



**EMPIRE OFFSHORE WIND:  
EMPIRE WIND PROJECT (EW 1 and EW 2)**

# **CONSTRUCTION AND OPERATIONS PLAN**

**VOLUME 2f: SUMMARY OF AVOIDANCE,  
MINIMIZATION, AND MITIGATION MEASURES**

Prepared for

**equinor**



Submitted to

**Bureau of Ocean  
Energy Management**

Prepared by



**TETRA TECH**

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## 9. SUMMARY OF AVOIDANCE, MINIMIZATION, AND MITIGATION MEASURES

Empire proposes to implement the avoidance, minimization, and mitigation measures identified in **Table 9-1**, as described in detail in Sections 4 through 8. Empire has completed an analysis as described in **Section 2 Project Design Development** through which Project components were sited and selected to minimize disturbance to sensitive resources by prioritizing onshore cable routes, onshore substation sites, and an O&M Base location that were previously disturbed. Empire will adhere to all agency-required avoidance, minimization, and mitigation measures, as discussed during the permitting process. Empire will use adaptive management to reduce unintended impacts as appropriate and applicable. Finally, Empire is committed to continued outreach and engagement with relevant agencies, interested Tribes, and other stakeholders throughout the Project life.

**Table 9-1 Summary Table**

Measure Number	Measure	Description of Measure	Resource	Project Phase
1	Training for extreme weather conditions	In order to mitigate the potential impacts from physical oceanographic and meteorological conditions, Empire will require that all personnel, crew, and contractors complete training and are familiar with the safety plans developed for extreme weather conditions.	Physical and Oceanographic Conditions	Construction, Operations and Maintenance, Decommissioning
2	Project design	The Project will be designed with consideration of conditions in the Project Area.	Physical and Oceanographic Conditions	Construction, Operations and Maintenance, Decommissioning
3	Siting of offshore components to avoid anomalous or challenging geological conditions	The siting of offshore components to avoid anomalous or challenging geological conditions to the extent practicable.	Geological Conditions	Construction & Decommissioning
4	Project design and construction will consider geological condition	Project infrastructure will be designed and constructed with consideration of the geological conditions within the Project Area.	Geological Conditions	Construction & Decommissioning
5	Study and analysis of geological conditions in the Project Area	Additional study and analysis will be completed prior to construction and installation activities to inform the selection of methods to allow for Project infrastructure to be constructed in a way that allows for the least impact, both to and from, the geological conditions in the Project Area.	Geological Conditions	Construction & Decommissioning
6	Siting of onshore components in previously disturbed areas	The siting of onshore components in previously disturbed areas, existing roadways, and/or ROWs to the extent practicable.	Geological Conditions	Construction & Decommissioning
7	Restoration of disturbed areas	Areas disturbed by construction activities will be restored (i.e., graded) to pre-construction conditions, to the extent practicable.	Geological Conditions	Construction & Decommissioning
8	Ongoing monitoring of assets that could be impacted by geological conditions	The on-going monitoring of assets that have the potential to be impacted by geological conditions, including foundations, and interarray and export cables, to confirm the cables have not become exposed or that the scour and cable protection measures have not worn away.	Geological Conditions	Operations and Maintenance

**Table 9-1 Summary Table (continued)**

Measure Number	Measure	Description of Measure	Resource	Project Phase
9	Siting of offshore components to avoid natural and anthropogenic hazard	Siting of the offshore components to minimize and avoid natural and anthropogenic hazards to the extent practicable.	Natural and Anthropogenic Hazards	Construction & Decommissioning
10	Deeper burial the submarine export ongoing discussions with the USACE	Deeper burial of the submarine export cables in areas within certain identified navigation channels, subject to ongoing discussions with the USACE and other applicable stakeholders.	Natural and Anthropogenic Hazards	Construction & Decommissioning
11	Deeper burial the submarine export and interarray cables in areas with seabed penetration	Deeper burial of the submarine export and interarray cables in areas identified as having seabed penetrating fishing activity.	Natural and Anthropogenic Hazards	Construction & Decommissioning
12	Munitions and Explosives of Concern (MEC) survey for necessary areas	Complete detailed, dedicated MEC survey for areas deemed necessary prior to installation.	Natural and Anthropogenic Hazards	Construction & Decommissioning
13	Proper cable burial measures and protection accounting for mobile seabed; planning for potential sandwave removal	Implementation of measures to allow for proper cable burial and protection that accounts for mobile seabed in this area, as well as plan for the possibility of sandwave removal during any future repairs to the cables.	Natural and Anthropogenic Hazards	Construction & Decommissioning
14	Horizontal buffer of 164 ft for identified potential submerged cultural resources	Implementation of a horizontal buffer of at least 164 ft (50 m) for identified potential submerged cultural resources unless further investigation and/or consultation with the appropriate authorities deems unnecessary.	Natural and Anthropogenic Hazards	Construction, Operations and Maintenance, Decommissioning
15	Distribution of information and Local Notice to Mariners (LNM) and active engagement with applicable stakeholders	Distribution of information and LNM and active engagement with applicable stakeholders to ensure awareness of the positions of Project-related assets to avoid any collision or interference.	Natural and Anthropogenic Hazards	Construction, Operations and Maintenance, Decommissioning
16	Periodic inspections of offshore Project components to verify integrity	Periodic inspections of offshore Project components, including foundations, scour protection, and submarine export and interarray cables, to verify integrity of the Project components and to confirm adequate burial.	Natural and Anthropogenic Hazards	Operations and Maintenance

**Table 9-1 Summary Table (continued)**

Measure Number	Measure	Description of Measure	Resource	Project Phase
17	Provide as-built information to NOAA to support necessary updates to navigation charts	Provide as-built information to NOAA to support necessary updates to navigation charts in coordination with NOAA and other stakeholders as needed.	Natural and Anthropogenic Hazards	Operations and Maintenance
18	Implementation of soil erosion and sediment control plans; SWPPP	The implementation of soil erosion and sediment control plans, which will be provided for agency review and approval, as applicable, for each onshore component to the requirements detailed in the New York State Standards and Specifications for Erosion and Sediment Control (Blue Book), including development of a SWPPP, as applicable.	Water Quality	Construction & Decommissioning
19	SSER Comprehensive Management Plan	The incorporation of the NYSDEC Management Practices Catalogue for Nonpoint Source Pollution Prevention and Water Quality Protection in New York State into the site-specific best management practices for activities located within the SSER, as recommended by the SSER Comprehensive Management Plan.	Water Quality	Construction & Decommissioning
20	NPDES permits and SWPPP	Obtain an industrial stormwater NPDES permit (if required) and develop a SWPPP if more than 1 ac (0.4 ha) of land is disturbed at any land fall or onshore substation per the CWA (33 U.S.C. § 1342). The plan will identify the measures that will be employed at the site to control the release of erosion and pollutants to the water and will outline an implementation and maintenance schedule.	Water Quality	Construction & Decommissioning
21	Agency-approved inadvertent return plan	Implementation of an agency-approved inadvertent return plan, approved by the applicable agencies, as necessary.	Water Quality	Construction & Decommissioning
22	SPCC Plan	The management of accidental spills or releases of oils or other hazardous wastes through a SPCC plan, which will be provided for agency review and approval, as applicable.	Water Quality	Construction, Operations and Maintenance, Decommissioning
23	Restricted access	Restricting access through wetlands and waterbodies at EW 2 to identified construction sites, access roads, and work zones, to the extent practicable. This is not anticipated to be required at EW 1 and the O&M Base due to the absence of wetlands within the onshore area.	Water Quality	Construction & Decommissioning
24	Following regulation for at-sea discharge and vessel-generated waste	Project-related vessels will operate in accordance with laws regulating the at-sea discharges of vessel-generated waste.	Water Quality	Operations and Maintenance

**Table 9-1 Summary Table (continued)**

Measure Number	Measure	Description of Measure	Resource	Project Phase
25	SPCC Plan; OSRP	The management of accidental spills or releases of oils or other hazardous wastes through a SPCC plan for onshore activities and an OSRP for offshore activities, which will be provided for agency review and approval, as applicable.	Water Quality	Operations and Maintenance
26	SWPPP, SPCC inclusion of stormwater control feature inspection and cleaning	Stormwater control features will be routinely inspected and cleaned to remove debris or excess vegetation that may impede the designed functionality. The inspection schedule will be detailed in the SWPPP and SPCC or appropriate Operations Plan.	Water Quality	Operations and Maintenance
27	Nitrogen oxide and VOC emission reduction credits	Where required, Empire will purchase sufficient emission reduction credits to offset the NOX and VOC emissions for Project-related activities. Empire will provide documentation of the purchase of offsets in accordance with the requirements set forth in the Record of Decision (ROD) and/or the issued OCS air permit.	Air Quality	Construction, Operations and Maintenance, Decommissioning
28	Vessels will meet Tier III Nitrogen oxide standards	Vessels constructed on or after January 1, 2016 will meet Tier III NOX requirements when operating within the North American Emission Control Area (200 nm [370.4 km]) established by the International Maritime Organization (IMO).	Air Quality	Construction, Operations and Maintenance, Decommissioning
29	Ultra-low diesel fuel usage	Project-related diesel-powered equipment will use ultra-low sulfur diesel fuel, per the requirements of 40 CFR § 80.510(b). (Beginning June 1, 2010, all non-road diesel fuel is subject to a 15-ppm sulfur content limit, which is defined in practice as ultra-low sulfur diesel fuel.)	Air Quality	Construction & Decommissioning
30	Low sulfur diesel fuel usage	Project-related vessels will use low sulfur diesel fuel where possible and be at or below the maximum fuel sulfur content requirement of 1,000 ppm established per the requirements of 40 CFR § 80.510(k).	Air Quality	Construction, Operations and Maintenance, Decommissioning
31	EPA emission standard compliance	Project-related vessels will comply with applicable EPA, or equivalent, emission standards.	Air Quality	Construction, Operations and Maintenance, Decommissioning



