

Annex 2 – August 4th 2026 TSB Report no. 1

Cockle Surveys and inspections – Morecambe Bay

Aldingham and Newbiggin Cockle Survey 29-06-2026

Officers present: AP, LL, ID, MT
Tides: 29-06-2026 LW 18:14 2.4m (Liverpool Tides)

Survey method - Jumbo and 0.5m² quadrat

53 stations were sampled from a 500m grid. In the July 2025 surveys the survey grid was changed to include additional points closest to the shore at Aldingham and to remove some points to the east of the Aldingham bed that are no longer accessible due to the position of the river channel. Additional sample stations were also added to the west of the bed to ensure the full extent of the cockle bed was captured.

There was a wide range of cockle sizes across the bed from <5mm to >35mm. The density of size cockle is relatively low across the bed. There is evidence of a 2026 settlement with spat seen in some areas across the bed.

Means

Means were calculated from all stations with zero counts removed. Less than 5mm cockle was not used in the undersize figures due to the high variable survivability of cockle at this small size but has been included as a separate figure.

Mean number of size cockle	12 per m ²	(min 0, max 152)
Mean number of undersize cockle	32 per m ²	(min 0, max 162)
Mean number of 0-5mm cockle	0 per m ²	(min 0, max 0)
Mean weight of size cockle kg/m ²	0.113 kg/m ²	(min 0, max 1.773)
Mean weight of undersize cockle kg/m ²	0.084 kg/m ²	(min 0, max 0.361)

Maps

Maps were created showing the overall survey area, density of size cockle, density of undersize cockle (excluding cockles in the 0-5mm size range), the frequency of size classes (size of pie chart indicating the total density of cockles present), and the weight of undersize and size cockle.

Biomass

	Area of cockle present (ha)	Size Cockle (tonnes) ¹	Undersize Cockle (tonnes) ²
Aldingham and Newbiggin	1050	1189	883

5-15 Class (tonnes)	15-20 Class (tonnes)	20-25 Class (tonnes)	25-35 Class (tonnes)	>35 Class (tonnes)
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27	339	497	1122	87
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¹In regards to biomass size cockle defined as cockle which will not pass through a square gauge 20 x 20mm in size

²The biomass of undersize cockle does not include any estimates of cockle less than 5mm due to the high variability of survival of this size class.

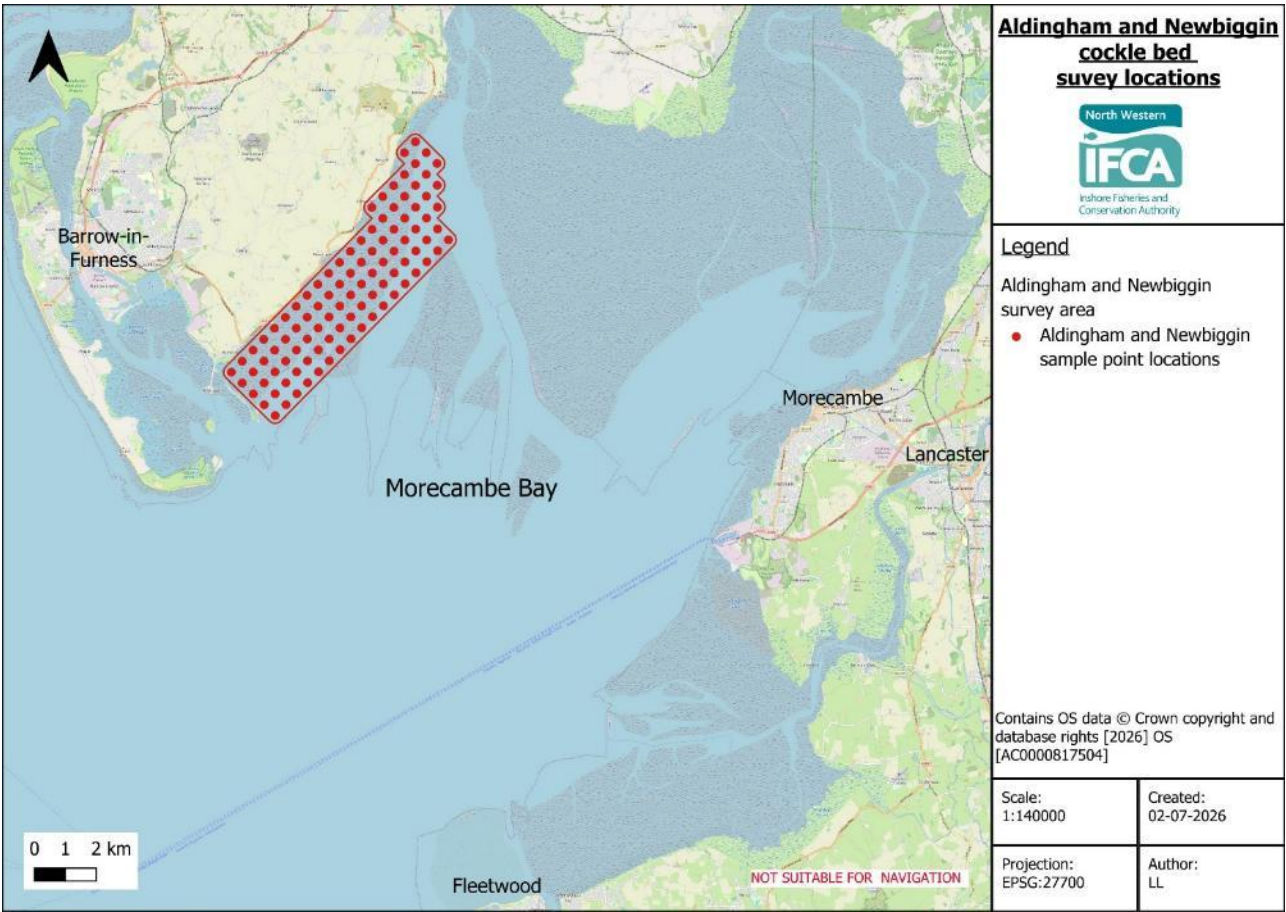


Figure 1. Illustration of position of Aldingham and Newbiggin survey area.

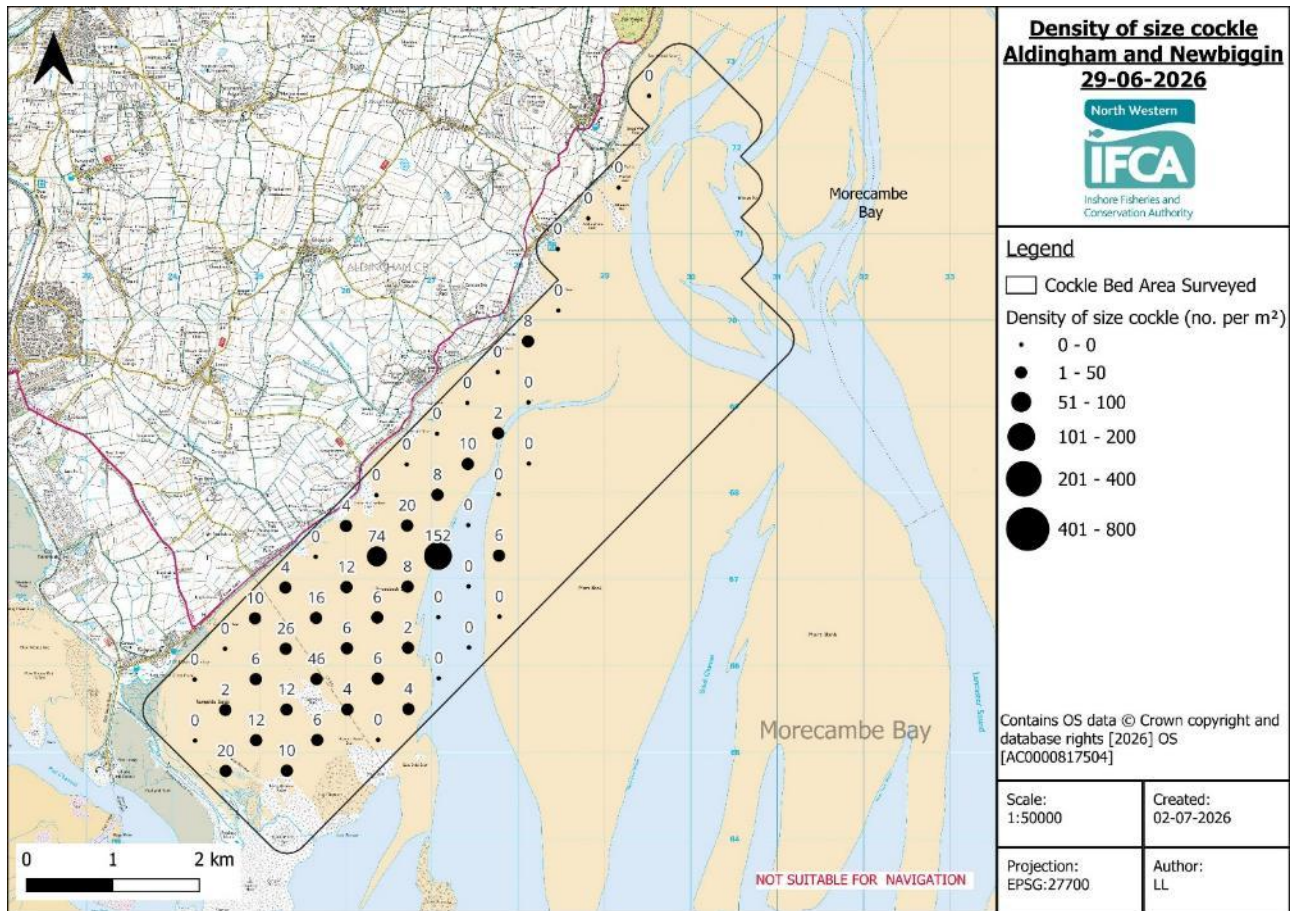


Figure 2. Density of size cockle per m² at Aldingham and Newbiggin June 2026.

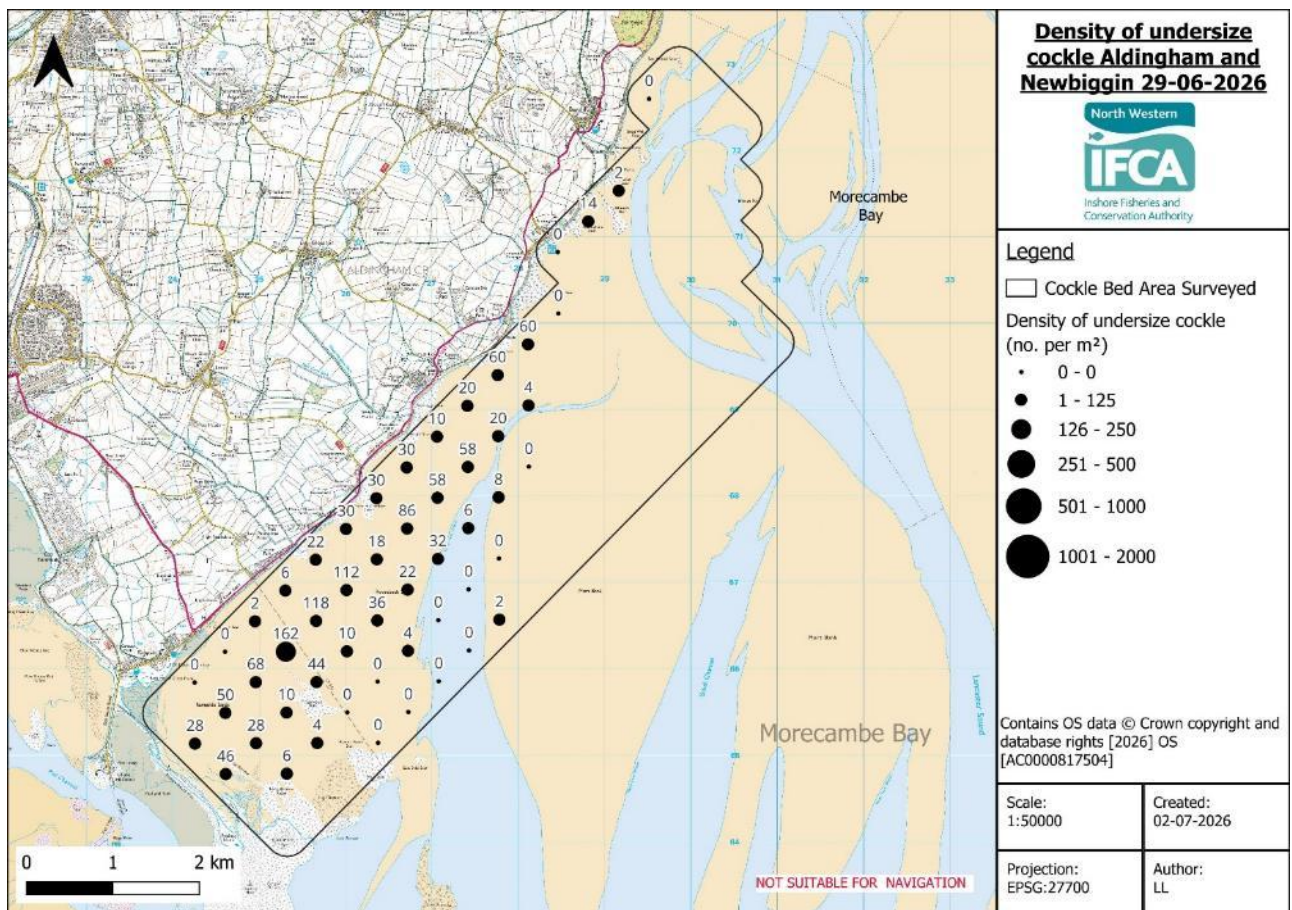


Figure 3. Density of undersize cockle per m² at Aldingham and Newbiggin June 2026.

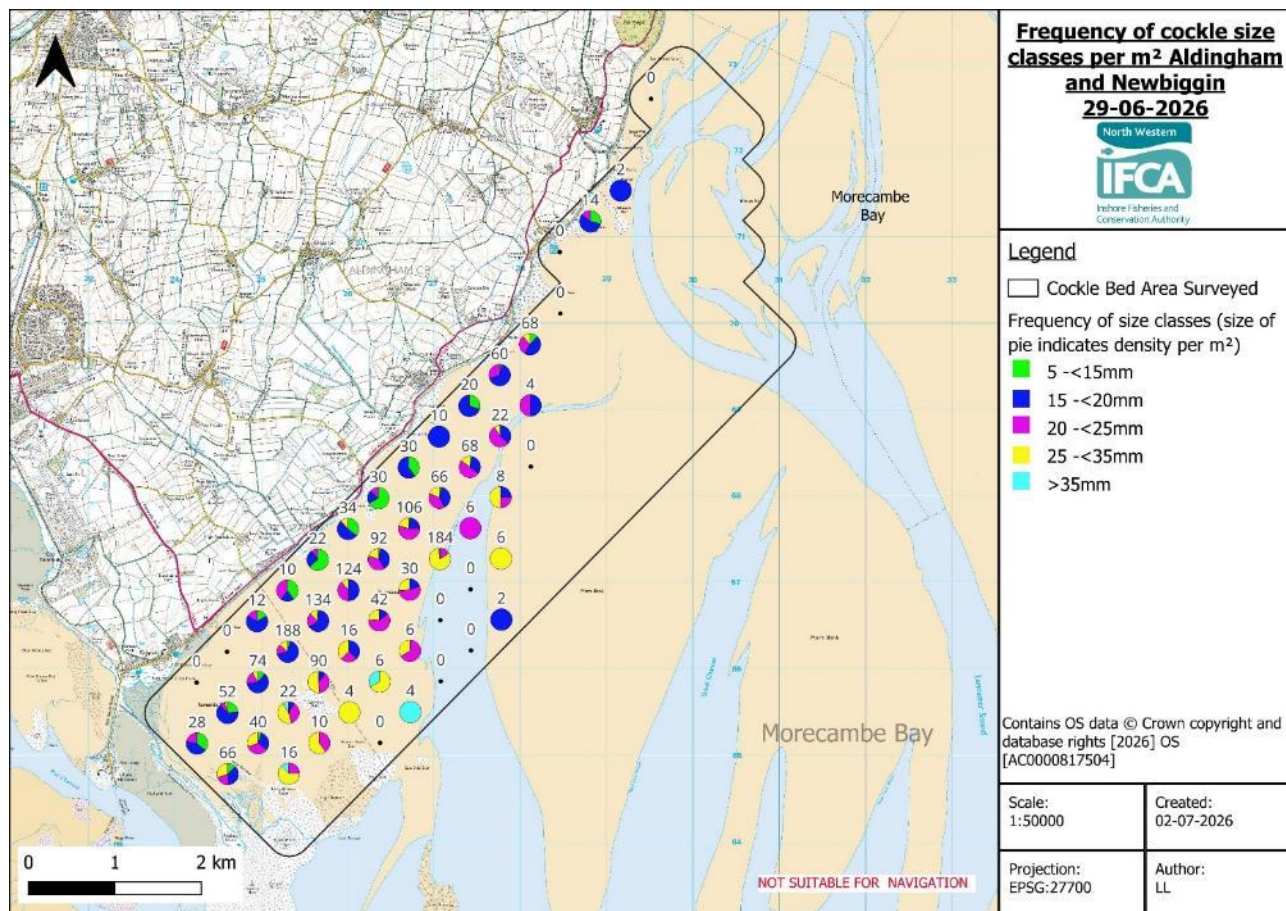


Figure 4. Frequency of size classes of cockle per m² at Aldingham and Newbiggin June 2026.

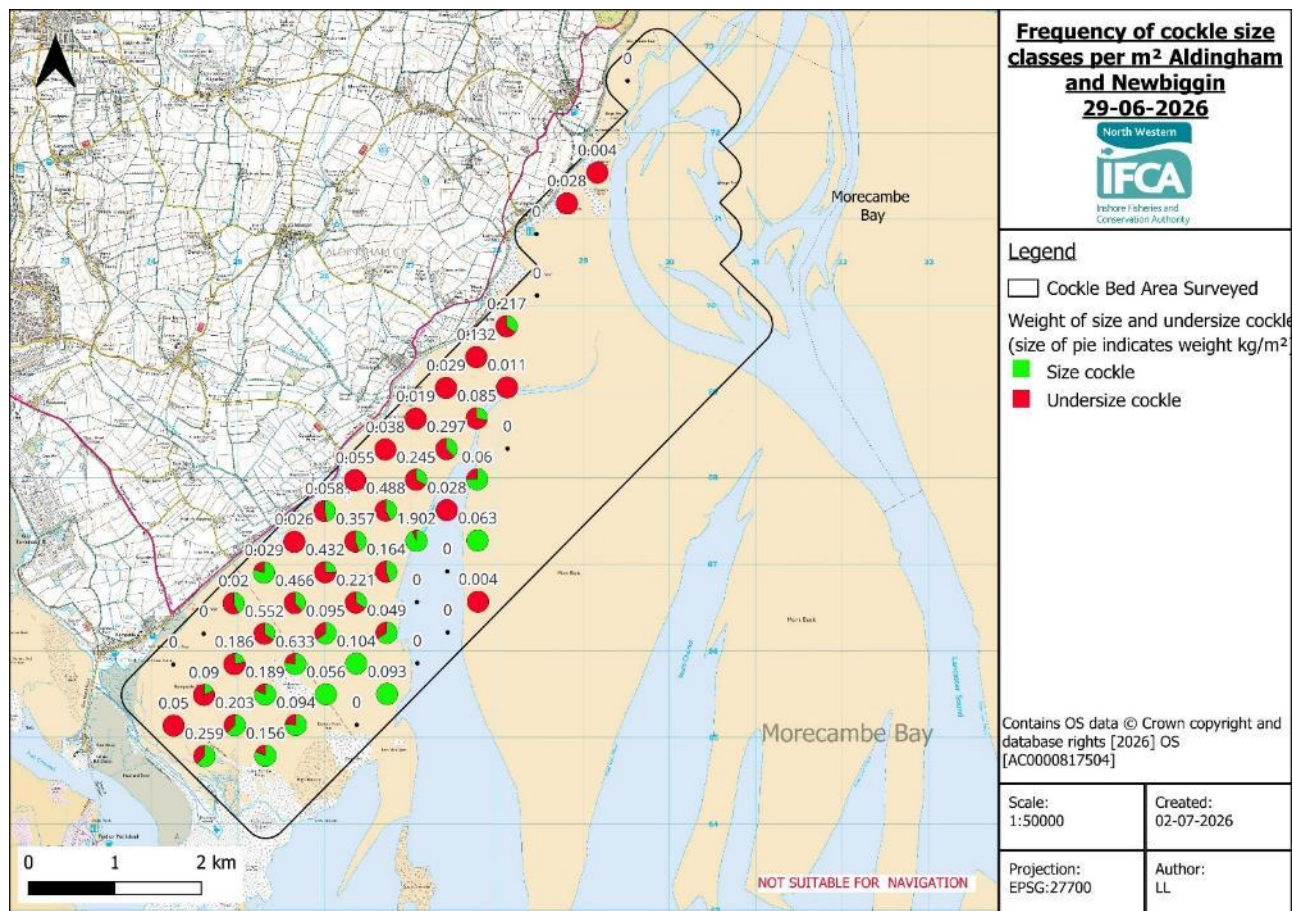


Figure 5. Weight of size and undersize cockle kg/m² at Aldingham and Newbiggin June 2026.

