

AQUIND Limited

AQUIND INTERCONNECTOR

Environmental Statement Addendum 3 – Appendix 3.3 High Level Risk Assessment of Alternative Landfalls

The Planning Act 2008

The Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009 – Regulation 5(2)(a)

The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017

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Contents

1.	Introduction		1
2.	Assessment of Alternativ	ve Landfall Sites	2
	2.1. Swanage		2
	2.2. Studland		3
	2.3. Boscombe		5
	2.4. Southbourne		7
	2.5. Mudeford		8
	2.6. Highcliffe		10
	2.8. Milford on Sea		12
	2.9. Solent and Lepe		14
	2.10. Worbarrow Bay		14
Α.	Data sources		15
В.	Maps		18

1. Introduction

A high-level constraints and risk analysis of alternative landfall sites 11-18 shown in Figure 1-1 below has been undertaken. A very high-level overview has been taken for sites 10, 19 and 20.

Risk scores are based on pre-mitigation scenarios according to the scoring reference shown in Figure 1-2.

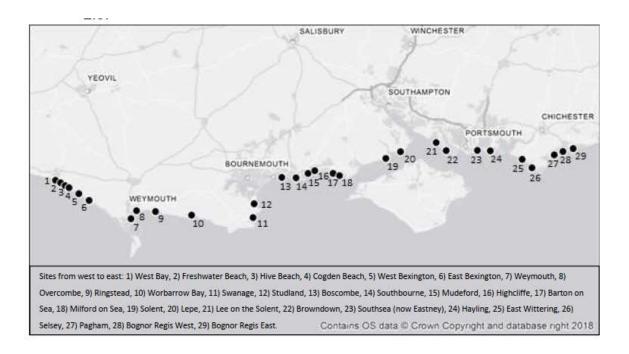


Figure 1-1 Potential Landfall Sites

Scoring:	
Showstopper in terms of consent or deliverability of the project ie.	
Where mitigation not possible / not enough /not econonmically	7
acceptable	
Very high consenting/programme risk and mitigation required	5
High consenting/programme risk and mitigation required	3
Likely to result in some consenting/programme risk and	0
mitigation required	2
Unlikely to lead to a consenting or programme risk with or	4
without mitigation	

Figure 1-2 Risk Scoring Reference

Assessment of Alternative Landfall Sites

A number of datasets have been considered for this assessment. These datasets are provided in Appendix A, and are represented visually in Appendix B.

2.1. Swanage

2.1.1. Designated Sites (Risk Score 7)

- A large area of Poole Bay is designated as the Solent and Dorset Coast SPA.
- Swanage Bay is designated as Studland to Portland SAC c.2.2 km out to sea at its narrowest in this location.
 The sites is designated for diverse range of reef habitats which also include seagrass beds, maerl beds and mussel beds. Therefore, the marine approach to Swanage from any direction would have direct impacts to this site.
- Swanage Bay only has a 1.7 km stretch that is not designated for SSSI. South Dorset Coast SSSI is located to the south of Swanage and is designated for internationally important geological interest with a rich range of wildlife habitats supporting populations of several rare plants and animals. Purbeck Ridge (East) SSSI in the north of Swanage Bay which is designated for extensive areas of high-quality chalk downland with important invertebrate and lower plant communities, scrub and ancient broadleaf woodland. The site also contains important geological and geomorphological interest on the coast.
- Swanage Bay is designated as Purbeck Coast MCZ c.3.7 km out to sea at its narrowest. This site is designated
 for subtidal habitats including subtidal sediments, mearl beds, and rocky reef important for nesting black
 seabream.
- The whole of this coastal headland is designated as the Dorset AONB and the headland south of Swanage is a Local Nature Reserve and the coast along Durlston Bay is a National Nature Reserve.
- The Dorset and East Devon Coast World Heritage Site is located to the south of and in the north of Swanage Bay which forms part of the Jurassic Coast known for its great number of marine and terrestrial animal and plant fossils.

2.1.2. Existing Infrastructure and other Activities (Risk Score 2)

- Any approach to a landfall at Swanage would need to avoid the aggregate areas to the south west of the Isle of
 Wight and two licenced disposal areas, one to the west of Isle of Wight and one approx. 4 km from the coast at
 Swanage Bay. It is assumed that these could be avoided by suitable routing.
- This location would require an additional cable crossing of the IFA2 Interconnector to be included within the AQUIND Interconnector design.
- OGA 31st Offshore Licencing Round from 2019. Blocks 98/12 & 98/11b were awarded to Corallian Energy Ltd. in connection with Oil & Gas exploration.
- This landfall is approximately 45 km from the Mannington substation as the onshore route would have to skirt around Poole Harbour inlet.

2.1.3. Seabed Conditions (Risk Score 3)

- A large proportion of the marine approach to Swanage Bay and offshore of Swanage Bay is characterised by Moderate or high energy circalittoral coarse sediment which would be considered suitable for cable installation.
- The seabed just offshore of Peverill Point just south of Swanage and further north in the Bay is characterised by moderate energy infralittoral rock which would constrain cable burial and landfall activities as rock substrates

are generally unsuitable for cable burial which would therefore mean additional cable protection or routing work to avoid such substrates was required.

2.1.4. Wrecks and Obstructions (Risk Score 1)

Swanage Bay and the marine approach to the Bay possesses some possible wrecks and obstructions to avoid.
 No protected wrecks noted.

2.1.5. Shipping and Navigation (Risk Score 2)

- There is an MoD Firing Practice Area located directly to the south of Swanage Bay.
- Further into the English Channel is a submarine exercise area.
- Vessels would need to be mindful of other vessels navigating into / from the Needles channel to the north of the Isle of Wight.

2.1.6. Summary

Significant constraints for this landfall option exist in relation to designated sites, both at the landfall itself and offshore which would impact any approach to this landfall option. Seabed suitability is variable with some areas of rock that would impact installation options. There are also a number of other activities that would need to be managed or routed around to avoid interaction or the need for additional agreements with third parties.

2.2. Studland

2.2.1. Designated Sites (Risk Score 7)

- A large area of Poole Bay is designated as the Solent and Dorset Coast SPA.
- Studland Bay has Studland to Portland SAC located in the south which covers the offshore coast around Handfast Point to the south of Studland. The site is designated for diverse range of reef habitats which also include seagrass beds, maerl beds and mussel beds. Therefore the marine approach to Studland or Handfast Point could have direct impacts to this site. The rest of Studland Bay around to the navigation channel into Poole Harbour is protected by Isle of Portland to Studland Cliffs SAC designated for sea cliffs and orchid rich sites and Dorset Heaths (Purbeck &Wareham) & Studland Dunes SAC designated for its dune habitats and other habitats as well as great crested newt (EPS species) and southern damselfly (which is also overlapped by the Dorset Heathlands Ramsar designated for wetland habitats). The land in the north of Studland Bay protected by SAC is also a National Nature Reserve (Purbeck Heaths NNR).
- All of the Studland Bay coastline is designated as SSSIs. These included Studland Cliffs SSSI, an outstanding stratigraphic and structural site of national importance, with important palaeontological features around Handfast Point (south of Studland) and Studland & Godlington Heaths SSSI where the importance of the peninsula is as a key site for coastal geomorphology, the range of habitats on Studland and Goldington Heaths, including a fine expanse of heathland with many rare animals.
- All of Studland Bay is designated as Studland Bay MCZ c.1.6 km out to sea. This site is designated for seagrass
 beds, long snouted seahorse and subtidal sand habitats providing important nursery for juvenile fish such as
 bass and endangered rays. Purbeck Coast MCZ is located east of the coast of Handfast Point.
- Poole Bay is designated as a Shellfish Water Protected Area under the WFD Directive. Poole Bay also possesses a number of protected bathing water areas.
- The whole of this coastal headland is designated as the Dorset AONB.