**Table 9-1 Summary Table (continued)**

Measure Number	Measure	Description of Measure	Resource	Project Phase
32	Data sharing with BOEM	Empire will provide BOEM with data on horsepower rating of all propulsion and auxiliary engines, duration of time operating in state waters, load factor, and fuel consumption for Project-related vessels to determine actual emissions from Project-related vessels, which will confirm that sufficient emissions offsets have been acquired.	Air Quality	Construction, Operations and Maintenance, Decommissioning
33	Information updates on equipment provided to BOEM and EPA	Empire will provide vessel engines and emissions control equipment information to BOEM and the EPA in accordance with the requirements set forth in the ROD and/or the issued OCS air permit.	Air Quality	Construction, Operations and Maintenance, Decommissioning
34	Compliance with state regulations on engine idling	Project-related vehicles, diesel engines, and/or nonroad diesel engines at the staging site will comply with applicable state regulations regarding idling. In New York State, 6 NYCRR 217-3 prohibits all on-road diesel-fueled and non-diesel-fueled heavy-duty vehicles from idling for more than five minutes. N.J.A.C. 7:27-14 and 7:27-15 restricts the unnecessary idling of diesel and gasoline engines, respectively, to three minutes.	Air Quality	Construction & Decommissioning
35	Construction equipment will be well-maintained	Construction equipment will be well-maintained and vehicles using internal combustion engines equipped with mufflers will be routinely checked to ensure they are in good working order.	In-Air Acoustic Environment	Construction & Decommissioning
36	Quieter-type adjustable backup alarms will be used for vehicles as feasible	Quieter-type adjustable backup alarms will be used for vehicles as feasible.	In-Air Acoustic Environment	Construction & Decommissioning
37	Noisy equipment will be located as far as possible from NSAs	Noisy equipment will be located as far as possible and feasible from NSAs.	In-Air Acoustic Environment	Construction & Decommissioning
38	A noise complaint hotline will be made available	A noise complaint hotline will be made available to help actively address all noise related issues.	In-Air Acoustic Environment	Construction & Decommissioning
39	HDD/Direct Pipe construction activities will occur during daytime period	HDD/Direct Pipe construction activities will occur during daytime period unless otherwise deemed acceptable from the appropriate regulatory authority.	In-Air Acoustic Environment	Construction & Decommissioning

**Table 9-1 Summary Table (continued)**

Measure Number	Measure	Description of Measure	Resource	Project Phase
40	In the case of night operations, only the HDD drill rig and power unit will be used	In the case of night operations, only the HDD drill rig and power unit will be used, unless deemed acceptable from the appropriate regulatory authority.	In-Air Acoustic Environment	Construction & Decommissioning
41	Compliance with IMO noise standards	The vessels used for nearshore work and vessels transiting between Project ports and the Lease Area will comply with IMO noise standards, as applicable.	In-Air Acoustic Environment	Construction & Decommissioning
42	Noise-generating equipment may be located inside or outside with the use of noise barriers, if necessary	If necessary, subject to regulatory requirements and stakeholder engagement, noise-generating equipment (e.g., reactors and transformers) may be located inside or outside with the use of noise barriers.	In-Air Acoustic Environment	Operations and Maintenance
43	Limited lighting during construction	Limiting lighting associated with construction vehicles and work zones, to the extent practicable, to reduce the attraction of insect prey for wildlife species such as bats and insectivorous birds.	Terrestrial Vegetation and Wildlife	Construction & Decommissioning
44	Siting in disturbed areas	Siting of onshore components in previously disturbed areas, existing roadways, and/or ROWs to the extent practicable.	Terrestrial Vegetation and Wildlife	Construction & Decommissioning
45	Soil erosion and sediment control plans	The implementation of soil erosion and sediment control plans, which will be provided for agency review and approval, as applicable, for each onshore component to the requirements detailed in the New York State Standards and Specifications for Erosion and Sediment Control (Blue Book), including development of a SWPPP, as applicable.	Terrestrial Vegetation and Wildlife	Construction & Decommissioning
46	Incorporation of the NYSDEC Management Practices Catalogue for Nonpoint Source Pollution Prevention and Water Quality Protection	Incorporation of the NYSDEC Management Practices Catalogue for Nonpoint Source Pollution Prevention and Water Quality Protection in New York State into the site-specific best management practices for activities located within the SSER, as recommended by the SSER Comprehensive Management Plan for EW 2.	Terrestrial Vegetation and Wildlife	Construction & Decommissioning
47	Implementation of an inadvertent return plan	The implementation of an inadvertent return plan, which will be provided for agency review and approval, as applicable.	Terrestrial Vegetation and Wildlife	Construction & Decommissioning

**Table 9-1 Summary Table (continued)**

Measure Number	Measure	Description of Measure	Resource	Project Phase
48	Implementation of an invasive species control plan	The implementation of an invasive species control plan at EW 2 to avoid the spread of invasive species and replant with native vegetation only, which will be provided for agency review and approval, as applicable. This is not anticipated to be required for EW 1 or the O&M Base due to the highly developed nature of the onshore area and lack of natural vegetation.	Terrestrial Vegetation and Wildlife	Construction, Operations and Maintenance, Decommissioning
49	Revegetation of disturbed areas	Temporarily disturbed areas will be revegetated with appropriate native species at EW 2, as needed and in compliance with applicable permits, mitigation plans, and/or invasive species control plan to prevent the introduction of invasive plant species. This is not anticipated to be required for EW 1 or the O&M Base due to the highly developed nature of the onshore area and lack of natural vegetation.	Terrestrial Vegetation and Wildlife	Construction, Operations and Maintenance, Decommissioning
50	SWPPP and/or SPCC Plan	Management of accidental spills or releases of oils or other hazardous wastes through a SWPPP and/or SPCC Plan, which will be provided for agency review and approval, as applicable.	Terrestrial Vegetation and Wildlife	Construction & Decommissioning
51	staggering silt fencing / erosion control devices	Consideration of staggering silt fencing or other erosion control devices in sensitive areas to facilitate the passage of biota, if deemed effective. The strategy will be implemented on a site-specific basis and finalized during the permitting process.	Terrestrial Vegetation and Wildlife	Construction & Decommissioning
52	Implementation of a mitigation plan	The implementation of a mitigation plan for the mitigation of long-term unavoidable impacts within jurisdictional wetlands, streams, or their regulated buffer areas at EW 2, which will be provided for agency review and approval, as applicable. This is not anticipated to be required at EW 1 or the O&M Base due to the lack of wetlands and streams, as well as the highly developed nature of the onshore area.	Terrestrial Vegetation and Wildlife	Operations and Maintenance
53	Site-specific mitigation	Site-specific mitigation strategies as well as post-construction monitoring will be refined during the permitting process and detailed in an approved mitigation plan and SWPPP.	Terrestrial Vegetation and Wildlife	Operations and Maintenance
54	Limitation of project personnel/vehicles	Limiting access of Project personnel and vehicles beyond existing disturbed areas and approved access roads to the extent practicable.	Terrestrial Vegetation and Wildlife	Operations and Maintenance
55	Lighting reduction measures	The implementation of lighting reduction measures onshore such as downward projecting lights, lights triggered by motion sensors, and limiting artificial light to the extent practicable, where safe.	Terrestrial Vegetation and Wildlife	Operations and Maintenance

**Table 9-1 Summary Table (continued)**

Measure Number	Measure	Description of Measure	Resource	Project Phase
56	Invasive species survey	A formal survey for invasive plant species will be conducted before Project construction, if needed, in accordance with an Invasive Species Control Plan, to document the location of invasive plant stands within the limit of disturbance.	Terrestrial Vegetation and Wildlife	Operations and Maintenance
57	Siting in disturbed areas	The siting of onshore components in previously disturbed areas, existing roadways, and/or ROWs to the extent practicable.	Wetlands and Waterbodies	Construction & Decommissioning
58	Siting structures outside of special FHAs	The siting of structures outside of special FHAs at EW 2 to the extent practicable. Note that this is not possible for EW 1 or the O&M Base, due to the proximity of the Gowanus POI to the shoreline.	Wetlands and Waterbodies	Construction & Decommissioning
59	Implementation of soil erosion and sediment control plans; SWPPP	The implementation of soil erosion and sediment control plans, which will be provided for agency review and approval, as applicable, for each onshore component to the requirements detailed in the New York State Standards and Specifications for Erosion and Sediment Control (Blue Book), including development of a SWPPP, as applicable.	Wetlands and Waterbodies	Construction & Decommissioning
60	NYSDEC Management Practices Catalogue for Nonpoint Source Pollution Prevention and Water Quality Protection management practices	The incorporation of the NYSDEC Management Practices Catalogue for Nonpoint Source Pollution Prevention and Water Quality Protection in New York State into the site-specific best management practices for activities located within the SSER, as recommended by the SSER Comprehensive Management Plan for EW 2.	Wetlands and Waterbodies	Construction & Decommissioning
61	Inadvertent return plan	The implementation of an inadvertent return plan, which will be provided for agency review and approval, as applicable.	Wetlands and Waterbodies	Construction & Decommissioning
62	SPCC plan	The management of accidental spills or releases of oils or other hazardous wastes through a SPCC plan, which will be provided for agency review and approval, as applicable.	Wetlands and Waterbodies	Construction & Decommissioning
63	Restricted access	During construction, access will be restricted to existing paved roads and approved access roads at wetland and stream crossings where possible, to avoid excessive soil compaction in sensitive areas.	Wetlands and Waterbodies	Construction & Decommissioning
64	Temporary matting to protect vegetation	The installation of temporary matting at EW 2 if access through wetlands is required during construction activities to protect vegetation root systems, reduce compaction, and minimize ruts. This is not anticipated to be required for EW 1 or the O&M Base due to the lack of wetlands within the onshore area.	Wetlands and Waterbodies	Construction & Decommissioning



