

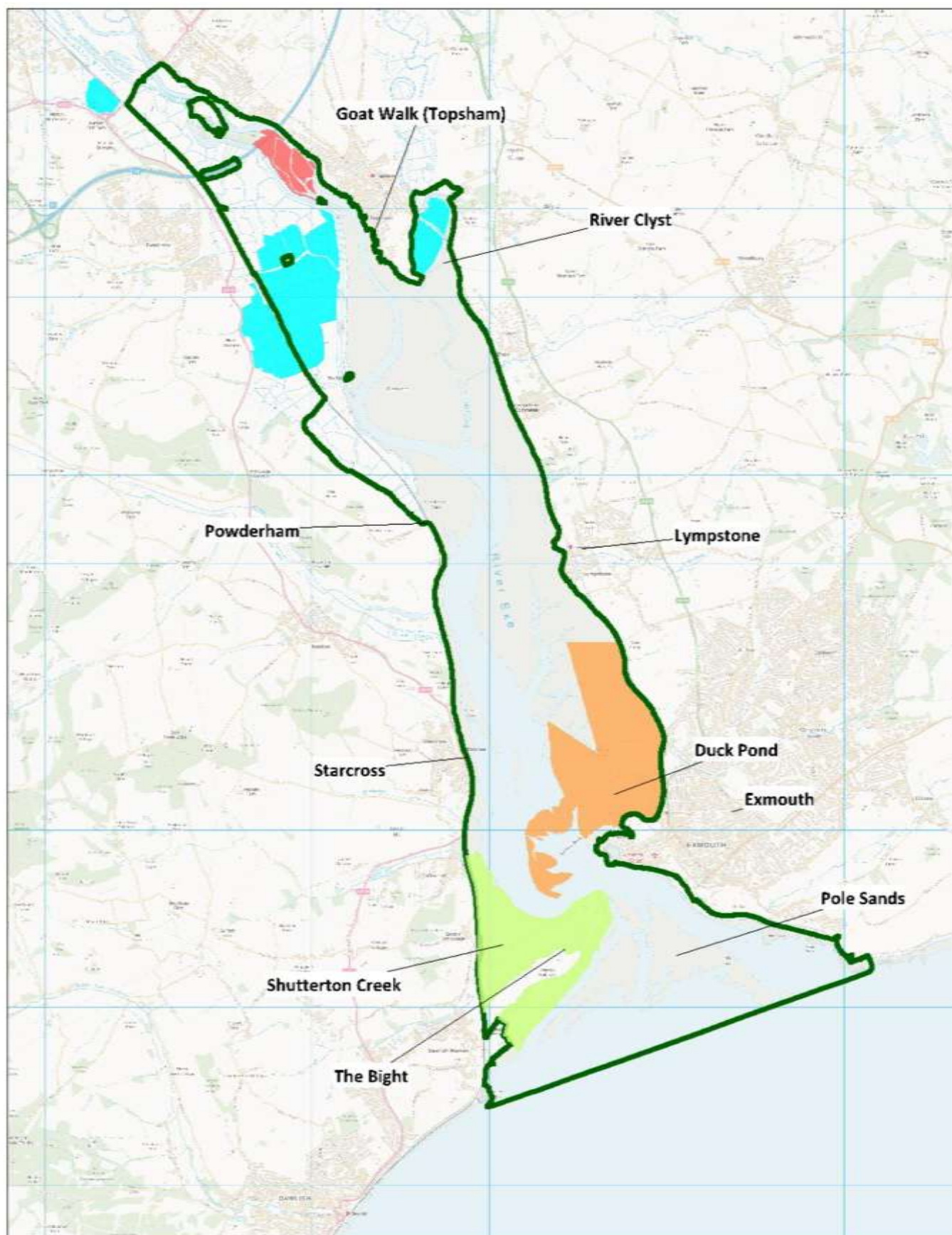


Exe Disturbance Study Map Annex



Liley, D., Cruickshanks, K., Waldon, J.
& Fearnley, H.

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Map 1. Exe Estuary SPA, relevant reserves and key locations mentioned in the text