• The Dorset and East Devon Coast World Heritage Site is located around the headland at Handfast Point (south of Studland) which forms part of the Jurassic Coast known for its great number of marine and terrestrial animal and plant fossils.

2.2.2. Existing Infrastructure and other Activities (Risk Score 2)

- Any approach to a landfall at Studland would need to avoid the aggregate areas to the south-west of the Isle of Wight and two licenced disposal areas, one to the west of Isle of Wight and one approx. 4 km from the coast at Swanage Bay.
- This location would require an additional cable crossing of the IFA2 Interconnector to be included within the AQUIND Interconnector design.
- Maintenance dredging activities of the Swash navigation channel into Poole Harbour would need consideration.
- There is an extant OGA Licence Area (Wytch Farm Oil Field, which has 'Producing' Status and is largest known
 onshore oilfield in Europe employing extended reach drilling into Poole Bay) to the north of Studland Bay issued
 to Perenco UK Ltd (operational life extended to 2037) with scattered oil well infrastructure within Poole Bay,
 which would need to be avoided.
- OGA 31st Offshore Licencing Round from 2019. Blocks 98/12 & 98/11b were awarded to Corallian Energy Ltd. in connection with Oil & Gas exploration.
- This landfall is approximately 45 km from the Mannington substation as the onshore route would have to skirt around Poole Harbour inlet.

2.2.3. Seabed Conditions (Risk Score 3)

- Seabed within Studland Bay is characterised by moderate or low energy infralittoral sand which transitions to moderate energy circalittoral sand further offshore, which is considered suitable for cable installation.
- The seabed to the north and south of the bay is characterised by coarse and mixed sediments which is considered suitable for cable installation.
- The seabed just offshore of Handfast Point just south of Studland is characterised by Moderate energy
 infralittoral rock which would constrain cable burial and landfall activities in this area as rock substrates are
 generally unsuitable for cable burial which would therefore mean additional cable protection or routing work to
 avoid such substrates was required.

2.2.4. Wrecks and Obstructions (Risk Score 1)

- Studland Bay and the marine approach to the Bay possesses some possible wrecks and obstructions which would need to be avoided.
- There are three notable protected wrecks in the area which would require archaeological exclusion zones.

2.2.5. Shipping and Navigation (Risk Score 3)

- There is an MoD Firing Practice Area located directly to the south of Swanage Bay.
- Further into the English Channel is a submarine exercise area.
- Vessels would need to be mindful of other vessels navigating into the Needles channel to the north of the Isle
 of Wight.
- Vessels would need to be mindful of other vessels navigating into the Swash Channel to Poole Harbour. There
 are also a number of ferry services that transit between Poole and Cherbourg and the Channel Islands.

 There is a Voluntary No Anchoring Zone in the south of Studland Bay to protect seagrass meadows, and it would be expected that no cable installation would be possible in this area due to the sensitivities of the habitats present.

2.2.6. Summary

Significant constraints for this landfall option exist in relation to designated sites and protected habitats, both at the landfall itself and offshore which would impact any approach to this landfall option. Seabed suitability is variable with some areas of rock that would impact installation options. There are also a number of other activities and seabed obstructions (e.g. wrecks) that would need to be managed or routed around to avoid interaction or the need for additional agreements with third parties.

2.3. Boscombe

2.3.1. Designated Sites (Risk Score 5)

- A large area of Poole Bay is designated as the Solent and Dorset Coast SPA which is designated for breeding terns.
- There are no SACs in the immediate vicinity of Boscombe. The closest coastal SAC is c.6km to the east which
 is Dorset Heaths SAC designated for heath habitats, peat, fens, great crested newt (an EPS species) and
 southern damselfly.
- Much of the coastline between Bournemouth and Southbourne is designated as SSSIs. These included Poole
 Bay Cliffs SSSI designated for their geology, sedimentology and habitats, and Christchurch Harbour SSSI
 designated for its saltmarsh, birds and other habitats.
- There is a Local Nature Reserve situated immediately behind Boscombe (Boscombe Chine LNR) and another running the length between Boscombe and Southbourne (Boscombe & Southbourne Overcliff).
- Two MCZs are located 1.5-3 km off the coast of Boscombe. Poole Rocks MCZ (west) is designated for it sediments and rocks as well as fish (black seabream and Counch's goby) and native oyster, and Southbourne Rough MCZ (east) designated for black seabream.
- Poole Bay is designated as a Shellfish Water Protected Area (pink hatch) under the WFD Directive. Poole Bay also possesses a number of protected bathing water areas (blue squares).

2.3.2. Existing Infrastructure and other Activities (Risk Score 3)

- Any approach to a landfall at Boscombe would need to avoid the aggregate areas to the south-west of the Isle
 of Wight and two licenced disposal areas, one to the west of Isle of Wight and one approx. 4 km from the coast
 at Swanage Bay.
- This location would require an additional cable crossing of the IFA2 Interconnector to be included within the AQUIND Interconnector design.
- The Poole Bay Coastal Defence Scheme is to run between 2020 to 2032 replacing all beach groynes and beach re-nourishment.
- Bournemouth Beach Management Scheme to run Phase 2 and 3 between 2021 and 2031 replacing beach groynes and beach replenishment.
- There is an extant OGA Licence Area (Wytch Farm Oil Field, which has 'Producing' Status and is largest known
 onshore oilfield in Europe employing extended reach drilling into Poole Bay) to the north of Studland Bay issued
 to Perenco UK Ltd (operational life extended to 2037) with scattered oil well infrastructure within Poole Bay.

- OGA 31st Offshore Licencing Round from 2019. Blocks 98/12 & 98/11b were awarded to Corallian Energy Ltd. in connection with Oil & Gas exploration.
- This landfall is approximately 21 km from the Mannington substation.

2.3.3. Seabed Conditions (Risk Score 3)

- Seabed within the coastal region off Boscombe and within Poole Bay is characterised by low, moderate and high energy circalittoral sand with areas of circalittoral sandy mud and mixed sediments which are considered suitable for cable installation.
- High energy circalittoral coarse sediments are found further offshore and these are also suitable for cable installation
- The coastal fringe around the bay from Bournemouth to Southbourne is characterised by High energy infralittoral
 rock which would constrain cable burial and landfall activities as rock substrates are generally unsuitable for
 cable burial which would therefore mean additional cable protection or routing work to avoid such substrates
 was required.

2.3.4. Wrecks and Obstructions (Risk Score 2)

- The coast off of Boscombe possesses some possible wrecks and obstructions.
- There are two 'wrecks and obstruction areas' travelling the length of the coast from Poole Harbour to Christchurch Harbour. These obstruction areas will likely require additional investigative work and any findings of wrecks may require exclusion zones.
- There are no protected wrecks in the immediate area.

2.3.5. Shipping and Navigation (Risk Score 2)

- There is an MoD Firing Practice Area located directly to the south of Swanage Bay.
- Further into the English Channel is a submarine exercise area.
- Vessels would need to be mindful of other vessels navigating into the Needles channel to the north of the Isle
 of Wight.
- Vessels would need to be mindful of other vessels navigating into the Swash Channel to Poole Harbour. There are also a number of ferry services that transit between Poole and Cherbourg and the Channel Islands.
- Piers are present at Boscombe and Bournemouth and will need to be considered in terms of any interaction with the Proposed Development and wider usage of the piers.
- Multiple outfalls/pipelines along the coast.

