

## APPENDIX I Potential Space Use Conflicts, Resolutions and References

(Columns 1, 2 and 3 Adapted from OSPAR Commission 2008)

Issue	Potential conflict	Potential resolution	Annotated Citations (Found in Appendix II)	Citations (Found in Appendix III)
Marine Protected Areas (Marine Reserves, National Monuments, Marine Sanctuaries) or areas of biological or ecological interest or value	Loss of area or function of area, or disturbance of biota or ecosystem services in the protected areas. Loss of area or function of area, or disturbance of biota in the sensitive or ecologically valuable area.	Avoid protected areas or ensure that the project complies the relevant protection and conservation targets. Avoid sensitive and ecologically valuable areas or ensure that project does not negatively affect the respective area and its biodiversity	Bess & Rallapudi, 2007; Biodiversity Committee. OSPAR Commission, 2005; Brody, et al., 2004; Capitini, et al., 2004; Douvere, 2008; Gleason, et al., 2010; Inger, et al., 2009; Klein, et al., 2008; McGrath, 2004; Sørensen, et al., 2003	Kittinger, et al., 2010
Military operations	Loss or restriction of exercise areas. Disturbance of munitions disposal sites (risk of detonation and remobilization).	Avoid locating in or near military exercise areas. Negotiate use priorities at political level. Avoid known disposal sites. Carry out appropriate consultation and surveys during project planning.	Biodiversity Committee. OSPAR Commission, 2005; Brown & Stanley, 2005; Jago & Taylor, 2002; Offshore Windenergy Europe, 2008; Sørensen, et al., 2003	Bouchard, 2007; DONG Energy, et al., 2006; Swedish Energy Agency, 2009
Submarine cables, pipelines and transmission lines	Loss or restriction of areas available for routes. Obstruction of maintenance and repairs. Damage to existing installation.	Avoid pipeline routes. Provide space for maintenance and repair vessels. Avoid cable routes. Provide space for maintenance and repair vessels. Plan for crossings of new and existing cables.	Boyd & Banzhaf, 2007; Centaur Associates Inc., 1981; Downs, et al., 2000; Drew & Hopper, 2009; English, et al., 1993; Massachusetts Ocean Partnership, 2009; Michel, et al., 2007; Offshore Windenergy Europe, 2008; Sørensen, et al., 2003; The British Wind Energy Association	Bouchard, 2007; DONG Energy, et al., 2006; ELSAMPROJEKT A/S, 2000; Knaster, et al., 1998; Swedish Energy Agency, 2009; Warwick Energy, et al., 2005

			(BWEA), 2004; U.K. Department for Business Enterprise & Regulatory Reform, et al., 2008; U.S. Department of the Interior, 2009	
Disposal sites for dredged material	Loss of disposal sites. Obstruction of disposal activities.	Avoid known disposal sites. Carry out appropriate consultation and surveys during project planning.	Biodiversity Committee. OSPAR Commission, 2005 Centaur Associates Inc., 1981	OSPAR Commission, 2006
Navigation and shipping lanes, marine transportation	Loss, restriction, rerouting of recognized sea-lanes through restriction zones and Areas To Be Avoided. Vessel restrictions on innocent navigation, freedom of navigation and anchoring. Collisions between devices and powered and unpowered (drifting) vessels; vessel to vessel collisions.	Avoid established shipping lanes and anchoring locations. Risk assessment and mitigation during planning phase. Education of mariners (recreational and commercial) about potential navigation hazards and avoidance measures. Marking and placement of appropriate navigation devices. Consideration of exclusion zones and Area To Be Avoided Designation.	Ban, et al. In Press (2010); Brody, et al. 2004; Howard 2004; MARICO Marine and The British Wind Energy Association (BWEA) 2007; Masalu 2000; McGrath 2004; Offshore Windenergy Europe 2008; Sørensen, et al. 2003; U.K. Department of Trade and Industry, et al. 2005; U.K. Maritime and Coastguard Agency 2008; U.K. Maritime and Coastguard Agency 2008; U.S. Coast Guard 2009	Degnbol and Wilson 2008; Dempster and Sanchez-Jerez 2008; International Energy Agency 2005; Klapp 1980; Portland Harbour Authority 2009; Warwick Energy, et al. 2005
Areas of archaeological, historic or cultural interest	Loss of areas of archaeological or historic interest. Destruction of or damage to archaeological sites. Loss of access to customary food gathering areas. Loss of cultural identity Disturbance of cultural traditions.	Adjust planned locations of moorings, foundations and cables. Hydroacoustic/seismic surveys and evaluation of historical records in the planning phase. Community and ethnographic surveys in the planning phase Consultation with communities, indigenous peoples representatives and tribal authorities.	Berkenhagen, et al., 2010; Bess & Rallapudi, 2007; Biodiversity Committee. OSPAR Commission, 2005; Flannery & Cinnéide, 2008; Fletcher-Tomenius & Forrest, 2000; Kearney, et al., 2007; Masalu, 2000; McGrath, 2004; Sørensen, et al., 2003	ELSAMPROJEKT A/S, 2000; Warwick Energy, et al., 2005
Search and Rescue (SAR)	Obstacle to air navigation in	Consultation with SAR	Brown & Stanley, 2005;	