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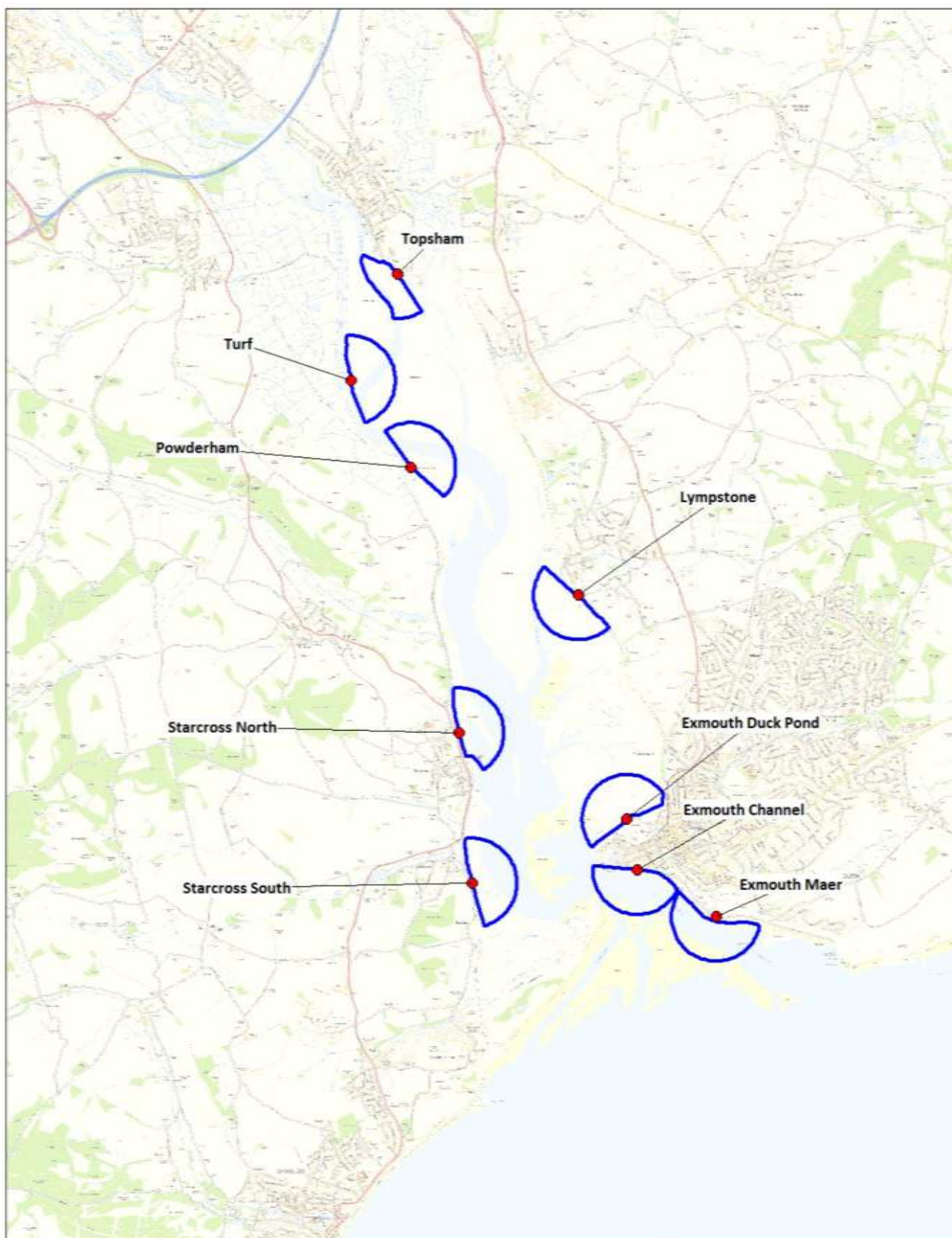




