

# Shannon Technology and Energy Park (STEP) Power Plant

## Appendix A7A.8: Intertidal Survey Report (2024)

Shannon LNG Limited

A thick, dark green curved line starts from the bottom left, curves upwards and to the right, and then curves downwards and to the right, ending at the bottom right edge of the page.

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**Shannon Technology and Energy Park (STEP)  
Intertidal Survey  
Ardmore Point, Co. Kerry  
March 2024**

Produced by

**AQUAFACT International Services Ltd**

On behalf of

**Shannon LNG Ltd**



**AQUAFACT**  
APEM Group

### Report Approval Sheet

Client	Shannon LNG Ltd
Report Title	Shannon Technology and Energy Park (STEP) Intertidal Survey Ardmore Point March 2024
Job Number	JN15156
Report Status	Final
Issue Date	4 <sup>th</sup> April 2024

Rev	Status	Issue Date	Document File Name	Author (s)	Approved by:
1	Draft	4 <sup>th</sup> April 2024	Intertidal Survey Report	Niamh Lynch, Dr Ronan Browne	Dr Eddie McCormack
2	Final	9 <sup>th</sup> April 2024	Intertidal Survey Report	Niamh Lynch, Dr Ronan Browne	Dr Shane O'Boyle

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## 1. Introduction

AQUAFAC were commissioned by Shannon LNG, on behalf of Shannon Technology and Energy Park, to conduct an intertidal survey in the vicinity of a proposed development site at Ardmore Point and Knockinglas Point at the Shannon LNG site in Ballylongford situated on the Shannon Estuary (see **Error! Reference source not found.** below).

AQUAFAC carried out two intertidal transects on the 29 March 2024. The weather was dry and cloudy, with sunshine later in the day. A force of 1-2 westerly winds blew. Low water was at 13:26 pm (1m) at Tarbert Island (Shannon Foynes Tide Tables 2024).