2.3.6. Summary

A high level of constraint for this landfall option exists in relation to designated sites and protected habitats, both at the landfall itself and offshore which would impact any approach to this landfall option. Seabed suitability is variable with some areas of rock that would impact installation options. There are also a number of other activities and seabed obstructions (e.g. potential wrecks) that would need to be managed or routed around to avoid interaction or the need for additional agreements with third parties.

2.4. Southbourne

2.4.1. Designated Sites (Risk Score 5)

- A large area of Poole Bay is designated as the Solent and Dorset Coast SPA which is designated for breeding terns There are no SACs in the immediate vicinity of Southbourne. The closest coastal SAC is c.1.8 km to the east which is Dorset Heaths SAC designated for heath habitats, peat, fens, great crested newt (an EPS species) and southern damselfly.
- Much of the coastline between Bournemouth and Southbourne is designated as SSSIs. These included Poole
 Bay Cliffs SSSI designated for their geology, sedimentology and habitats. Christchurch Harbour SSSI
 designated for its saltmarsh, birds and other habitats is the closest to Southborne located 700 m to the east.
 The onshore aspect of the Christchurch Harbour SSSI to the east is also a Local Nature Reserve (Hengistbury
 Head LNR).
- Two MCZs are located 1.5-3 km off the coast. Poole Rocks MCZ is designated for it sediments and rocks as well as fish (black seabream and Counch's goby) and native oyster, and Southbourne Rough MCZ designated for black seabream.
- Poole Bay is designated as a Shellfish Water Protected Area under the WFD Directive. Poole Bay also
 possesses a number of protected bathing water areas (blue squares).

2.4.2. Existing Infrastructure and other Activities (Risk Score 3)

- Any approach to a landfall at Southbourne would need to avoid the aggregate areas to the south west of the Isle
 of Wight and two licenced disposal areas (blue hatch), one to the west of Isle of Wight and one approx. 4 km
 from the coast at Swanage Bay.
- This location would require an additional cable crossing of the IFA2 Interconnector to be included within the AQUIND Interconnector design.
- The Poole Bay Coastal Defence Scheme is to run between 2020 to 2032 replacing all beach groynes and beach re-nourishment.
- Bournemouth Beach Management Scheme to run Phase 2 and 3 between 2021 and 2031 replacing beach groynes and beach replenishment.
- There is an extant OGA Licence Area (Wytch Farm Oil Field, which has 'Producing' Status and is largest known
 onshore oilfield in Europe employing extended reach drilling into Poole Bay) to the north of Studland Bay issued
 to Perenco UK Ltd (operational life extended to 2037) with scattered oil well infrastructure within Poole Bay.
- OGA 31st Offshore Licencing Round from 2019. Blocks 98/12 & 98/11b were awarded to Corallian Energy Ltd. in connection with Oil & Gas exploration.
- This landfall is approximately 21 km from the Mannington substation.

2.4.3. Seabed Conditions (Risk Score 3)

- Seabed within the coastal region off Southbourne and within Poole Bay is characterised by low, moderate and high energy circalittoral sand with areas of circalittoral sandy mud and mixed sediments. High energy circalittoral coarse sediments are found further offshore. These sediments are considered suitable for cable installation and burial.
- The coastal fringe around the bay from Bournemouth to Southbourne is characterised by High energy infralittoral
 rock which would constrain cable burial and landfall activities as rock substrates are generally unsuitable for
 cable burial which would therefore mean additional cable protection or routing work to avoid such substrates
 was required.

2.4.4. Wrecks and Obstructions (Risk Score 2)

- The coast off of Southbourne possesses some possible wrecks and obstructions.
- There are two 'wrecks and obstruction areas' travelling the length of the coast nearshore of Southbourne.
 Obstruction areas will likely require additional investigative work and any findings of wrecks may require exclusion zones.
- There are no protected wrecks in the immediate area.

2.4.5. Shipping and Navigation (Risk Score 2)

- There is an MoD Firing Practice Area located directly to the south of Swanage Bay.
- Further into the English Channel is a submarine exercise area.
- Vessels would need to be mindful of other vessels navigating into the Needles channel to the north of the Isle
 of Wight.
- Vessels would need to be mindful of other vessels navigating into the Swash Channel to Poole Harbour. There are also a number of ferry services that transit between Poole and Cherbour and the Channel Islands.
- Multiple outfalls/pipelines along the coast.

2.4.6. Summary

A high level of constraint for this landfall option exists in relation to designated sites, both at the landfall itself and offshore which would impact any approach to this landfall option. Seabed suitability is variable with some areas of rock that would impact installation options. There are also a number of other activities and seabed obstructions (e.g. potential wrecks and vessel activities) that would need to be managed or routed around to avoid interaction or the need for additional agreements with third parties.

2.5. Mudeford

2.5.1. Designated Sites (Risk Score 5)

- A large area of Poole Bay and Christchurch Bay is designated as the Solent and Dorset Coast SPA designated for breeding tern
- There are no SACs in the immediate vicinity of Mudeford. The closest coastal SAC is c.1 km to the south which
 is Dorset Heaths SAC designated for heath habitats, peat, fens, great crested newt (an EPS species) and
 southern damselfly.
- Mudeford is in close proximity to Christchurch Harbour SSSI designated for its saltmarsh, birds and other habitats.
- Two MCZs are located 1.5-3 km off the coast of Mudeford to the west. Poole Rocks MCZ (west) is designated
 for it sediments and rocks as well as fish (black seabream and Counch's goby) and native oyster, and
 Southbourne Rough MCZ (east) designated for black seabream. The Needles MCZ is also located of the
 westernmost headland of the Isle of Wight designated for a range of habitats and species including rock and
 sediments habitats, seagrass beds and stalked jellyfish.
- Poole Bay is designated as a Shellfish Water Protected Area under the WFD Directive. Poole Bay also
 possesses a number of protected bathing water areas including Mudeford.

2.5.2. Existing Infrastructure and other Activities (Risk Score 3)

- Any approach to a landfall at Mudeford would need to avoid the aggregate areas to the south west of the Isle of Wight and two licenced disposal areas (blue hatch), one to the west of Isle of Wight and one approx. 4 km from the coast at Swanage Bay.
- This location would require an additional cable crossing of the IFA2 Interconnector to be included within the AQUIND Interconnector design.
- The Poole Bay Coastal Defence Scheme is to run between 2020 to 2032 replacing all beach groynes and beach re-nourishment.
- There is an extant OGA Licence Area (Wytch Farm Oil Field, which has 'Producing' Status and is largest known
 onshore oilfield in Europe employing extended reach drilling into Poole Bay) to the north of Studland Bay issued
 to Perenco UK Ltd (operational life extended to 2037) with scattered oil well infrastructure within Poole Bay.
- OGA 31st Offshore Licencing Round from 2019. Blocks 98/12 & 98/11b were awarded to Corallian Energy Ltd. in connection with Oil & Gas exploration.
- This landfall is approximately 25 km from the Mannington substation and would need to skirt around Christchurch Harbour.

2.5.3. Seabed Conditions (Risk Score 3)

- The seabed directly east from Mudeford is characterised by low to high energy infralittoral sand, through which cable installation is considered feasible.
- The seabed southeast of Hengistbury Head south of Mudeford is characterised by high energy infralittoral rock
 which would constrain cable burial and landfall activities in this area as rock substrates are generally unsuitable
 for cable burial which would therefore mean additional cable protection or routing work to avoid such substrates
 was required, and this is intermixed with coarse and sublittoral sediments.