**Map 2. Survey Area
(Total counts of people)**

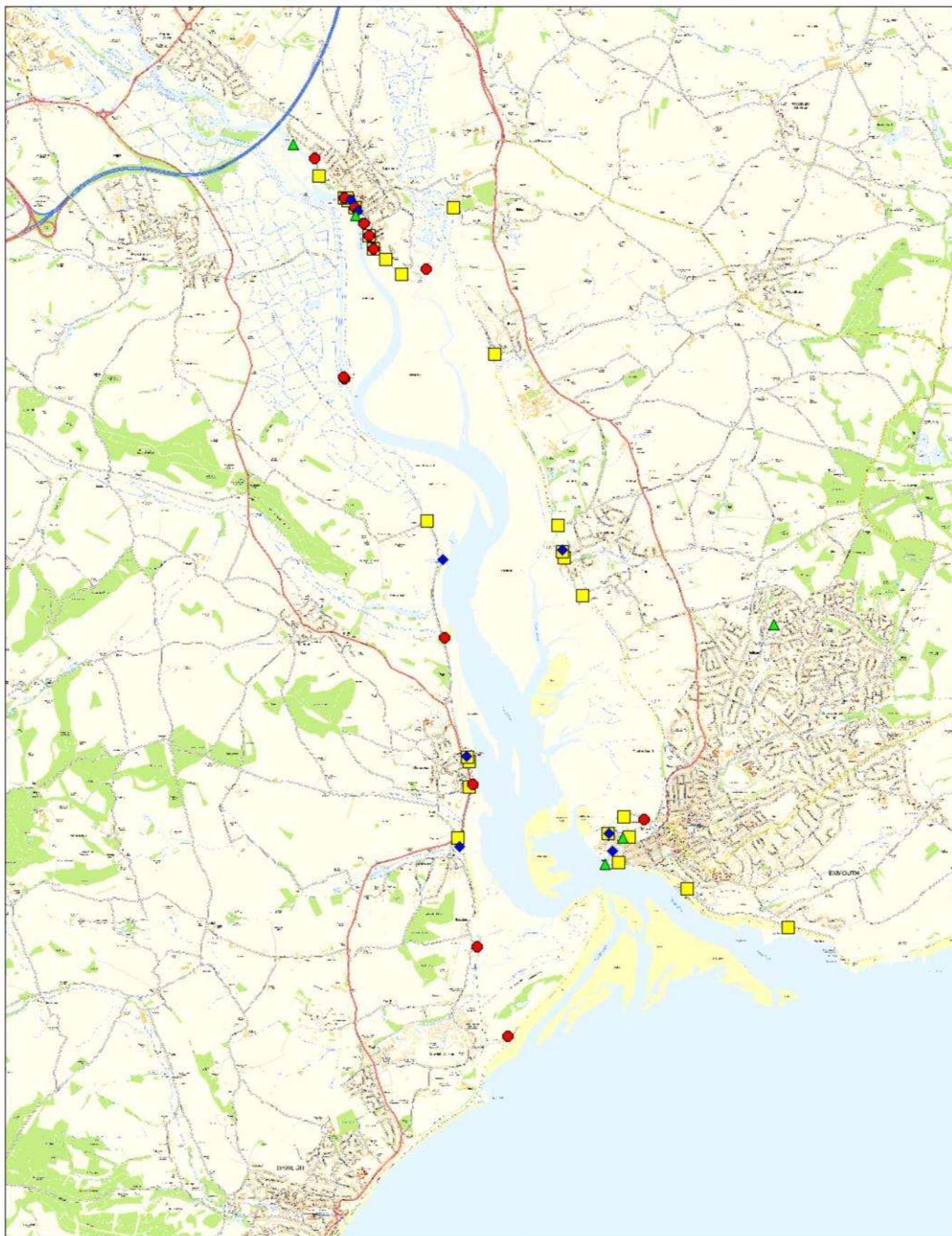


Recording area for total counts of people



**Map 3. Bird Survey Locations
(Standard Watches)**

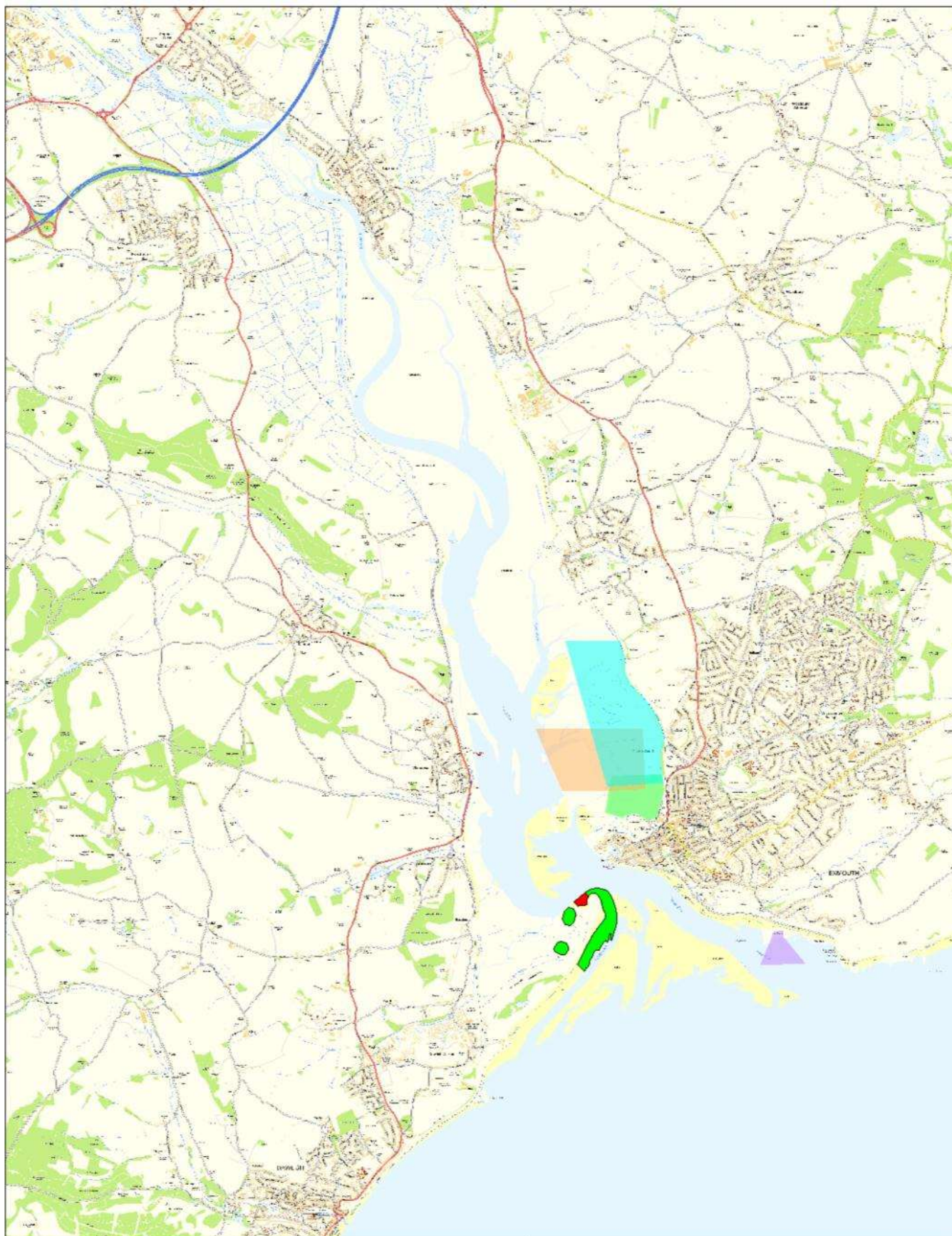
- Survey Point
- Recording area (500m max)



**Map 4. Infrastructure relating to boating/
water access**

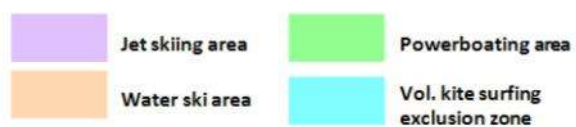
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- Slipway
- Other water access
- ◆ Main Boating Clubs
- ▲ Boat Yard