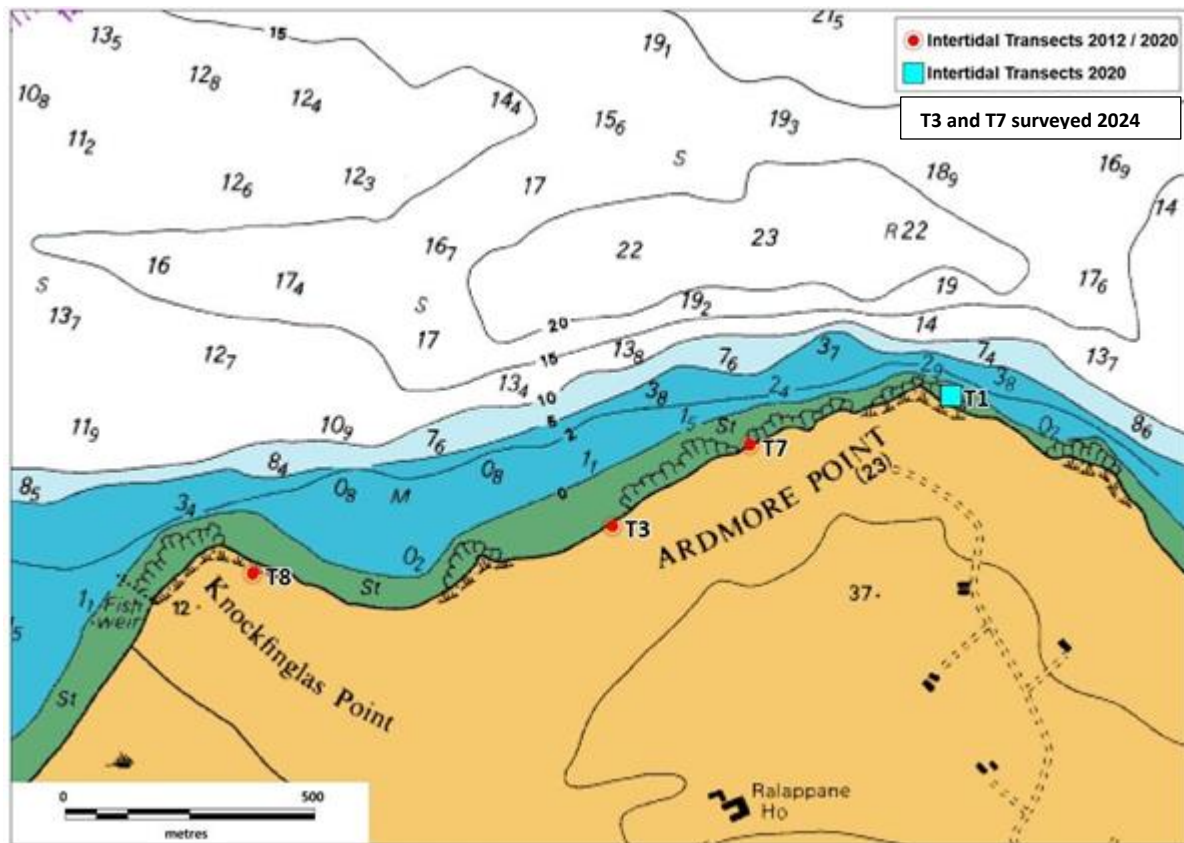


Figure 1.1: Location of the intertidal transects surveyed 2012, 2020 and on the 29<sup>th</sup> of March 2024

## 2. Materials & Methods

### 2.1. *Sampling Procedure*

In the present survey AQUAFAC focused their efforts on Transects T3 and T7 in the intertidal zone. These transects are in close proximity to the proposed outfall pipe from the Proposed Development.

The survey builds upon previous surveys conducted on the 8th and 9th of April 2020, where Transects T1, T7, T3 and T8 were examined. Transects T3, T7, and T8 were also surveyed back in 2012 and in 2005/2006 (**Error! Reference source not found.**).

### 2.2. *Intertidal survey methodology*

The 2024 survey commenced with overcast skies but transitioned into a bright and sunny afternoon with scattered clouds, creating a favourable environment for the survey activities. The wind was recorded as force 1 to 2 from the west. The tidal conditions were higher than in previous years, with low tide reaching 1m at 13:26.

As in previous surveys, a 0.25m<sup>2</sup> quadrat was examined at three distinct locations along each transect T3 and T7: Upper Shore, Mid Shore, and Lower Shore. Throughout the transects, we documented key features and took additional photographs. Efforts were made to uncover potential faunal species by overturning rocks and stones and partially removing algal canopy cover at each station, as needed.

As per previous work the intertidal zone's physical characteristics were described and photographed. **Error! Reference source not found.** summarising the general physical features considered across the zone and the specific physical features noted at each station.

Photographic evidence was collected to document the transects positions and any permanent, noticeable landmarks to facilitate future returns to these sites. The three stations on each transect line (T3 and T7) were marked using a global positioning system (GPS). The locations of each quadrat and starting point for each transect is shown in Table 2.2.



**Table 2.1: Physical features noted at each sampling station.**

Feature Type	Physical Feature	Description
<b>General Physical Features</b>	Surface Relief	Even-Uneven
	Firmness	Firm-Soft
	Stability	Stable-Mobile
	Sorting	Well-Poor
	Redox Layer	1 = Not visible, 2 = >20cm, 3 = 5-20cm, 4 = 1-5cm, 5 = <1cm
<b>Station-Specific Physical Features</b>	Mounds/Casts	Present
	Burrows/Holes	Present
	Tubes	Present
	Algal Mat	Present
	Waves/Dunes (>10cm high)	Present
	Ripples (<10cm high)	Present

Identification of species was conducted on-site and all species encountered were recorded and quantified based on the MNCR (Marine Nature Conservation Review) SACFOR abundance scale (adopted from 1990) that provides a unified system for recording the abundance of marine benthic flora and fauna in biological surveys ([sacfor.pdf \(jncc.gov.uk\)](#)).

This structured approach allowed for a detailed documentation of the intertidal zone, enhancing the accuracy and depth of the ecological assessment.

**Table 2.2: Coordinates of Ardmore stations (transect sections) for transects surveys.**

Station	Latitude	Longitude
T3 Starting Point	52.58227	-9.43939
T3 Upper	52.582438	-9.439435
T3 Mid	52.582543	-9.439599
T3 Lower	52.582642	-9.439655
T7 Starting Point	52.583750	-9.435360
T7 Upper	52.58381	-9.435387
T7 Mid	52.583892	-9.435496
T7 Lower	52.583979	-9.435557

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### 3. Intertidal Ecology Results