2.5.4. Wrecks and Obstructions (Risk Score 2)

- The coast off of Mudeford possesses some possible wrecks and obstructions.
- There is a 'wrecks and obstruction area' to the south of Christchurch Harbour. Obstruction areas will likely require additional investigative work and any findings of wrecks may require exclusion zones. There are no protected wrecks in the immediate area.

2.5.5. Shipping and Navigation (Risk Score 2)

- There is an MoD Firing Practice Area located directly to the south of Swanage Bay.
- Further into the English Channel is a submarine exercise area.
- Vessels would need to be mindful of other vessels navigating into the Needles channel to the north of the Isle
 of Wight.

2.5.6. Summary

A high level of constraint for this landfall option exists in relation to designated sites, both at the landfall itself and offshore which would impact any approach to this landfall option. Seabed suitability is variable with some areas of rock that would impact installation options. There are also a number of other activities and seabed obstructions (e.g. potential wrecks and vessel activities) that would need to be managed or routed around to avoid interaction or the need for additional agreements with third parties.

2.6. Highcliffe

2.6.1. Designated Sites (Risk Score 5)

- A large area of Poole Bay and Christchurch Bay is designated as the Solent and Dorset Coast SPA designated for breeding terns.
- There are no SACs in the immediate vicinity of Mudeford. The closest coastal SAC is c.4 km to the south west
 which is Dorset Heaths SAC designated for heath habitats, peat, fens, great crested newt (an EPS species) and
 southern damselfly. The South Wight Maritime SAC is located off the westernmost headland of Isle of Wight
 designated for a variety of different reef types and submerged sea caves.
- Much of the coastline in Christchurch Bay is designated as SSSI, Highcliffe to Milford Cliffs SSSI designated for geological and fossil interests as well as plant habitats.
- Two MCZs are located 1.5-3 km off the coast to the west of Highcliffe. Poole Rocks MCZ (west) is designated
 for it sediments and rocks as well as fish (black seabream and Counch's goby) and native oyster, and
 Southbourne Rough MCZ (east) designated for black seabream. The Needles MCZ is also located of the
 westernmost headland of the Isle of Wight designated for a range of habitats and species including rock and
 sediments habitats, seagrass beds and stalked jellyfish.
- Highcliffe has a designated protected bathing water area.

2.6.2. Existing Infrastructure and other Activities (Risk Score 2)

- Any approach to a landfall at Highcliffe would need to avoid the aggregate areas to the south west of the Isle of Wight and two licenced disposal areas, one to the west of Isle of Wight and one approx. 4 km from the coast at Swanage Bay.
- Southern Water also has a licence to 2031 for maintenance of coastal outfalls along this stretch of coastline.
- This location would require an additional cable crossing of the IFA2 Interconnector to be included within the AQUIND Interconnector design.
- The Poole Bay Coastal Defence Scheme is to run between 2020 to 2032 replacing all beach groynes and beach re-nourishment. It is noted that this is to the west of the potential landfall location, however does indicate relatively mobile shorelines are present in the wider area.
- OGA 31st Offshore Licencing Round from 2019. Blocks 98/12 & 98/11b were awarded to Corallian Energy Ltd. in connection with Oil & Gas exploration.
- This landfall is approximately 23 km from the Mannington substation.

2.6.3. Seabed Conditions (Risk Score 2)

- The seabed in front of Highcliffe is characterised by low to high energy infralittoral sand through which cable burial is considered possible.
- The seabed southeast of Hengistbury Head south of Mudeford is characterised by high energy infralittoral rock intermixed with coarse and sublittoral sediments. Further to the east heading into the Needles channel, west of the Isle of Wight, the seabed is characterised by high energy circalittoral coarse sediment and some further areas of high energy circalittoral rock. Areas of rock can constrain cable laying activities as rock substrates are generally unsuitable for cable burial which would therefore mean additional cable protection or routing work to avoid such substrates is required. High energy sedimentary areas can indicate a mobile seabed which can also require additional protection.

2.6.4. Wrecks and Obstructions (Risk Score 2)

- The coast off of Highcliffe possesses some possible wrecks and obstructions which would require avoidance.
- There are no protected wrecks in the immediate area.

2.6.5. Shipping and Navigation (Risk Score 2)

- There is an MoD Firing Practice Area located directly to the south of Swanage Bay.
- Further into the English Channel is a submarine exercise area.
- Vessels would need to be mindful of other vessels navigating into the Needles channel to the north of the Isle
 of Wight.

2.6.6. Summary

A high level of constraint for this landfall option exists in relation to designated sites, both at the landfall itself and offshore which would impact any approach to this landfall option. Seabed suitability is variable with some areas of rock and areas of high energy sedimentary habitats that could impact installation options. There are also a number of other activities and seabed obstructions (e.g. potential wrecks and vessel activities) that would need to be managed or routed around to avoid interaction or the need for additional agreements with third parties.

2.7. Barton on Sea

2.7.1. Designated Sites (Risk Score 5)

- A large area of Poole Bay and Christchurch Bay is designated as the Solent and Dorset Coast SPA designated for breeding tern.
- There are no SACs in the immediate vicinity of Barton on Sea. The closest coastal SAC is c.5 km to the east
 which is the Solent Maritime SAC designated for its estuaries, coastal lagoons and other marine habitat. The
 South Wight Maritime SAC is located off the westernmost headland of Isle of Wight designated for a variety of
 different reef types and submerged sea caves.
- Much of the coastline in Christchurch Bay is designated as SSSI, Highcliffe to Milford Cliffs SSSI designated for geological and fossil interests as well as plant habitats.
- The Needles MCZ is located of the westernmost headland of the Isle of Wight designated for a range of habitats and species including rock and sediments habitats, seagrass beds and stalked jellyfish.
- Barton On Sea has a designated protected bathing water area.

2.7.2. Existing Infrastructure and other Activities (Risk Score 2)

- Any approach to a landfall at Barton on Sea would need to avoid the aggregate areas to the south west of the Isle of Wight and two licenced disposal areas, one to the west of Isle of Wight and one approx. 4 km from the coast at Swanage Bay.
- Southern Water also has a licence to 2031 for maintenance of coastal outfalls along this stretch of coastline.
- This location would require an additional cable crossing of the IFA2 Interconnector to be included within the AQUIND Interconnector design.
- The Poole Bay Coastal Defence Scheme is to run between 2020 to 2032 replacing all beach groynes and beach
 re-nourishment. It is noted that this is to the west of the potential landfall location, however does indicate
 relatively mobile shorelines are present in the wider area.

- OGA 31st Offshore Licencing Round from 2019. Blocks 98/12 & 98/11b were awarded to Corallian Energy Ltd. in connection with Oil & Gas exploration.
- This landfall is approximately 28 km from the Mannington substation.

2.7.3. Seabed Conditions (Risk Score 2)

- The seabed in front of Barton on Sea is characterised by low to high energy infralittoral sand which is considered suitable for cable burial.
- The seabed southeast of Hengistbury Head south of Mudeford is characterised by high energy infralittoral rock intermixed with coarse and sublittoral sediments. Further to the east heading into the Needles channel, west of the Isle of Wight, the seabed is characterised by high energy circalittoral coarse sediment and some further areas of high energy circalittoral rock. Areas of rock can constrain cable laying activities as rock substrates are generally unsuitable for cable burial which would therefore mean additional cable protection or routing work to avoid such substrates is required. High energy sedimentary areas can indicate a mobile seabed which can also require additional protection.