Leven Cockle Survey 09-07-26

Officers present: ID, CT, LL, JH

Tides: LW 12:58 2.6m (Liverpool Tides)

Survey method - Jumbo and 0.5m² quadrat

58 stations were sampled from a 500m grid. There was an area to the Southwest of the survey grid that could not be surveyed due to a deep channel. There was a range of cockle sizes across the bed from < 5mm to 25 - 35mm. Size cockle is relatively low in density across the bed. There is an increase in the 20-25mm and 25-35mm size classes of cockle. There is also an increase in the biomass of undersize cockle. There was a low number of spat found at 4 survey locations.

Means

Means were calculated from all stations with zero counts removed. Less than 5mm cockle was not used in the undersize figures due to the high variable survivability of cockle at this small size.

Mean number of size cockle	5 per m ²	(min 0, max 24)
Mean number of undersize cockle	21 per m ²	(min 0, max 112)
Mean number of 0-5mm cockle	5 per m ²	(min 0, max 100)

Mean weight of size cockle kg/m ²	0.048 kg/m ²	(min 0, max 0.254)
Mean weight of undersize cockle kg/m ²	0.069 kg/m ²	(min 0, max 0.477)

Maps

Maps were created showing the overall survey area, density of size cockle, density of undersize cockle (excluding cockles in the 0-5mm size range), the frequency of size classes, the size of the pie chart indicates the total density of cockles present, and the weight of undersize and size cockle.

Biomass

	Area of cockle present (ha)	Size Cockle (tonnes) ¹	Undersize Cockle (tonnes) ²
Leven	1000	482	692

5-15 Class (tonnes)	15-20 Class (tonnes)	20-25 Class (tonnes)	25-35 Class (tonnes)	>35 Class (tonnes)
14	103	466	533	59

¹In regards to biomass size cockle defined as cockle which will not pass through a square gauge 20 x 20mm in size.

²The biomass of undersize cockle does not include any estimates of cockle less than 5mm due to the high variability of survival of this size class.

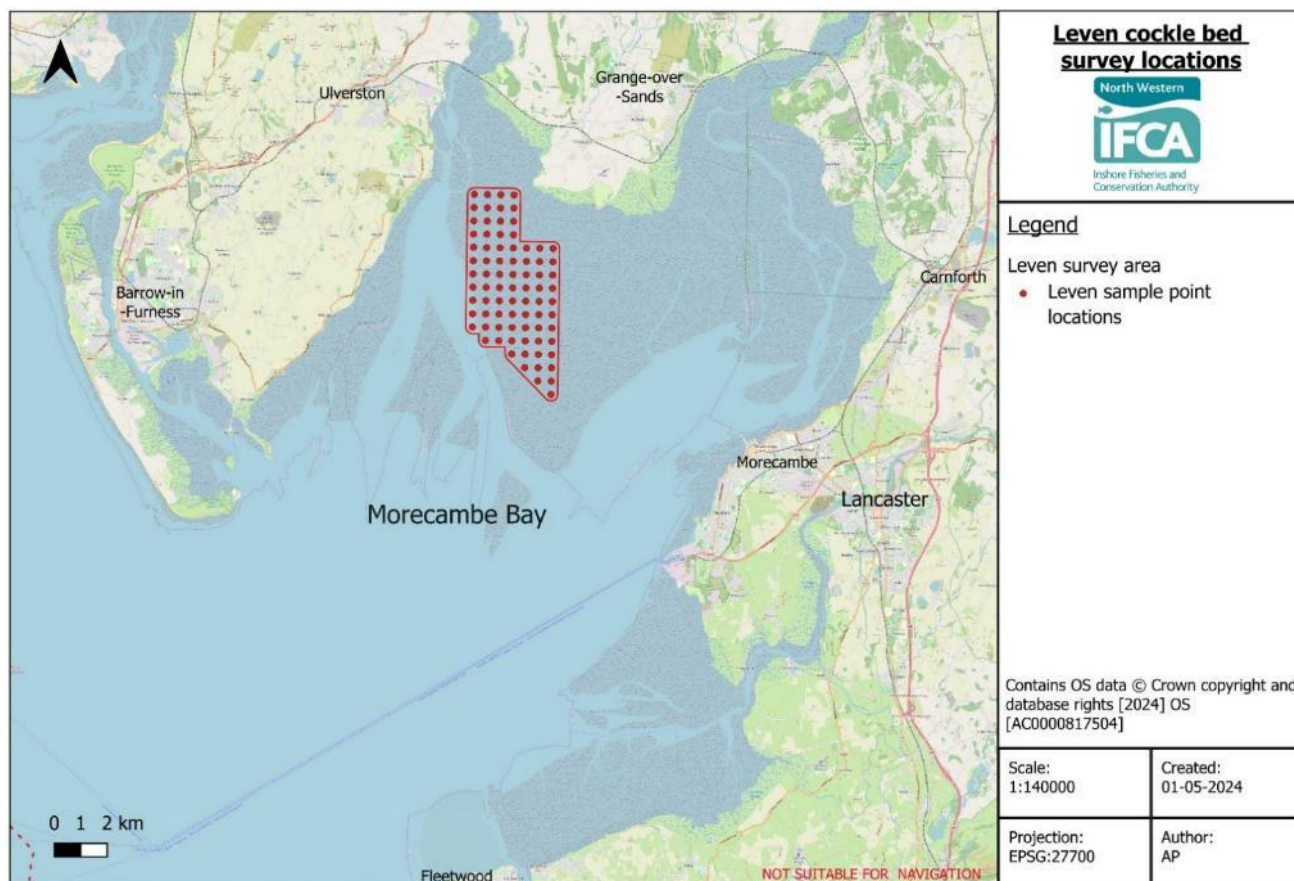


Figure 1. Illustration of position of Leven Survey Area

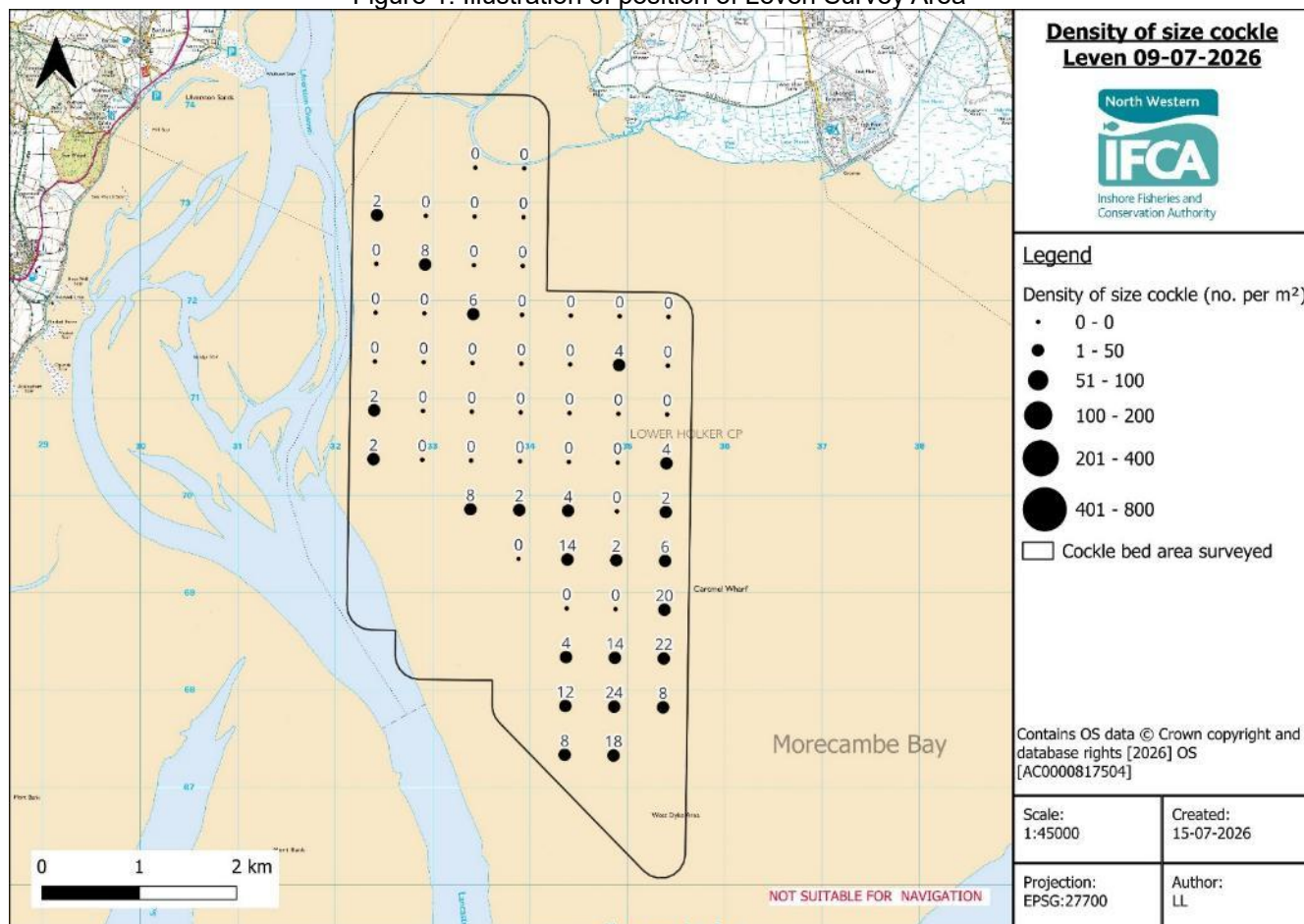


Figure 2. Density of size cockle per m² Leven July 2026

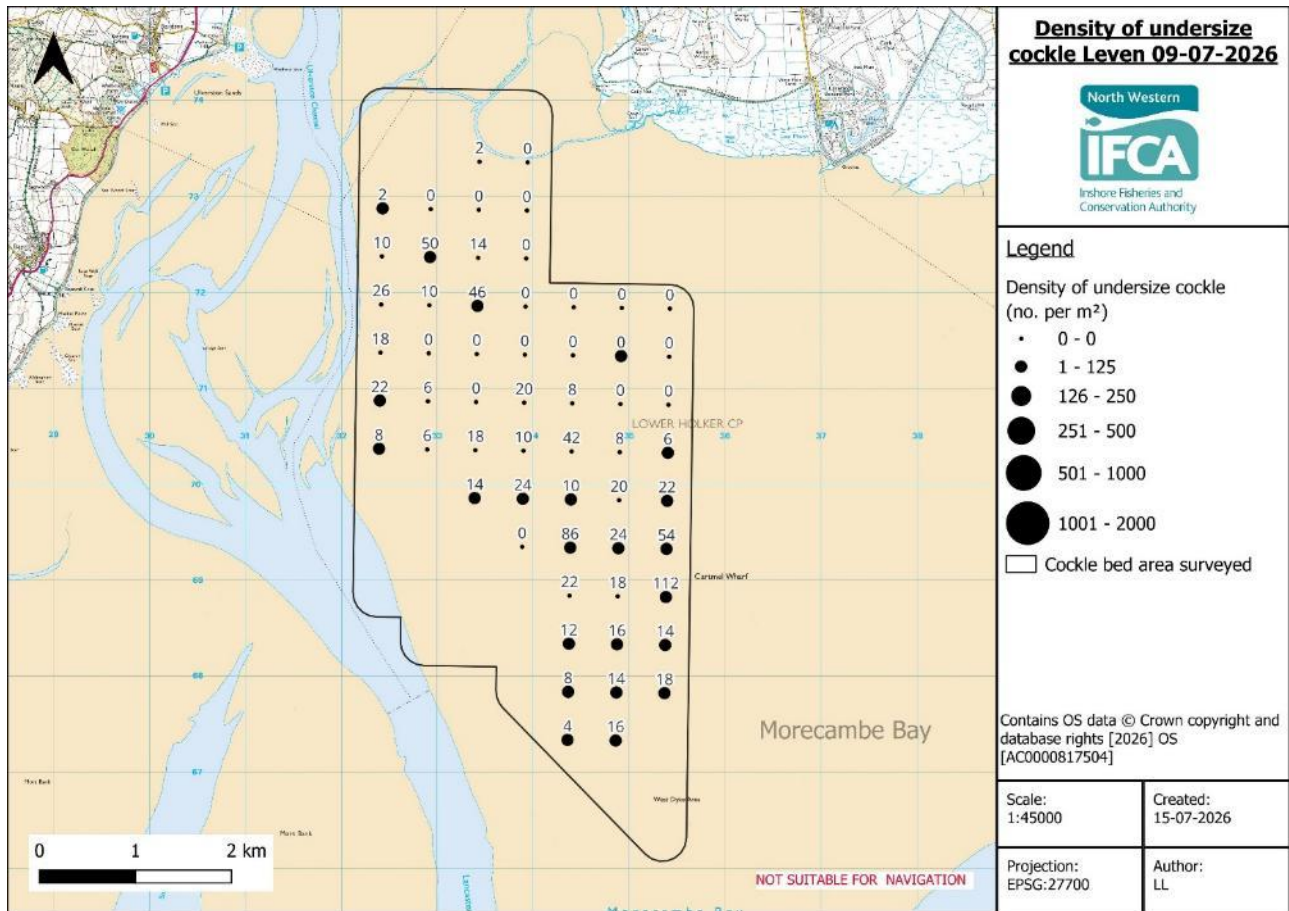


Figure 3. Density of undersize cockle per m² Leven July 2026

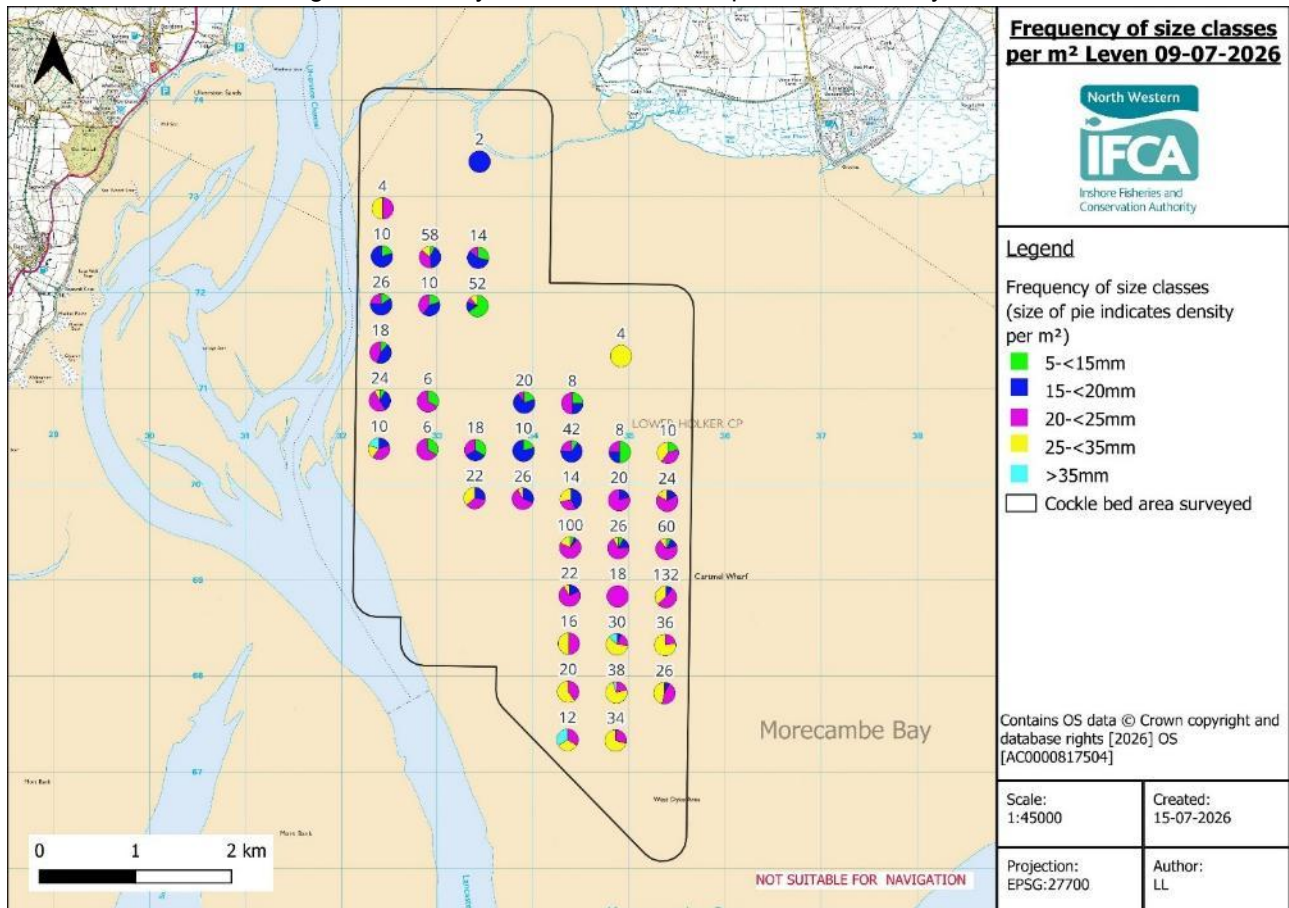


Figure 4. Frequency of size classes of cockle per m² Leven July 2026

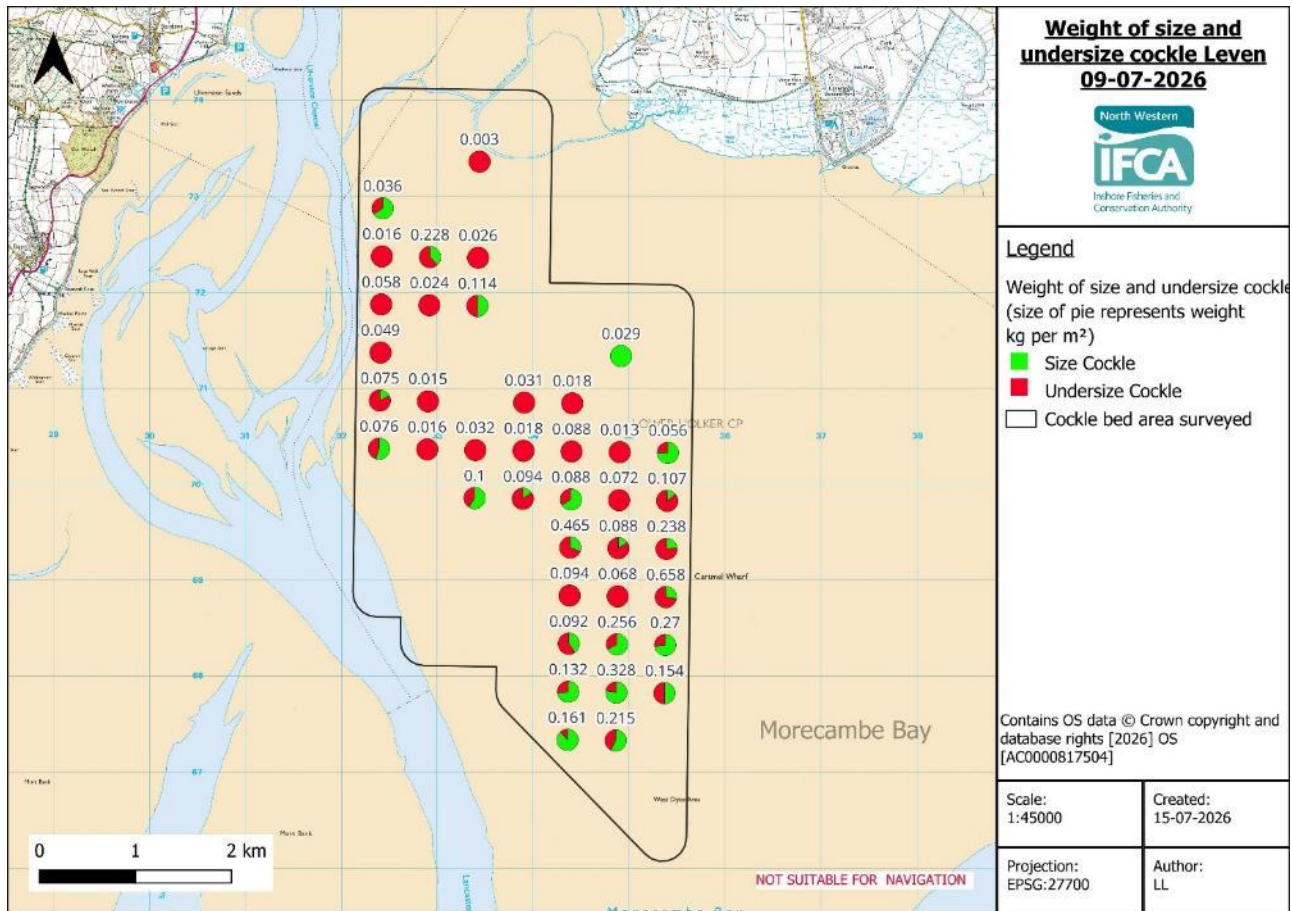


Figure 5. Weight of size and undersize cockle kg/m² at Leven July 2026

Flookburgh Cockle Survey 08-07-26

Officers present: ID, CT, AP, JH, LL, RL

Tides: LW 11:57 2.5m (Liverpool Tides)

Survey method - Jumbo and 0.5m² quadrat

140 stations were sampled from a 500m grid which included the recent extensions to the survey grid. There is a number of channels cutting through the bed meaning some survey stations could not be accessed. The bed area has decreased in size due to the number of survey stations with no cockle present and a number of station being in the channel which splits the cockle bed. The cockle is mixed across the bed and ranged in size from 5mm to 35mm. There is evidence of a 2026 settlement with spat seen in some areas across the bed.