**Table 9-1 Summary Table (continued)**

Measure Number	Measure	Description of Measure	Resource	Project Phase
65	Invasive species control plan	The implementation of an invasive species control plan at EW 2, which will be provided for agency review and approval, as applicable, to avoid the spread of invasive species and replant with native vegetation only. This is not anticipated to be required for EW 1 or the O&M Base due to the highly developed nature of the onshore area and lack of natural vegetation.	Wetlands and Waterbodies	Construction & Decommissioning
66	Restricted access	Restricting access through wetlands at EW 2 to identified construction sites, access roads, and work zones to the extent practicable. This is not anticipated to be required at EW 1 or the O&M Base due to the absence of wetlands within the onshore area.	Wetlands and Waterbodies	Construction & Decommissioning
67	Restoration of native species	Landscaping and restoration work at EW 2 will be completed with appropriate native species, per a landscape restoration plan or other appropriate plan, which will be provided for agency review and approval, as applicable, and in compliance with an invasive species control plan to prevent the introduction of invasive plant species, which will be provided for agency review and approval, as applicable. This is not anticipated to be required for EW 1 or the O&M Base due to the highly developed nature of the onshore area and lack of natural vegetation.	Wetlands and Waterbodies	Construction & Decommissioning
68	HDD	Consideration of the use of HDD for installation of the export cable landfalls at EW 2 to avoid surficial disturbances.	Wetlands and Waterbodies	Construction & Decommissioning
69	staggering silt fencing / erosion control devices	Consideration of staggering silt fencing or other erosion control devices in sensitive areas to facilitate the passage of biota, if deemed effective. The strategy will be implemented on a site-specific basis and finalized during the permitting process.	Wetlands and Waterbodies	Construction & Decommissioning
70	Restricted access	Protective measures will be installed around Project components at EW 2, to restrict access to wetlands during operation and maintenance activities. This is not anticipated to be required for EW 1 or the O&M Base due to the lack of wetlands within the onshore area.	Wetlands and Waterbodies	Operations and Maintenance

**Table 9-1 Summary Table (continued)**

Measure Number	Measure	Description of Measure	Resource	Project Phase
71	Landscape restoration plan	Revegetation monitoring at EW 2 will be conducted consistent with a landscaping restoration plan and an invasive species control plan, which will be provided for agency review and approval, as applicable, within wetlands, waterbodies, and protected adjacent areas and riparian zones that were temporarily disturbed during Project construction to ensure that functionality is restored in these areas satisfactory to permit requirements. This is not anticipated to be required for EW 1 or the O&M Base due to the highly developed nature of the onshore area.	Wetlands and Waterbodies	Operations and Maintenance
72	Mitigation monitoring for wetlands, waterbodies, and riparian zones	Mitigation monitoring at EW 2, if required and as defined during the regulatory process for any areas identified as mitigation sites as a result of long-term unavoidable impacts to wetlands, waterbodies and protected adjacent areas and riparian zones. This is not anticipated to be required for EW 1 or the O&M Base due to the lack of wetlands within the onshore area.	Wetlands and Waterbodies	Operations and Maintenance
73	Stormwater control features; SWPPP; SPCC	Stormwater control features will be routinely inspected and cleaned to remove debris or excess vegetation that may impede the designed functionality. The inspection schedule will be detailed in the SWPPP and/or SPCC.	Wetlands and Waterbodies	Operations and Maintenance
74	Siting in disturbed areas	Onshore components will be sited in previously disturbed areas, existing roadways, or otherwise unsuitable avian habitat and/or ROWs to the extent practicable.	Avian & Bat Species	Pre-Construction
75	Bat surveys	Empire Wind will be conducting acoustic bat surveys for the EW 2 Project in accordance with the U.S. Fish and Wildlife Service’s Range-Wide Indiana Bat & Northern Long-eared Bat Survey Guidelines of 2023. A negative presence survey will be taken as evidence that there is no need for limiting tree clearing or for conducting roost tree surveys.	Avian & Bat Species	Construction & Decommissioning
76	Lighting restrictions	Lighting not required during onshore and offshore construction will be limited to the minimum required by regulation and for safety, to reduce attraction of avian, bat, and sea turtle species.	Avian & Bat Species	Construction & Decommissioning
77	Bird deterrent devices	Installation of bird deterrent devices, where appropriate, on offshore, above-water Project-related structures to minimize introduction of perching structures to the offshore environment.	Avian & Bat Species	Operations and Maintenance

**Table 9-1 Summary Table (continued)**

Measure Number	Measure	Description of Measure	Resource	Project Phase
78	Lighting restrictions	Lighting not required by the FAA and the USCG and for safety during offshore construction will be limited to reduce attraction of birds and bats, where practicable.	Avian & Bat Species	Construction, Operations and Maintenance, Decommissioning
79	Dead/injured bird reporting	An annual report will be submitted to DOI and USFWS by January 31, accounting for any dead or injured birds or bats found on vessels or Project structures during construction, O&M, and decommissioning. The following information will be included: species name, date found, location, photo (if available), other relevant information. Any carcasses that have federal or research bands will be reported to the U.S. Geological Survey Bird Band Laboratory, BOEM, and USFWS.	Avian & Bat Species	Construction & Decommissioning
80	OSRP	The development and enforcement of an ORSP (Appendix F).	Avian & Bat Species	Construction & Decommissioning
81	HDD or other trenchless technology	Consideration of the use of HDD or other trenchless technologies for installation of the export cable landfalls at EW 2 to avoid surficial disturbances.	Avian & Bat Species	Construction & Decommissioning
82	Monitoring program	Development of an offshore bird and bat monitoring program to answer specific questions, including identifying key species of interest, and when possible, to contribute to the understanding of long-term, Project-specific impacts and larger scale efforts to understand cumulative impacts. Implementation of an Avian and Bat Post-Construction Monitoring Plan in coordination with the USFWS.	Avian & Bat Species	Operations and Maintenance
83	Revegetation of disturbed areas	Temporarily disturbed areas will be revegetated with appropriate native species at EW 2, as appropriate. This is not anticipated to be required at EW 1 due to the highly developed nature of the onshore area and lack of natural vegetation.	Avian & Bat Species	Operations and Maintenance
84	ADLS	Lessee will use an FAA-approved ADLS on wind turbines and offshore substations, which will only activate the FAA hazard lighting when an aircraft is in the vicinity of the wind facility, to reduce the visibility of nighttime lighting and nighttime visual impacts.	Avian & Bat Species	Operations and Maintenance
85	Avoidance of sensitive habitat	Avoiding, to the extent possible, siting structures (wind turbines, offshore substations, and submarine export and interarray cables) in areas of sensitive habitat, where feasible.	Benthic & Pelagic Resources	Pre-Construction

**Table 9-1 Summary Table (continued)**

Measure Number	Measure	Description of Measure	Resource	Project Phase
86	Spill prevention	Mitigation and avoidance measures to protect water quality, such as spill prevention.	Benthic & Pelagic Resources	Construction, Operations and Maintenance, Decommissioning
87	Designing lighting to avoid exposing wildlife to artificial light	Sensitive lighting schemes to minimize exposure of light.	Benthic & Pelagic Resources	Operations and Maintenance
88	Seasonal work window establishment	Establish seasonal work windows that avoid sensitive life stages, as feasible.	Benthic & Pelagic Resources	Pre-Construction
89	Silt curtains	Installing silt curtains in sensitive areas, as warranted by results of the sediment modeling.	Benthic & Pelagic Resources	Construction & Decommissioning
90	Ramp-up pile driving	Using ramp-up pile driving protocols.	Benthic & Pelagic Resources	Construction & Decommissioning
91	Cable installation tools	Using cable installation tools during trenching/installing/armoring cable activities that minimize the area and duration of sediment suspension, as feasible.	Benthic & Pelagic Resources	Construction & Decommissioning
92	HDD Plan	The use of HDD at export cable landfall at EW 2 to minimize physical disturbance of coastal habitats.	Benthic & Pelagic Resources	Construction & Decommissioning
93	HDD Plan	Empire would implement appropriate measures during HDD activities at export cable landfalls to minimize potential release of HDD fluid. To minimize an inadvertent fluid return, an HDD Contingency Plan would be developed and implemented.	Benthic & Pelagic Resources	Construction & Decommissioning
94	DPS vessels	Most construction vessels will maintain position using dynamic positioning, limiting the use of anchors and jack-up features, where feasible. Any anchors or jack-up features would be placed within the previously cleared and/or disturbed area around the foundations.	Benthic & Pelagic Resources	Construction & Decommissioning