2.7.4. Wrecks and Obstructions (Risk Score 2)

- The coast off of Barton on Sea possesses some possible wrecks and obstructions that require avoidance.
- There are no protected wrecks in the immediate area.

2.7.5. Shipping and Navigation (Risk Score 2)

- There is an MoD Firing Practice Area located directly to the south of Swanage Bay.
- Further into the English Channel is a submarine exercise area.
- Vessels would need to be mindful of other vessels navigating into the Needles channel to the north of the Isle
 of Wight.

2.7.6. Summary

A high level of constraint for this landfall option exists in relation to designated sites, both at the landfall itself and offshore which would impact any approach to this landfall option. Seabed suitability is variable with some areas of rock and areas of high energy sedimentary habitats that could impact installation options. There are also a number of other activities and seabed obstructions (e.g. potential wrecks and vessel activities) that would need to be managed or routed around to avoid interaction or the need for additional agreements with third parties.

2.8. Milford on Sea

2.8.1. Designated Sites (Risk Score 5)

- A large area of Poole Bay and Christchurch Bay is designated as the Solent and Dorset Coast SPA designated for breeding tern.
- There are no SACs at Milford on Sea. However, the Solent Maritime SAC designated for its estuaries, coastal lagoons and other marine habitats is in close proximity to the east. This site protects the Keyhaven and Pennington Marshes which are also protected via Ramsar (Solent & Southampton Water Ramsar), Hurst Castle and Lymingtone River SSSI.
- There is also a Local Nature Reserve at Milford on Sea (Sturt Pond LNR).

- The South Wight Maritime SAC is located off the westernmost headland of Isle of Wight designated for a variety of different reef types and submerged sea caves.
- Much of the coastline in Christchurch Bay is designated as SSSI, Highcliffe to Milford Cliffs SSSI designated for geological and fossil interests as well as plant habitats.
- The Needles MCZ is located of the westernmost headland of the Isle of Wight designated for a range of habitats and species including rock and sediments habitats, seagrass beds and stalked jellyfish.
- To the east of Milford on Sea are protected shellfish waters protected by the Water Framework Directive (WFD) and Milford on Sea has a designated protected bathing water area.

2.8.2. Existing Infrastructure and other Activities (Risk Score 2)

- Any approach to a landfall at Milford on Sea would need to avoid the aggregate areas to the south west of the Isle of Wight and two licenced disposal areas, one to the west of Isle of Wight and one approx. 4 km from the coast at Swanage Bay.
- Southern Water also has a licence to 2031 for maintenance of coastal outfalls along this stretch of coastline.
- This location would require an additional cable crossing of the IFA2 Interconnector to be included within the AQUIND Interconnector design.
- OGA 31st Offshore Licencing Round from 2019. Blocks 98/12 & 98/11b were awarded to Corallian Energy Ltd. in connection with Oil & Gas exploration.
- This landfall is approximately 30 km from the Mannington substation.

2.8.3. Seabed Conditions (Risk Score 3)

- The seabed in front of Milford on Sea is characterised by high energy infralittoral rock which would constrain cable burial and landfall activities.
- The seabed further offshore is characterised by high energy circalittoral coarse sediment and some further areas of high energy circalittoral rock.
- Areas of rock can constrain cable laying activities as rock substrates are generally unsuitable for cable burial
 which would therefore mean additional cable protection or routing work to avoid such substrates is required.
 High energy sedimentary areas can indicate a mobile seabed which can also require additional protection.

2.8.4. Wrecks and Obstructions (Risk Score 2)

- The coast off of Milford on Sea possesses some possible wrecks and obstructions which would require avoidance.
- There are two protected wrecks located on the northeastern edge of the Needles navigation channel that would likely require archaeological exclusion zones to be established.

2.8.5. Shipping and Navigation (Risk Score 2)

- There is an MoD Firing Practice Area located directly to the south of Swanage Bay.
- Further into the English Channel is a submarine exercise area.
- Vessels would need to be mindful of other vessels navigating into the Needles channel to the north of the Isle
 of Wight.

2.8.6. Summary

A high level of constraint for this landfall option exists in relation to designated sites, both at the landfall itself and offshore which would impact any approach to this landfall option. Seabed suitability is variable with some areas of rock and areas of high energy sedimentary habitats that could impact installation options. There are also a number of other activities and seabed obstructions (e.g. potential wrecks and vessel activities) that would need to be managed or routed around to avoid interaction or the need for additional agreements with third parties.

2.9. Solent and Lepe

In addition to the considerable constraints to an offshore approach from the west of the Isle of Wight as detailed above for a number of other landfall options, these two sites present significant constraints to development, which raise the overall risk score of Solent and Lepe location to 7. In particular:

- The Solent is designated as the Solent and Dorset Coast SPA.
- Along the whole of the mainland side, the coastline in The Solent is protected by SACs, SSSIs, Ramsars, and Local Nature Reserves.
- Any approach to these landfalls from either the west or the east would be directly through the Solent channel
 which is narrow and would be subject to heavy marine traffic use (especially entering the main navigation
 channels north of Isle of Wight and also the main channel into Southampton) presenting considerable challenges
 to larger construction vessels with limited manoeuvrability. The hydrodynamic regime may also present
 challenges to construction works and construction methodologies.
- The Solent is a protected shellfish waters protected by the Water Framework Directive (WFD).
- These landfalls would be greater than c.40 km from the Mannington substation.

2.10. Worbarrow Bay

In addition to the considerable constraints to an offshore approach from the west of the Isle of Wight as detailed above for a number of other landfall options, this site presents significant constraints to development, which raise the overall risk score of Worbarrow Bay to 7. In particular:

- The Solent is designated as the Solent and Dorset Coast SPA.
- Within this small inlet south of Lulworth, the coastline is protected by Studland to Portland SAC, Purbeck Coast
 MCZ, and South Dorset Coast SSSI along the length of the coastline and is also part of the Dorset and East
 Devon Coast World Heritage Site and Dorset AONB.
- The Bay is located within a Sea Danger Area as it is an MoD Firing Practice Area.
- The seabed in the Bay and its approaches is characterised by large swathes of rock.
- This landfall is approximately 40 km from the Mannington substation.

