

The information provided below provide a summary of the impacts that will be likely as a consequence of the proposed activity.

Impact: Temporary Habitat Loss of Seabed

The proposed work activity will require the temporary deployment of four spud legs during retrieval and re-installation of the loading arm with total disturbance area on the seabed of 4.52 m² per four leg deployment (assuming a circular 1.2 m diameter spud leg) and a total potential seabed disturbance of 13.56 m² across the three deployments. The proposed spud deployment is located within the existing berthing area, a deep-water area which is used by LNG ships on a regular routine basis which will result in a highly disturbed environment due to propeller wash and mooring activities. Given the negligible disturbance area, temporary duration and highly modified environment in which the spud legs will be there will be not impact on seabed habitats from direct disturbance from spud leg deployment.

Impact: Increase in Suspended Sediments and Sediment Deposition Causing Impact on adjacent Maerl Bed Habitat

Maerl beds are considered sensitive to anthropogenic disturbance and have the potential to be impacted from activities that cause increases in suspended sediments and sediment deposition that may smother or cause impact on photosynthesis from reduction of light attenuation. Maerl beds have been found to exist approximately 200 m to the west and north of the barge location (Figure 1).

Firstly, the proposal should be considered in in terms of scale and extent and in the context of the geographical location and hydrodynamic regime at the proposed works location. The berth area in which the spud legs will be deployed is located a central tidal channel, of the Milford Haven Waterway which experience strong tidal currents (maximum neap current speed - 0.7 knts and maximum spring current speed - 1.5 knts), in an east to west direction¹. Therefore, the sediments within the berth area will likely be relatively coarse material (i.e. sands and gravels) as any fine sediments will be remobilised into the water column by the tidal currents. This is supported by mapping presented at Magic.defra.gov.uk which indicates the area around the South Hook jetty as being characterised by subtidal coarse sediments and work undertaken Carey *et al.* (2015²) which characterised the area as fine sands to mixed sediments and identified the biotopes A5.444: *Flustra* and *Hydrallmania* on tide swept sediment and A5.422: *Crepidula* in mixed sediment in the vicinity of the South Hook Jetty. The berth areas of the jetty also do not require maintenance dredging to be undertaken providing further justification that fine sediments are unlikely to accumulate in significant quantities in the area in which the spud legs will be deployed.

The deployment of each spud leg during loading arm retrieval and re installation will potentially displace/ disturb a maximum volume of 1.36 m³ per deployment (4.52 m² (Spud leg area) x 0.3 m (approximate penetration depth) of material. Even if sediments are disturbed, these will be disturbed locally, at the seabed and would be expected to fall out of suspension within close proximity (metres) of the location of spud leg placement. In the unlikely event that these sediments would be transported further afield the negligible volume of sediment disturbed (as outlined above) and the high dilution afforded within Milford Haven waterway would mean that suspended sediments would be below detectable levels in the immediate vicinity of the proposed works, with no adverse impacts on the Maerl Beds approximately 200 m to the west.

Given the negligible volume of sediments that will be disturbed, the immediate fall out of coarse sediments following suspension immediately following disturbance there will no impact on adjacent Maerl beds or any other benthic habitat within Milford Haven.

In conclusion, while we are aware of and accept that the Maerl Beds are very sensitive ecological features in the Milford Haven Waterway, the information provided above as well as the details provided in the application demonstrate that there will be no impact from the proposal on any benthic conservation features, including Maerl Beds of the Milford Haven waterway..

¹ Hyder Consulting (1999). Quantification of Inputs to Milford Haven, MHW Environmental Monitoring Steering Group.

² Carey, D.A., Hayn, M., German, J.D., Little, D.I. and Bullimore, B (2015) Marine habitat mapping of the Milford Haven Waterway, Wales, UK: Comparison of facies mapping and EUNIS classification for monitoring sediment habitats in an industrialized estuary. *Journal of Sea Research* 100 (2015) 99-119.

