Not surveyed	17,9	Span 619	Serious
BC3400	3928	382367	7230570	Not surveyed	Not surveyed	Not surveyed	20,5	Span 563	Serious
BC3696	798	383405	7229619	Not surveyed	Not surveyed	Not surveyed	21,3	Span 507	Serious
BC3561	32	382927	7230164	Not surveyed	Not surveyed	Not surveyed	21,5	Span 542	Serious
BC3559	87	382920	7230522	Not surveyed	Not surveyed	Not surveyed	23,6	Span 542	Serious
BC4453	42	394446	7224490	Not surveyed	Not surveyed	Not surveyed	23,7	Span 129	Serious
BC4341	114	393160	7224585	Dead/Not present	Good	Good	17,7	Span 179	Moderate
BC3710	265	383467	7229648	Good	Fair	Good	21,5	Span 507	Moderate
BC4218	126	389270	7225789	Dead/Not present	Poor	Poor	3,3	Span 298	Minor
BC4560	371	396086	7224446	Not surveyed	Not surveyed	Not surveyed	22,3	Span 75	Minor
BC4581	23	396338	7224210	Dead/Not present	Poor	Poor	22,9	Crossing 1, Span 46, Span 49	Minor
BC4043	72	386563	7227250	Not surveyed	Not surveyed	Not surveyed	25,2	Span 382	Minor
BC4456	150	394484	7224552	Dead/Not present	Fair	Fair	27,8	Span 129	Minor
BC4330	574	393086	7224512	Not surveyed	Not surveyed	Not surveyed	28,2	Span 179	Minor
BC3999	18	385895	7227665	Not surveyed	Not surveyed	Not surveyed	29,2	Span 409	Minor
BC4054	769	386712	7227090	Not surveyed	Not surveyed	Not surveyed	32,8	Span 374	Minor
BC3972	24	385700	7227790	Not surveyed	Not surveyed	Not surveyed	36,4	Span 418	Minor
BC3993	16	385855	7227696	Not surveyed	Not surveyed	Not surveyed	36,6	Span 409	Minor
BC4042	174	386548	7227248	Not surveyed	Not surveyed	Not surveyed	37,8	Span 382	Minor
BC4579	75	396325	7224193	Dead/Not present	Fair	Fair	39,3	Crossing 1, Span 46, Span 49	Minor
BC4369	314	393543	7224565	Dead/Not present	Good	Good	40,3	Crossing 7	Minor
BC1971	126	379172	7233040	Excellent	Good	Excellent	40,7	Berm for unsuccessful trenching	Minor
BC2051	92	379298	7233066	Not surveyed	Not surveyed	Not surveyed	42,7	Span 619	Minor
BC4215	357	389221	7225726	Not surveyed	Not surveyed	Not surveyed	42,9	Span 298	Minor
BC3973	157	385706	7227759	Not surveyed	Not surveyed	Not surveyed	43,1	Span 418	Minor
BC4052	217	386664	7227053	Not surveyed	Not surveyed	Not surveyed	43,6	Span 374	Minor
BC1875	270	379022	7234463	Not surveyed	Not surveyed	Not surveyed	44,1	Crossings 2 and 3	Minor
BC3591	303	383008	7230072	Not surveyed	Not surveyed	Not surveyed	45,0	Span 542	Minor
BC3585	166	382996	7236304	Not surveyed	Not surveyed	Not surveyed	45,3	Berm for unsuccessful trenching	Minor
BC4058	456	386754	7227084	Not surveyed	Not surveyed	Not surveyed	47,2	Span 374	Minor
BC3558	67	382920	7230067	Not surveyed	Not surveyed	Not surveyed	49,5	Span 542	Minor

5 CONCLUSIONS

This risk assessment is based on results from the extensive mapping of the Berling area and detailed umbilical route planning and by applying industry guidelines for environmental assessment and risk threshold levels. This risk assessment helps to pinpoint the activities that poses the greatest risk to nearby corals, in order to focus further mitigation measures during execution. The results per activity and in total are presented in Table 5-1.