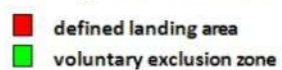


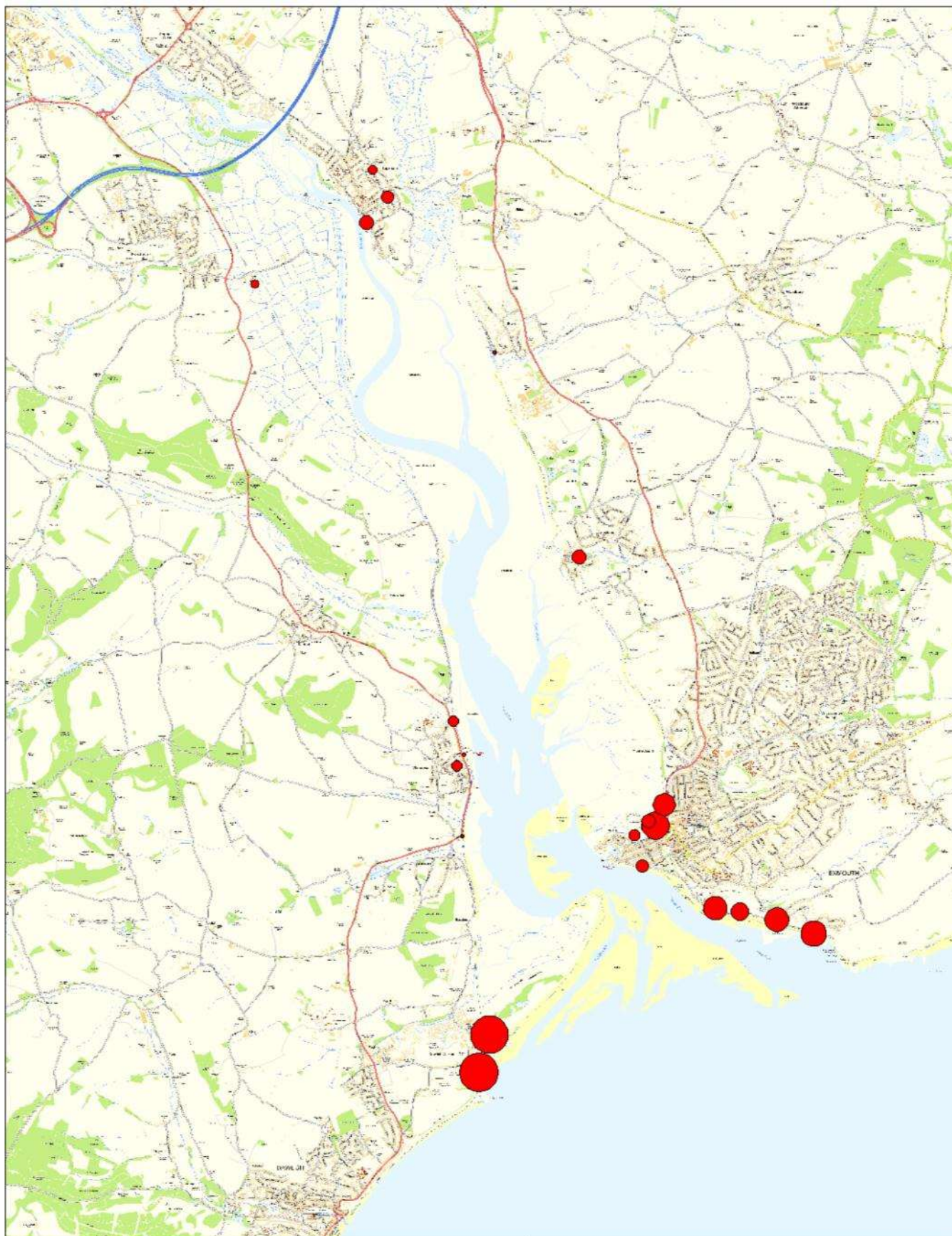
Map 5. Current zoning relating to water-based recreation

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Landing at Dawlish Warren

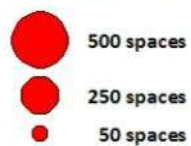




Map 6. Car-parking

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Parking Capacity





Map 7. Paths and Cycle Routes

Adapted from Exe Estuary Explorer leaflet and
Exe Estuary Partnership website

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- Cycle route, off road
- Footpath, off road

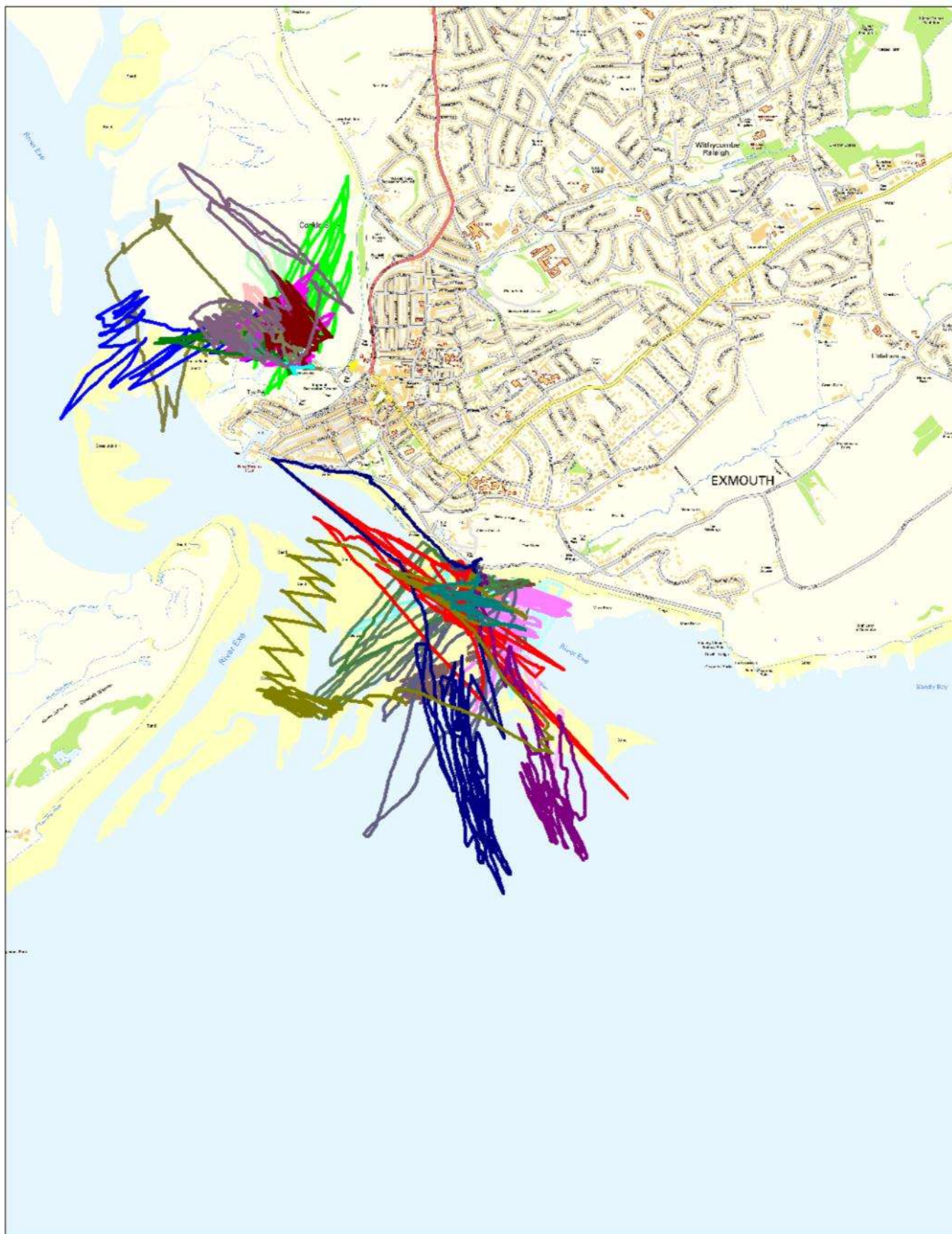
Note that these routes are not necessarily
Public Rights of Way