Appendices

A. Data sources

Table A.1: Data sources considered in the assessments

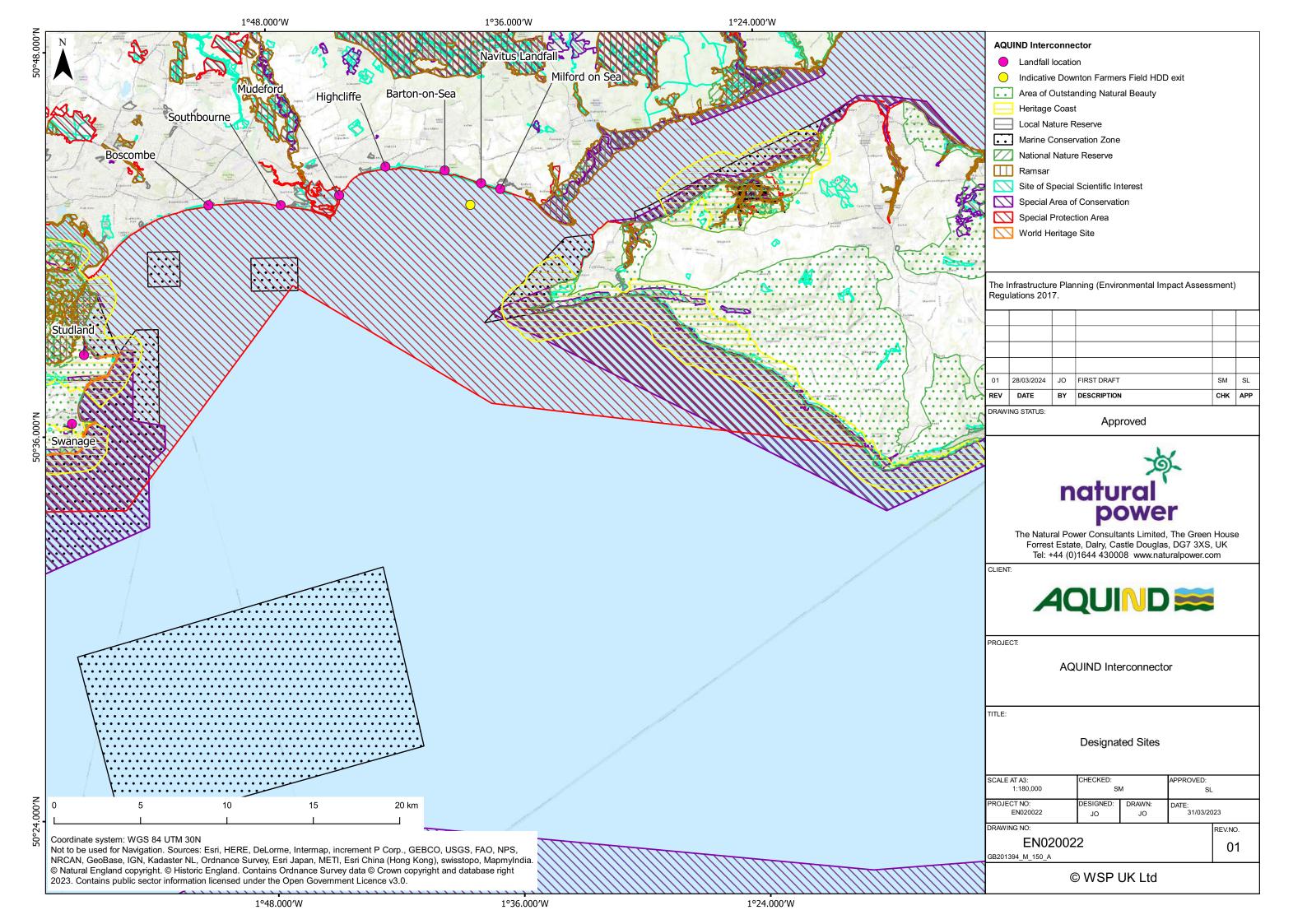
Layer	Format	Source	Download URL
UK Special Protection Areas	Shapefile	JNCC	https://hub.jncc.gov.uk/assets/20dbc9b4-ceac-4bf2-8763-4ae387fa88c4
JK Ramsars	Shapefile	JNCC	Site boundaries of wetlands of international importance under the Ramsar convention JNCC Resource Hub
Special Areas of Conservation (England)	Shapefile	DEFRA	Defra Spatial Data Download
Marine Conservation Zones	Shapefile	DEFRA	ArcGIS Web Application (data.gov.uk)
Sites of Special Scientific Interest (England)	Shapefile	DEFRA	Defra Spatial Data Download
Conservation Areas	Shapefile	Historic England	Download Listing Data - GIS Shapefiles Historic England
Vorld Herritage Sites	Shapefile	Historic England	Download Listing Data - GIS Shapefiles Historic England
Scheduled Monuments	Shapefile	Historic England	Download Listing Data - GIS Shapefiles Historic England
rea of Outstanding Natural Beauty	Shapefile	DEFRA	Defra Spatial Data Download
lerritage Coast	Shapefile	DEFRA	ArcGIS Web Application (data.gov.uk)
ocal Nature Reserve	Shapefile	DEFRA	Defra Spatial Data Download
lational Nature Reserve	Shapefile	DEFRA	Defra Spatial Data Download
French SAC/SPAs (Natura2000)	Shapefile	European Environment Agency	Natura 2000 data - the European network of protected sites — European Environment Agency (europa.eu)
EUSeaMap 2021 Broad-Scale Predictive labitat Map for Europe	Shapefile	EMODnet	EMODnet Product Catalogue - EMODnet (europa.eu)
GBR BGS Offhsore 1:250,000 scale hard ubstrate	WMS	British Geological Survey	Offshore marine WMS - British Geological Survey (bgs.ac.uk)
BR BGS Offshore 1:125,000 scale marine edrock linear features	WMS	British Geological Survey	Offshore marine WMS - British Geological Survey (bgs.ac.uk)
GBR BGS Offshore 1:250,000 scale sea bed ediment	WMS	British Geological Survey	Offshore marine WMS - British Geological Survey (bgs.ac.uk)
offshore 1:250,000 scale marine bedrock olygon	WMS	British Geological Survey	Offshore marine WMS - British Geological Survey (bgs.ac.uk)
/recks and Obstructions	Shapefile	UK Hyrdohraphic Office	Global Wrecks and Obstructions Shapefile ADMIRALTY Marine Data Portal
rotected Wrecks	Shapefile	Hisoric England	Download Listing Data - GIS Shapefiles Historic England
ggregate Site Agreements	Shapefile	The Crown Estate	Aggregates Site Agreements (England, Wales & NI), The Crown Estate Aggregates Site Agreements (England, Wales & NI), The Crown Estate The Crown Estate Open Data Portal (arcgis.com)
idal Stream Cable Agreements	Shapefile	The Crown Estate	<u>Tidal Stream Cable Agreements (England, Wales & NI), The Crown Estate Tidal Stream Cable Agreement (England, Wales & NI), The Crown Estate The Crown Estate Open Data Portal (arcgis.com)</u>
/ind Site Agreements	Shapefile	The Crown Estate	Wind Site Agreements (England, Wales & NI), The Crown Estate Wind Site Agreements (England, Wales NI), The Crown Estate The Crown Estate Open Data Portal (arcgis.com)
/ind Cable Agreements	Shapefile	The Crown Estate	Wind Cable Agreements (England, Wales & NI), The Crown Estate Wind Cable Agreements (England, Wales & NI), The Crown Estate The Crown Estate Open Data Portal (arcgis.com)
arine Management Organisation Marine Case anagement System Data	WFS	Marine Management Organisation	MMOMarineCaseManagementSystemData
Offshore Wells	ArcGIS REST Servers (https://data.nstauthority.co.uk/arcgis/rest/services)	North Sea Transistion Authority	North Sea Transition Authority (NSTA): NSTA Open Data - Data centre (nstauthority.co.uk)
		•	