**Table 9-1 Summary Table (continued)**

Measure Number	Measure	Description of Measure	Resource	Project Phase
95	OSRP	Using appropriate measures for vessel operation and implementing an OSRP, which includes measures to prevent, detect, and contain accidental release of oil and other hazardous materials. Project personnel would be trained in accordance with relevant laws, regulations, and Project policies, as described in the OSRP.	Benthic & Pelagic Resources	Construction & Decommissioning
96	Timing of construction	Consideration of the timing of construction activities; working with the fishing industry and fisheries agencies on sensitive spawning and fishing periods to actively avoid or reduce interaction with receptors, where feasible.	Benthic & Pelagic Resources	Construction & Decommissioning
97	Cable burial to 4-6 feet depth	A commitment to sufficiently bury electrical cables (target 6 feet [1.2 meters]) where feasible, minimizing seabed habitat loss and reducing the effects of EMF; where deep burial is not technically feasible, rock armoring will shield the cable from the overlying water.	Benthic & Pelagic Resources	Operations and Maintenance
98	Continued engagement with regulatory agencies and ENGOs	Development of appropriate monitoring program(s) in close coordination with regulatory agencies and stakeholders.	Benthic & Pelagic Resources	Construction, Operations and Maintenance, Decommissioning
99	OSRP	The development and enforcement of an OSRP (Appendix F).	Benthic & Pelagic Resources	Construction, Operations and Maintenance, Decommissioning
100	Scour protection	Installation of scour protection, as needed.	Benthic & Pelagic Resources	Construction
101	Continued engagement with agencies	Continued engagement with regulatory agencies, ENGOs, and other stakeholders on potential mitigation and best practices, as appropriate.	Marine Mammals & Sea Turtles	Construction & Decommissioning
102	seasonal closures	Seasonal pile driving closures.	Marine Mammals & Sea Turtles	Construction & Decommissioning
103	Ramp-ups, clearance & shut-down procedures	Ramp-up measures when impact pile driving is initiated.	Marine Mammals & Sea Turtles	Construction & Decommissioning

**Table 9-1 Summary Table (continued)**

Measure Number	Measure	Description of Measure	Resource	Project Phase
104	pre-clearance	Pre-clearance prior to the initiation of pile driving to ensure marine mammals are not located within relevant impact zones when pile driving begins.	Marine Mammals & Sea Turtles	Construction & Decommissioning
105	pile driving shutdown	Shutdown of impact pile driving based on confirmed detection of marine mammals within relevant impact zones, when feasible.	Marine Mammals & Sea Turtles	Construction & Decommissioning
106	Monitoring and exclusion zones	Establishment of clearance and shutdown zones enforced by: <ul style="list-style-type: none"> <li>o Qualified NOAA Fisheries approved PSOs;</li> <li>o Real-time monitoring systems, as appropriate;</li> <li>o Use of PAM systems; and</li> <li>o Use of reduced visibility monitoring tools/technologies (e.g., night vision, infrared and/or thermal cameras)</li> </ul>	Marine Mammals & Sea Turtles	Construction & Decommissioning
107	PSOs	PSOs will be stationed at the pile driving platform/vessel as well as on a dedicated PSO vessel.	Marine Mammals & Sea Turtles	Construction & Decommissioning
108	Noise reducing technologies	Use of commercially available and technically feasible noise attenuation technologies to reduce pile driving noise.	Marine Mammals & Sea Turtles	Construction & Decommissioning
109	Speed restrictions	Project-related vessels will comply with NOAA Fisheries speed restrictions within the Mid-Atlantic U.S. SMAs for North Atlantic right whales of 10 knots (18.5 km/h) or less for vessels 65 ft (20 m) or greater during the period of November 1 through April 30. Project-related vessels will also comply with the 10 knot (<18.5 km/h) speed restrictions in any visually triggered Slow Zone/DMA.	Marine Mammals & Sea Turtles	Construction, Operations and Maintenance, Decommissioning
110	Speed restrictions	Project-related vessels 65 ft (20 m) or greater will comply 10 knot (18.5 km/s) speed restrictions when any mother/calf pairs, pods, or large assemblages of cetaceans are in the vicinity.	Marine Mammals & Sea Turtles	Construction & Decommissioning
111	Vessel collision avoidance mitigation measures	Vessel collision avoidance mitigation measures for Project-related vessels working in or in transit to and from the Lease Area, including 500-m separation distance from North Atlantic right whales, 100-m separation distance from all other large whales and 50-m separation distance from all other marine mammals as well as adherence to vessel strike avoidance measures as advised by NOAA Fisheries.	Marine Mammals & Sea Turtles	Construction, Operations and Maintenance, Decommissioning

**Table 9-1 Summary Table (continued)**

Measure Number	Measure	Description of Measure	Resource	Project Phase
112	Reference materials	Reference materials will be provided on board all Project vessels for identification of marine mammals.	Marine Mammals & Sea Turtles	Construction, Operations and Maintenance, Decommissioning
113	Any vessel larger than 300 gross tonnes moving into right whale habitat will report in as part of the right whale Mandatory Ship Reporting System	Any vessel larger than 300 gross tonnes moving into right whale habitat will report in as part of the NOAA Fisheries Northeast marine mammal and sea turtle stranding and entanglement hotline: (866) 755-NOAA (866-755-6622). They will be immediately responded to with updated reports of right whale sightings in the area, in addition to reminders of safe vessel speeds and movements within the management area.	Marine Mammals & Sea Turtles	Construction, Operations and Maintenance, Decommissioning
114	PSOs and/or Project personnel will check NOAA's website daily for any update on DMAs/Slow Zones	Marine mammal observers and/or Project personnel will check NOAA's website regularly for updates on Slow Zones/DMAs and will respond with vessel movement strategies or work hours accordingly.	Marine Mammals & Sea Turtles	Construction, Operations and Maintenance, Decommissioning
115	Sightings of North Atlantic right whales will be immediately reported the NOAA Fisheries North Atlantic Right Whale Sighting Advisory System	Sightings of North Atlantic right whales will be immediately reported the NOAA Fisheries North Atlantic Right Whale Sighting Advisory System: (866) 755-6622 (sightings in any location may also be reported to the U.S. Coast Guard via channel 16).	Marine Mammals & Sea Turtles	Construction, Operations and Maintenance, Decommissioning
116	All crew members responsible for navigation duties must receive site-specific training	All crew members responsible for navigation duties must receive site-specific training on protected species sighting/reporting and vessel strike avoidance measures prior to the start of in water construction activities.	Marine Mammals & Sea Turtles	Construction, Operations and Maintenance, Decommissioning
117	Following regulation for at-sea discharge and vessel-generated waste	Project-related vessels will operate in accordance with laws regulating the at-sea discharges of vessel-generated waste.	Marine Mammals & Sea Turtles	Construction, Operations and Maintenance, Decommissioning
118	Avoidance of sensitive habitat	Siting of Project-components to avoid and minimize impacts to habitat of high value to marine mammals, directly and indirectly, to the greatest extent practicable.	Marine Mammals & Sea Turtles	Construction & Decommissioning

**Table 9-1 Summary Table (continued)**

Measure Number	Measure	Description of Measure	Resource	Project Phase
119	Use of dedicated lookout to reduce risk of collision	Use dedicated trained crew members lookout (independent of fulfilled by PSO[s] for applicable activities) to help reduce the risk of collision under certain circumstances.	Marine Mammals & Sea Turtles	Operations and Maintenance
120	Monitoring program development	Development of appropriate monitoring program(s) in close coordination with regulatory agencies and stakeholders.	Marine Mammals & Sea Turtles	Operations and Maintenance
121	Use of SOV concept	Use of SOV concept, supported by CTV(s), to reduce vessel traffic associated with Operations and Maintenance for the Project, if technically and commercially feasible.	Marine Mammals & Sea Turtles	Operations and Maintenance
122	buffer area for identified potential submerged archaeological resources	Implementation of a horizontal buffer of at least 164 ft (50 m) for identified potential submerged archaeological resources, unless further investigation and/or consultation with the appropriate authorities deems this unnecessary.	Marine Archaeological Resources	Construction, Operations and Maintenance, Decommissioning
123	Engagement with Tribes and cultural resource stakeholders	Additional evaluation of appropriate measures regarding paleolandscape features to be addressed with regulatory authorities, and informed by engagement with Tribes and cultural resource stakeholders.	Marine Archaeological Resources	Construction, Operations and Maintenance, Decommissioning
124	Siting in disturbed areas	Avoidance of culturally sensitive terrestrial archaeological resources by siting Project components in existing ROWs and previously disturbed areas, to the extent practicable.	Terrestrial Archaeological Resources	Construction & Decommissioning
125	An archaeologist will be present to monitor during ground-disturbing activities	An archaeological monitor will be present where the Project’s ground-disturbing activities intersect the “Archaeological Monitoring Area” depicted in <b>Figure Y-2-12</b> in <b>Appendix Y, Attachment Y2</b> .	Terrestrial Archaeological Resources	Construction & Decommissioning
126	Unanticipated Discoveries Plan	The development and implementation of an Unanticipated Discoveries Plan, which will be developed in coordination with federal and state agencies and the Tribes. The Unanticipated Discoveries Plan will be in accordance with state laws and will outline the procedures to follow if archaeological materials or human remains are discovered during construction activities, including contact information and reporting protocols if unanticipated discoveries are identified.	Terrestrial Archaeological Resources	Construction & Decommissioning