Map 8. GPS routes: Jet skiers

Four different routes shown, collected on two dates, March 2010. Colours show different routes.

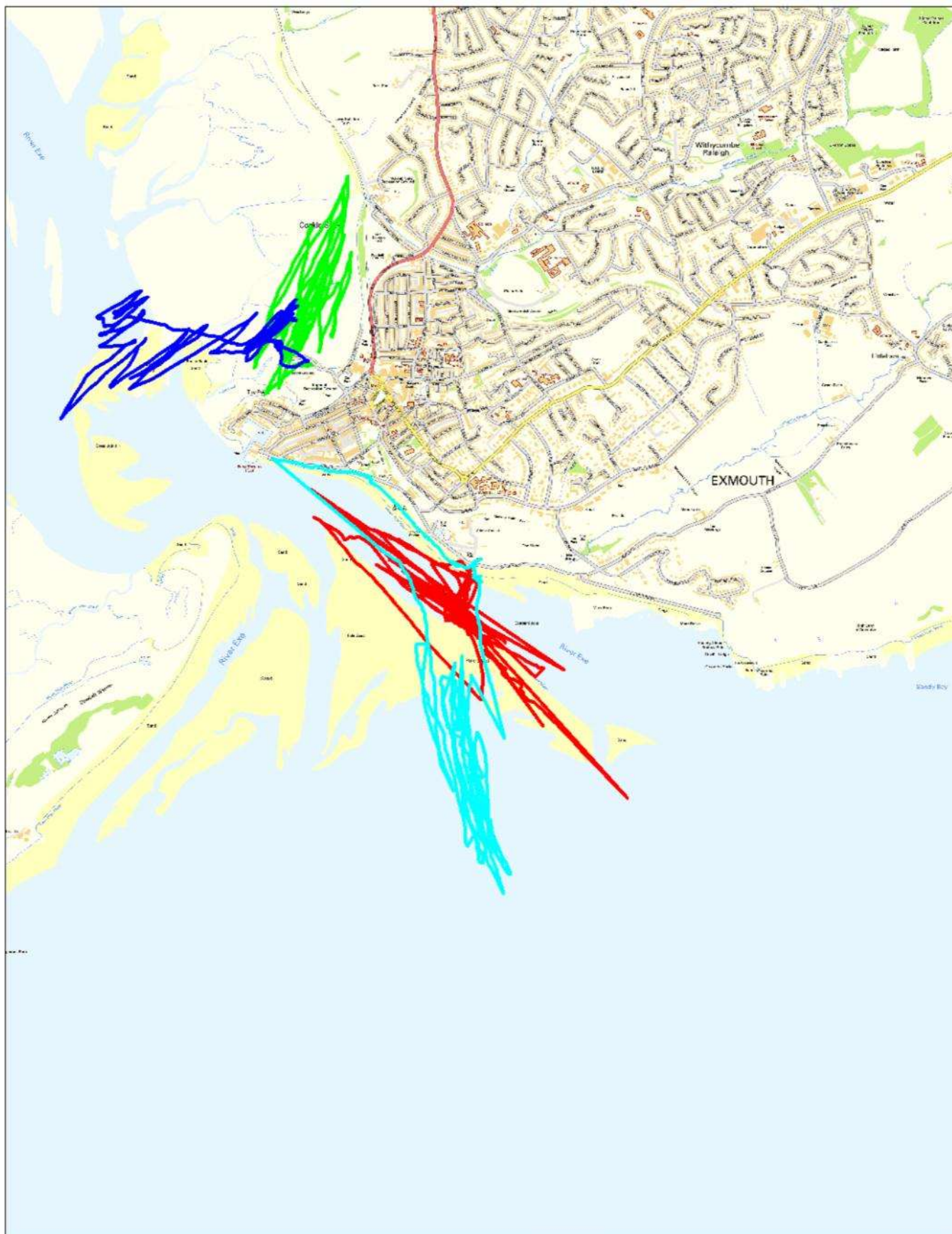
Contains Ordnance Survey data. © Crown copyright and database right 2011.