#### 3.1. Intertidal Transect Survey

##### 3.1.1. Ardmore Transect T3

This transect T3 is located approximately 650 meters southwest of Ardmore Point and approximately 800 meters east of Knockfinglas Point (Starting Point: 52.58227°N, 9.43939°W). The spatial arrangement, including the start and end points as well as the quadrat locations, is depicted in **Error! Reference source not found.** (Start and End Points and Quadrat Locations along Transect 3). From upper to lower shore, the total length of Transect 3 spanned 37.9m meters. Visual representations of this transect, extending from the upper to the lower shore and vice versa, are presented in **Error! Reference source not found.**

The transect is flanked by a mixed soil cliff, approximately three to four meters in height, which is in turn backed by improved agricultural land. The strandline, detailed in **Error! Reference source not found.**, features a gravel track about 2-3 meters wide, adorned with outcropping boulders. These boulders, hosting some washed-up *Ascophyllum nodosum* and *Fucus vesiculosus*, are also covered with lichens, including *Verrucaria* spp., *Caloplaca thallicola*, *Tephromela atra*, and *Ramalina cuspidata*.

In the supralittoral zone, the identified biotope aligns with the 'LR.FLR.Lic.YG Yellow and grey lichens on supralittoral rock' classification, as per the Marine Habitat Classification for Britain and Ireland (Connor *et al.*, 2004). The terrain transitions from a mix of gravel and boulders to a predominantly boulder field in the mid to lower shore regions. Using Starting Point: 52.58227°N, 9.43939°W from (April 2020) and Finishing point 52.582642 -9.439655 (March 2024) the total length of the transect was 45.12 meters.



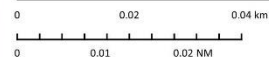
**Legend**

- Quadrats position
- Transect 3

**Notes**

Basemap: GoogleSatellite Map

Shannon Technology and Energy Park (STEP) Intertidal Survey Ardmore Point, Co. Kerry



Scale: 1:942 @ A4 Date: 04/04/2024

Coordinate System: TM65 / Irish National Grid

12 Kilkerrin Park,  
Liosbaun Industrial Estate,  
Tuam Road,  
Galway,  
Ireland H91 FW7V  
353-91-756812



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**Figure 3.1: Ardmore Transect T3. Start and End points and quadrat locations.**



**Figure 3.2: Ardmore Transect T3. View from upper and lower shores.**



**Figure 3.3: Ardmore Strandline above T3.**

#### 3.1.1.1. T3 – Upper Shore

The upper shore consisted of a gravel-bolder mix. The *Pelvetia canaliculata* algal band extended from the high tide mark to approximately 3m to 7m down the transect; the *Fucus spiralis* algal band from 5m to 10m; the *Ascophyllum nodosum* algal band from 12 to 30m. The *Fucus vesiculosus* algal band from 15m to 37.9m of the observable shore.

The upper shore quadrat (**Error! Reference source not found.**3.4) contained 6% cover *Pelvetia canaliculata*, 2% *Fucus vesiculosus*, *Carcinus maenas* (1 individual), many Talitrid amphipods (>100 individuals), and *Littorina saxatilis* (2 individuals).

The upper shore at this location displays elements of both the 'LS.LCS.Sh.BarSh Barren littoral shingle' biotope (EUNIS code A2.111) and the 'LR.LLR.FVS.AscVS *Ascophyllum nodosum* and *Fucus vesiculosus* on variable salinity mid eulittoral rock' (EUNIS code A1.324).



Figure 3.4: Ardmore Transect 3. Upper Shore Quadrat.

3.1.1.2. T3 – Mid Shore

Within the mid shore quadrat, *Fucus vesiculosus* accounted for approximately 10% algal cover. *Littorina saxatilis* (10 individuals/0.025m<sup>2</sup>), common periwinkle, *Littorina littorea*, (2 individuals/0.025m<sup>2</sup>), and common limpet, *Patella vulgata*, (1 individual/0.025m<sup>2</sup>) were recorded. Figure 3.5 shows the mid shore quadrat. This biotope corresponds with JNCC biotope 'LS.LCS.Sh.BarSh Barren littoral shingle' (EUNIS A2.111)



Figure 3.5: Ardmore Transect 3. Mid Shore Quadrat.

#### 3.1.1.3. T3- Lower Shore

The lower shore examined during this 1m low tide was characterized by rock and shale cobbles. Algal bands within the lower shore included serrated wrack, *Fucus serratus*, (other species were subtidal). This was not accessible for a complete assessment because of the tide level.