Means

Means were calculated from all stations with zero counts removed. Less than 5mm cockle was not used in the undersize figures due to the high variable survivability of cockle at this small size.

Mean number of size cockle 5 per m² (min 0, max 58)

Mean number of undersize cockle 31 per m² (min 0, max 184)

Mean number of 0-5mm cockle 107 per m² (min 0, max 6400)

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Mean weight of size cockle kg/m² 0.041 kg/m² (min 0, max 0.465)

Mean number of undersize cockle kg/m² 0.090 kg/m² (min 0, max 0.654)

Maps

Maps were created showing the overall survey area, density of size cockle, density of undersize cockle (excluding cockles in the 0-5mm size range), the frequency of size classes, the size of the pie chart indicates the total density of cockles present, and the weight of undersize and size cockle.

Biomass

	Area (ha)	Size Cockle (tonnes) ¹	Undersize Cockle (tonnes) ²
Flookburgh	2600	1064	2348

5-15 Class (tonnes)	15-20 Class (tonnes)	20-25 Class (tonnes)	25-35 Class (tonnes)	>35 Class (tonnes)
63	417	1714	1172	46

¹In regards to biomass size cockle defined as cockle which will not pass through a square gauge 20 x 20mm in size.

²The biomass of undersize cockle does not include any estimates of cockle less than 5mm due to the high variability of survival of this size class.

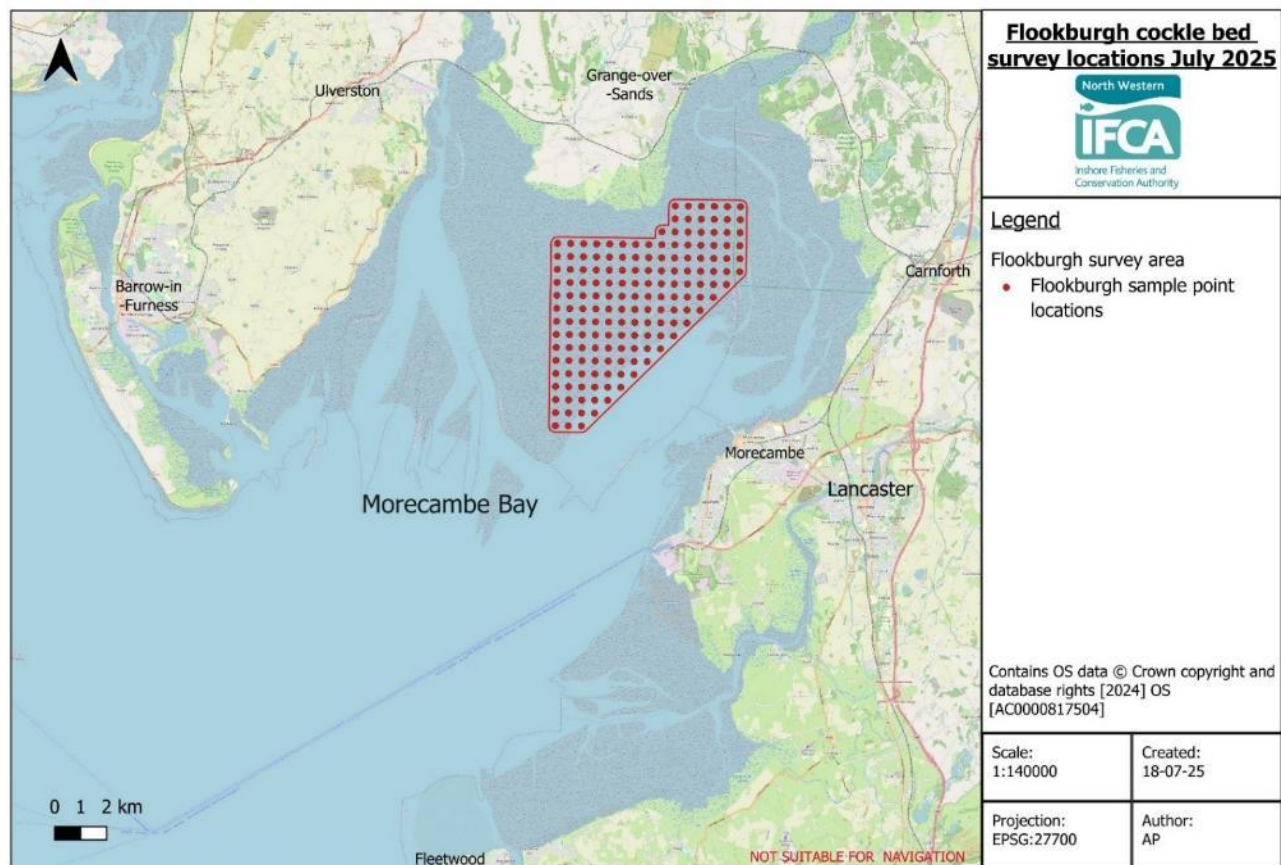


Figure 1. Illustration of position of Flookburgh Survey Area.

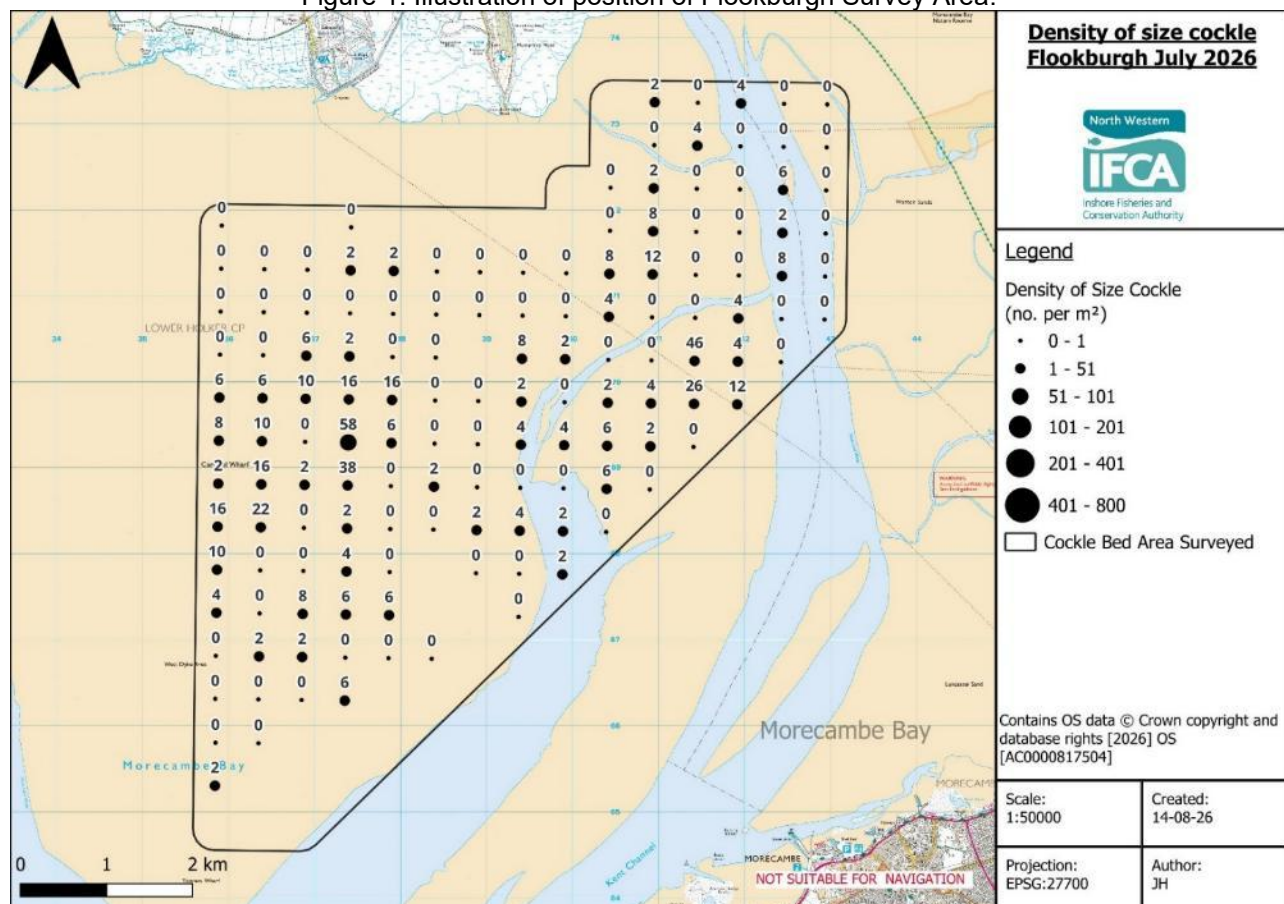


Figure 2. Density of size cockle per m² Flookburgh July 2026.

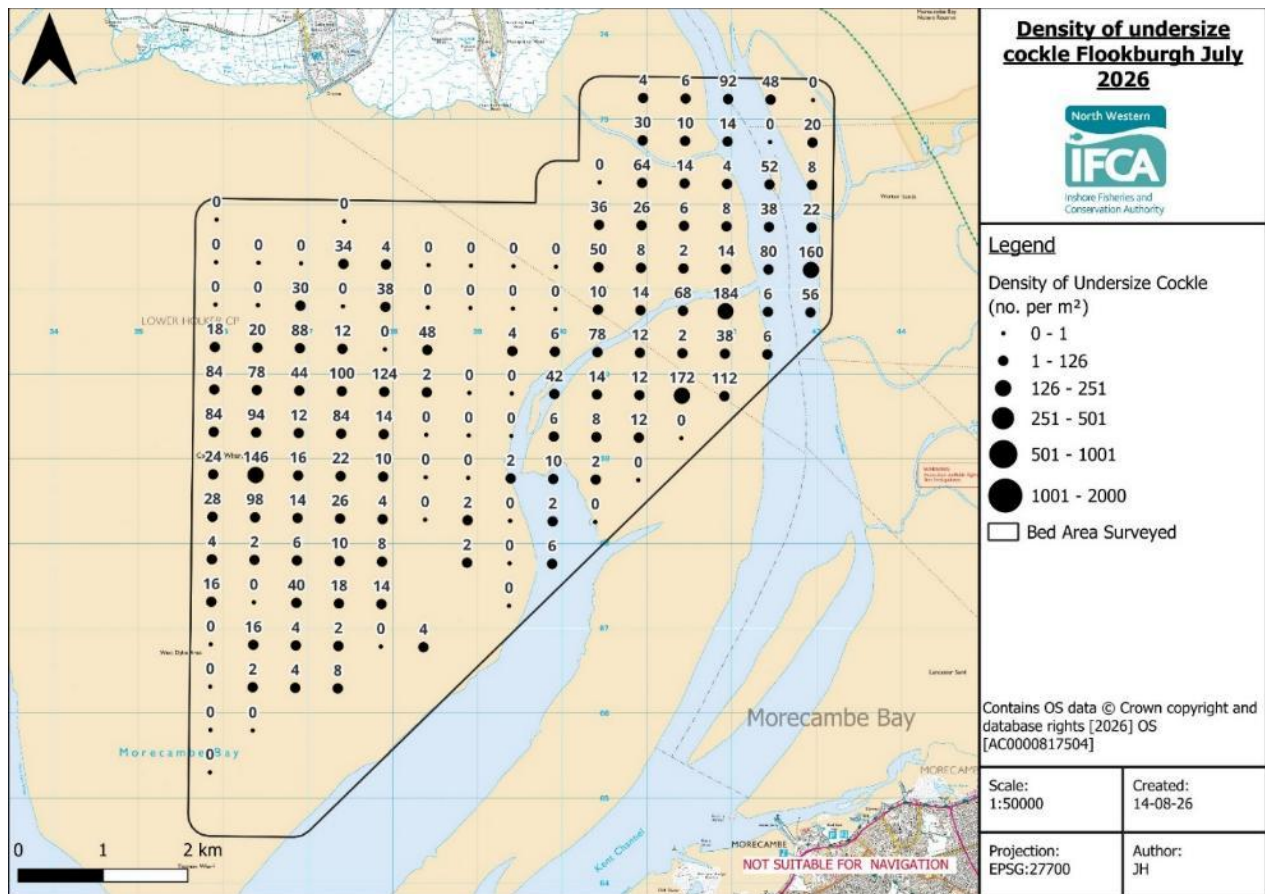


Figure 3. Density of undersize cockle per m² Flookburgh July 2026.

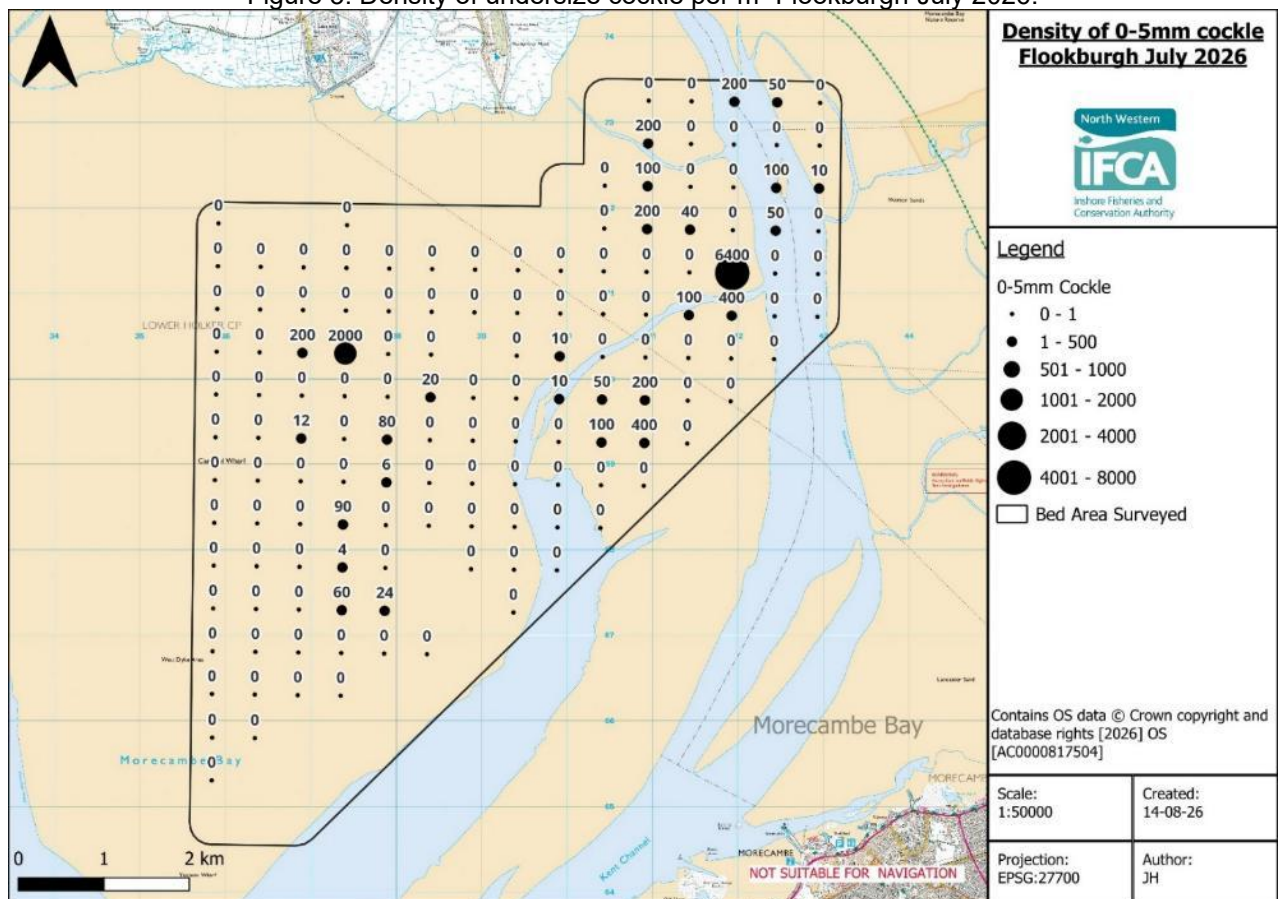


Figure 4. Density of 0-5mm cockle per m² Flookburgh July 2026.

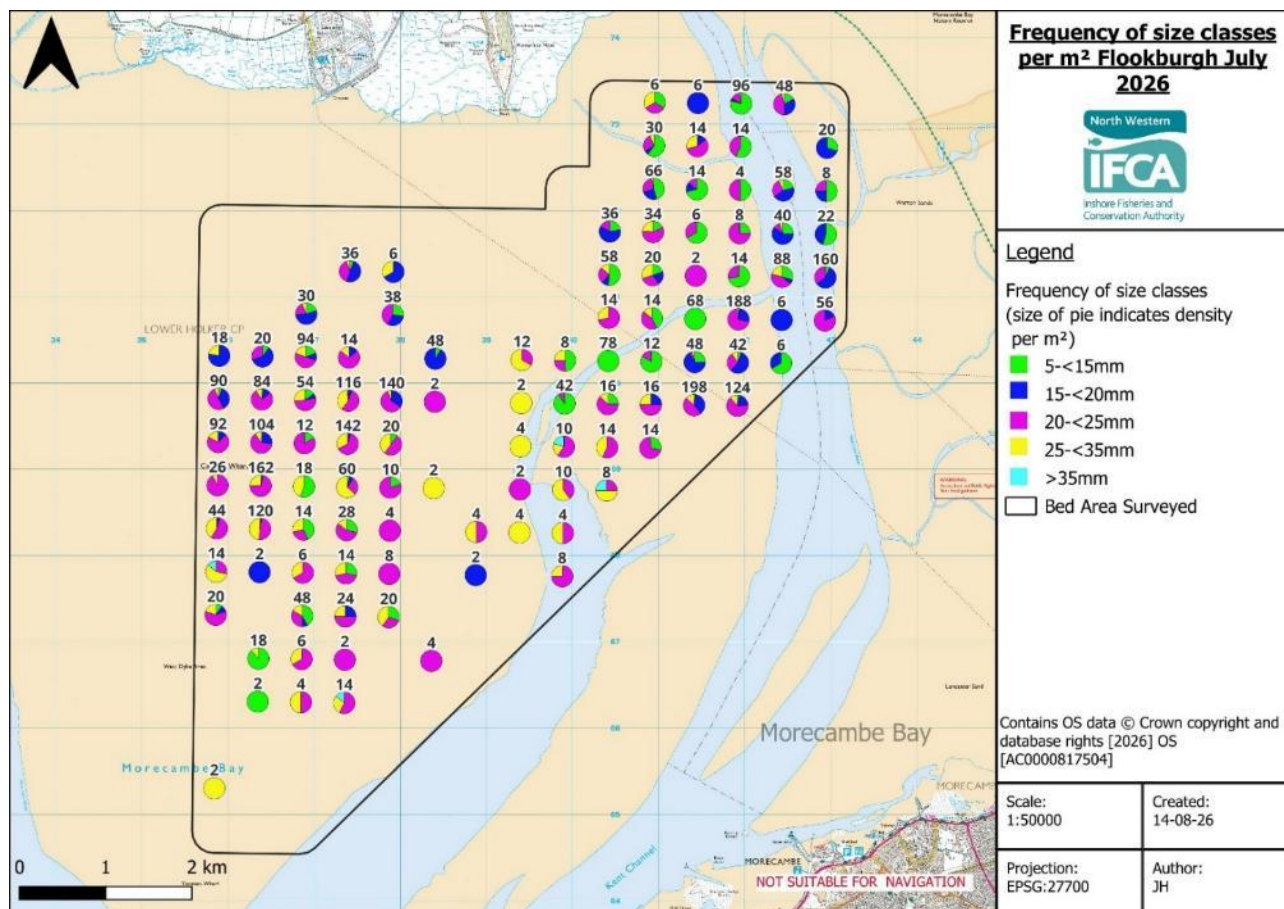


Figure 4 Frequency of size classes of cockle per m² Flookburgh July 2026.