	particular for low flying aircraft (e.g. helicopters). Obstacle to SAR vessel navigation. Radar interference.	organizations. Marking of devices and where appropriate provide marking and engineering design elements to assist SAR.	Howard & Brown, 2004; Jago & Taylor, 2002; U.K. Maritime and Coastguard Agency, 2008a, 2008b	
Civil air traffic	Obstacle to air navigation in particular for low flying aircraft (e.g. helicopters).	As necessary avoid flight lanes, particularly near airports. Maintain appropriate marking and navigation signals suitable for aircraft navigation.	Brown & Stanley, 2005; Howard & Brown, 2004; Jago & Taylor, 2002; Offshore Windenergy Europe, 2008; U.S. Department of the Interior, 2009	Bouchard, 2007; International Energy Agency, 2005; Swedish Energy Agency, 2009; U.S. Department of the Interior. Minerals Management Service. Renewable Energy and Alternate Use Program, 2006
Sand, gravel and mineral extraction	Temporary loss or restriction of areas; disturbance of extraction.	Avoid licensed extraction areas.	Masalu, 2000; Massachusetts Ocean Partnership, 2009; McGrath, 2004; Offshore Windenergy Europe, 2008; U.S. Commission on Ocean Policy, 2004; U.S. Department of the Interior, 2009	
Offshore oil and gas activities	Temporary exclusion or restriction of exploitation or exploration activities.	Avoid licensed areas. Provide for space for exploitation or exploration activities.	Brody, et al., 2004; Centaur Associates Inc., 1981; Cicin-Sain & Tiddens, 1989; Cormick & Knaster, 1986; County of Santa Barbara. Planning & Development Department. Energy Division, 2008; Gonzalez & Interior, 2004; Impact Assessment Inc., et al., 2004; Inger, et al., 2009; The British Wind Energy Association (BWEA), 2004	Bouchard, 2007; County of Santa Barbara. Resource Management Department. Energy Division., 1987; Gramling, 1996; Grant, 1978; Klapp, 1980; Knaster, et al., 1998; U.K. Department of Energy and Climate Change, 2009
Recreational and Commercial Fisheries	Construction: Noise from construction may cause temporary changes in local fish abundance, distribution	Avoid or minimize overlap with valuable fishing grounds dependent on the use of bottom trawls or bottom contact gear such	Ban, et al., In Press (2010); Berkenhagen, et al., 2010; Bess & Rallapudi, 2007; Brody, et al., 2004;	Bruckmeier, 2005; County of Santa Barbara. Resource Management Department. Energy