The quadrat contained *Fucus serratus* (approximately 8% coverage), 7 *Patella vulgata*, encrusting spirorbids and encrusting red algae (30% coverage).

**Error! Reference source not found.** shows the quadrat surveyed on the lower shore. This biotope corresponds with the JNCC biotope 'LR.MLR.BF.Fser.R *Fucus serratus* and red seaweeds on moderately exposed lower eu littoral rock' (EUNIS A1.2141).



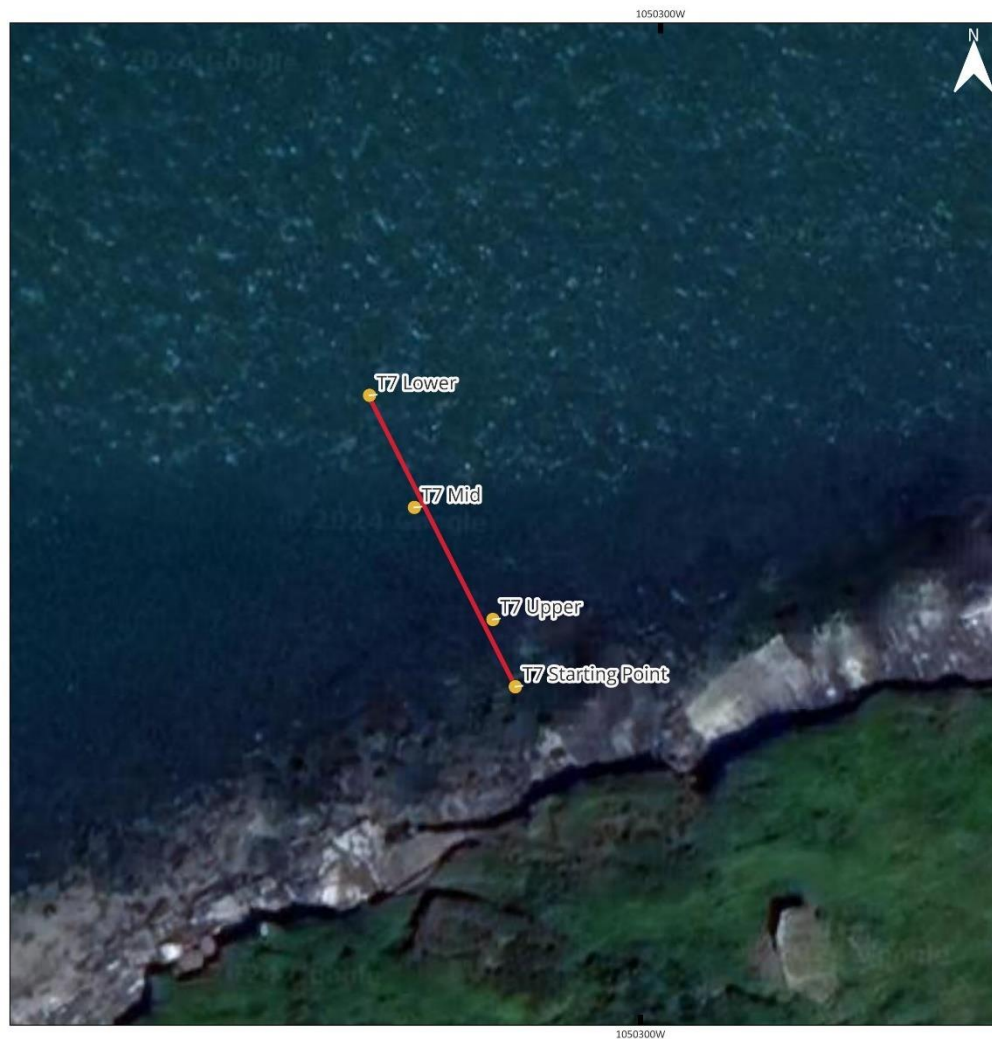
**Figure 3.6: Ardmore Transect 3. Lower Shore Quadrat**

### **3.1.2. Ardmore Treansect 7 (T7)**

Transect T7 is positioned approximately 335 meters southwest of Ardmore Point (Starting Point: 52.58375°N, 9.43536°W). The layout, including the start and end points along with the quadrat locations, is illustrated in Figure 3.7.

The perspectives along Transect 7, from both the upper to lower shore and vice versa, are captured in Figure 3.8. This transect is situated behind improved agricultural land, leading to a notable feature at its commencement: a 3-meter-high vertical cliff adorned with grass, ivy, and gorse, descending directly onto bedrock as depicted in Figure 3.9.