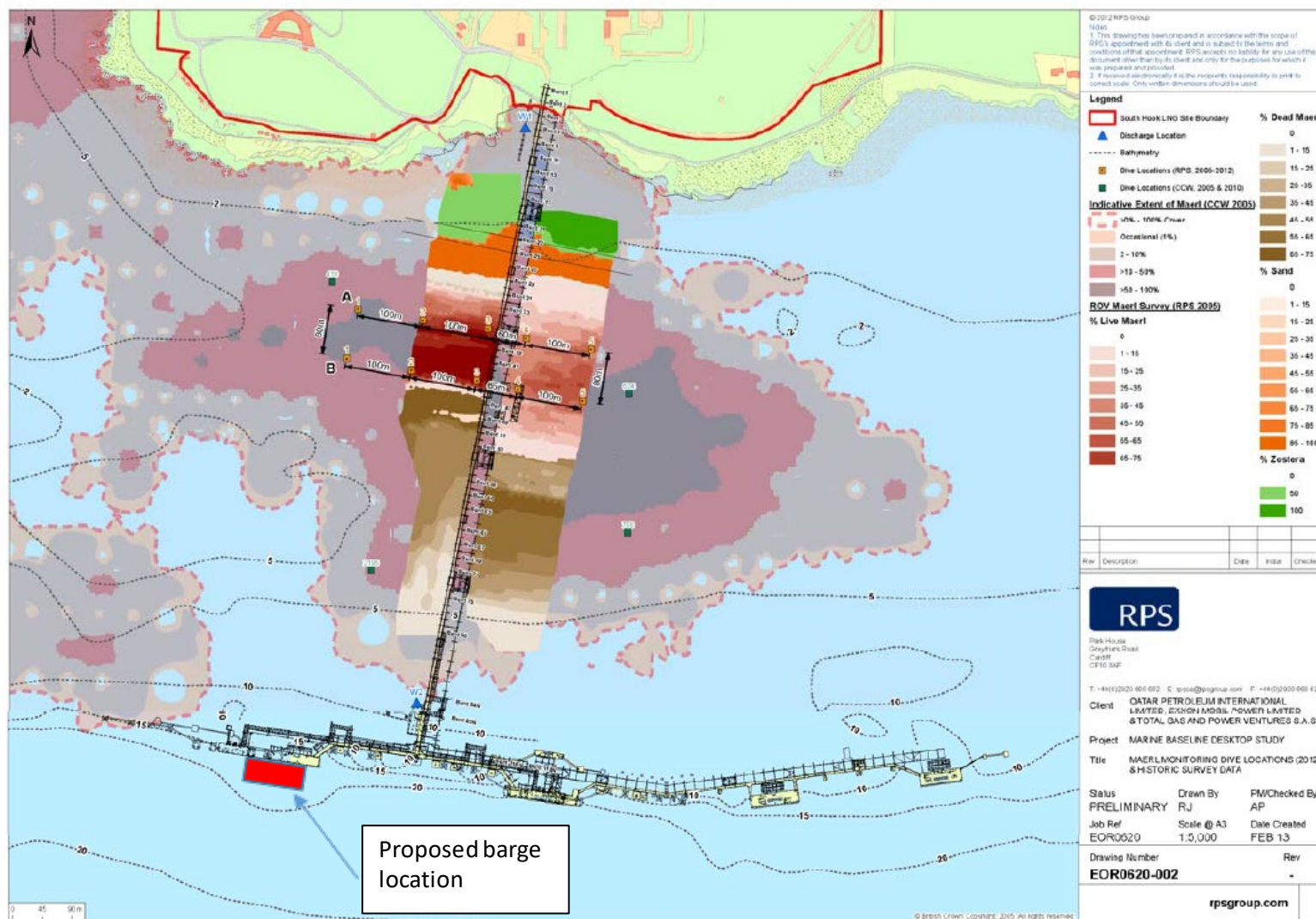


Figure 1: Location of proposed pontoon barge position and benthic habitat in the vicinity to the jetty. Reference: 'Post Operational Maerl Monitoring Survey Report 2012', Project Ref: EOR0620 Report No: EOR0620-R-02-02, RPS May 2013), which was submitted to EAW (NRW predecessor).