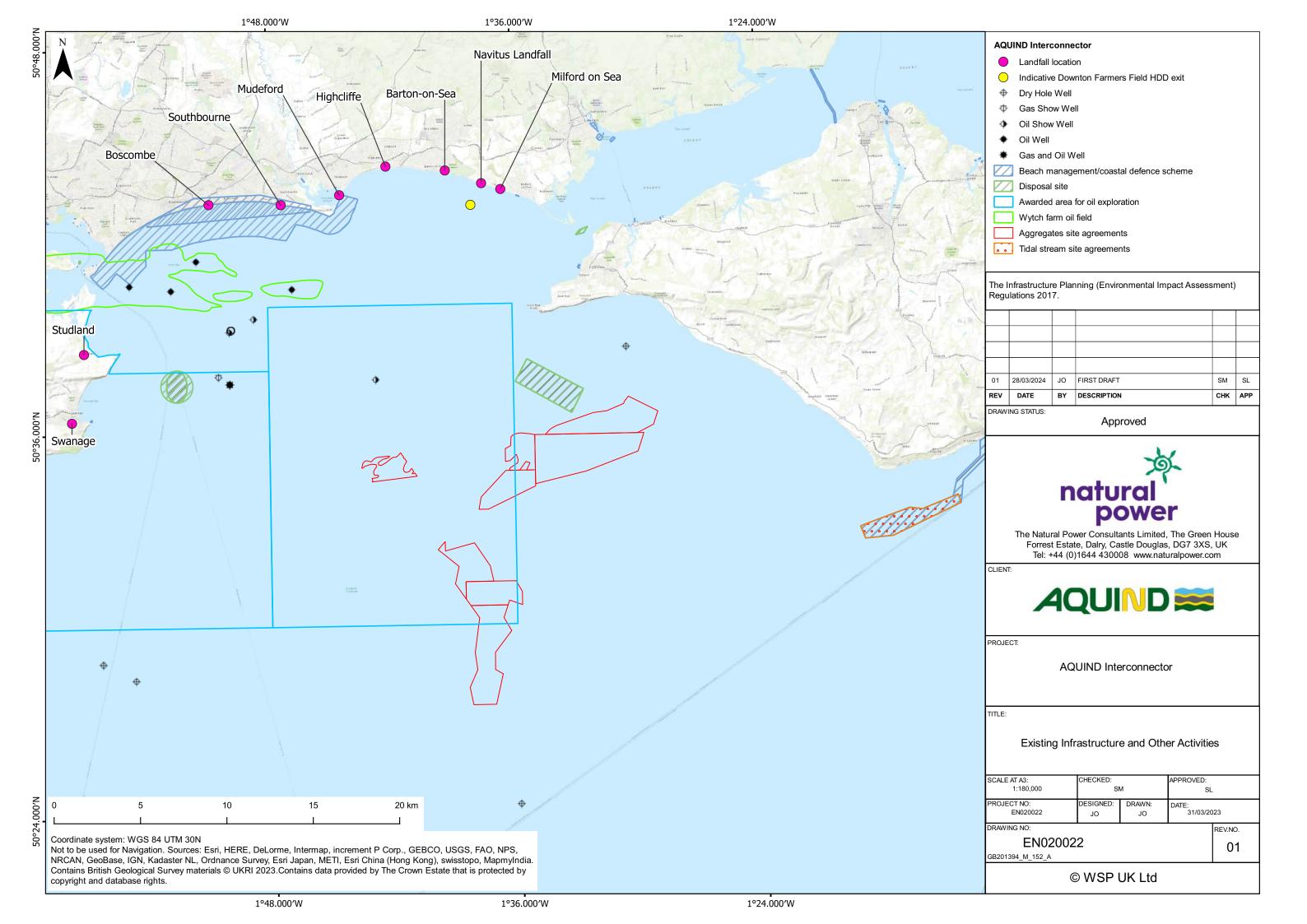
High Level Risk Analysis

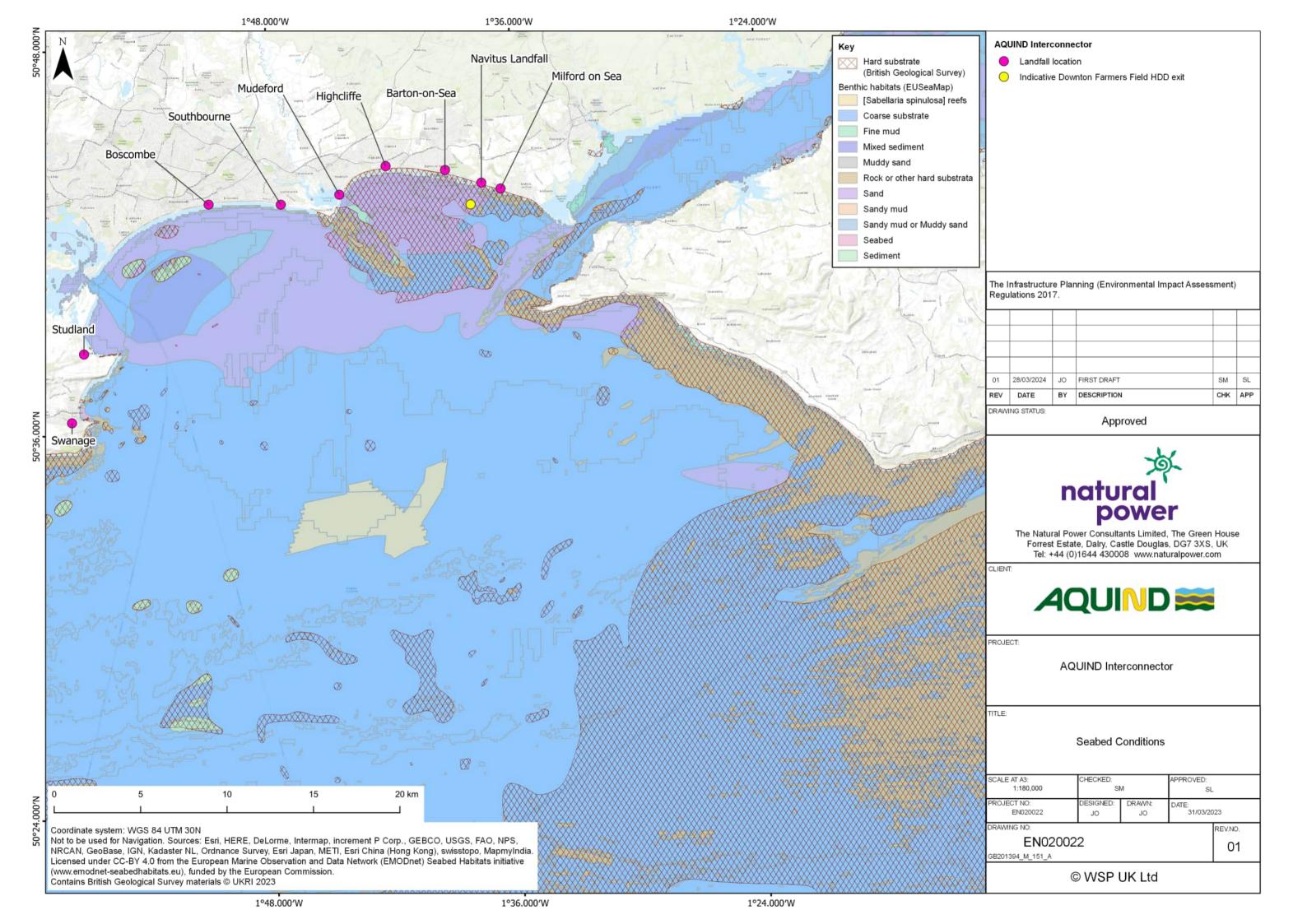
Layer	Format	Source	Download URL
Top Hole - Bottom Hole Straight Line	ArcGIS REST Servers	North Sea Transistion	North Sea Transition Authority (NSTA): NSTA Open Data - Data centre (nstauthority.co.uk)
Connection	(https://data.nstauthority.co.uk/arcgis/rest/services)	Authority	
Well Bottom Hole Locations	ArcGIS REST Servers (https://data.nstauthority.co.uk/arcgis/rest/services)	North Sea Transistion Authority	North Sea Transition Authority (NSTA): NSTA Open Data - Data centre (nstauthority.co.uk)
Undeveloped Discoveries	ArcGIS REST Servers (https://data.nstauthority.co.uk/arcgis/rest/services)	North Sea Transistion Authority	North Sea Transition Authority (NSTA): NSTA Open Data - Data centre (nstauthority.co.uk)
31st Round Indicative Areas	ArcGIS REST Servers (https://data.nstauthority.co.uk/arcgis/rest/services)	North Sea Transistion Authority	North Sea Transition Authority (NSTA): NSTA Open Data - Data centre (nstauthority.co.uk)
31st Round Provisional Areas	ArcGIS REST Servers (https://data.nstauthority.co.uk/arcgis/rest/services)	North Sea Transistion Authority	North Sea Transition Authority (NSTA): NSTA Open Data - Data centre (nstauthority.co.uk)
Offshore Fields	ArcGIS REST Servers (https://data.nstauthority.co.uk/arcgis/rest/services)	North Sea Transistion Authority	North Sea Transition Authority (NSTA): NSTA Open Data - Data centre (nstauthority.co.uk)
FieldDets_Off	ArcGIS REST Servers (https://data.nstauthority.co.uk/arcgis/rest/services)	North Sea Transistion Authority	North Sea Transition Authority (NSTA): NSTA Open Data - Data centre (nstauthority.co.uk)
UKCS Licensed Blocks History	ArcGIS REST Servers (https://data.nstauthority.co.uk/arcgis/rest/services)	North Sea Transistion Authority	North Sea Transition Authority (NSTA): NSTA Open Data - Data centre (nstauthority.co.uk)
UKCS Licensed and Unlicensed Blocks	ArcGIS REST Servers (https://data.nstauthority.co.uk/arcgis/rest/services)	North Sea Transistion Authority	North Sea Transition Authority (NSTA): NSTA Open Data - Data centre (nstauthority.co.uk)
UKCS Sub Areas	ArcGIS REST Servers (https://data.nstauthority.co.uk/arcgis/rest/services)	North Sea Transistion Authority	North Sea Transition Authority (NSTA): NSTA Open Data - Data centre (nstauthority.co.uk)
UKCS Licences	ArcGIS REST Servers (https://data.nstauthority.co.uk/arcgis/rest/services)	North Sea Transistion Authority	North Sea Transition Authority (NSTA): NSTA Open Data - Data centre (nstauthority.co.uk)
UKCS Sub Areas by Equity Group Holder	ArcGIS REST Servers (https://data.nstauthority.co.uk/arcgis/rest/services)	North Sea Transistion Authority	North Sea Transition Authority (NSTA): NSTA Open Data - Data centre (nstauthority.co.uk)
Onshore Fields	ArcGIS REST Servers (https://data.nstauthority.co.uk/arcgis/rest/services)	North Sea Transistion Authority	North Sea Transition Authority (NSTA): NSTA Open Data - Data centre (nstauthority.co.uk)
Licence Relinquishments	ArcGIS REST Servers (https://data.nstauthority.co.uk/arcgis/rest/services)	North Sea Transistion Authority	North Sea Transition Authority (NSTA): NSTA Open Data - Data centre (nstauthority.co.uk)
31st Offshore Round Blocks on Offer	ArcGIS REST Servers (https://data.nstauthority.co.uk/arcgis/rest/services)	North Sea Transistion Authority	North Sea Transition Authority (NSTA): NSTA Open Data - Data centre (nstauthority.co.uk)
Exclusive Economic Zone	Shapefile	UK Hyrdohraphic Office	UK Hydrographic Office Maritime Limits and Boundaries ADMIRALTY Marine Data Portal
Marine Chart 2175-0	Raster	N/A	N/A
Marine Chart 2035-0	Raster	N/A	N/A
Marine Chart 3418-0	Raster	N/A	N/A
Marine Chart 2610-0	Raster	N/A	N/A
Marine Chart 2450-0	Raster	N/A	N/A