Map 9. GPS routes: Kite Surfing

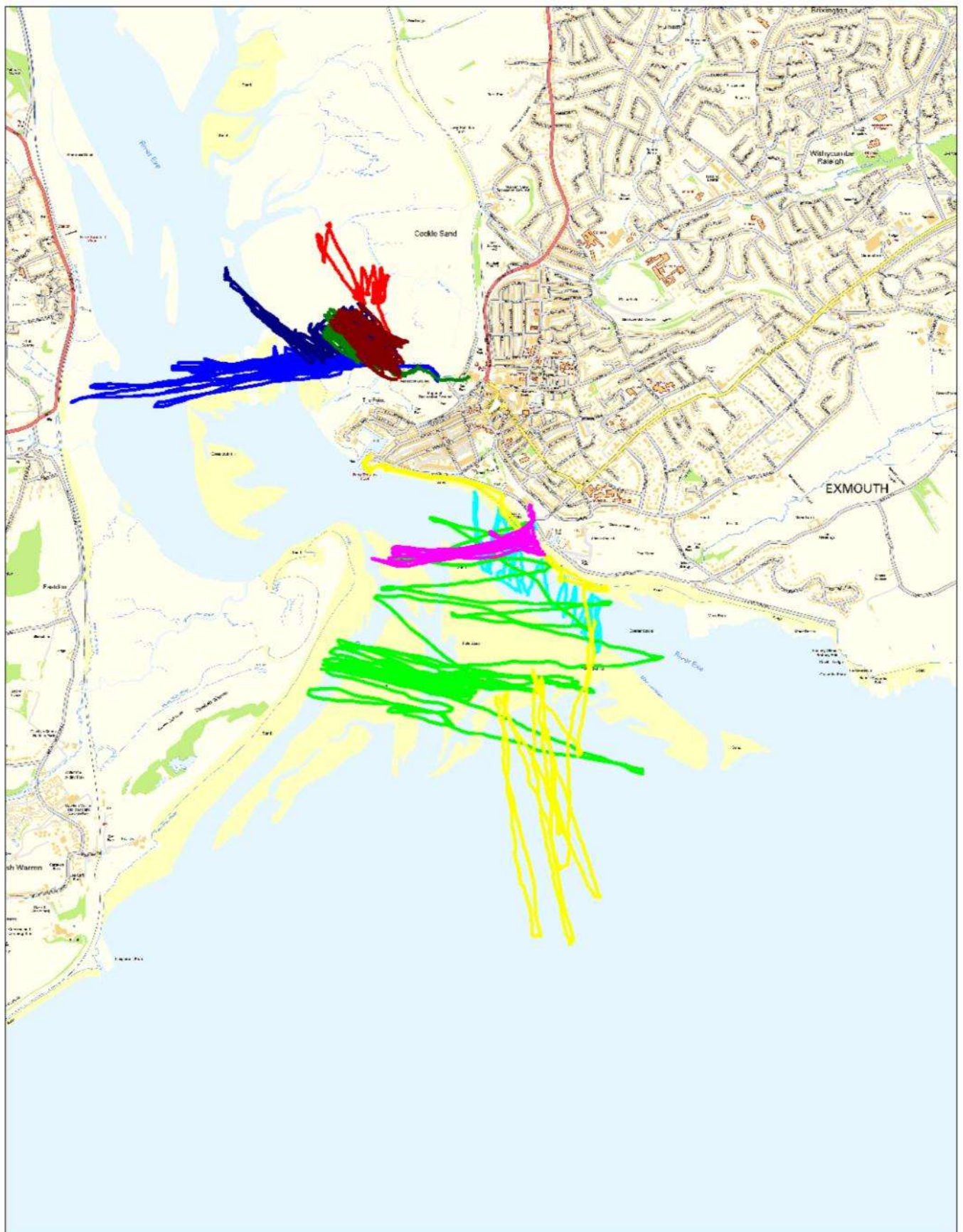
36 different routes shown, collected on 11 dates, 2009-2011. Colours show different routes.

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Map 10. GPS routes: Kite Surfing
4 selected routes only