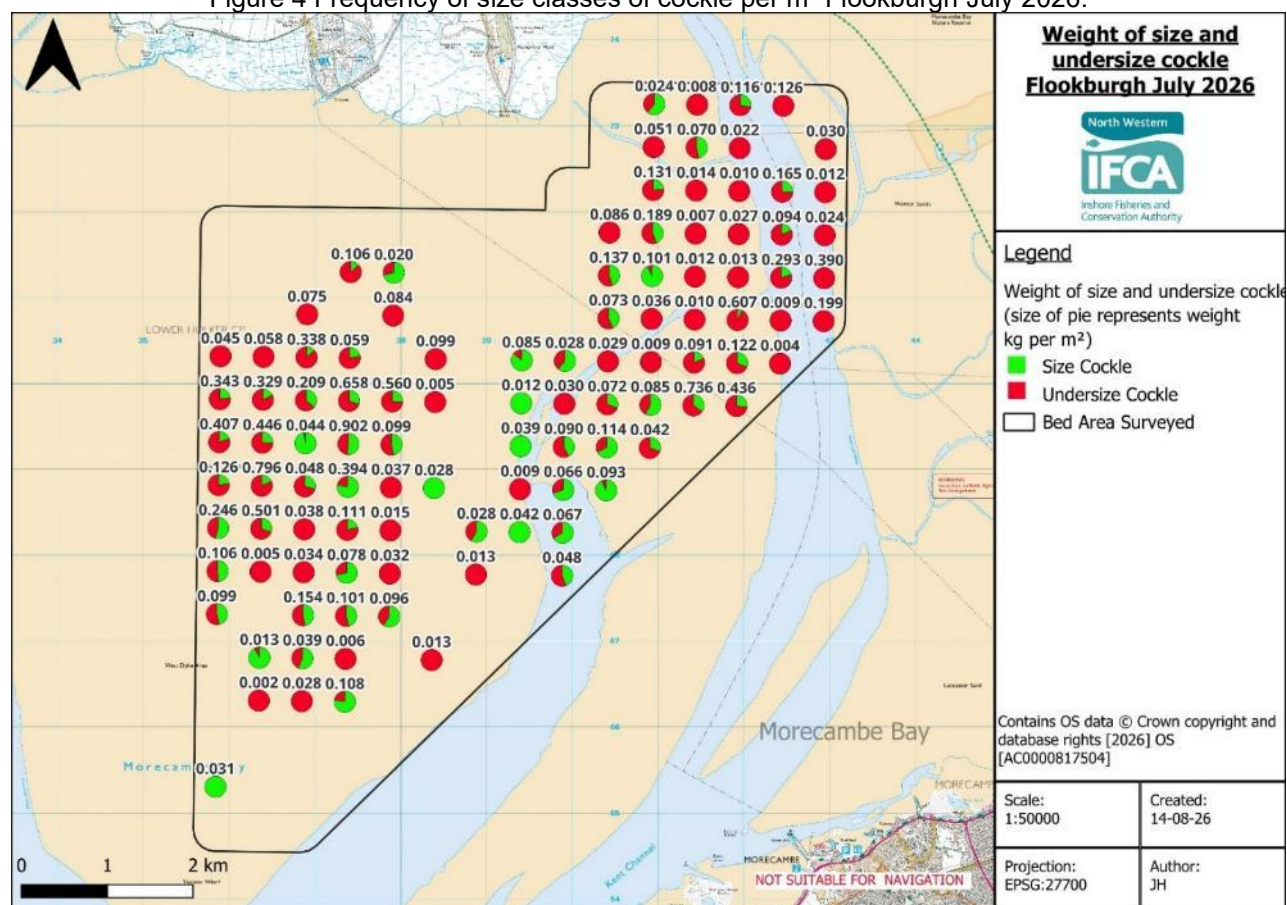


Figure 5 Weight of size and undersize cockle kg/m² at Flookburgh July 2026.

Pilling Cockle Survey 07-07-2026

Officers present: AP, JH, GG, LL

Tides: LW 11:09 2.3m (Liverpool Tides)

Survey method - Jumbo and 0.5m² quadrat

77 stations were sampled from a 500m grid. There was a wide range of cockle sizes across the bed from <5mm to >35mm. Size cockle has decreased in density from last July with a max of 40 cockles per m², and an average of 7 per m² across the bed. There is evidence of a 2026 settlement with spat seen in some areas across the bed.

Means

Means were calculated from all stations with zero counts removed. Less than 5mm cockle was not used in the undersize figures due to the high variable survivability of cockle at this small size but has been included as a separate figure.

Mean number of size cockle	7 per m ²	(min 0, max 40)
Mean number of undersize cockle	12 per m ²	(min 0, max 58)
Mean number of 0-5mm cockle	32 per m ²	(min 0, max 480)

Mean weight of size cockle kg/m ²	0.075 kg/m ²	(min 0, max 0.312)
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Mean weight of undersize cockle kg/m ²	0.043 kg/m ²	(min 0, max 0.228)
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Maps

Maps were created showing the overall survey area, density of size cockle, density of undersize cockle (excluding cockles in the 0-5mm size range), the frequency of size classes (size of pie chart indicating the total density of cockles present), and the weight of undersize and size cockle.

Biomass

	Area of cockle present (ha)	Size Cockle (tonnes) ¹	Undersize Cockle (tonnes) ²
Pilling	1450	1091	621

5-15 Class (tonnes)	15-20 Class (tonnes)	20-25 Class (tonnes)	25-35 Class (tonnes)	>35 Class (tonnes)
10	107	460	1097	38

¹In regards to biomass size cockle defined as cockle which will not pass through a square gauge 20 x 20mm in size.

²The biomass of undersize cockle does not include any estimates of cockle less than 5mm due to the high variability of survival of this size class.

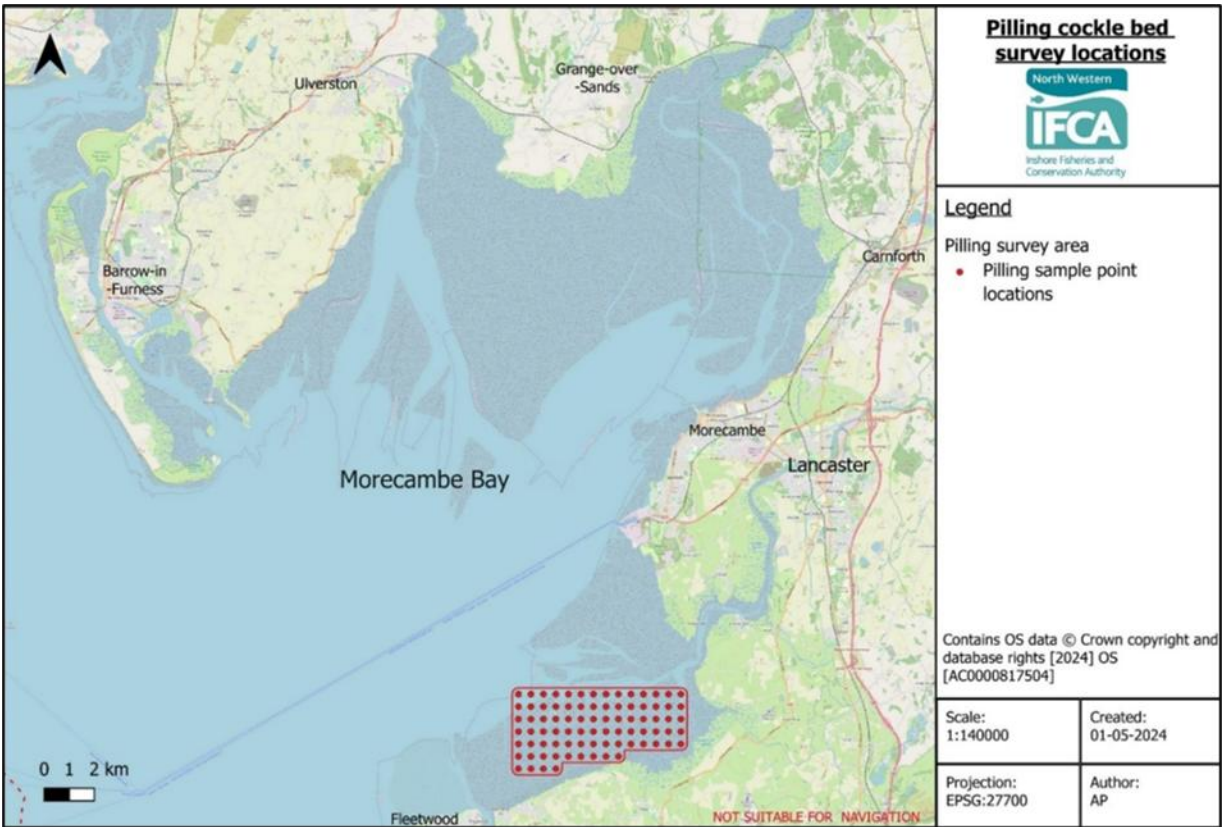


Figure 1. Illustration of position of Pilling Survey Area.

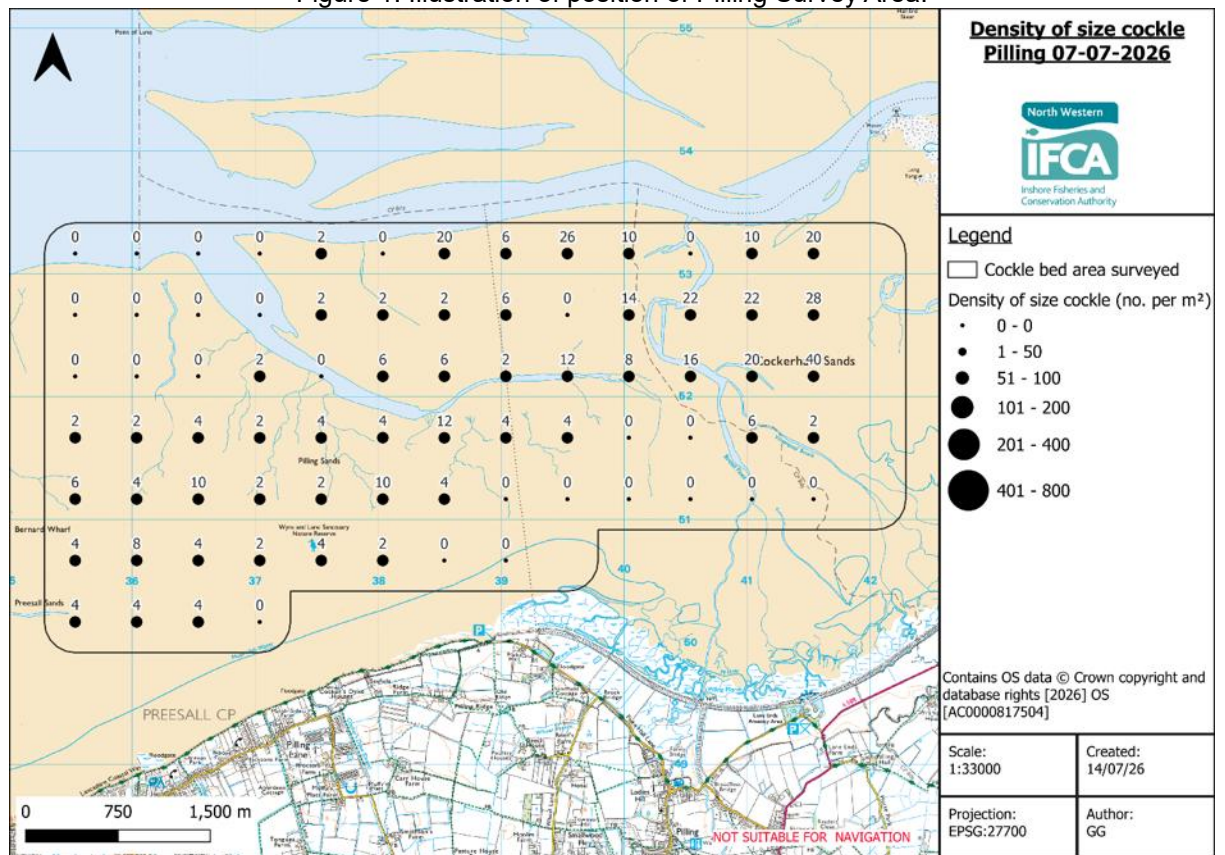


Figure 2. Density of size cockle per m² at Pilling July 2026.

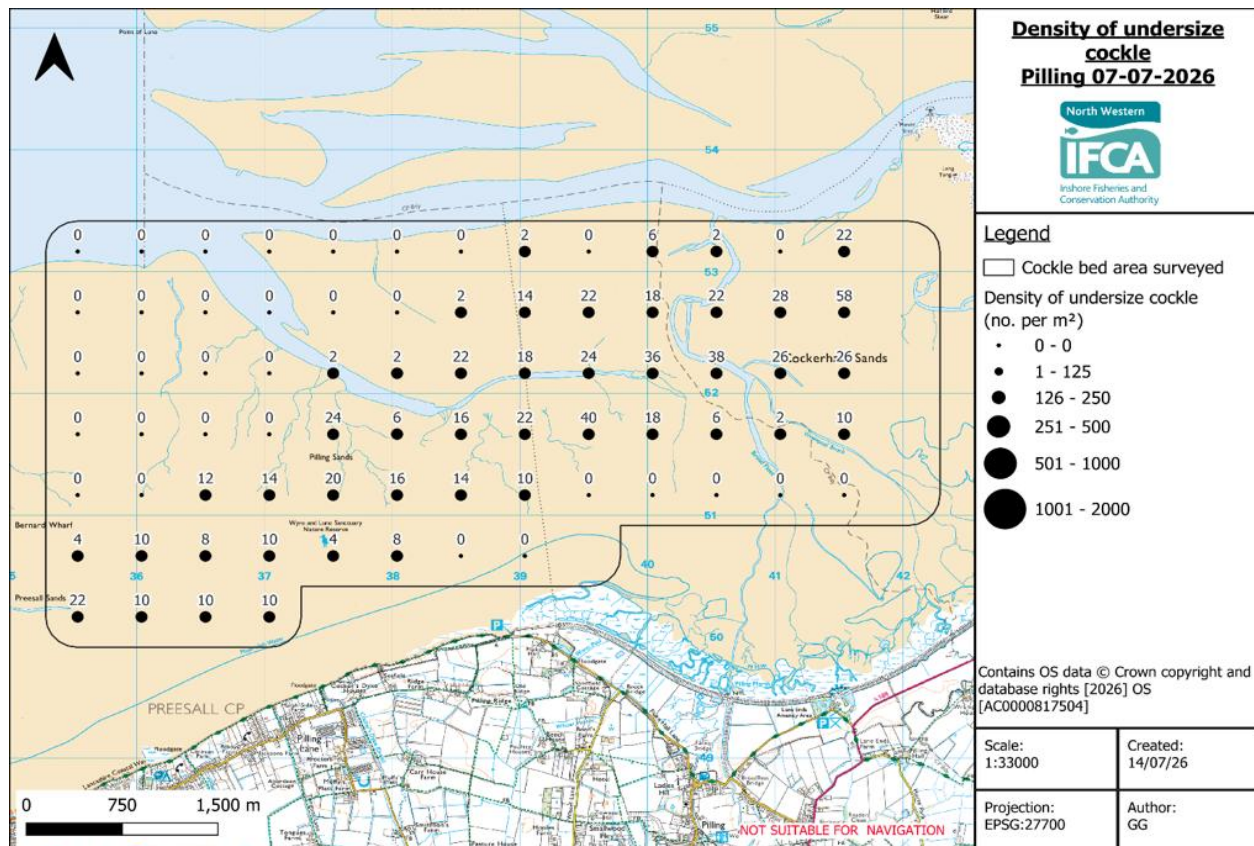


Figure 3. Density of undersize cockle per m² at Pilling July 2026.

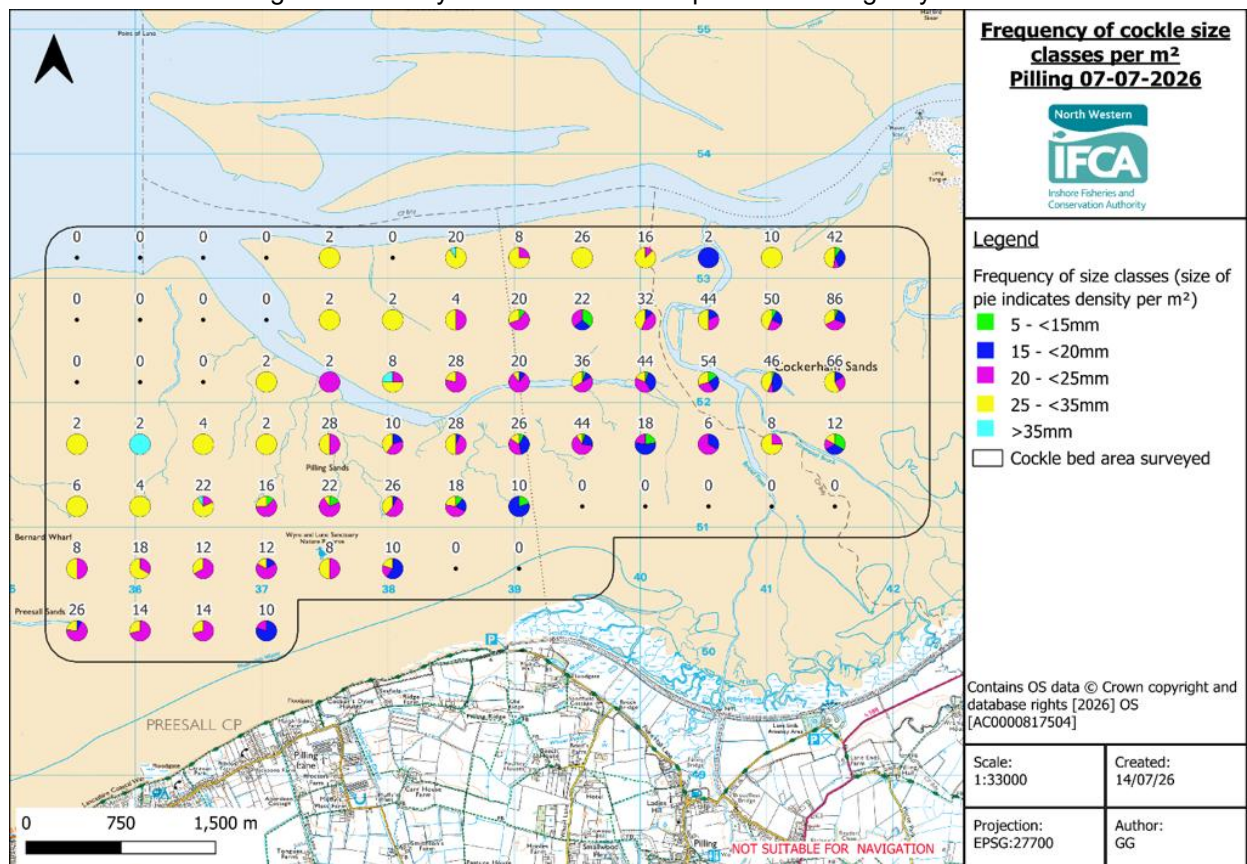


Figure 4. Frequency of size classes of cockle per m² at Pilling July 2026.

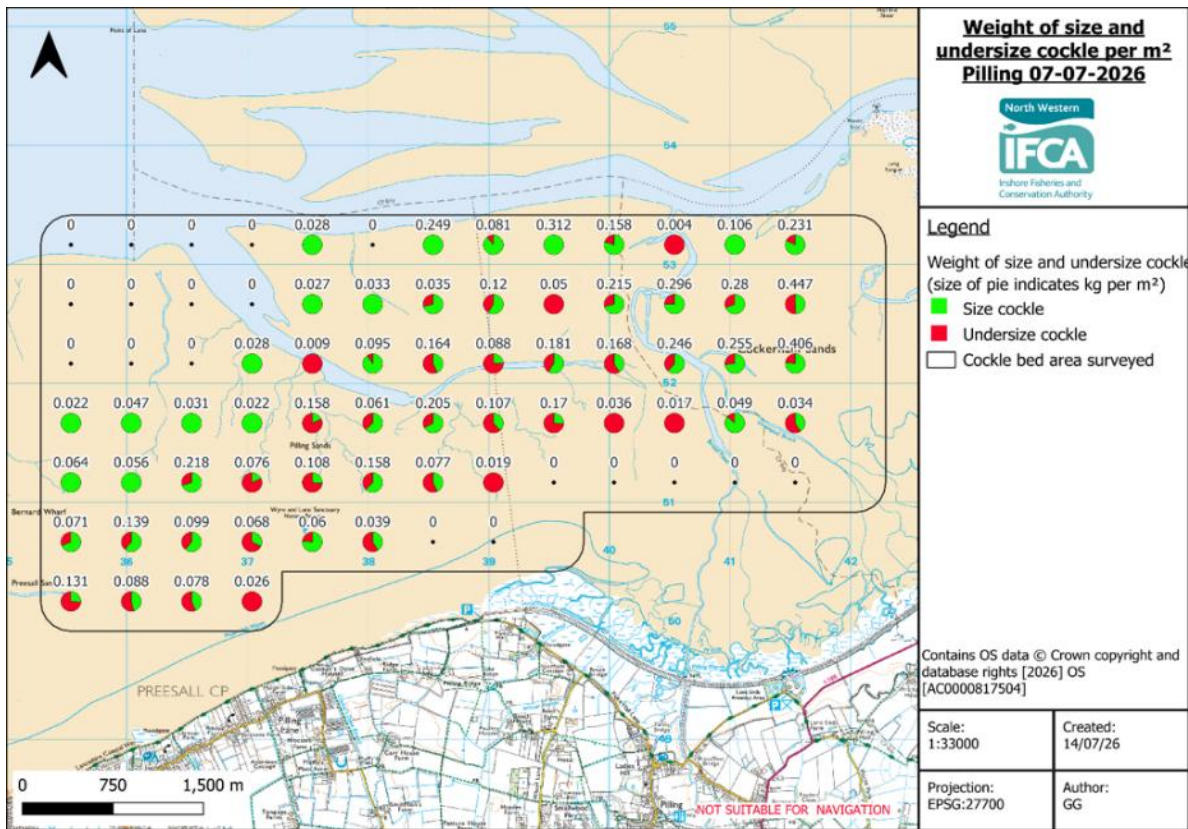


Figure 5. Weight of size and undersize cockle kg/m² at Pilling July 2026.