Table 5-1 *Summary of corals within risk per activity and the maximum risk of the total number of corals (several corals are within risk for more than one activity).*

Activity	«Minor»	«Moderate»	«Serious»	«Severe»	Total
Pre lay Rock - Dec 2024	**14**	**1**	**3**	**2**	**20**
Trenching	**36**	**0**	**2**	**0**	**38**
Post lay Rock	**22**	**2**	**7**	**3**	**34**
TOTAL	**72**	**3**	**12**	**5**	**92**

The main conclusions of the risk assessment are:

- A total of 62 coral areas have been identified at risk of being impacted, within different risk categories, and by one or more of the different installation elements (Figure 5-1).
- One coral, BC3864, will be partly covered by the pre lay rock span 449.
- The risk assessment has used a conservative approach, and 72 of 92 corals identified are at minor risk, with negligible probability of impact.
- The post lay rock activity is posing the highest risk to the present corals with 3 corals in «Severe» risk and 7 in «Serious» risk.
- In total 43 of the 62 delineated potential corals within risk are not visually mapped. The majority of these (33 corals) are located at a distance of 20 meters or more from any activities (Figure 5-1). The closest corals have been mapped to full extent and the closest not visually inspected coral (BC3651) is located 15.3 meters from any planned installation.
- All corals with identified risk are summarized in appendix 1.

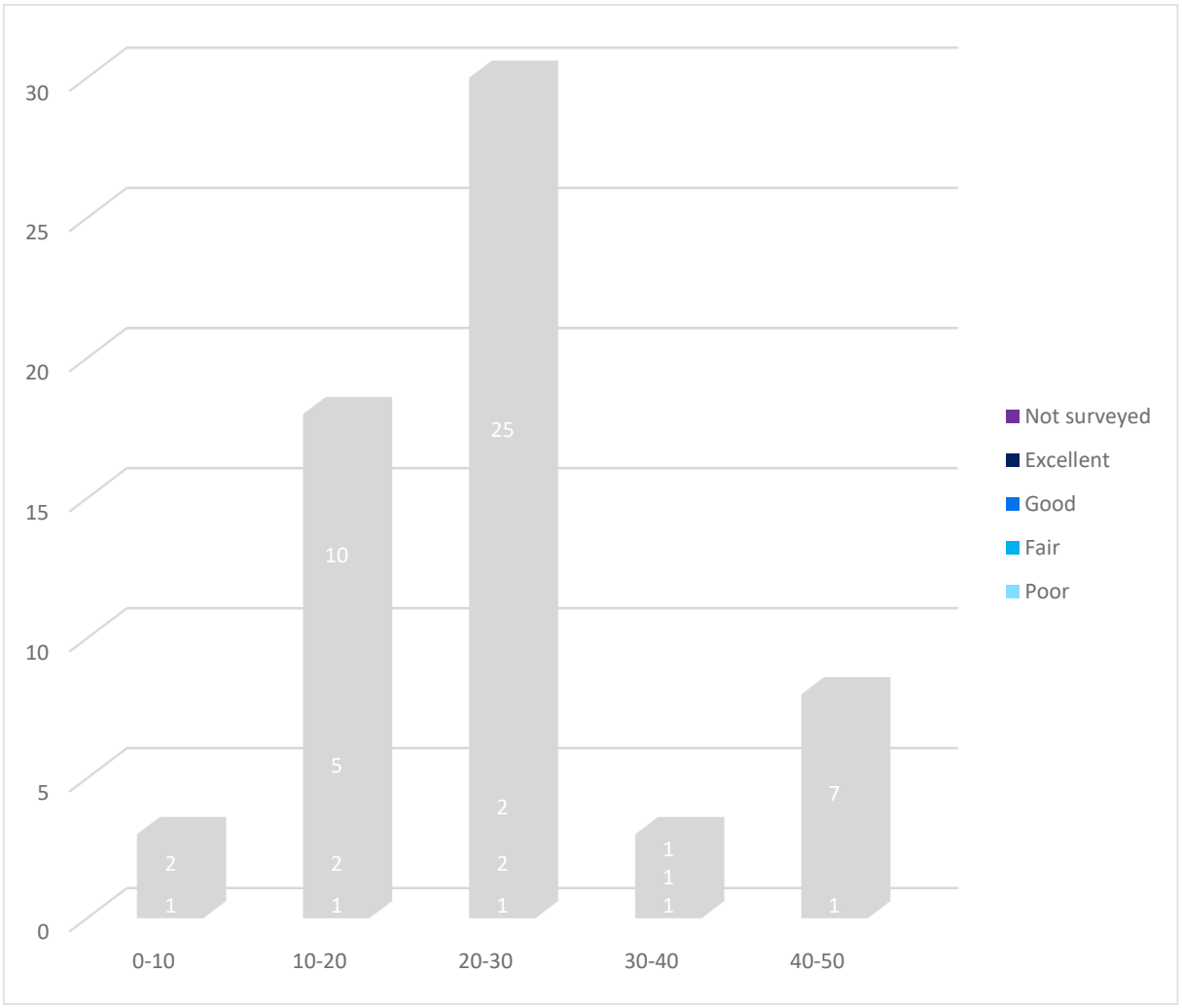

Figure 5-1 *Number of visually mapped corals in relation to distance (m) from nearest installation.*