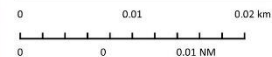
**Legend**

- Quadrats position
- Transect 7

**Notes**

Basemap: GoogleSatellite Map

Shannon Technology and Energy Park (STEP) Intertidal Survey Ardmore Point, Co. Kerry



Scale: 1:471 @ A4 Date: 04/04/2024

Coordinate System: TM65 / Irish National Grid

12 Kilkerrin Park,  
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353-91-756812



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**Figure 3.7: Ardmore Transect 7. Start and End points and quadrat locations.**

The extensive flat bedrock surface is colonized by lichens, including *Caloplaca* spp. *Tephromela atra*, and *Ramalina* spp. The identified biotope at the supralittoral level matches

the JNCC's classification of 'LR.FLR.Lic.YG Yellow and grey lichens on supralittoral rock' (EUNIS code B3.111). Progressing towards the mid shore, the bedrock transitions into a mix of stones, cobbles, and pebbles, leading to the most seaward reaches of the lower shore with a 1m low tide.



**Figure 3.8: Ardmore Transect 7. View from lower shore and upper shore.**



**Figure 3.9: Ardmore Transect 7. Upper shore.**

### 3.1.2.1. T7 – Upper Shore

The upper shore consisted of broken bedrock with *Pelvetia canaliculata* present in a band extending from 3m to 5m covering between 5% of the bedrock substrate in the upper eulittoral. The *Fucus spiralis* algal band extended from 5m to 7m. Figure 3.10 shows the quadrat from the upper shore. Flora and fauna from the quadrat included *Pelvetia canaliculata* 4% cover, *Fucus spiralis* 6%, *Enteromorpha* spp. 36%. There was 1 *Patella vulgata*, 1 *Littorina saxatilis*, 25 *Littorina littorea*. The biotopes found in the upper eulittoral correspond to the JNCC biotopes 'LR.LLR.FVS.PeIVS *Pelvetia canaliculata* on sheltered, variable salinity littoral fringe rock' (EUNIS code A1.311) above 'LR.LLR.F.Fspi *Fucus spiralis* on moderately exposed to very sheltered upper eulittoral rock' (EUNIS code A1.3122) which was above 'LR.LLR.FVS.AscVS *Ascophyllum nodosum* and *Fucus vesiculosus* on variable salinity mid eulittoral rock' (EUNIS code A1.3141).



Figure 3.10: Ardmore Transect 7. Upper Shore Quadrat

### 3.1.2.2. T7 – Mid Shore

The flat broken bedrock with small boulders continued down into the mid shore region. Patches of *Fucus vesiculosus* were present (c. 10% cover). Figure 3.11 shows the quadrat from the mid shore.

Flora and fauna within the quadrat included *Fucus vesiculosus* (8% coverage), *Littorina littorea* (1 individual), *Littorina saxatilis* (2), *Littorina obtusata* (1), *Nucella lapillus* (1), and *Semibalanus balanoides*.

This biotope corresponds to the JNCC biotope 'LR.LLR.FVS.FvesVS *Fucus vesiculosus* on variable salinity mid eulittoral boulders and stable mixed substrata' (EUNIS code A1.323).



Figure 3.11: Transect 7. Mid Shore Quadrat

### 3.1.2.3. T7 – Lower Shore

The substrate in the lower shore was composed of small boulders on bedrock with silt deposits. The *Fucus serratus* algal band began at 31.2m and extended into the lower shore.

The flora and fauna recorded within the quadrat included *Fucus serratus* 7% cover, encrusting red algae 24%, *Patella vulgate*, 7 polychaetes, *Spirorbis* spp. (5%). These biotopes and those below the tide mark correspond to the JNCC biotope 'LR.MLR.BF.Fser.R *Fucus serratus* and under-boulder fauna on exposed to moderately exposed lower eulittoral boulders' and 'IR.MIR.KR.Ldig.Ldig *Laminaria digitata* on moderately exposed sublittoral fringe bedrock' (EUNIS code A3.2111). Figure 3.12 shows the quadrat surveyed in the lower shore.