Middleton Cockle Survey 30-06-26

Officers present: AG, RL, JH, LL

Tides: LW 17:50 2.3m (Liverpool tides)

Survey method - Jumbo and 0.5m² quadrat

61 stations were sampled from a 350 m grid. Cockle biomass was estimated at 378 tonnes of size cockles and 897 tonnes of undersize cockles. Compared with the previous survey, size cockle biomass decreased by approximately from 589 to 378 tonnes, while undersize biomass increased from 115 to 897 tonnes. The population is now dominated by the 20–25 mm size class.

Means

Means were calculated from all stations with zero counts removed. Less than 5mm cockle was not used in the undersize figures due to the high variable survivability of cockle at this small size but has been included as a separate figure.

Mean number of size cockle	5 per m ²	(min 0, max 60)
Mean number of undersize cockle	37 per m ²	(min 0, max 464)
Mean number of 0-5mm cockle	0 per m ²	(min 0, max 0)

Mean weight of size cockle kg/m ²	0.051 kg/m ²	(min 0, max 0.83)
Mean number of undersize cockle kg/m ²	0.012 kg/m ²	(min 0, max 1.71)

Maps

Maps were created showing the overall survey area, density of size cockle, density of undersize cockle (excluding cockles in the 0-5mm size range), the frequency of size classes, the size of the pie chart indicates the total density of cockles present, and the weight of undersize and size cockle.

Biomass

	Area (ha)	Size Cockle (tonnes) ¹	Undersize Cockle (tonnes) ²
Middleton Sands	747	378	897

5-15 Class (tonnes)	15-20 Class (tonnes)	20-25 Class (tonnes)	25-35 Class (tonnes)	>35 Class (tonnes)
9	198	704	327	37

¹In regards to biomass size cockle defined as cockle which will not pass through a square gauge 20 x 20mm in size.

²The biomass of undersize cockle does not include any estimates of cockle less than 5mm due to the high variability of survival of this size class.

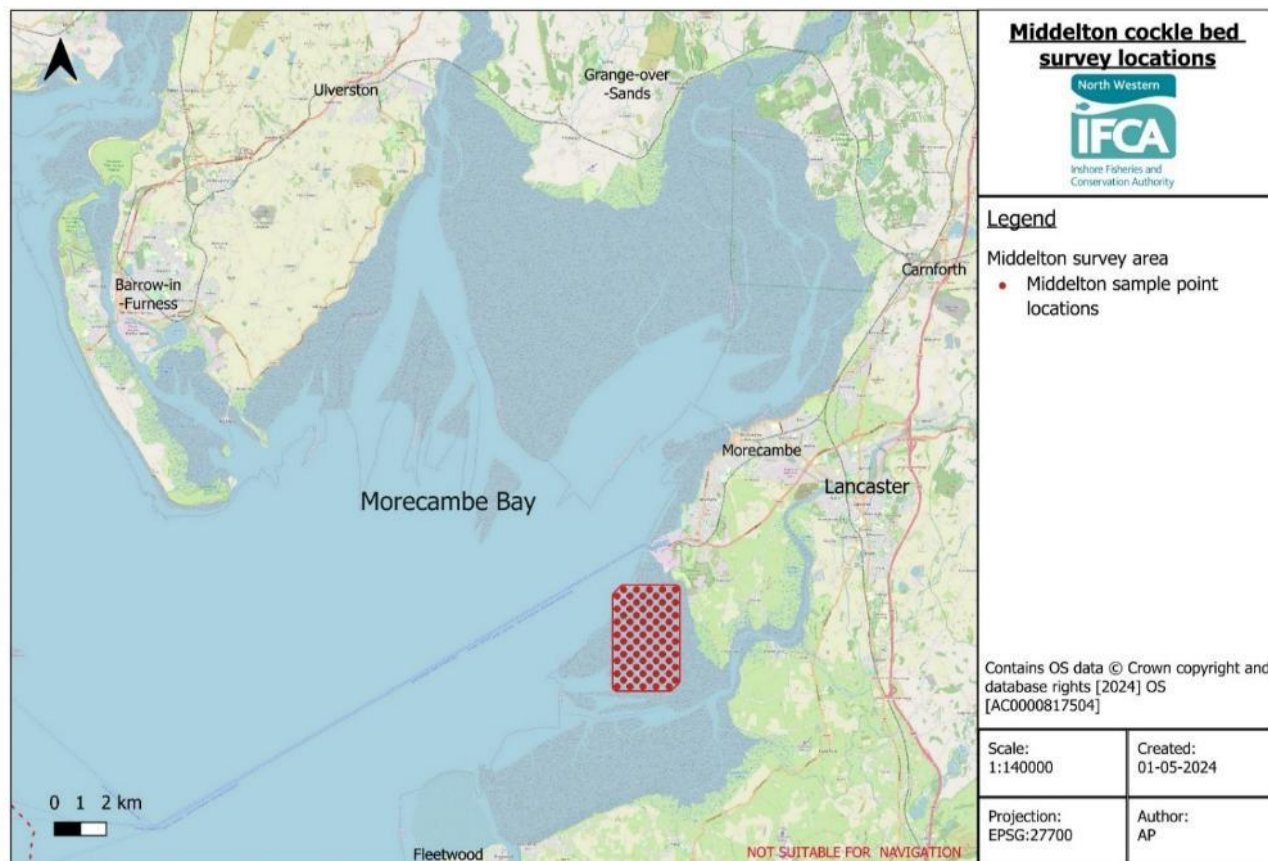


Figure 1. Illustration of position of Middelton Survey Area.

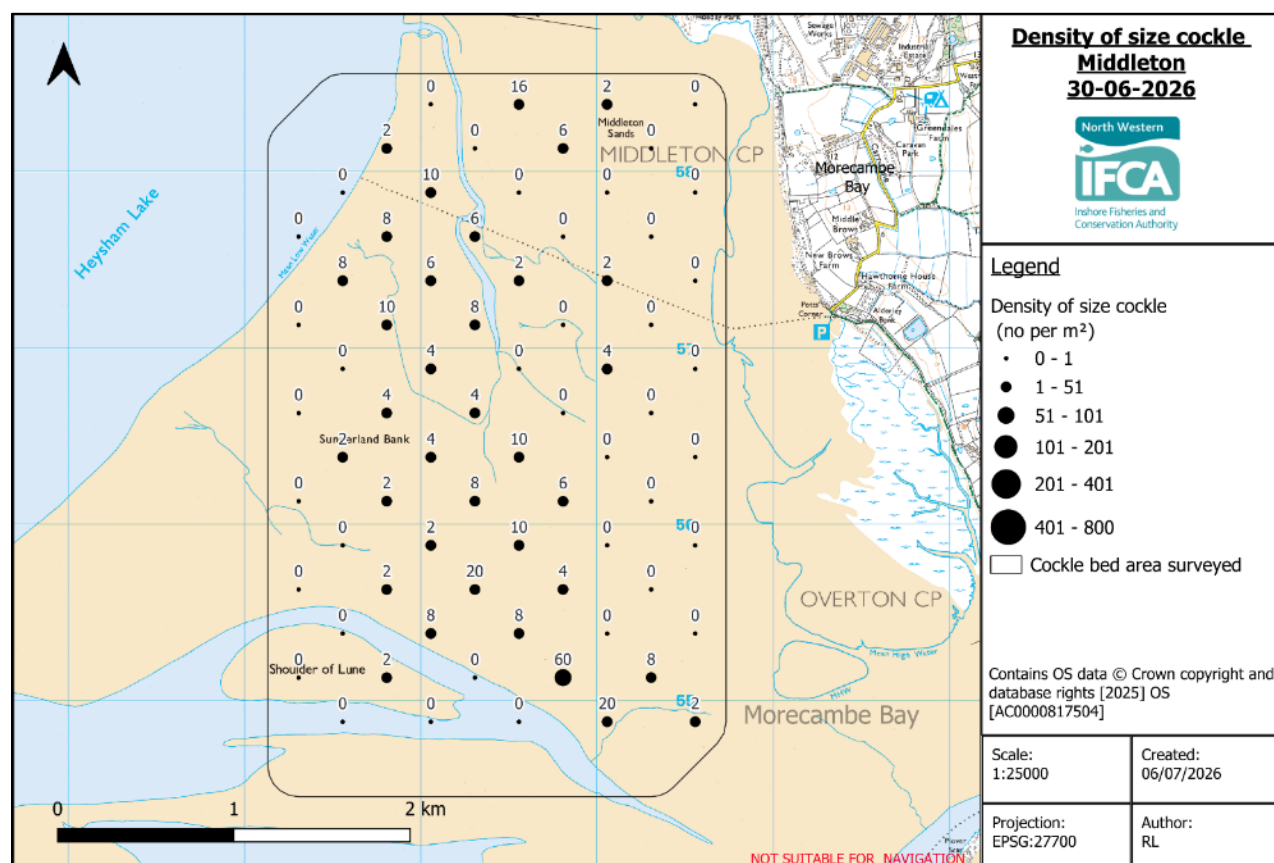


Figure 2. Density of size cockle per m² at Middelton June 2026.

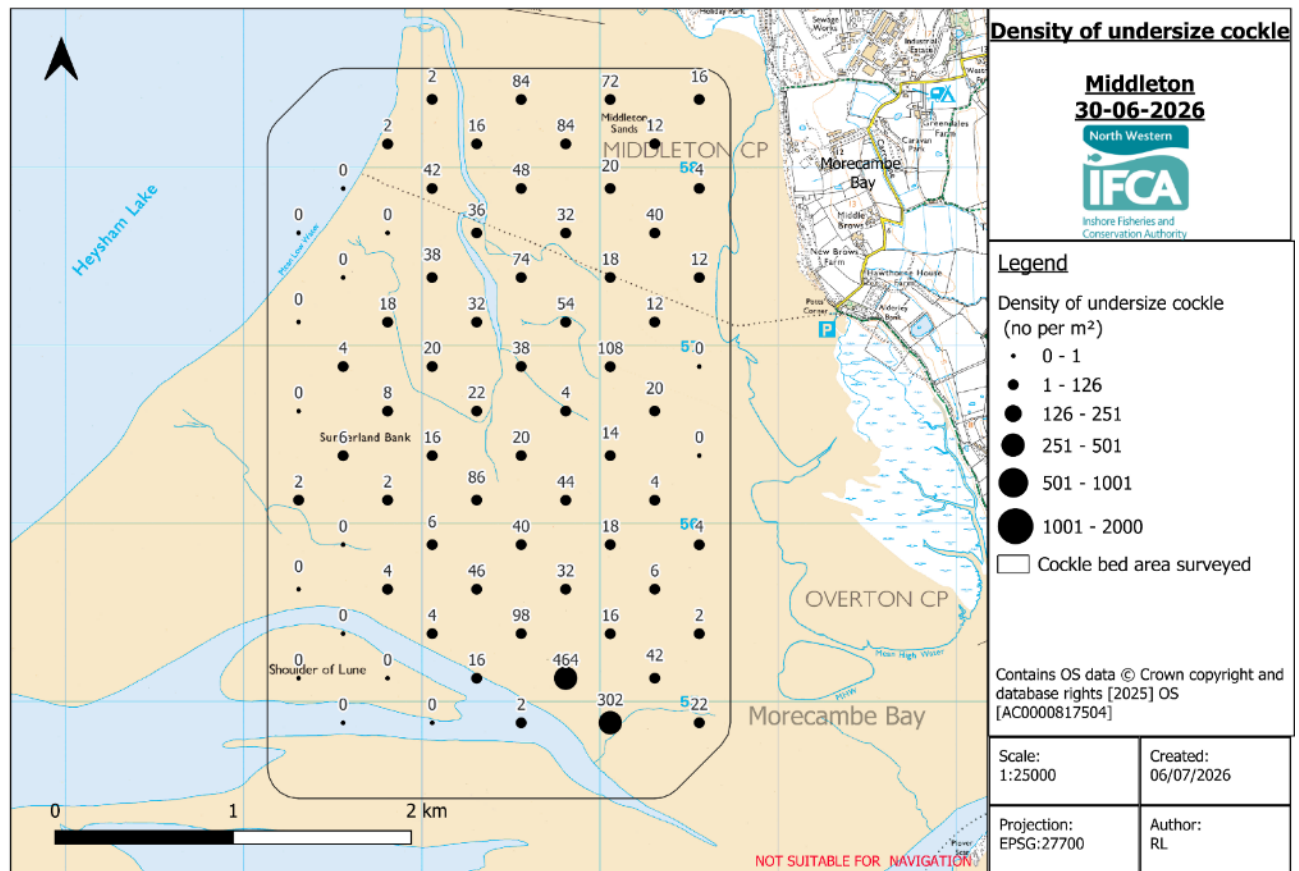


Figure 3. Density of undersize cockle per m² at Middleton June 2026.

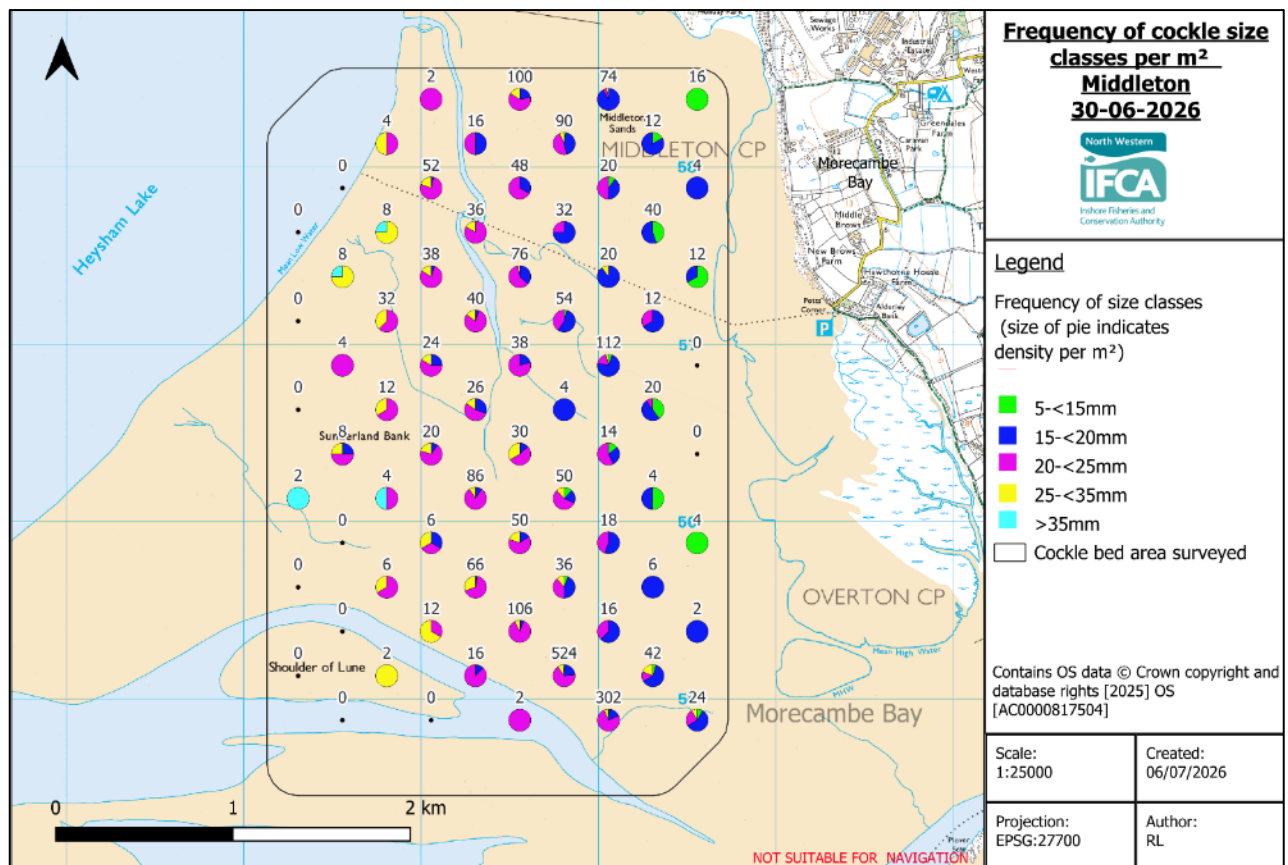


Figure 4. Frequency of size classes of cockle per m² at Middleton June 2026.

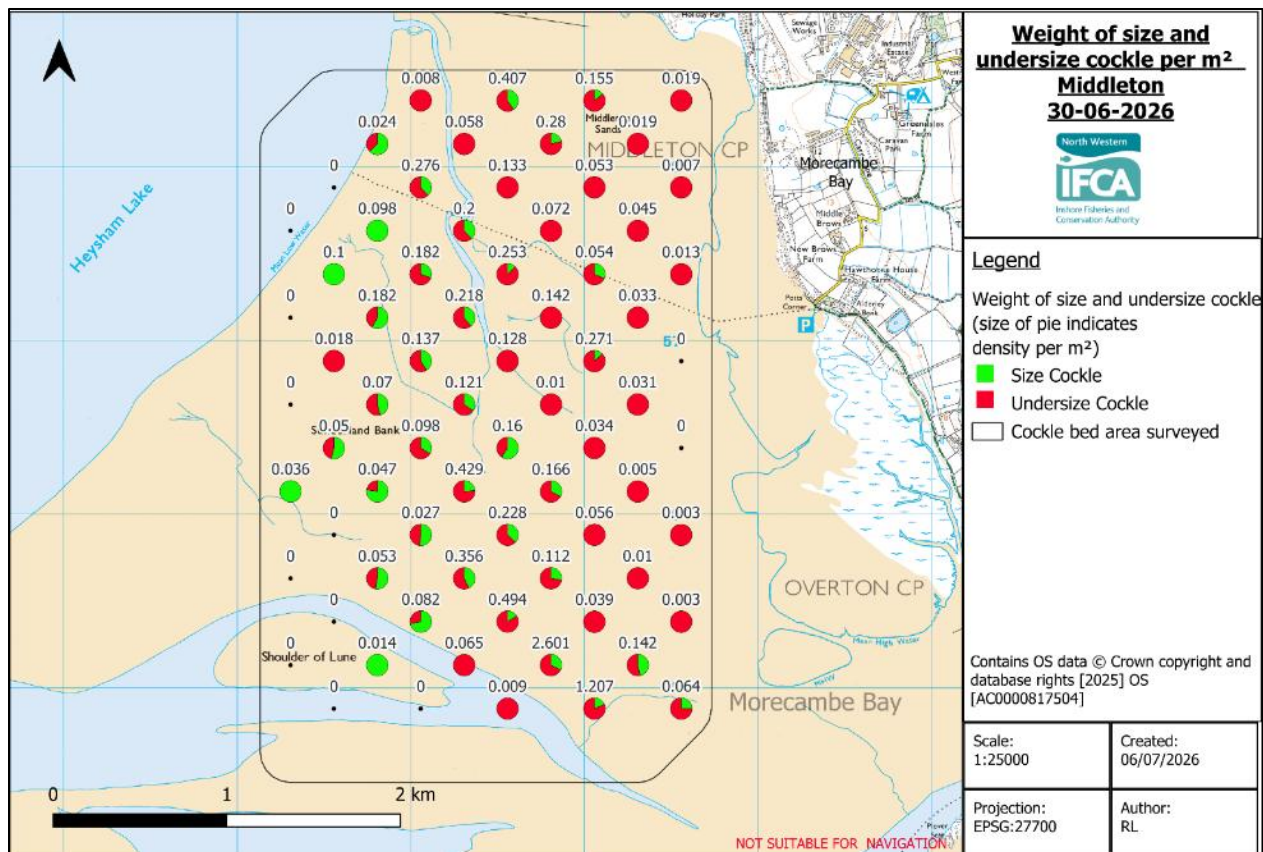


Figure 5. Weight of size and undersize cockle kg/m² at Middleton June 2026.