**Table 9-1 Summary Table (continued)**

Measure Number	Measure	Description of Measure	Resource	Project Phase
127	Outreach/engagement with Tribes and stakeholders	Continued outreach and engagement with relevant agencies, interested Tribes, and other stakeholders throughout the construction process to identify appropriate mitigation and monitoring measures during ground-disturbing activities, if deemed necessary.	Historic Properties & Architectural Properties	Construction & Decommissioning
128	Siting in disturbed areas	Avoidance of sensitive historic resources by siting onshore Project components in highly developed and previously disturbed areas to the extent practicable.	Historic Properties & Architectural Properties	Construction & Decommissioning
129	Following regulation for marking and lighting of above-water offshore components	Marking and lighting of above water offshore Project components will be consistent with regulatory requirements and guidance (see Section 3 for additional details on the proposed marking and lighting measures).	Historic Properties & Architectural Properties	Operations and Maintenance
130	Wind turbine design and appearance to follow BOEM recommendations	Wind turbine design and appearance will be in line with mitigation measures recommended by BOEM (2007). <sup>1</sup>	Historic Properties & Architectural Properties	Operations and Maintenance
131	Siting in disturbed areas	Onshore components have been proactively sited in highly developed and previously disturbed areas, where feasible, where they will introduce less visual contrast relative to their surroundings.	Visual Resources	Construction & Decommissioning
132	Vegetative screening	Vegetative screening, as needed, at the onshore substation sites to help screen views of the onshore substation by nearby residents, subject to New York permitting requirements.	Visual Resources	Construction & Decommissioning
133	Marking/lighting/painting WTGs according to regulations	Marking and lighting and paint color of above water offshore Project components will be consistent with regulatory requirements and guidance (see Section 3 for additional details on the proposed marking and lighting measures).	Visual Resources	Operations and Maintenance

<sup>1</sup> BOEM (Bureau of Ocean Energy Management). 2007. Programmatic Environmental Impact Statement for Alternative Energy Development and Production and Alternative Use of Facilities on the Outer Continental Shelf – Final Environmental Impact Statement, Section 5 Potential Impacts of Alternative Energy Development. Available online at: [https://www.boem.gov/Renewable-Energy-Program/Regulatory-Information/Alt\\_Energy\\_FPEIS\\_VolIIIIFrontMatter.aspx](https://www.boem.gov/Renewable-Energy-Program/Regulatory-Information/Alt_Energy_FPEIS_VolIIIIFrontMatter.aspx). Accessed May 23, 2019.

**Table 9-1 Summary Table (continued)**

Measure Number	Measure	Description of Measure	Resource	Project Phase
134	Wind turbine design and appearance to follow BOEM recommendations	Wind turbine design and appearance will be in line with mitigation measures recommended by BOEM (2007). <sup>1</sup>	Visual Resources	Operations and Maintenance
135	Lighting design to reduce light pollution	Lighting at the onshore substation site will be designed to include measures to reduce light pollution, where feasible, such as downward projecting lights, lights triggered by motion sensors, and limiting artificial light to the extent practicable	Visual Resources	Operations and Maintenance
136	Use of design standards of Waterfront Revitalization Program	The EW 1 onshore substation and O&M Base will meet the design standards set forth in the Waterfront Revitalization Program policies, as applicable (see Appendix AA).	Visual Resources	Operations and Maintenance
137	ADLS	Implementation of an ADLS on turbines (or a similar system) to turn the aviation obstruction lights on and off in response to detection of nearby aircraft, as a base case, pending commercial availability, technical feasibility, and agency review and approval.	Visual Resources	Operations and Maintenance
138	Vegetative screening	Vegetative screening, as needed, along the north side of the EW 2 Onshore Substation A site to help screen views of the substation by nearby residents, subject to New York and New Jersey permitting requirements.	Visual Resources	Operations and Maintenance
139	Siting in disturbed areas	Installation of onshore components within existing ROWs and within previously developed areas designated for such uses, to the extent practicable.	Population, Economy, Employment, and Housing and Property Values	Construction & Decommissioning
140	Siting in disturbed areas	Installation of onshore components within existing ROWs and within previously developed areas designated for such uses, to the extent practicable.	Land Use and Zoning	Construction & Decommissioning
141	Development of a Traffic Management Plan	The development of a Traffic Management Plan, to be developed in coordination with, and approved by, the affected local municipalities, as applicable.	Land Use and Zoning	Construction & Decommissioning
142	Security measures on active construction sites	The addition of security measures to monitor, and proper marking of, active construction sites, as deemed necessary.	Land Use and Zoning	Construction & Decommissioning

**Table 9-1 Summary Table (continued)**

Measure Number	Measure	Description of Measure	Resource	Project Phase
143	Local community updates and communication	Regular updates to the local community through social media and public notices and/or other appropriate communications tools.	Land Use and Zoning	Construction & Decommissioning
144	Coordination with agencies, officials, and stakeholders for future land development plans	Coordination with appropriate local and municipal agencies, officials, and stakeholders, in consideration of future land development plans.	Land Use and Zoning	Operations and Maintenance
145	Marking of onshore components	The onshore components will be properly marked for identification.	Land Use and Zoning	Operations and Maintenance
146	Restoration of onshore project area	The onshore Project Area will be restored to conditions consistent with approvals from local authorities and/or property owners.	Land Use and Zoning	Operations and Maintenance
147	Minimize impacts to public access in the EW 2 onshore substation design, as feasible	Empire will evaluate minimizing impacts to public access in the EW 2 onshore substation design, as feasible.	Land Use and Zoning	Operations and Maintenance
148	Security measures on active construction sites and security vessels monitoring	The addition of security vessels monitoring, and proper marking of, active construction sites.	Recreation and Tourism	Construction & Decommissioning
149	Development of a Traffic Management Plan	The development of a Traffic Management Plan, to be developed in coordination with, and approved by, the affected local municipalities.	Recreation and Tourism	Construction & Decommissioning
150	Local community updates and communication	Regular updates to the local community through the issuance of LNMs, social media, public notices, and/or other appropriate communications tools.	Recreation and Tourism	Construction & Decommissioning
151	Marking of wind turbines and offshore substations with USCG/PATON requirements	The wind turbines and offshore substations will be properly marked in accordance with USCG guidance, including the PATON requirements (see Section 3 for additional details on the proposed marking and lighting measures).	Recreation and Tourism	Operations and Maintenance
152	Vessels will not be restricted from entering the operational wind farms areas	Vessels will not be restricted from entering the operational wind farms areas, and as a result, these structures may attract local charters for sightseeing and recreational fishing.	Recreation and Tourism	Operations and Maintenance

**Table 9-1 Summary Table (continued)**

Measure Number	Measure	Description of Measure	Resource	Project Phase
153	Local community updates and communication	Regular updates to the local community through social media, public notices, and/or other appropriate communications tools.	Environmental Justice	Construction, Operations and Maintenance, Decommissioning
154	Siting in disturbed areas	Installation of onshore components within existing ROWs and within previously developed areas designated for such uses, to the extent practicable.	Environmental Justice	Construction, Operations and Maintenance, Decommissioning
155	Development of a Traffic Management Plan	The development of a Traffic Management Plan, to be developed in coordination with, and approved by, the affected local municipalities, as applicable.	Environmental Justice	Construction, Operations and Maintenance, Decommissioning
156	Development of a Traffic Management Plan	The development of a Traffic Management Plan, to be developed in coordination with, and approved by, the affected local municipalities, as applicable.	Land Transportation and Traffic	Construction, Operations and Maintenance, Decommissioning
157	Development of Project-related vehicle routes	The development of Project-related vehicle routes to and from construction sites, which are consistent with allowable uses, to the extent practicable.	Land Transportation and Traffic	Construction, Operations and Maintenance, Decommissioning
158	Highly visible lighting/marketing of active construction sites	Highly visible marking and lighting of active construction sites.	Land Transportation and Traffic	Construction, Operations and Maintenance, Decommissioning
159	Establishment of temporary, localized construction zones	Temporary, localized construction zones to minimize areas or sections of road closure.	Land Transportation and Traffic	Construction, Operations and Maintenance, Decommissioning
160	Local community updates and communication	Regular updates to the local community through social media, public notices, and/or other appropriate communications tools.	Land Transportation and Traffic	Construction, Operations and Maintenance, Decommissioning