6 MITIGATING MEASURES

To minimize the footprint during rock installation, trenching and other activities covered by the application, the following risk-reducing measures are planned:

- At the commencement of all operations with identified environmental risks, a risk assessment will be conducted with involved personnel to increase awareness of coral presence.
- Operations will be carried out with a high degree of accuracy, and operators will be informed about known coral positions that need protection.
- Visual and acoustic aids will be employed during laying.
- Minimize sediment impact by maintaining a short distance from the discharge point of the fallpipe to the seabed.
- Use the minimum amount of rock possible during the laying operation.
- If possible, utilize a "deflector plate" to reduce the falling velocity during the laying of the rock bottom (reducing the upstirring of natural sediment).
- Visual inspection will be conducted after stone installation and pipeline/trenching operations to document any damages.

7 REFERENCES

DNV GL, 2016. Region 9 – Barentshavet Hovedrapport 2016 – Visual survey along Snøhvit E and F pipeline routes. Report No.: 2016-1212

DNV, 2021. Coral risk assessment – Northernmost pipeline route - Coral survey from iris/hades to Åsgard, September/October 2021. Memo No: 2021-08-06-01

DNV, 2022. Environmental support PL644 pipeline. Report No.: 2022-0404.

DNV, 2023. Environmental survey Berling 2023, Report no.: 2023-0584.

DNV, 2023b. Askeladd J & L - Post drilling and installation survey, Report No.: 2023-0305.

DNV, 2023c. Ærfugl Phase 1 - As Built Impact Assessment Report No.: 2023-0518

Fugro, 2018. Survey Report Island Vanguard Coral Survey for Deepsea Bergen PL644 Appraisal Fugro Document No. FNAS-P133018-01-REP-001-Rev0

Gardline, 2021. PL644 Pipeline Routing to Åsgard B Host Survey Gardline Report Ref. 11583.E01

iSurvey, 2021. PL644 DETAILED SEABED MAPPING: HADES-IRIS TO ÅSGARD INFILL SURVEY iSURVEY. Document Number 14536-ISAS-SR

NOROG, 2019. Handbook Species and Habitats of Environmental Concern - Mapping, Risk Assessment. Mitigation and Monitoring. - In Relation to Oil and Gas Activities. Report No.: 2019-007, Rev. 1 (2024)

Miljøldirektoratet, 2024. Vedtak om tillatelse til mudring, steinlegging og utslipp knyttet til rørlegging og havbunnsintervensjon på Berling. Ref 2024/1356

OMV, 2024. Søknad om tillatelse til virksomhet etter forurensningsloven. 26.01.2024 | Rev. 1.0

Technip FMC. Pre-Lay Rock Installation Specification, 2024; Berling Project. Document No.: 300591-SP-5802-0002

APPENDIX A

Overview of all risk assessed corals.