Warton Cackle Survey 16-07-26

Officers present: ID, JH, AP, LL, AG, GE

Tides: LW 08:03 0.8m (Liverpool Tides)

Survey method - Jumbo and 0.5m² quadrat

A total of 52 stations were sampled, 25 were sampled from a 350m grid and 27 from a 500m grid due to the full extent of the bed being unknown prior to the survey. The 350m grid covered an area known to have cockle present due to a previous inspection. The 500m grid was used to extend the area surveyed to ensure that edges of the bed were located. The Northwest of the survey grid could not be accessed due to a deep channel. There was a range of cockle sizes across the bed from < 5mm to 25 - 35mm. Size cockle is very low in density across the bed. The main size classes present were 15-20mm and 20-25mm. There were large number of spat found in at some survey locations on the East of the grid.

Means

Means were calculated from all stations with zero counts removed. Less than 5mm cockle was not used in the undersize figures due to the high variable survivability of cockle at this small size.

Mean number of size cockle	2 per m ²	(min 0, max 8)
Mean number of undersize cockle	93 per m ²	(min 0, max 562)
Mean number of 0-5mm cockle	229 per m ²	(min 0, max 4000)

Mean weight of size cockle kg/m ²	0.014 kg/m ²	(min 0, max 0.079)
Mean weight of undersize cockle kg/m ²	0.250 kg/m ²	(min 0, max 1.555)

Maps

Maps were created showing the overall survey area, density of size cockle, density of undersize cockle (excluding cockles in the 0-5mm size range), the frequency of size classes, the size of the pie chart indicates the total density of cockles present, and the weight of undersize and size cockle.

Biomass

	Area of cockle present (ha)	Size Cockle (tonnes) ¹	Undersize Cockle (tonnes) ²
Warton	906	123	1941

5-15 Class (tonnes)	15-20 Class (tonnes)	20-25 Class (tonnes)	25-35 Class (tonnes)	>35 Class (tonnes)
47	631	1232	145	0

¹In regards to biomass size cockle defined as cockle which will not pass through a square gauge 20 x 20mm in size.

²The biomass of undersize cockle does not include any estimates of cockle less than 5mm due to the high variability of survival of this size class.