**Table 9-1 Summary Table (continued)**

Measure Number	Measure	Description of Measure	Resource	Project Phase
161	Consultation with DoD Clearinghouse	Continue consultation with DoD Clearinghouse, including the engagement of a formal Mitigation Agreement process to offset identified impacts to radar systems. On July 29, 2020, Empire received a request from the DoD Clearinghouse to enter into a partnership to initiate mitigation discussion for potential impacts resulting from the construction and installation of the Project. Empire intends to enter into this partnership, responding with a confirmation letter on August 19, 2020. Empire met with the DoD in November 2021 and discussions are ongoing to finalize the mitigation agreement.	Aviation	Construction & Decommissioning
162	Minimize and/or mitigate potential impacts to high frequency weather & current radar systems	Coordination with NOAA to minimize, and/or mitigate potential impacts to high frequency weather and current radar systems.	Aviation	Construction & Decommissioning
163	Direction communication with applicable agencies and personnel to alert of construction movements	Direct communication with applicable agencies and personnel to alert the appropriate parties to planned construction movements and actions.	Aviation	Construction & Decommissioning
164	Marking/lighting of wind turbines and construction equipment in accordance with FAA’s Advisory Circular number 70/7460-1L	All wind turbines and construction equipment will be properly lit and marked in accordance with FAA’s Advisory Circular number 70/7460-1L within FAA jurisdiction and beyond, or other methods as deemed required during consultation and as applicable (see Section 3 for additional information on proposed marking and lighting measures.	Aviation	Construction, Operations and Maintenance, Decommissioning
165	Regular communication/updates with key aviation stakeholders and with DoD Clearinghouse	Regular communications and updates with key aviation stakeholders, including the DoD Clearinghouse, on wind turbine locations. On July 29, 2020, Empire received a request from the DoD Clearinghouse to enter a partnership to initiate mitigation discussion for potential impacts resulting from the construction and installation of the Project. Empire intends to enter into this partnership, responding with a confirmation letter on August 19, 2020. Empire met with the DoD in November 2021 and discussions are ongoing to finalize the mitigation agreement.	Aviation	Operations and Maintenance
166	Continued consultation with stakeholders	Continued consultation with stakeholders, including but not limited to: the USCG, New York Vessel Traffic Service, PANYNJ, and the USACE on best practices.	Marine Transportation and Navigation	Construction & Decommissioning

**Table 9-1 Summary Table (continued)**

Measure Number	Measure	Description of Measure	Resource	Project Phase
167	Highly visible lighting/marketing of active construction sites	Highly visible marking and lighting of active construction sites.	Marine Transportation and Navigation	Construction & Decommissioning
168	Vessel compliance with international and flag state regulations	Compliance by vessels associated with the Project with international and flag state regulations including the COLREGs and the SOLAS.	Marine Transportation and Navigation	Construction & Decommissioning
169	Compliance with existing uses and management of surrounding waterway	Utilization of existing TSSs, maintained channels, and transit lanes by vessels associated with the Project to comply with existing uses and management of the surrounding waterway, to the extent practicable.	Marine Transportation and Navigation	Construction & Decommissioning
170	Completion of a Cable Installation Plan	Completion of a Cable Installation Plan, detailing how cable installation will be managed to ensure disruption is minimized, in particular within port approaches.	Marine Transportation and Navigation	Construction & Decommissioning
171	Completion of a Construction Method Statement	Completion of a Construction Method Statement, detailing specific construction logistics between New York ports and the Lease Area, inclusive of transport configuration, vessels, and schedule of transport operations.	Marine Transportation and Navigation	Construction & Decommissioning
172	Contract agreement that all construction vessels be equipped with working AIS transceivers at all times	Inclusion by Empire of a requirement in contracts that all construction vessels be equipped with working AIS transceivers at all times.	Marine Transportation and Navigation	Construction & Decommissioning
173	Marine coordination for vessels	Marine coordination for vessels associated with the Project (i.e., a central coordination hub from which all Project vessel movements will be managed, and third-party traffic will be monitored).	Marine Transportation and Navigation	Construction & Decommissioning
174	Minimum advisory safe passing distances for cable laying vessels	Minimum advisory safe passing distances for cable laying vessels (where feasible).	Marine Transportation and Navigation	Construction & Decommissioning
175	Monitoring of third-party vessel traffic by AIS	Monitoring of third-party vessel traffic by AIS.	Marine Transportation and Navigation	Construction & Decommissioning
176	Implementation of a safety zone around active construction sites	The implementation of up to a 1,640-ft (500-m) safety zone around active construction sites (including partially installed wind turbines) pending agreement with USCG.	Marine Transportation and Navigation	Construction & Decommissioning



**Table 9-1 Summary Table (continued)**

Measure Number	Measure	Description of Measure	Resource	Project Phase
177	Creation/Implementation of an SMS	Creation and implementation of an SMS ( <b>Appendix G</b> ).	Marine Transportation and Navigation	Construction & Decommissioning
178	Implementation of Layout Rules	Implementation of the Layout Rules (see <b>Section 3</b> ) during layout design process, most notably: - One nautical mile separation between wind farm and the edge of the TSS lanes. - Straight line edges parallel to TSS lanes (no isolated or protruding turbines). - At least one line of orientation in final layout.	Marine Transportation and Navigation	Construction & Decommissioning
179	Regular updates to the local marine community regarding positions of installation activities	Regular updates, including the positions of installed and partially installed structures, to the local marine community through social media, the USCG LNM, and active engagement with Maritime Association of the Port of New York and New Jersey Harbor Safety, Navigation, and Operations Committee.	Marine Transportation and Navigation	Construction & Decommissioning
180	Ongoing consultation with stakeholders	Ongoing consultation with stakeholders, in particular, in relation to the submarine export cable(s).	Marine Transportation and Navigation	Construction & Decommissioning
181	Use of buoys/support vessels to mark temporary working areas	The potential use of buoys and/or support vessels to mark temporary working areas or potential hazards (e.g., partially installed structures).	Marine Transportation and Navigation	Construction & Decommissioning
182	Project Support Vessel monitoring	The operation of Project Support Vessels monitoring and communicating with vessels operating in the area.	Marine Transportation and Navigation	Construction & Decommissioning
183	Regular updates to the local marine community on safety zones	Regular safety zone updates to the local marine community through social media, the USCG LNM, and active engagement with Maritime Association of the Port of New York and New Jersey Harbor Safety, Navigation, and Operations Committee.	Marine Transportation and Navigation	Construction & Decommissioning
184	Dynamic construction and safety zones	Dynamic construction and safety zones where feasible, focusing on sites being actively worked on, to minimize the extent of the affected area.	Marine Transportation and Navigation	Construction & Decommissioning

**Table 9-1 Summary Table (continued)**

Measure Number	Measure	Description of Measure	Resource	Project Phase
185	Marking of wind turbines and offshore substations with USCG/BOEM requirements	The wind turbines and offshore substation will be properly marked and lit in accordance with IALA O-139 and USCG/BOEM requirements, unless a variance is approved by the applicable agency prior to construction (see Section 3 for additional details on the proposed marking and lighting measures).	Marine Transportation and Navigation	Operations and Maintenance
186	Project Layout Rules	Project Layout Rules will be implemented to facilitate ease of navigation in and around the wind farm to minimize collision risk.	Marine Transportation and Navigation	Operations and Maintenance
187	1nm separation distance from vessel traffic within neighboring TSS lanes	Project-enacted “Developable Area” will facilitate a 1-nm (1.8-km) separation distance from vessel traffic within neighboring TSS lanes.	Marine Transportation and Navigation	Operations and Maintenance
188	Updates to NOAA on location of applicable project infrastructure	Information will be provided to NOAA so that charts (nautical and electronic) can be updated with the location of applicable Project infrastructure.	Marine Transportation and Navigation	Operations and Maintenance
189	Minimum blade clearance of 85 ft for wind turbines	Wind turbines will have a minimum blade clearance of 85 ft (26 m) above mean higher high water.	Marine Transportation and Navigation	Operations and Maintenance
190	Vessel compliance with international and flag state regulations	Compliance by vessels associated with the Project with international and flag state regulations including the COLREGs and the SOLAS.	Marine Transportation and Navigation	Operations and Maintenance
191	Development and implementation of an ERP	The development and implementation of an ERP.	Marine Transportation and Navigation	Operations and Maintenance
192	Marine coordination for vessels	Marine coordination for vessels associated with the Project (i.e., a central coordination hub from which all Project vessel movements will be managed, and third-party traffic will be monitored).	Marine Transportation and Navigation	Operations and Maintenance
193	Compliance with existing uses and management of surrounding waterway	Utilization of existing TSSs, maintained channels, and transit lanes by vessels associated with the Project to comply with existing uses and management of the surrounding waterway, to the extent practicable.	Marine Transportation and Navigation	Operations and Maintenance
194	Closed circuit television for site monitoring	Closed circuit television installed on certain structures within the array for the purpose of monitoring activity within the site.	Marine Transportation and Navigation	Operations and Maintenance

**Table 9-1 Summary Table (continued)**

Measure Number	Measure	Description of Measure	Resource	Project Phase
195	Communication with fisherman on location of project structures	Locations of the wind farm structures will be provided directly to fishermen for the purpose of displaying the wind farm electronically via their on-board equipment.	Marine Transportation and Navigation	Operations and Maintenance
196	Facilitation of USCG SAR trials	Facilitation of USCG SAR trials within and near the Lease Area.	Marine Transportation and Navigation	Operations and Maintenance
197	Operational SAR Procedures	Operational SAR Procedures in place that detail how the Project will cooperate with USCG in the event of an emergency situation.	Marine Transportation and Navigation	Operations and Maintenance
198	Development of a marine pollution contingency plan	The development of a marine pollution contingency plan (e.g., <b>Appendix F Oil Spill Response Plan</b> ).	Marine Transportation and Navigation	Operations and Maintenance
199	Establishment of operational procedures for Project vessels	The establishment of operational procedures for Project vessels such as entry/exit points and designated routes.	Marine Transportation and Navigation	Operations and Maintenance
200	Provision of self-help capability	Provision of self-help capability (i.e., any onshore or vessel/turbine-based resources or facilities available to Empire that may assist in the event of an emergency).	Marine Transportation and Navigation	Operations and Maintenance
201	Cable routing study	Cable routing study, including geophysical and geotechnical surveys, stakeholder input and environmental and social constraints to develop submarine export cable routes that avoid or minimize interactions with anchorage areas.	Marine Transportation and Navigation	Operations and Maintenance
202	Completion of a Cable Installation Plan	Completion of a Cable Installation Plan, detailing how cable installation will be managed to ensure disruption is minimized, in particular within port approaches, and monitored once installation is complete.	Marine Transportation and Navigation	Operations and Maintenance
203	Completion of a CBRA	Completion of a CBRA to identify appropriate cable burial depths and to identify any needs for additional cable protections.	Marine Transportation and Navigation	Operations and Maintenance
204	Periodic monitoring of cable burial and protection measures	Periodic monitoring of cable burial and protection measures to ensure they remain effective, with regular monitoring of protection in vicinity of areas of existing anchoring as identified within the cable burial risk assessment.	Marine Transportation and Navigation	Operations and Maintenance