Coral_ID	Coral area	X (ED50 UTM32)	Y (ED50 UTM32)	Desmophyllum_reef	Coral_Garden	Coral Max	Distance Rock Pre lay	Rock Pre lay berm ID	Dist Umbilical Trenching	Distance Rock Post lay	Rock Post lay berm ID	Rock Pre lay Risk	Trenching Risk	Rock Post lay Risk	Max Risk
BC4218	126	389270	7225789	Dead/Not present	Poor	Poor	4,5	Span 298	45,9	3,3	Span 298	Minor		Minor	**Minor**
BC3986	1324	385822	7227799	Excellent	Excellent	Excellent			25,5	6,3	Span 418			Severe	**Severe**
BC4216	272	389244	7225759	Poor	Excellent	Excellent	6,6	Span 298	16,0	6,3	Span 298	Severe	Minor	Severe	**Severe**
BC3864	1942	384817	7228534	Excellent	Excellent	Excellent	0,0	Span 449	42,9	11,7	Span 449	Severe	Minor	Severe	**Severe**
BC4220	115	389270	7225803	Excellent	Excellent	Excellent	18,7	Span 298	23,5	16,2	Span 298	Minor	Minor	Serious	**Serious**
BC4341	114	393160	7224585	Dead/Not present	Good	Good	15,8	Span 179	36,4	17,7	Span 179	Moderate		Moderate	**Moderate**
BC2032	501	379261	7233068	Not surveyed	Not surveyed	Not surveyed	24,9	Span 619	20,5	17,9	Span 619	Serious	Minor	Serious	**Serious**
BC3400	3928	382367	7230570	Not surveyed	Not surveyed	Not surveyed			22,2	20,5	Span 563		Minor	Serious	**Serious**
BC3696	798	383405	7229619	Not surveyed	Not surveyed	Not surveyed	30,6	Span 507	20,4	21,3	Span 507	Minor	Minor	Serious	**Serious**
BC3710	265	383467	7229648	Good	Fair	Good	36,2	Span 507	25,5	21,5	Span 507	Minor		Moderate	**Moderate**
BC3561	32	382927	7230164	Not surveyed	Not surveyed	Not surveyed	24,3	Span 542	28,9	21,5	Span 542	Serious		Serious	**Serious**
BC4560	371	396086	7224446	Not surveyed	Not surveyed	Not surveyed	39,2	Span 75	22,6	22,3	Span 75	Minor	Minor	Minor	**Minor**
BC4581	23	396338	7224210	Dead/Not present	Poor	Poor	32,2	Span 49	41,0	22,9	Crossing 1, Span 46, Span 49	Minor		Minor	**Minor**
BC3559	87	382920	7230522	Not surveyed	Not surveyed	Not surveyed				23,6	Span 542			Serious	**Serious**
BC4453	42	394446	7224490	Not surveyed	Not surveyed	Not surveyed	30,1	Span 129	28,1	23,7	Span 129	Minor		Serious	**Serious**
BC4043	72	386563	7227250	Not surveyed	Not surveyed	Not surveyed	16,0	Span 382	34,4	25,2	Span 382	Serious		Minor	**Serious**
BC4456	150	394484	7224552	Dead/Not present	Fair	Fair	25,4	Span 129	43,5	27,8	Span 129	Minor		Minor	**Minor**
BC4330	574	393086	7224512	Not surveyed	Not surveyed	Not surveyed	46,5	Span 179	28,7	28,2	Span 179	Minor		Minor	**Minor**
BC3999	18	385895	7227665	Not surveyed	Not surveyed	Not surveyed	30,0	Span 409	37,6	29,2	Span 409	Minor		Minor	**Minor**
BC4054	769	386712	7227090	Not surveyed	Not surveyed	Not surveyed			22,9	32,8	Span 374		Minor	Minor	**Minor**
BC3972	24	385700	7227790	Not surveyed	Not surveyed	Not surveyed			23,5	36,4	Span 418		Minor	Minor	**Minor**
BC3993	16	385855	7227696	Not surveyed	Not surveyed	Not surveyed			26,1	36,6	Span 409			Minor	**Minor**
BC4042	174	386548	7227248	Not surveyed	Not surveyed	Not surveyed	27,3	Span 382	45,6	37,8	Span 382	Minor		Minor	**Minor**