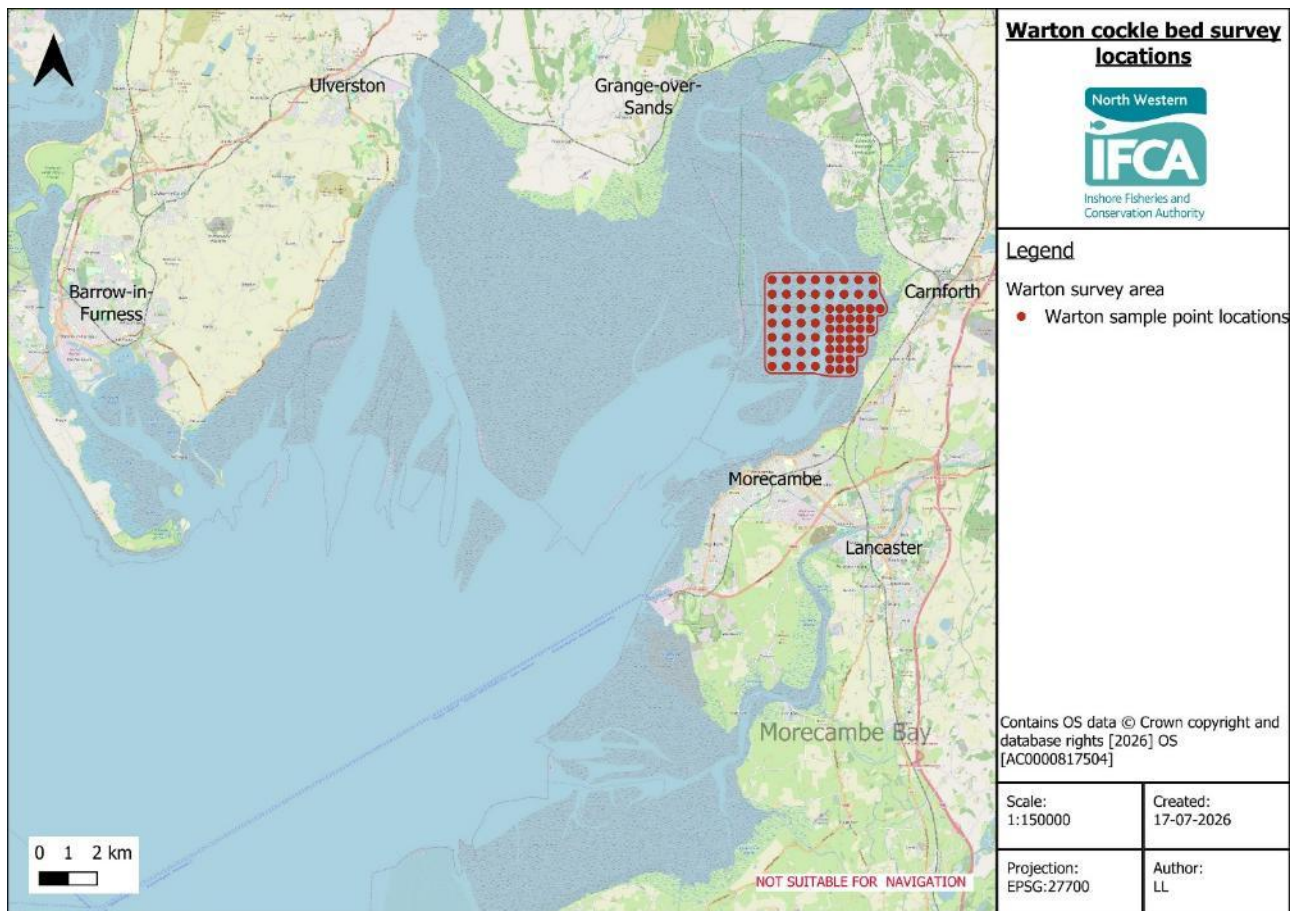


Figure 1. Illustration of position of Leven Survey Area

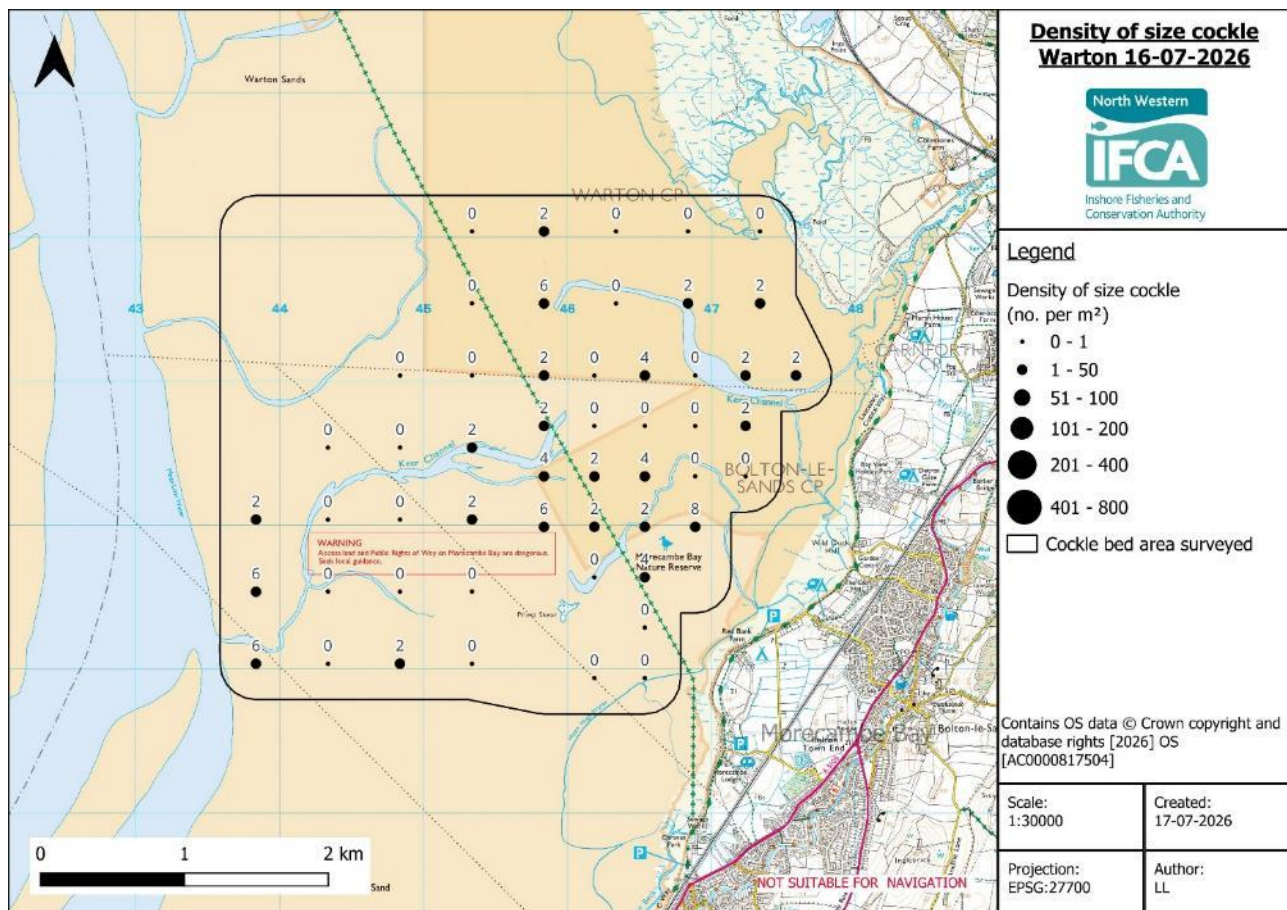


Figure 2. Density of size cockle per m² Warton July 2026

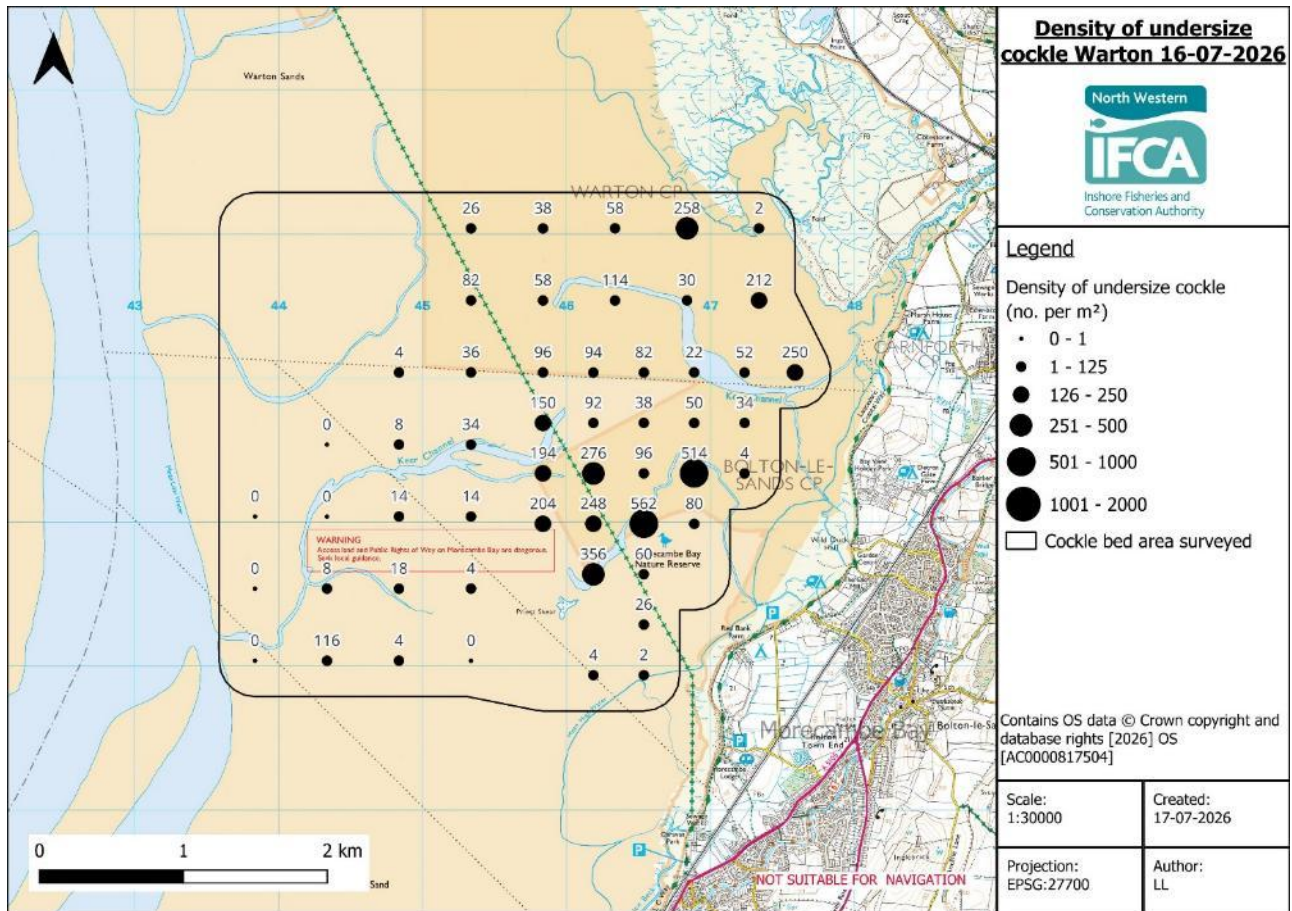


Figure 3. Density of undersize cockle per m² Warton July 2026

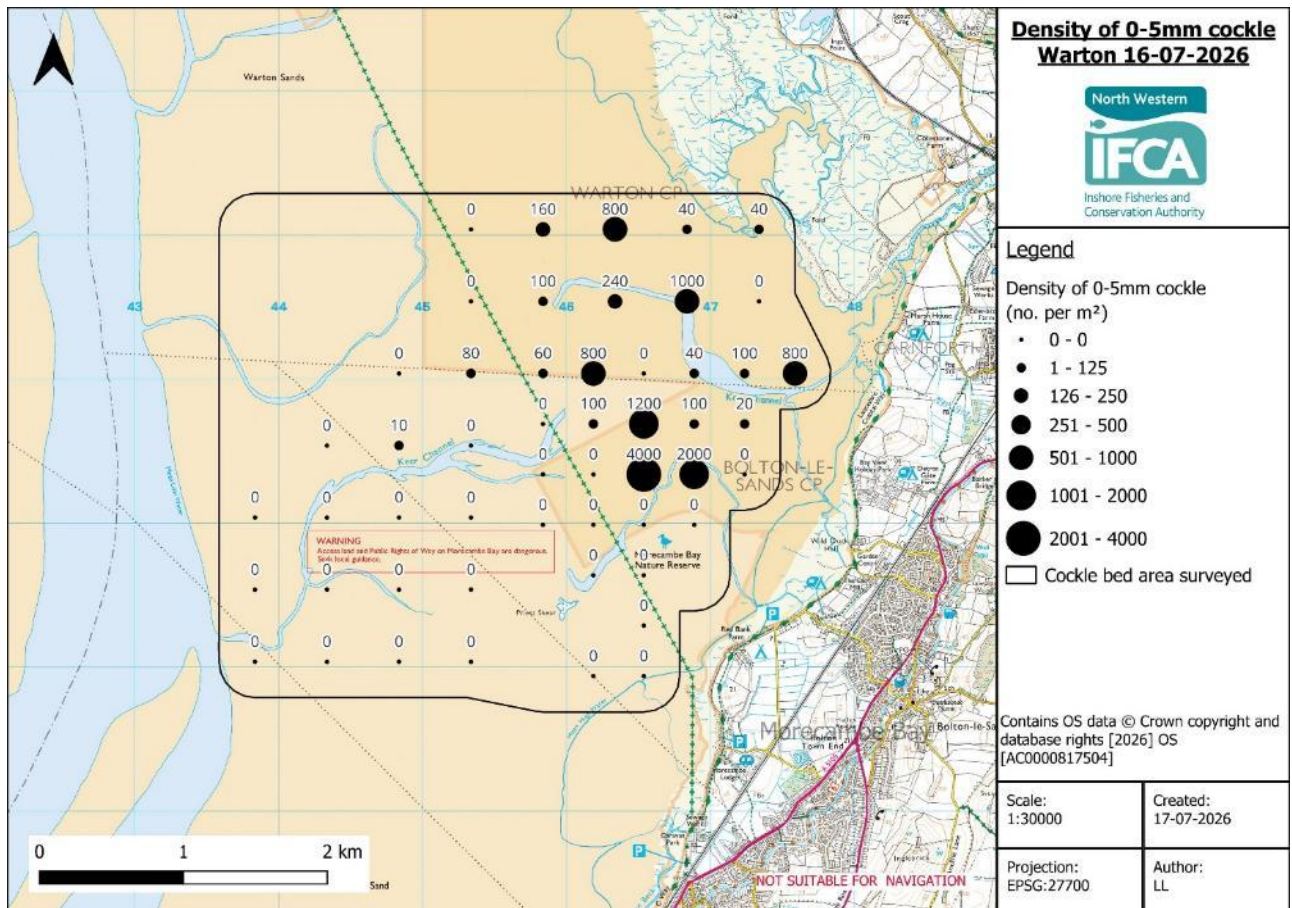


Figure 4. Density of 0-5mm cockle per m² Warton July 2026

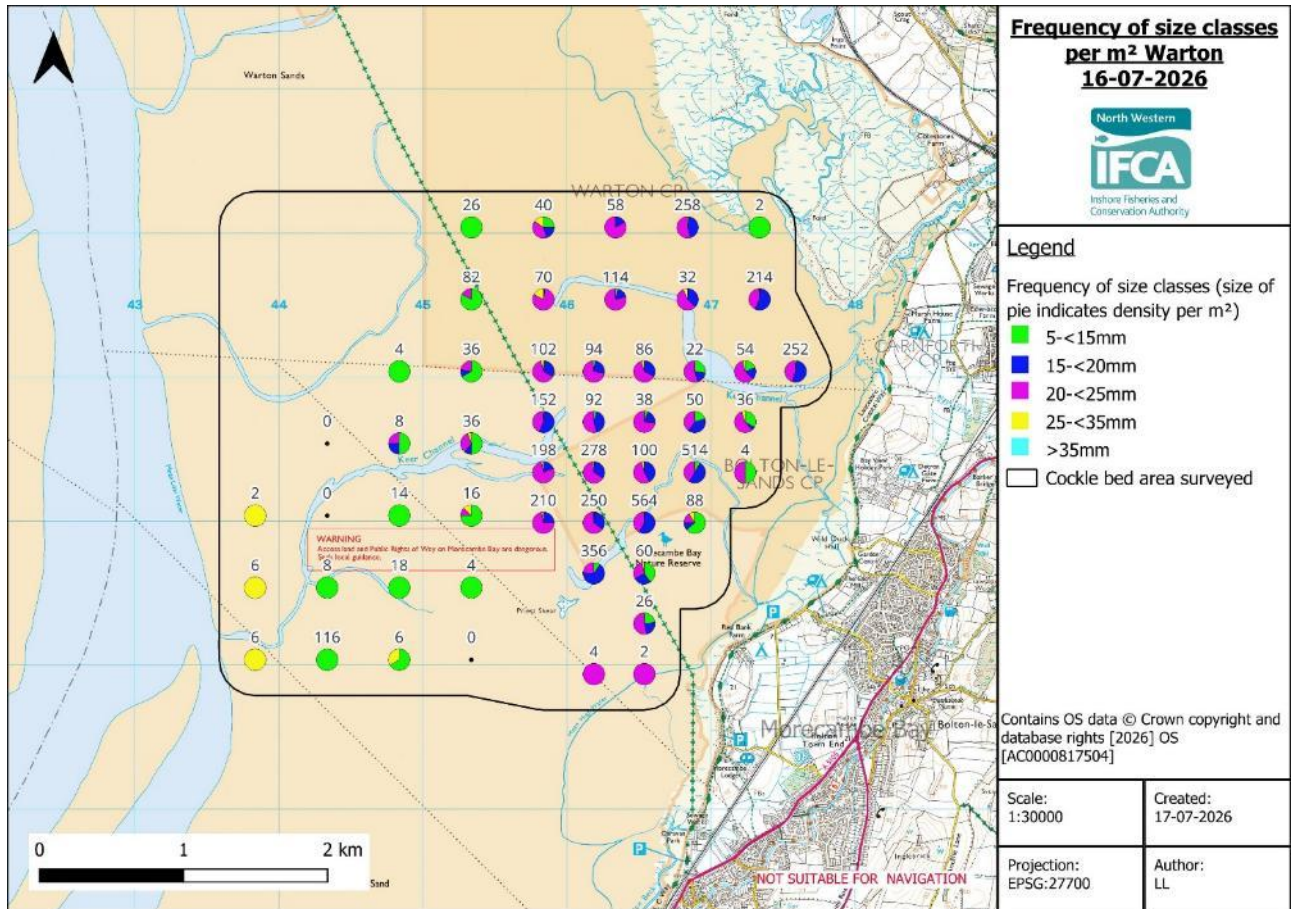


Figure 4. Frequency of size classes of cockle per m² Warton July 2026

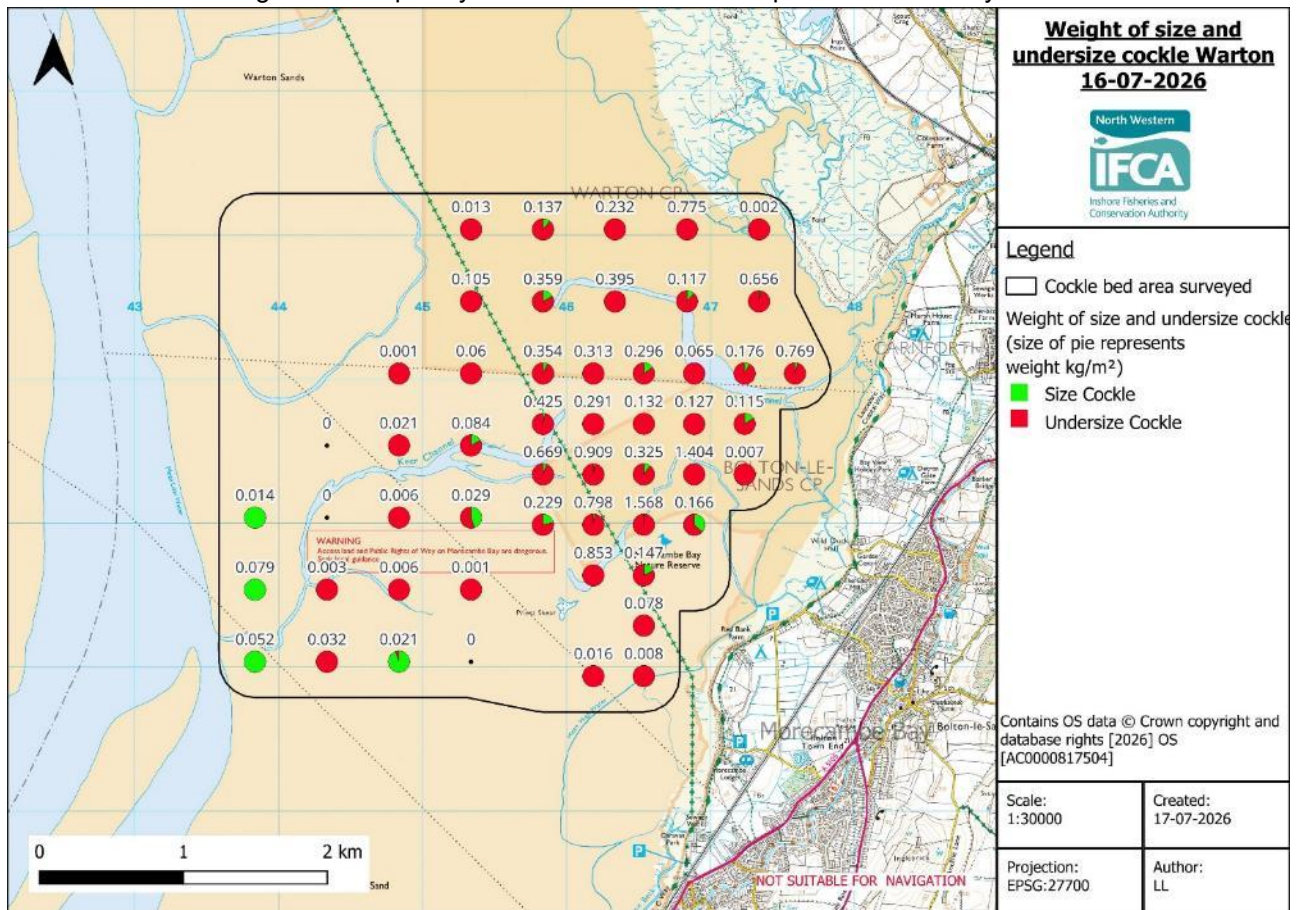


Figure 5. Weight of size and undersize cockle kg/m² Warton July 2026

Cockle Surveys and inspections – Wirral Coast

Leasowe Cockle Survey 03-07-2026

Officers present: GG, AP, MT, AB
Tides: LW 08:33 1.9m (Liverpool Tides)

Survey method - Jumbo and 0.5m² quadrat

74 stations were sampled from a 250m grid. Cockle size ranged across the bed from < 5mm to > 35mm with the main biomass of cockles in the 25-35mm size class. Since the survey in 2025, the biomass of size and undersize cockle has decreased significantly. There was minimal evidence of a 2026 settlement with spat seen at only 4 survey locations across the bed.

Means

Means were calculated from all stations with zero counts removed. Less than 5mm cockle was not used in the undersize figures due to the high variable survivability of cockle at this small size but has been included as a separate figure.

Mean number of size cockle	11 per m ²	(min 0, max 82)
Mean number of undersize cockle	23 per m ²	(min 0, max 256)
Mean weight of size cockle kg/m ²	0.161 kg/m ²	(min 0, max 1.226)
Mean weight of undersize cockle kg/m ²	0.064 kg/m ²	(min 0, max 0.302)

Maps

Maps were created showing the overall survey area, density of size cockle, density of undersize cockle (excluding cockles in the 0-5mm size range), the frequency of size classes (the size of the pie chart indicating the total density of cockles present), and the weight of undersize and size cockle.

Biomass

	Area of cockle present (ha)	Size Cockle (tonnes) ¹	Undersize Cockle (tonnes) ²
Leasowe	194	313	123

5-15 Class (tonnes)	15-20 Class (tonnes)	20-25 Class (tonnes)	25-35 Class (tonnes)	>35 Class (tonnes)
4	8	97	254	73

¹In regards to biomass size cockle defined as cockle which will not pass through a square gauge 20 x 20mm in size.

²The biomass of undersize cockle does not include any estimates of cockle less than 5mm due to the high variability of survival of this size class.

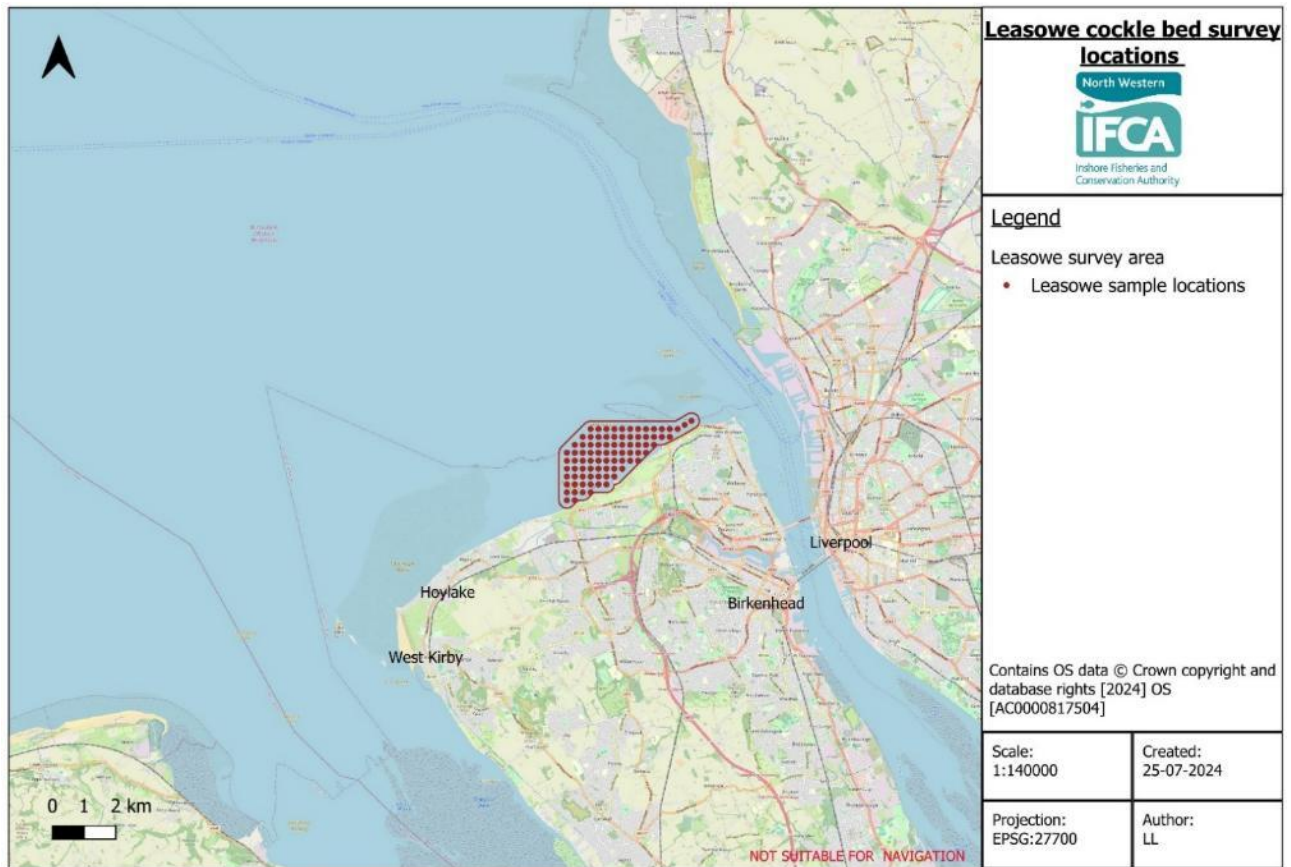


Figure 1: Illustration of position of Leasowe Survey Area.

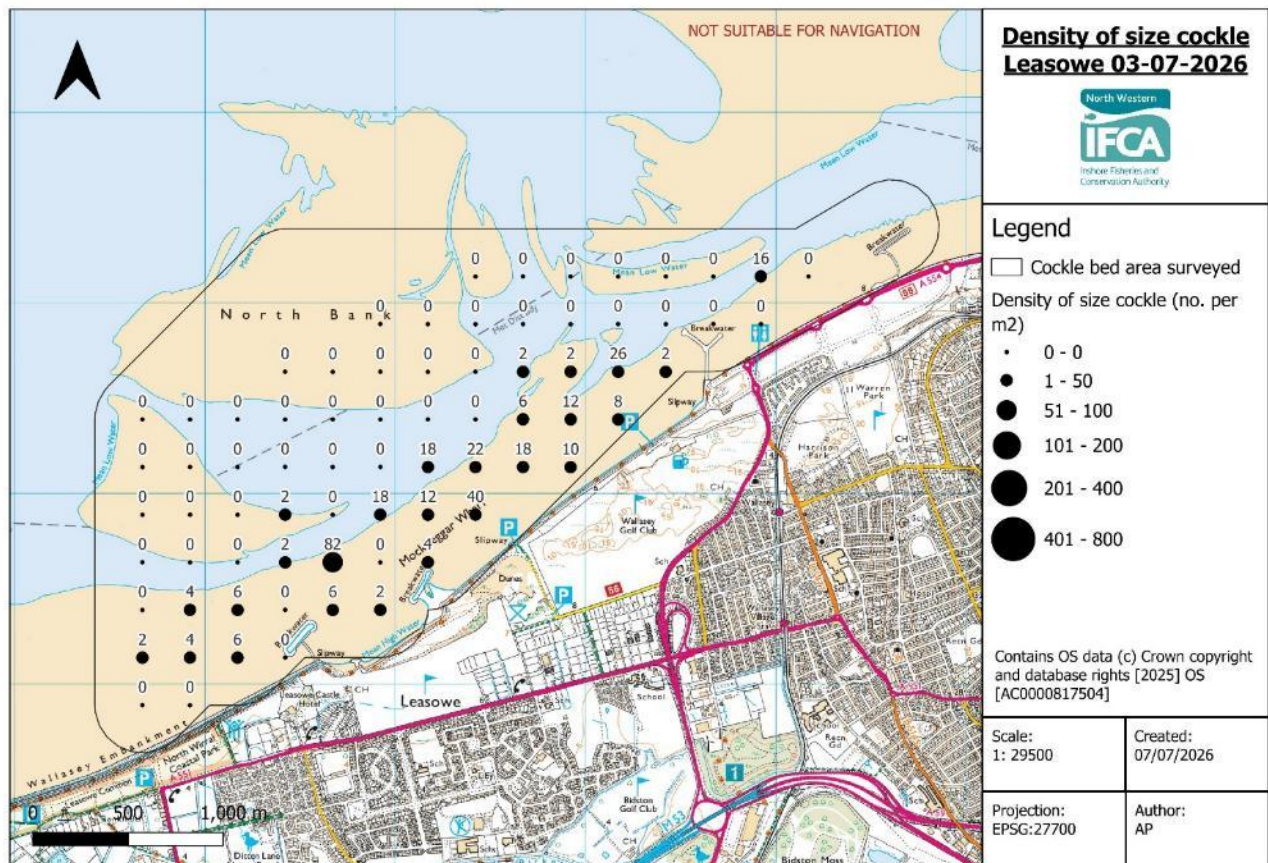


Figure 2: Density of size cockle per m² at Leasowe July 2026.

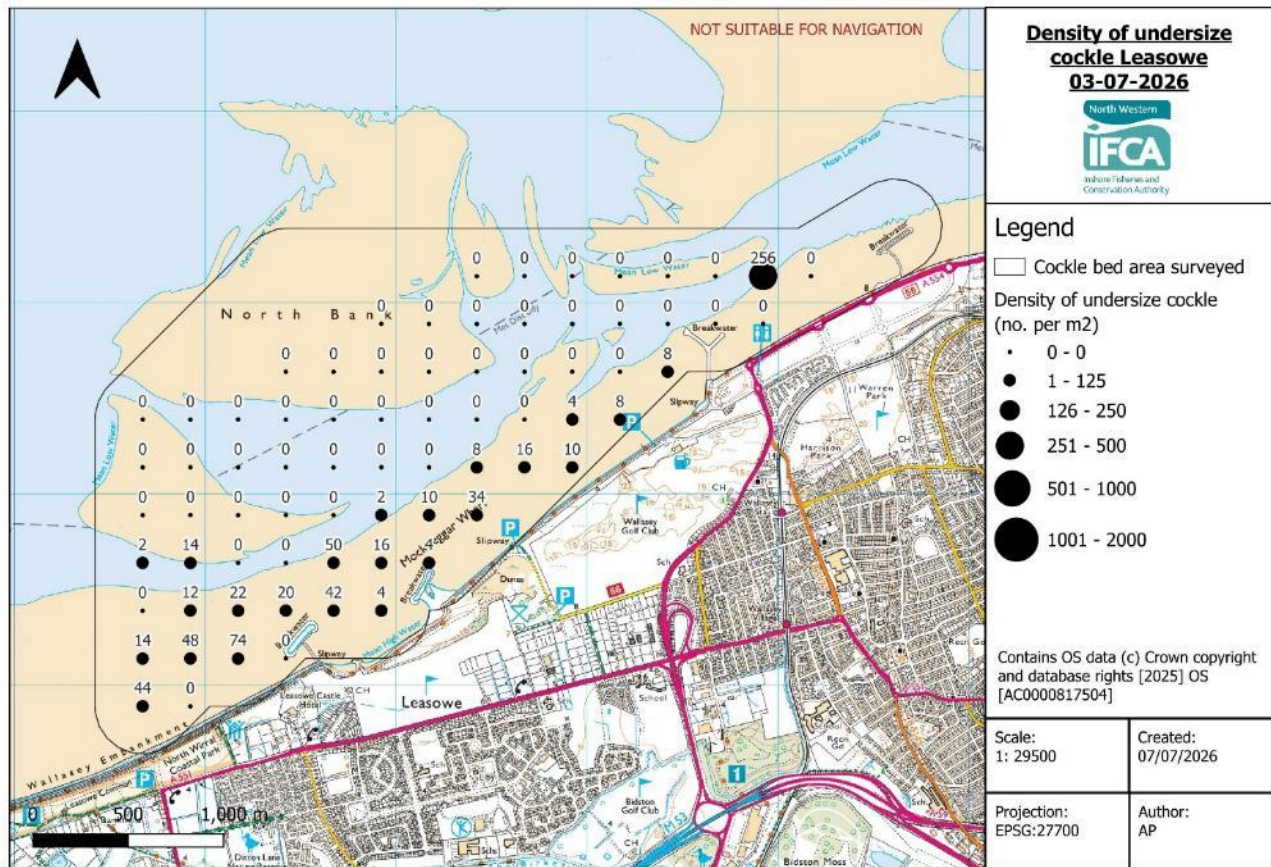


Figure 3: Density of undersize cockle per m² at Leasowe July 2026.

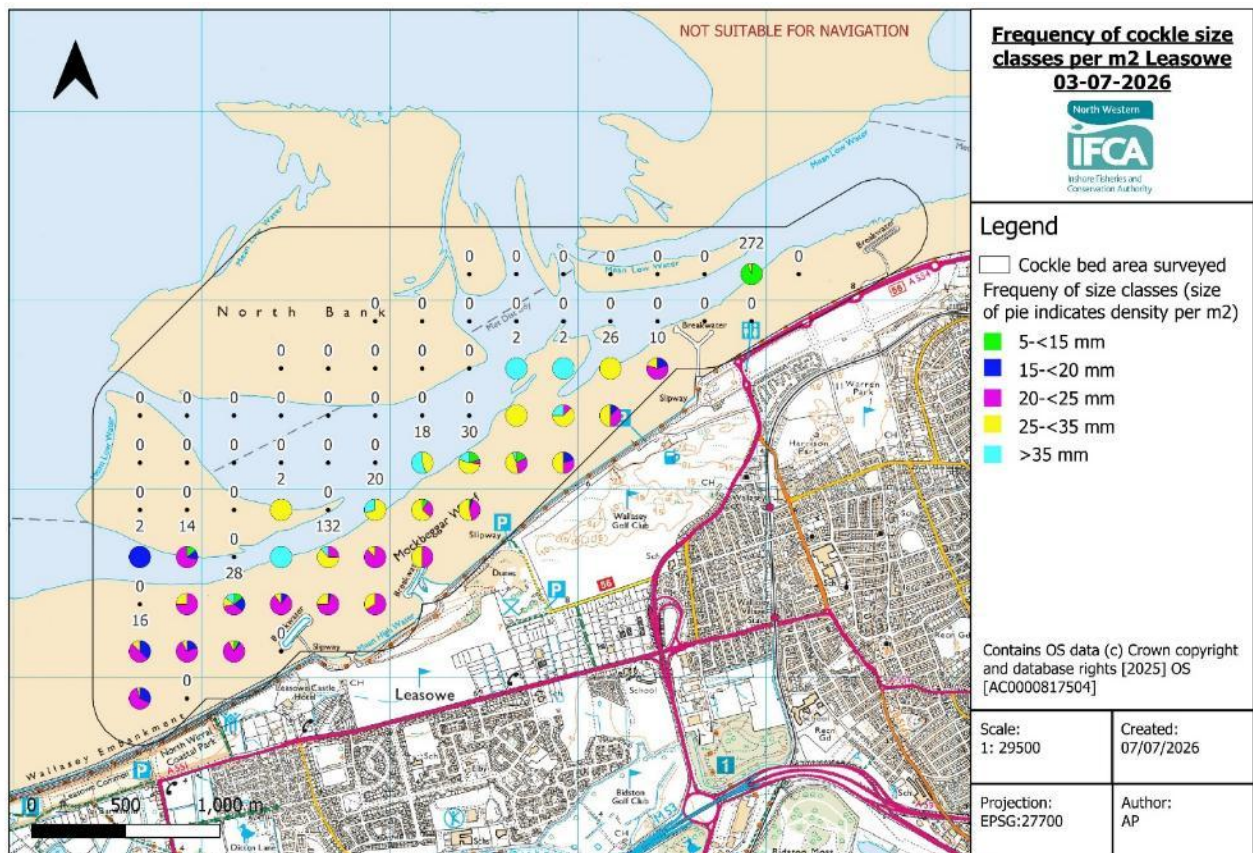


Figure 4: Frequency of size classes of cockle per m² at Leasowe July 2026.