	<p>behavior.  Operation: Loss of fishing grounds. Snagging of gear, Increased steaming time. Increased costs to fishermen. Loss of income.  EMF may cause localized changes in fish abundance, distribution &amp; behavior affecting local catch per unit effort.</p>	<p>as pots.  Consult with recreational and commercial organizations on location and siting of devices and associated intra array cables. Promote formation and ongoing consultation with port &amp; fishing industry liaison committees  Develop contingency plans for addressing potential loss of gear around devices and cables.  Consider industry assistance where loss of fishing opportunities are unavoidable.</p>	<p>Capitini, et al., 2004;  Centaur Associates Inc., 1981;  Cicin-Sain &amp; Tiddens, 1989;  Cormick &amp; Knaster, 1986;  Downs, et al., 2000;  Drew &amp; Hopper, 2009;  Ecotrust, 2009;  Flannery &amp; Cinnéide, 2008;  Halcrow Group Limited, 2006;  Hanna, 1999;  Impact Assessment Inc., et al., 2004;  Inger, et al., 2009;  Klein, et al., 2008;  Mackinson, et al., 2006;  Masalu, 2000;  McGrath, 2004;  Rayns, et al., 2006;  Scholz, et al., 2006;  Sheehy, 2009;  Sørensen, et al., 2003;  St. Martin &amp; Hall-Arber, 2008;  The British Wind Energy Association (BWEA), 2004, 2006;  Tomlinson, et al., 2007;  U.K. Department for Business Enterprise &amp; Regulatory Reform, 2008;  U.S. Department of the Interior, 2009</p>	<p>Division., 1987;  Degnbol &amp; Wilson, 2008;  Dempster &amp; Sanchez-Jerez, 2008;  DONG Energy, et al., 2006;  Grant, 1978;  Kittinger, et al., 2010;  Klapp, 1980;  Kona Blue Water Farms, 2007;  Odell, et al., 2005;  Symes, 2005;  Warwick Energy, et al., 2005</p>
Seascape	<p>Visual impact during day and at night.</p>	<p>Select location sufficient distances from shore.,  Avoid sensitive vistas.  Engineer devices to minimize visual intrusion during day and light pollution at night.</p>	<p>Flannery &amp; Cinnéide, 2008;  Ladenburg &amp; Dubgaard, 2009;  Massachusetts Technology Collaborative, 2002;  Tomson &amp; Royal Yachting Association, 2009;  Weiss, et al., 2007;  Ziza, 2008</p>	<p>DONG Energy, et al., 2006;  ELSAMPROJEKT A/S, 2000;  Hagerman &amp; Bedard, 2004;  Juda &amp; Hennessey, 2001;  Warwick Energy, et al., 2005</p>
Tourism & recreation activities (besides fishing)	<p>Restrictions to on-water recreation activities.  Changes in visitation rates and</p>	<p>Consult with local tourism board during planning phase.  Avoid or limit interaction with</p>	<p>AquaEnergy, 2006;  Brody, et al., 2004;  Flannery &amp; Cinnéide, 2008;</p>	<p>Dempster &amp; Sanchez-Jerez, 2008;  ELSAMPROJEKT A/S,</p>

	<p>participation rates. Changes to wave form impacting surfing and beach form.</p>	<p>areas of high recreation use. Create fund to mitigate, to the maximum extent feasible, impacts to coastal recreation, aesthetics, tourism, and/or sensitive environmental resources.</p>	<p>Ladenburg &amp; Dubgaard, 2009; Masalu, 2000; McGrath, 2004; Royal Yachting Association, 2005; Sørensen, et al., 2003; Tomson, et al., 2004; Tomson &amp; Royal Yachting Association, 2009; U.S. Coast Guard, 2009; U.S. Department of the Interior, 2009; U.S. Department of the Interior. Minerals Management Service. Renewable Energy and Alternate Use Program, 2006; West Coast Governors, 2009</p>	<p>2000; Kona Blue Water Farms, 2007; Portland Harbour Authority, 2009; Royal Yachting Association, 2006; U.S. Department of the Interior. Minerals Management Service. Renewable Energy and Alternate Use Program, 2006; Warwick Energy, et al., 2005</p>
<p>Scientific research</p>	<p>Restrictions for scientific research. Disruption to research transacts. Changes in marine community structure. Changes in local ocean currents. Changes in the abundance, distribution and behavior of marine life.</p>	<p>Consult with local research institutions during planning phase. Partner with local researchers on long-term monitoring and evaluation. Avoid disruption to long-term research projects.</p>	<p>Biodiversity Committee. OSPAR Commission, 2005</p>	