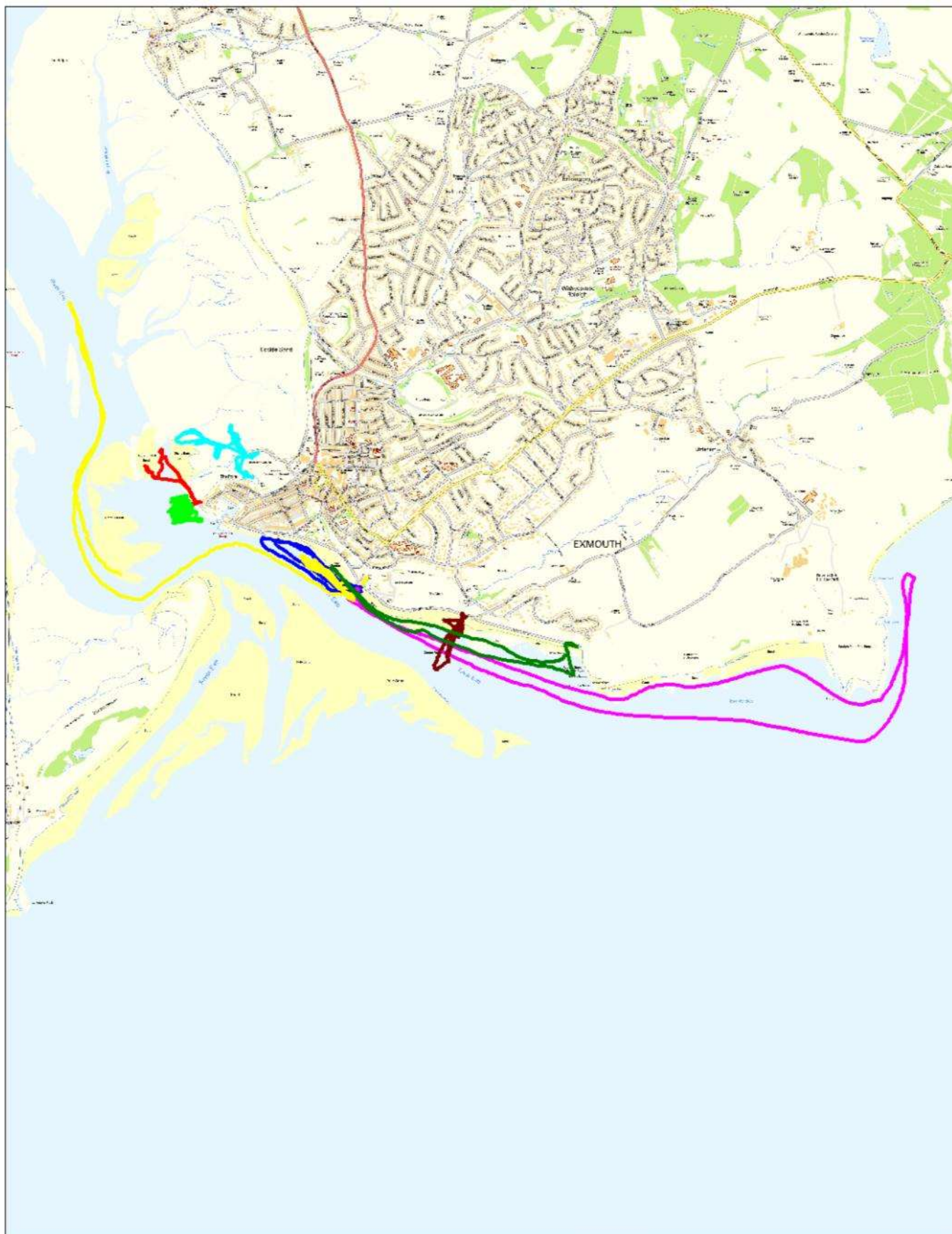
- 01/09/2009 (S-w wind)
- 04/09/2009 (N-w wind)
- 14/03/2010 (N wind)
- 20/11/2010 (E wind)



Map 11. GPS routes: Windsurfing

9 different routes shown, collected on 5 dates, 2009-2011. Colours show different routes.

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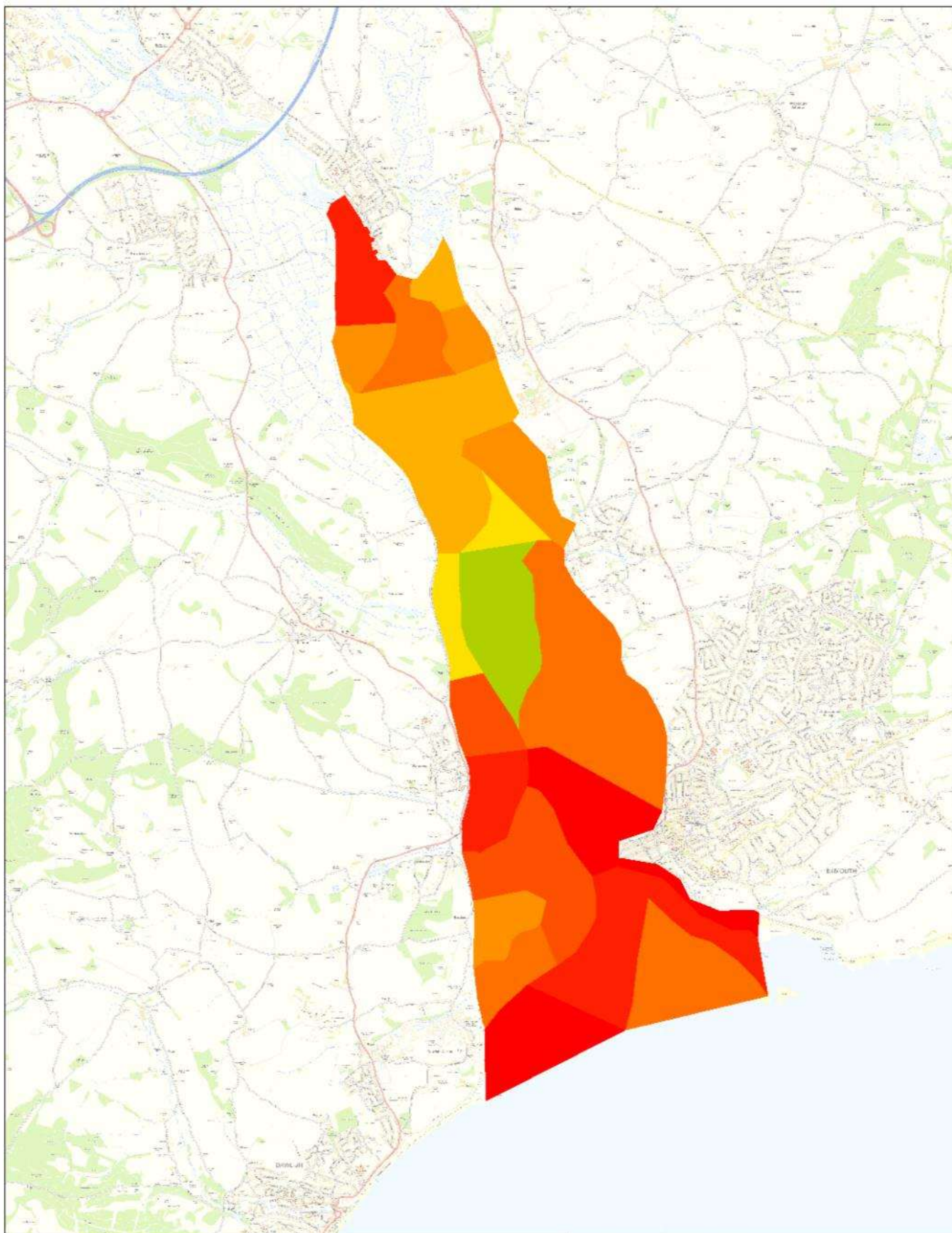