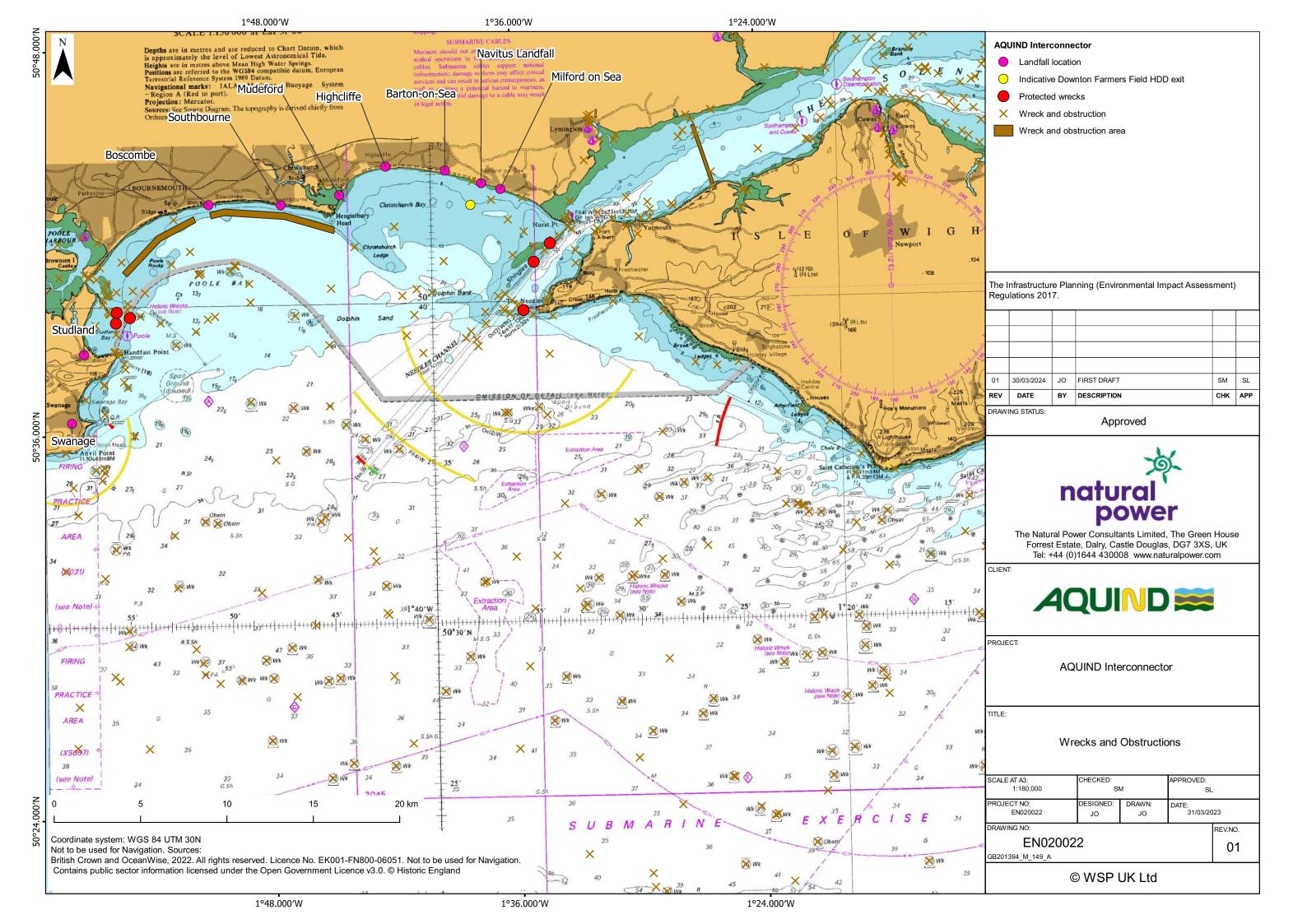
High Level Risk Analysis

B. Maps











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