**Table 9-1 Summary Table (continued)**

Measure Number	Measure	Description of Measure	Resource	Project Phase
205	Potential real-time monitoring of Project cable assets	Potential real-time monitoring of Project cable assets using AIS to proactively notify vessels of potential interactions.	Marine Transportation and Navigation	Operations and Maintenance
206	Implementation of a Fisheries Mitigation Plan	Continued implementation of a Fisheries Mitigation Plan throughout the construction process to alert local fishing industries to relevant construction activities through the use of in-person communications, social media, website communications, and LNMs.	Commercial Fisheries & Recreational Fishing	Construction & Decommissioning
207	Cable route planning	Cable route planning to avoid areas of hard or steep seabed where burial is difficult, if those areas coincide with high fishing activity.	Commercial Fisheries & Recreational Fishing	Construction & Decommissioning
208	Rolling construction zones	Utilization of rolling construction zones to minimize areas closed off to fishing.	Commercial Fisheries & Recreational Fishing	Construction & Decommissioning
209	Minimize overlap with areas/time of high activity	Where feasible, planning the location and timing of construction activities that minimize overlap with areas or times of high activity.	Commercial Fisheries & Recreational Fishing	Pre-Construction
210	Continued engagement with fishing industry	Continued active engagement with the fishing industry on the timing and location of construction so that they can, where possible, elect to fish in other areas and plan accordingly.	Commercial Fisheries & Recreational Fishing	Construction & Decommissioning
211	Continued use of offshore OFLRs	Continued use of offshore OFLRs to facilitate communications with the fishing community.	Commercial Fisheries & Recreational Fishing	Construction & Decommissioning
212	Continued communications between FLO and	Continued communications between FLO and fisheries on the areas of temporary construction closures, when they are re-opened, updates on schedules through email serves, flyers, websites.	Commercial Fisheries & Recreational Fishing	Construction & Decommissioning

**Table 9-1 Summary Table (continued)**

Measure Number	Measure	Description of Measure	Resource	Project Phase
213	CBRA	A CBRA to determine sufficient burial depth along the submarine export cable route and, where target burial depth cannot be reached, secondary protection shall be considered.	Commercial Fisheries & Recreational Fishing	Construction & Decommissioning
214	Identification of sensitive spawning and fishing periods	Continued work with the fishing industry and fisheries agencies to identify sensitive spawning and fishing periods to actively avoid or reduce interaction with receptors during construction, where feasible.	Commercial Fisheries & Recreational Fishing	Construction & Decommissioning
215	Marking of wind turbines and offshore substations with USCG/BOEM requirements	Marking and lighting all wind turbines and offshore substations in accordance with USCG, BOEM, and IALA O-139 guidance.	Commercial Fisheries & Recreational Fishing	Construction, Operations and Maintenance, Decommissioning
216	Safety vessel	Utilization of a safety vessel to alert mariners to safety zones and/or active construction areas where appropriate.	Commercial Fisheries & Recreational Fishing	Construction & Decommissioning
217	Safety zones	Implementation of 1,640-ft (500-m) safety zones around relevant structures, activities, and vessels in a dynamic approach, as previously defined for the Block Island Wind Farm (81 FR 31862). Should USCG Safety Zone authorities not extend beyond 12 nm (22 km) at the time of construction, Empire will utilize a combination of safety vessels, LNM's, and COLREGS to promote both awareness of these activities and the safety of the construction equipment and personnel.	Commercial Fisheries & Recreational Fishing	Construction & Decommissioning
218	AIS	Installation of operational AIS on all vessels associated with the construction and operation of the Project.	Commercial Fisheries & Recreational Fishing	Construction & Decommissioning
219	TSS usage	Project construction vessels will utilize, to the extent practicable, the surrounding TSSs while transiting to and from the Lease Area.	Commercial Fisheries & Recreational Fishing	Construction & Decommissioning

**Table 9-1 Summary Table (continued)**

Measure Number	Measure	Description of Measure	Resource	Project Phase
220	Temporary lighting as an alert	Temporary lighting and marking may be used during the construction phase to alert mariners to areas under construction.	Commercial Fisheries & Recreational Fishing	Construction & Decommissioning
221	Continued communications and alerts to fishing industry	In the event of maintenance within the offshore environment, the Project will alert the fishing industry to the occurrence of these activities. Communication methods will include the use of FLOs, social media, website communications, and LNM.	Commercial Fisheries & Recreational Fishing	Operations and Maintenance
222	Layout Rules	The Project will utilize the Layout Rules (as described in <b>Section 3</b> ) to achieve wind farm layouts, wind turbine spacing and lines of orientation within the array that facilitate continued access to traditional fishing grounds.	Commercial Fisheries & Recreational Fishing	Operations and Maintenance
223	Submarine export and interarray cables	Submarine export and interarray cables will be buried to a target burial depth of 6 ft (1.8 m).	Commercial Fisheries & Recreational Fishing	Operations and Maintenance
224	Following installation of the submarine	Following installation of the submarine export and interarray cables, the Project will conduct cable burial surveys at appropriate intervals to assess if target burial depth is being maintained.	Commercial Fisheries & Recreational Fishing	Operations and Maintenance
225	Micro-siting of the submarine	Micro-siting of the submarine export cable route to further reduce potential impacts on sensitive habitats and minimize areas where burial is more challenging.	Commercial Fisheries & Recreational Fishing	Operations and Maintenance
226	Regular updates to the local	Regular updates to the local marine community through Project websites, social media, the USCG LNM and active engagement with other stakeholders.	Commercial Fisheries & Recreational Fishing	Operations and Maintenance
227	To minimize risk of anchors	To minimize risk of anchors and fishing gear snagging the submarine export cable, the submarine export cable route has been routed to target areas where chances of burial are improved.	Commercial Fisheries & Recreational Fishing	Operations and Maintenance



**Table 9-1 Summary Table (continued)**

Measure Number	Measure	Description of Measure	Resource	Project Phase
228	Limited use of concrete mattresses	The use of concrete mattresses as surface cable protection will be limited.	Commercial Fisheries & Recreational Fishing	Operations and Maintenance
229	Project component locations provided to NOAA	All submarine export cable, interarray cable, wind turbine, and offshore substation locations will be provided to NOAA and updated on nautical charts appropriately.	Commercial Fisheries & Recreational Fishing	Operations and Maintenance
230	Project component marked for navigation	To the extent practicable and in consultation with the fishing industry, turbine locations and cable routes will be marked on the most common types of software used by fishermen for navigation and fishing.	Commercial Fisheries & Recreational Fishing	Operations and Maintenance
231	Installation of AIS signals on WTGs	Installation of AIS signals on turbines, as appropriate, to facilitate safe navigation.	Commercial Fisheries & Recreational Fishing	Operations and Maintenance
232	Vessel usage of existing waterways	Project vessels will utilize transit lanes, fairways, and predetermined passage plans consistent with existing waterway uses, to the extent practicable.	Department of Defense and OCS National Security Maritime Uses	Construction & Decommissioning
233	Regular communications and updates will occur with key national security maritime stakeholders	Regular communications and updates will occur with key national security maritime stakeholders on Project-related construction vessel activities.	Department of Defense and OCS National Security Maritime Uses	Construction & Decommissioning

**Table 9-1 Summary Table (continued)**

Measure Number	Measure	Description of Measure	Resource	Project Phase
234	Active engagement with key national security stakeholders	Active engagement with key national security stakeholders including U.S. Fleet Forces, the USCG, and U.S. Navy Office of Cable Protection will take place. This engagement will be conducted through the DoD Clearinghouse, with an increase in frequency expected as Empire moves closer to commencement of construction activities. On July 29, 2020, Empire received a request from the DoD Clearinghouse to enter into a partnership to initiate mitigation discussion for potential impacts resulting from the construction and installation of the Project. Empire intends to enter into this partnership, responding with a confirmation letter on August 19, 2020.	Department of Defense and OCS National Security Maritime Uses	Construction & Decommissioning
235	Dynamic construction and safety zones	Dynamic construction and safety zones will be implemented where feasible, focusing on sites being actively worked on, to minimize the extent of the affected area.	Department of Defense and OCS National Security Maritime Uses	Construction & Decommissioning
236	Partially constructed structures and safety zones marked and lit in accordance with IALA O-139/BOEM/USCG guidance	Partially constructed structures and safety zones will be properly marked and lit in accordance with IALA O-139, USCG requirements, and the 2021 BOEM Lighting/Marking Guidance (see <b>Section 3</b> for additional details on the proposed marking and lighting measures).	Department of Defense and OCS National Security Maritime Uses	Construction, Operations and Maintenance, Decommissioning
237	Updates to NOAA on as-built information	As-built information will be provided to NOAA Fisheries to support necessary updates to navigation charts in coordination with NOAA Fisheries and other stakeholders as needed.	Department of Defense and OCS National Security Maritime Uses	Operations and Maintenance
238	Coordination with USCG to facilitate training exercises	Empire will work with the USCG to facilitate training exercises within the operational wind farm, as requested.	Department of Defense and OCS National Security Maritime Uses	Operations and Maintenance