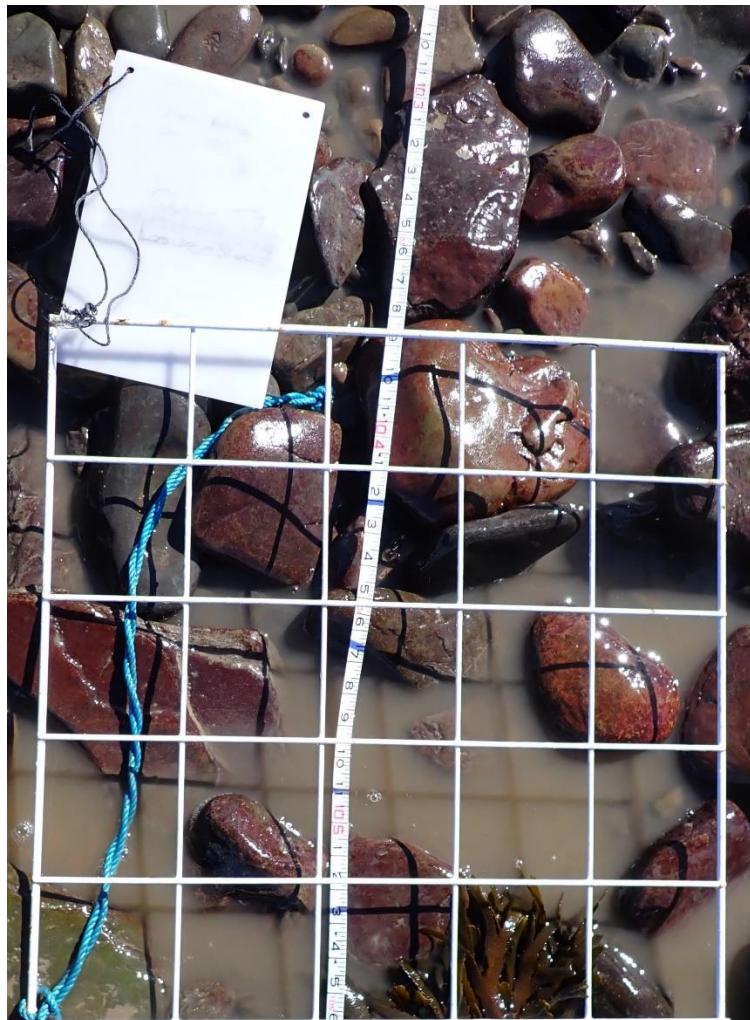


Figure 3.12: Ardmore Transect 7. Lower Shore Quadrat.

## 4. Discussion

The intertidal habitats encountered are typical of cobbly rocky shores in Ireland being dominated by *Pelvetia canaliculata*, *Fucus* sp. and *Ascophyllum nodosum*. No rare, protected or unusual species were observed, and no changes were observed compared to previous surveys undertaken in previous years.

A summary of Biotopes encountered along each transect is shown below.

Transect 3 (T3)	JNCC Biotope code	Description
supralittoral zone	LR.FLR.Lic.YG	Yellow and grey lichens on supralittoral rock
upper shore	LS.LCS.Sh.BarSh LR.LLR.FVS.AscVS	Barren littoral shingle biotope (EUNIS code A2.111) and the <i>Ascophyllum nodosum</i> and <i>Fucus vesiculosus</i> on variable salinity mid eulittoral rock' (EUNIS code A1.324).
mid shore	LS.LCS.Sh.BarSh	Barren littoral shingle (EUNIS A2.111)
lower shore (but could not fully assess)	LR.MLR.BF.Fser.R	<i>Fucus serratus</i> and under-boulder fauna on exposed to moderately exposed lower eulittoral boulders.

Transect 7 (T7)	JNCC Biotope code	Description
supralittoral zone	LR.FLR.Lic.YG	Yellow and grey lichens on supralittoral rock
upper shore	LR.LLR.FVS.PeIVS LR.LLR.F.Fspi	<i>Pelvetia canaliculata</i> on sheltered, variable salinity littoral fringe rock' (EUNIS code A1.311) above <i>Fucus spiralis</i> on moderately exposed to very sheltered upper eulittoral rock' (EUNIS code A1.3122)
mid shore	LR.LLR.FVS.FvesVS	<i>Fucus vesiculosus</i> on variable salinity mid eulittoral boulders and stable mixed substrata' (EUNIS code A1.323).
lower shore (but could not fully assess)	LR.MLR.BF.Fser.R	<i>Fucus serratus</i> and under-boulder fauna on exposed to moderately exposed lower eulittoral boulders.

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## 5. References

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