Coral_ID	Coral area	X (ED50 UTM32)	Y (ED50 UTM32)	Desmophyllum_reef	Coral_Garden	Coral Max	Distance Rock Pre lay	Rock Pre lay berm ID	Dist Umbilical Trenching	Distance Rock Post lay	Rock Post lay berm ID	Rock Pre lay Risk	Trenching Risk	Rock Post lay Risk	Max Risk
BC4579	75	396325	7224193	Dead/Not present	Fair	Fair	38,8	Span 49		39,3	Crossing 1, Span 46, Span 49	Minor		Minor	**Minor**
BC4369	314	393543	7224565	Dead/Not present	Good	Good			40,5	40,3	Crossing 7			Minor	**Minor**
BC1971	126	379172	7233040	Excellent	Good	Excellent			41,5	40,7	Berm for unsuccessful trenching			Minor	**Minor**
BC2051	92	379298	7233066	Not surveyed	Not surveyed	Not surveyed	40,8	Span 619		42,7	Span 619	Minor		Minor	**Minor**
BC4215	357	389221	7225726	Not surveyed	Not surveyed	Not surveyed	37,2	Span 298	47,9	42,9	Span 298	Minor		Minor	**Minor**
BC3973	157	385706	7227759	Not surveyed	Not surveyed	Not surveyed			43,8	43,1	Span 418			Minor	**Minor**
BC4052	217	386664	7227053	Not surveyed	Not surveyed	Not surveyed			20,9	43,6	Span 374		Minor	Minor	**Minor**
BC1875	270	379022	7234463	Not surveyed	Not surveyed	Not surveyed				44,1	Crossings 2 and 3			Minor	**Minor**
BC3591	303	383008	7230072	Not surveyed	Not surveyed	Not surveyed			34,3	45,0	Span 542			Minor	**Minor**
BC3585	166	382996	7236304	Not surveyed	Not surveyed	Not surveyed				45,3	Berm for unsuccessful trenching			Minor	**Minor**
BC4058	456	386754	7227084	Not surveyed	Not surveyed	Not surveyed			48,7	47,2	Span 374			Minor	**Minor**
BC3558	67	382920	7230067	Not surveyed	Not surveyed	Not surveyed				49,5	Span 542			Minor	**Minor**
BC3868	110	384856	7228424	Not surveyed	Not surveyed	Not surveyed			24,4				Minor		**Minor**
BC4003	147	385981	7227601	Not surveyed	Not surveyed	Not surveyed			39,5						**Minor**
BC4443	79	394350	7224516	Dead/Not present	Poor	Poor			17,0				Minor		**Minor**
BC3855	24	384678	7228564	Not surveyed	Not surveyed	Not surveyed			16,9				Minor		**Minor**
BC3719	228	383493	7229550	Not surveyed	Not surveyed	Not surveyed			16,9				Minor		**Minor**
BC3904	369	385101	7228191	Excellent	Good	Excellent			11,8				Serious		**Serious**
BC3907	371	385149	7228183	Excellent	Excellent	Excellent			11,8				Serious		**Serious**
BC3651	599	383232	7229880	Not surveyed	Not surveyed	Not surveyed			15,3				Minor		**Minor**
BC3483	998	382708	7230240	Not surveyed	Not surveyed	Not surveyed			15,5				Minor		**Minor**
BC3737	901	383629	7229296	Not surveyed	Not surveyed	Not surveyed			15,7				Minor		**Minor**
BC4095	134	387410	7226676	Not surveyed	Not surveyed	Not surveyed			16,4				Minor		**Minor**
BC3836	18	384519	7228705	Not surveyed	Not surveyed	Not surveyed			16,5				Minor		**Minor**
BC2968	232	381082	7231451	Good	Good	Good			17,1				Minor		**Minor**
BC4018	61	386267	7227511	Poor	Fair	Fair			17,1				Minor		**Minor**
BC2948	168	381030	7231437	Excellent	Good	Excellent			18,5				Minor		**Minor**
BC3161	1653	381628	7230985	Excellent	Poor	Excellent			18,9				Minor		**Minor**
BC3731	407	383563	7229361	Not surveyed	Not surveyed	Not surveyed			19,7				Minor		**Minor**
BC4394	104	393832	7224502	Not surveyed	Not surveyed	Not surveyed			20,2				Minor		**Minor**

Coral_ID	Coral area	X (ED50 UTM32)	Y (ED50 UTM32)	Desmophyllum_reef	Coral_Garden	Coral Max	Distance Rock Pre lay	Rock Pre lay berm ID	Dist Umbilical Trenching	Distance Rock Post lay	Rock Post lay berm ID	Rock Pre lay Risk	Trenching Risk	Rock Post lay Risk	Max Risk
BC3919	21	385248	7228084	Not surveyed	Not surveyed	Not surveyed			21,0				Minor		**Minor**
BC3487	690	382717	7230329	Not surveyed	Not surveyed	Not surveyed			21,7				Minor		**Minor**
BC2828	1364	380767	7231824	Not surveyed	Not surveyed	Not surveyed			22,0				Minor		**Minor**
BC4242	355	389630	7225634	Not surveyed	Not surveyed	Not surveyed			22,3				Minor		**Minor**
BC1580	45	378531	7233805	Not surveyed	Not surveyed	Not surveyed			22,3				Minor		**Minor**
BC4295	116	392241	7224566	Not surveyed	Not surveyed	Not surveyed			22,5				Minor		**Minor**
BC4497	140	394887	7224482	Not surveyed	Not surveyed	Not surveyed			22,7				Minor		**Minor**
BC3524	586	382819	7230243	Not surveyed	Not surveyed	Not surveyed			23,1				Minor		**Minor**
C3638	86	383197	7229919	Not surveyed	Not surveyed	Not surveyed			24,0				Minor		**Minor**
BC3626	91	383156	7230046	Good	Dead/Not present	Good			24,1				Minor		**Minor**
BC1737	409	378779	7233533	Not surveyed	Not surveyed	Not surveyed			24,7				Minor		**Minor**

About DNV

DNV is the independent expert in risk management and assurance, operating in more than 100 countries. Through its broad experience and deep expertise DNV advances safety and sustainable performance, sets industry benchmarks, and inspires and invents solutions.

Whether assessing a new ship design, optimizing the performance of a wind farm, analyzing sensor data from a gas pipeline or certifying a food company's supply chain, DNV enables its customers and their stakeholders to make critical decisions with confidence.

Driven by its purpose, to safeguard life, property, and the environment, DNV helps tackle the challenges and global transformations facing its customers and the world today and is a trusted voice for many of the world's most successful and forward-thinking companies.