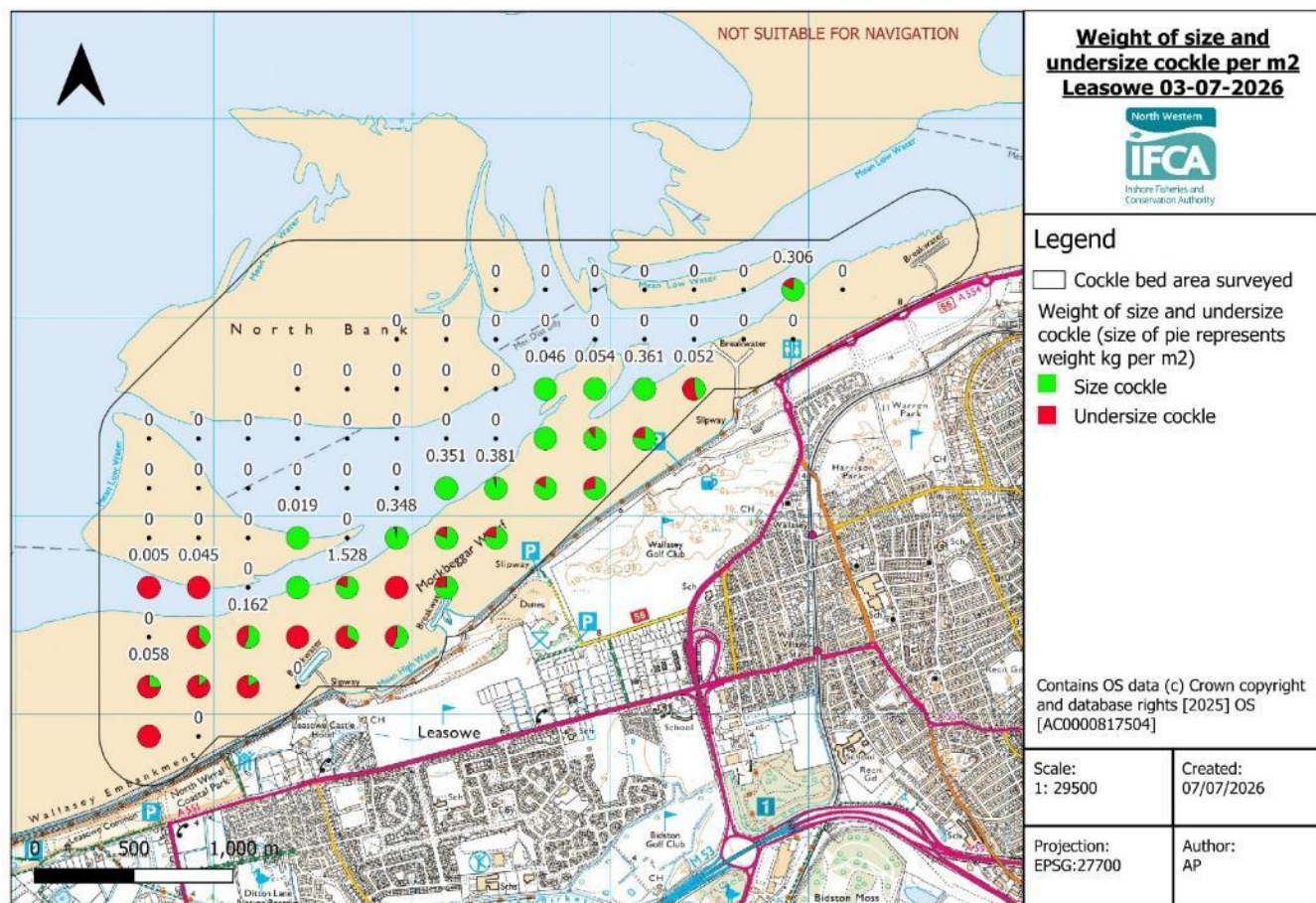


Figure 5: Weight of size and undersize cockle kg/m² at Leasowe July 2026.

Cockle Surveys and inspections – Ribble Estuary

Southport Cockle Survey 23-06-2026

Officers present: AB, RL, MT, AP

Tides: LW 13:20 2.6m (Liverpool Tides)

Survey method - Jumbo and 0.5m² quadrat

55 stations were sampled from a 350m grid. The survey grid location was based on the 2024 cockle surveys. The density of size cockle across the bed has remained low since the previous surveys in 2024 and 2025. Cockles of all size classes were low in density. There was minimal evidence of a 2026 settlement with no spat identified.

Means

Means were calculated from all stations with zero counts removed. Less than 5mm cockle was not used in the undersize figures due to the high variable survivability of cockle at this small size.

Mean number of size cockle	0.6 per m ²	(min 0, max 6)
Mean number of undersize cockle	9.2 per m ²	(min 0, max 118)
Mean number of 0-5mm cockle	0 per m ²	(min 0, max 0)

Mean weight of size cockle kg/m ²	0.011 kg/m ²	(min 0, max 0.046)
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Mean weight of undersize cockle kg/m ²	0.061 kg/m ²	(min 0, max 0.268)
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Maps

Maps were created showing the overall survey area, density of size cockle, density of undersize cockle (excluding 0-5mm cockle), the frequency of size classes, and the weight of undersize and size cockle. The size of the pie chart indicates the total density of cockles present,

Biomass

	Area of cockle present (ha)	Size Cockle (tonnes) ¹	Undersize Cockle (tonnes) ²
Southport	294	32	178

5-15 Class (tonnes)	15-20 Class (tonnes)	20-25 Class (tonnes)	25-35 Class (tonnes)	>35 Class (tonnes)
2.5	63	111	33	0

¹In regards to biomass size cockle defined as cockle which will not pass through a square gauge 20 x 20mm in size.

²The biomass of undersize cockle does not include any estimates of cockle less than 5mm due to the high variability of survival of this size class.

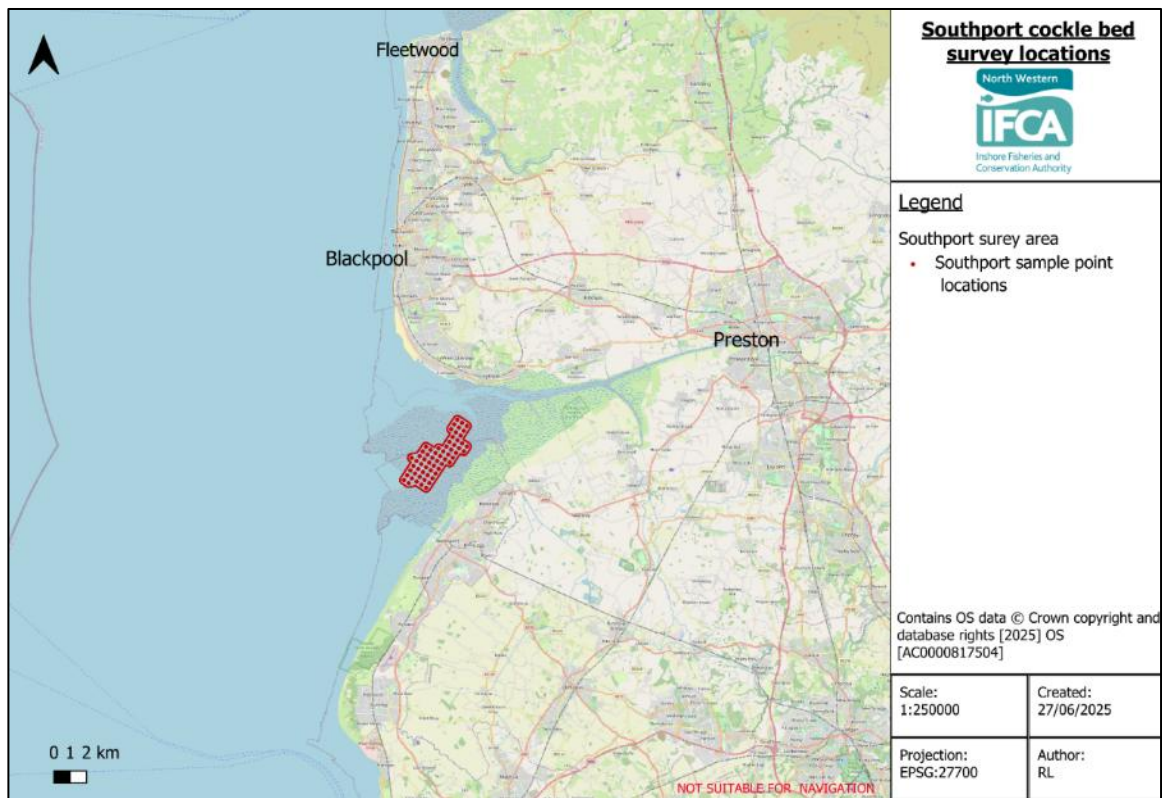


Figure 1. Illustration of Southport survey bed area with sample locations 23/06/26

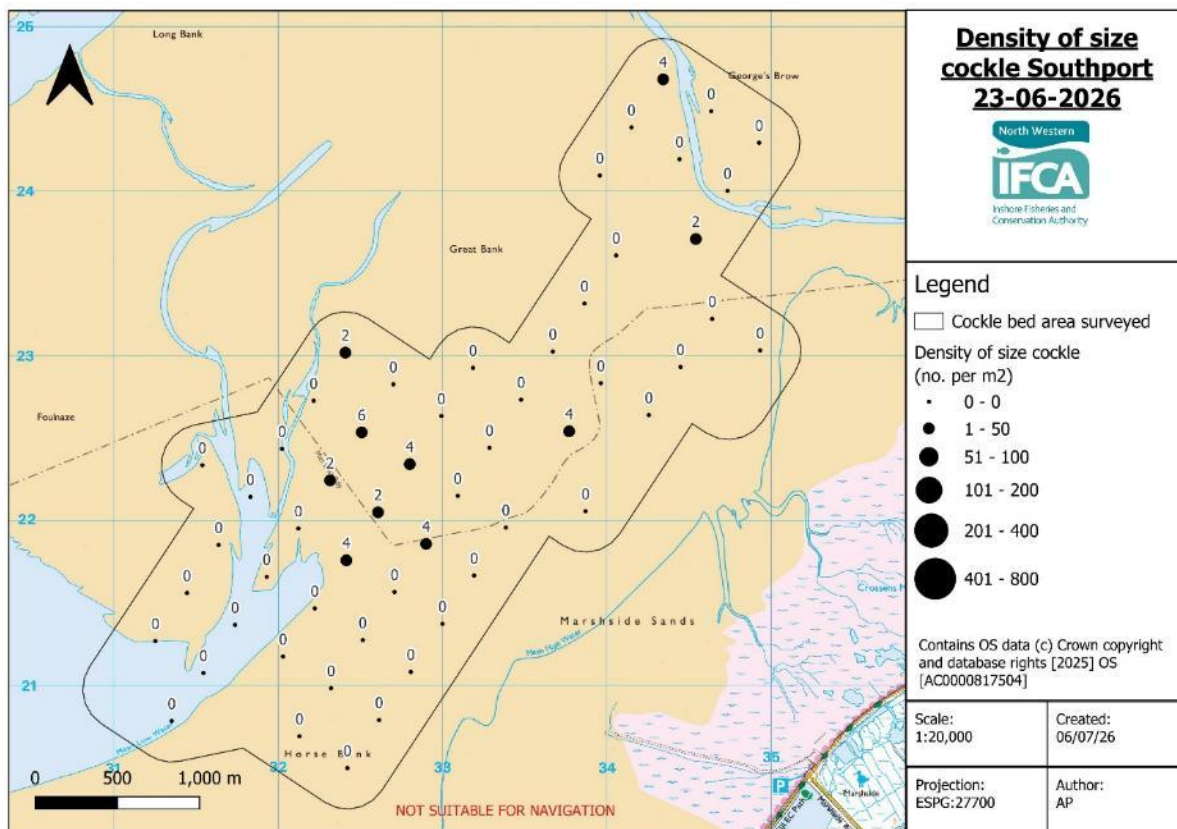


Figure 2. Density of size cockle per m² at Southport June 2026.

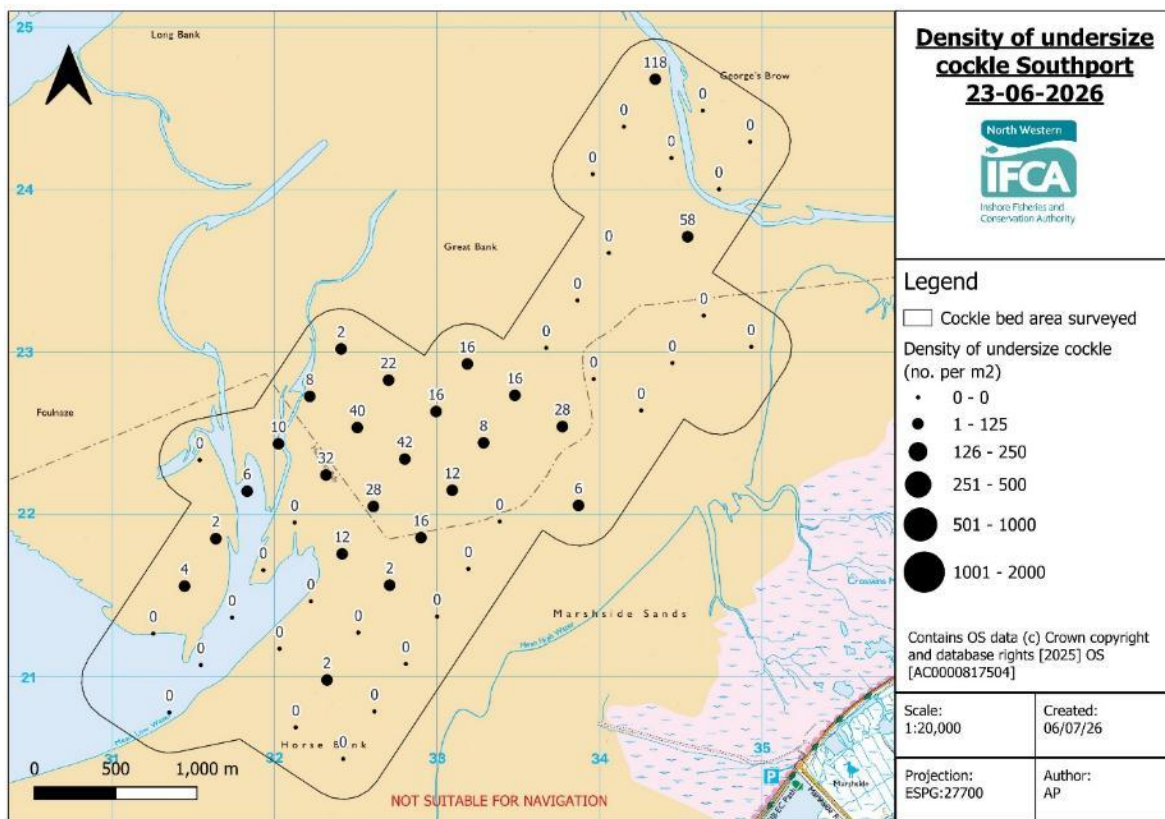


Figure 3. Density of undersize cockle per m² at Southport June 2026.

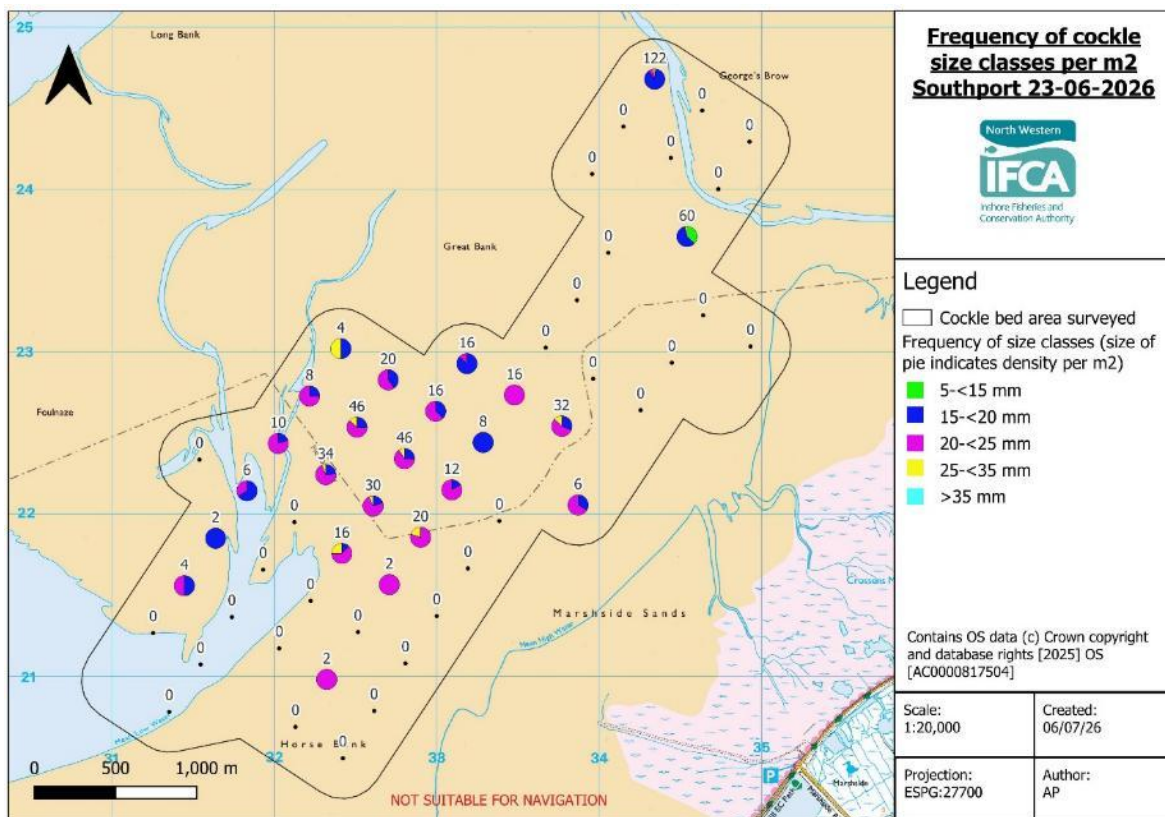


Figure 4. Frequency of size classes of cockle per m² at Southport June 2026.

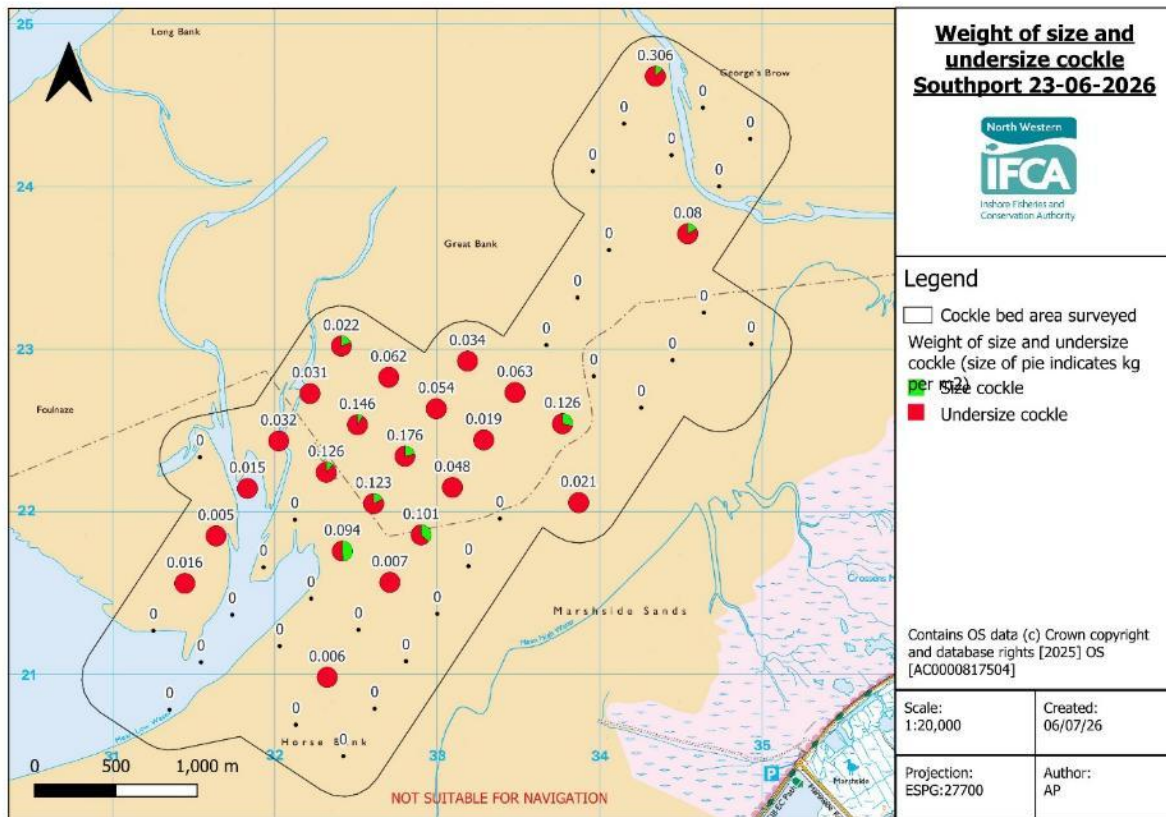


Figure 5. Weight of size and undersize cockle kg/m² at Southp