**Table 9-1 Summary Table (continued)**

Measure Number	Measure	Description of Measure	Resource	Project Phase
239	Regular communication with key national security stakeholders, including the DoD Clearinghouse	Regular communication and updates will occur with key national security stakeholders, including the DoD Clearinghouse on the timing and location of maintenance activities and Project-related activities that may affect national security operations.	Department of Defense and OCS National Security Maritime Uses	Operations and Maintenance
240	Safety zones up to 1,640 ft (500 m) around active construction sites.	The implementation of up to a 1,640-ft (500-m) safety zone around active construction sites pending agreement with USCG.	Marine Energy and Infrastructure	Construction & Decommissioning
241	Operation of security/support vessels during construction activities	Operate security/support vessels, where appropriate, to monitor and communicate with vessels operating in the area during periods of construction activity.	Marine Energy and Infrastructure	Construction & Decommissioning
242	Highly visible lighting/marketing of active construction sites	Use highly visible marking and lighting of active construction sites.	Marine Energy and Infrastructure	Construction & Decommissioning
243	Regular updates to the local marine community	Regular updates to the local marine community through Project websites, social media, the USCG LNM and active engagement with other stakeholders.	Marine Energy and Infrastructure	Construction, Operations and Maintenance, Decommissioning
244	Siting to avoid sensitive habitats, recks, reefs, other structures	Site Project-related components to avoid sensitive habitats, wrecks, reefs, and other structures that support offshore marine uses to the extent practicable.	Marine Energy and Infrastructure	Construction & Decommissioning
245	Siting to avoid sensitive habitats, recks, reefs, other structures	Site Project-related components to avoid sensitive habitats, wrecks, reefs, and other structures that support offshore marine uses to the extent practicable.	Marine Energy and Infrastructure	Construction & Decommissioning
246	Marking of wind turbines and offshore substations with USCG/BOEM requirements	Marking of wind turbines and offshore substations in accordance with IALA O-139, USCG requirements, and the 2021 BOEM Lighting/Marking Guidance (see <b>Section 3</b> for additional details on the proposed marking and lighting measures).	Marine Energy and Infrastructure	Operations and Maintenance
247	Vessel transit will not be restricted and may provide recreational opportunities	Vessels will not be restricted from entering the operational wind farms areas, and as a result these structures may attract local charters for sightseeing and recreational fishing.	Marine Energy and Infrastructure	Operations and Maintenance

**Table 9-1 Summary Table (continued)**

Measure Number	Measure	Description of Measure	Resource	Project Phase
248	Provision of locations of structures for inclusion in NOAA charts	Provision of locations of structures for inclusion in NOAA charts.	Marine Energy and Infrastructure	Operations and Maintenance
249	Implementation of a safety zone around active construction sites	The implementation of up to a 1,640-ft (500-m) safety zone around active construction sites pending agreement with USCG.	Other Coastal and Marine Uses	Construction & Decommissioning
250	Operation of security/support vessels during construction activities	Operate security/support vessels, where appropriate, to monitor and communicate with vessels operating in the area during periods of construction activity.	Other Coastal and Marine Uses	Construction & Decommissioning
251	Highly visible lighting/marketing of active construction sites	Use highly visible marking and lighting of active construction sites.	Other Coastal and Marine Uses	Construction & Decommissioning
252	Regular updates to the local marine community	Regular updates to the local marine community through Project websites, social media, the USCG LNM and active engagement with other stakeholders.	Other Coastal and Marine Uses	Construction, Operations and Maintenance, Decommissioning
253	Siting to avoid sensitive habitats, recks, reefs, other structures	Site Project-related components to avoid sensitive habitats, wrecks, reefs, and other structures that support offshore marine uses to the extent practicable.	Other Coastal and Marine Uses	Construction & Decommissioning
254	Marking of wind turbines and offshore substations with USCG/BOEM requirements	Marking of wind turbines and offshore substations in accordance with IALA O-139, USCG requirements, and the 2021 BOEM Lighting/Marking Guidance (see <b>Section 3</b> for additional details on the proposed marking and lighting measures).	Other Coastal and Marine Uses	Operations and Maintenance
255	Vessels will not be restricted from entering the operational wind farms areas	Vessels will not be restricted from entering the operational wind farms areas, and as a result these structures may attract local charters for sightseeing and recreational fishing.	Other Coastal and Marine Uses	Operations and Maintenance
256	Provision of locations of structures for inclusion in NOAA charts	Provision of locations of structures for inclusion in NOAA charts.	Other Coastal and Marine Uses	Operations and Maintenance

**Table 9-1 Summary Table (continued)**

Measure Number	Measure	Description of Measure	Resource	Project Phase
257	Design of project components to withstand extreme conditions	Project infrastructure and equipment will be designed to be able to withstand extreme conditions, and will be protected both externally and internally by a lightning protection system.	Public Health and Safety	Construction, Operations and Maintenance, Decommissioning
258	Development of an emergency evacuation plan	Development and implementation of an emergency evacuation plan that will be incorporated into the overall site ERP.	Public Health and Safety	Construction, Operations and Maintenance, Decommissioning
259	Restricted access	Restrict access to both onshore and offshore work sites to authorized and qualified personnel.	Public Health and Safety	Construction & Decommissioning
260	Implementation of a safety zone around active offshore construction sites	The implementation of up to a 1,640-ft (500-m) safety zone around active offshore construction sites pending agreement with USCG.	Public Health and Safety	Construction & Decommissioning
261	Implementation of a safety zone around active onshore construction sites	Implement safety zones around active onshore construction sites.	Public Health and Safety	Construction & Decommissioning
262	Prevention of unauthorized access	Secure onshore construction sites with a fence and lock to prevent unauthorized access.	Public Health and Safety	Construction & Decommissioning
263	Securing construction equipment	Securing construction equipment onshore within fenced work areas.	Public Health and Safety	Construction & Decommissioning
264	Security monitoring onshore/offshore	Use of security to monitor both onshore and offshore construction sites.	Public Health and Safety	Construction & Decommissioning
265	Spill response kits	Construction sites will contain spill response kits.	Public Health and Safety	Construction & Decommissioning
266	Use of secondary containment for oils and greases	Use of secondary containment for oils and greases in accordance with all state and federal regulations.	Public Health and Safety	Construction, Operations and Maintenance, Decommissioning
267	Transport hazardous materials in water-tight containers	Transport hazardous materials in water-tight containers.	Public Health and Safety	Construction, Operations and Maintenance, Decommissioning

**Table 9-1 Summary Table (continued)**

Measure Number	Measure	Description of Measure	Resource	Project Phase
268	Training program for Project personnel	Train Project personnel, as applicable, in accordance with relevant regulations and company policy, including the site-specific emergency evacuation routes, warning signals, locations of fire extinguishers and first aid kits, as well as the chain of command.	Public Health and Safety	Construction, Operations and Maintenance, Decommissioning
269	Lighting/marketing of construction sites for safety	Construction sites will be clearly marked and lighted, in a manner sufficient to safeguard personnel and public safety.	Public Health and Safety	Construction & Decommissioning
270	Project-specific SMS development	Development and implementation of a Project specific SMS.	Public Health and Safety	Construction, Operations and Maintenance, Decommissioning
271	SPCC and OSRP plans	Implementation of a SPCC Plan for onshore activities and OSRP for offshore activities that will be provided for agency review and approval, as applicable.	Public Health and Safety	Operations and Maintenance
272	Prevention of unauthorized access	Secure the onshore substation and O&M Base with a fence and lock to prevent unauthorized access.	Public Health and Safety	Operations and Maintenance
273	Marking of wind turbines and offshore substations with USCG/BOEM requirements	Marking of wind turbines and offshore substations in accordance with IALA O-139, USCG requirements, and the 2021 BOEM Lighting/Marking Guidance (see <b>Section 3</b> for additional details on the proposed marking and lighting measures).	Public Health and Safety	Operations and Maintenance
274	Use of appropriate, agency-approved marking and lighting around the onshore substations and O&M Base	Use of appropriate, agency-approved marking and lighting around the onshore substations and O&M Base.	Public Health and Safety	Operations and Maintenance
275	Equip the base of turbine tower with a lock	Restrict access to the interior of the wind turbines and offshore substations by a locked door at the base of the tower.	Public Health and Safety	Operations and Maintenance
276	Restricted access	Only trained and qualified personnel will be allowed access to the onshore substations, wind turbines, and offshore substations to perform O&M activities.	Public Health and Safety	Operations and Maintenance
277	Spill response kits	Project sites will contain spill response kits.	Public Health and Safety	Operations and Maintenance