Map 12. GPS routes: Canoes/Row/P'dleboards

10 different routes shown, collected on 8 dates, 2009-2011. Colours show different activities/dates.

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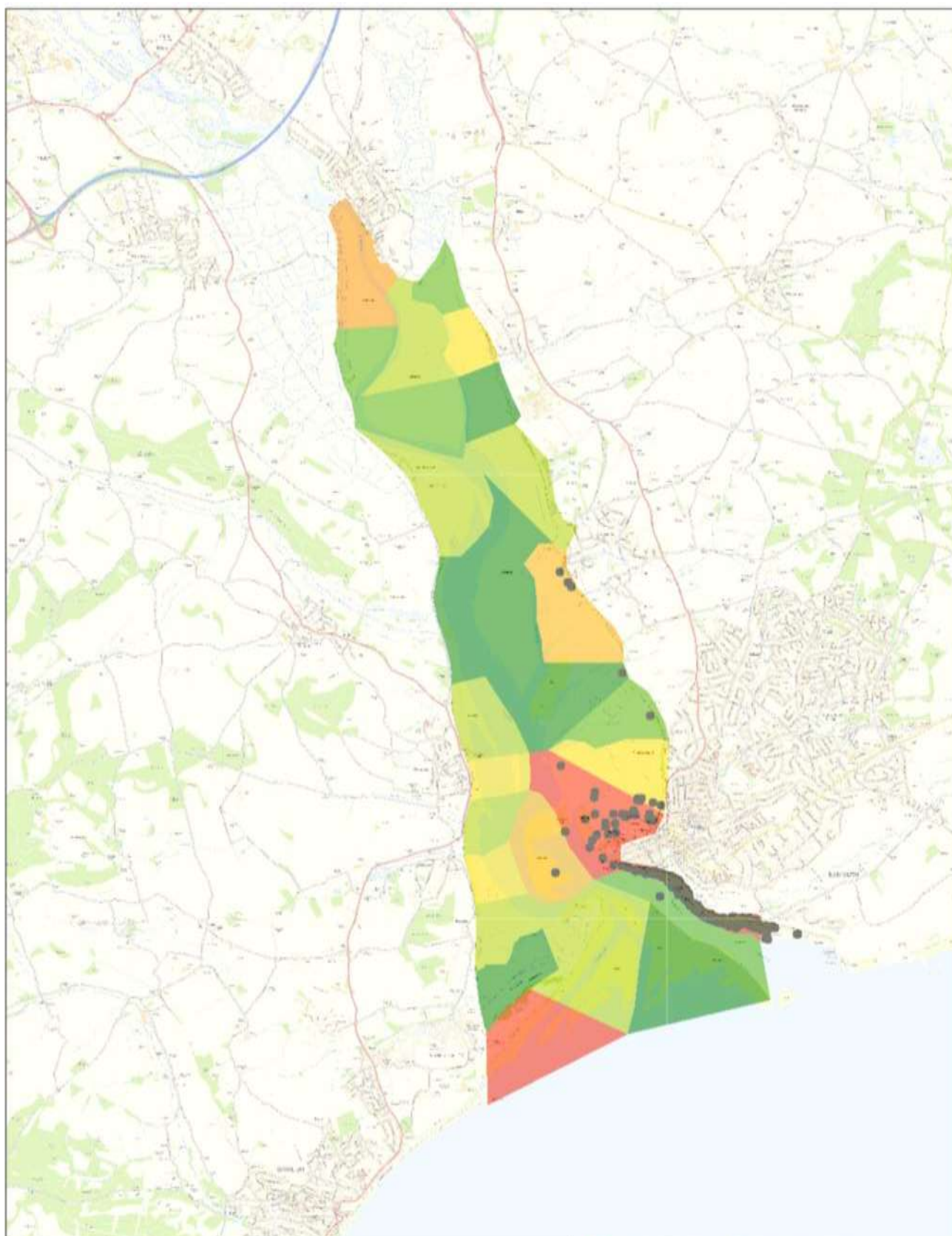
- Canoe/ row 11/10/2009 (1)
- Canoe/ row 14/3/2010 (2)
- Canoe/ row 28/3/2010 (1)
- Canoe/ row 04/04/2010 (1)
- Canoe/ row 11/4/2010 (2)
- Canoe/ row 10/10/2010 (1)
- Paddleboard 18/6/2010 (1)
- Paddleboard 27/6/2010 (1)



**Map 13. Matrix Scores:
Overall score for 'busy-ness'**

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4.5 to 5 (3)	2.5 to 3 (4)
4 to 4.5 (5)	2 to 2.5 (5)
3.5 to 4 (4)	1.5 to 2 (3)
3 to 3.5 (7)	1 to 1.5 (1)

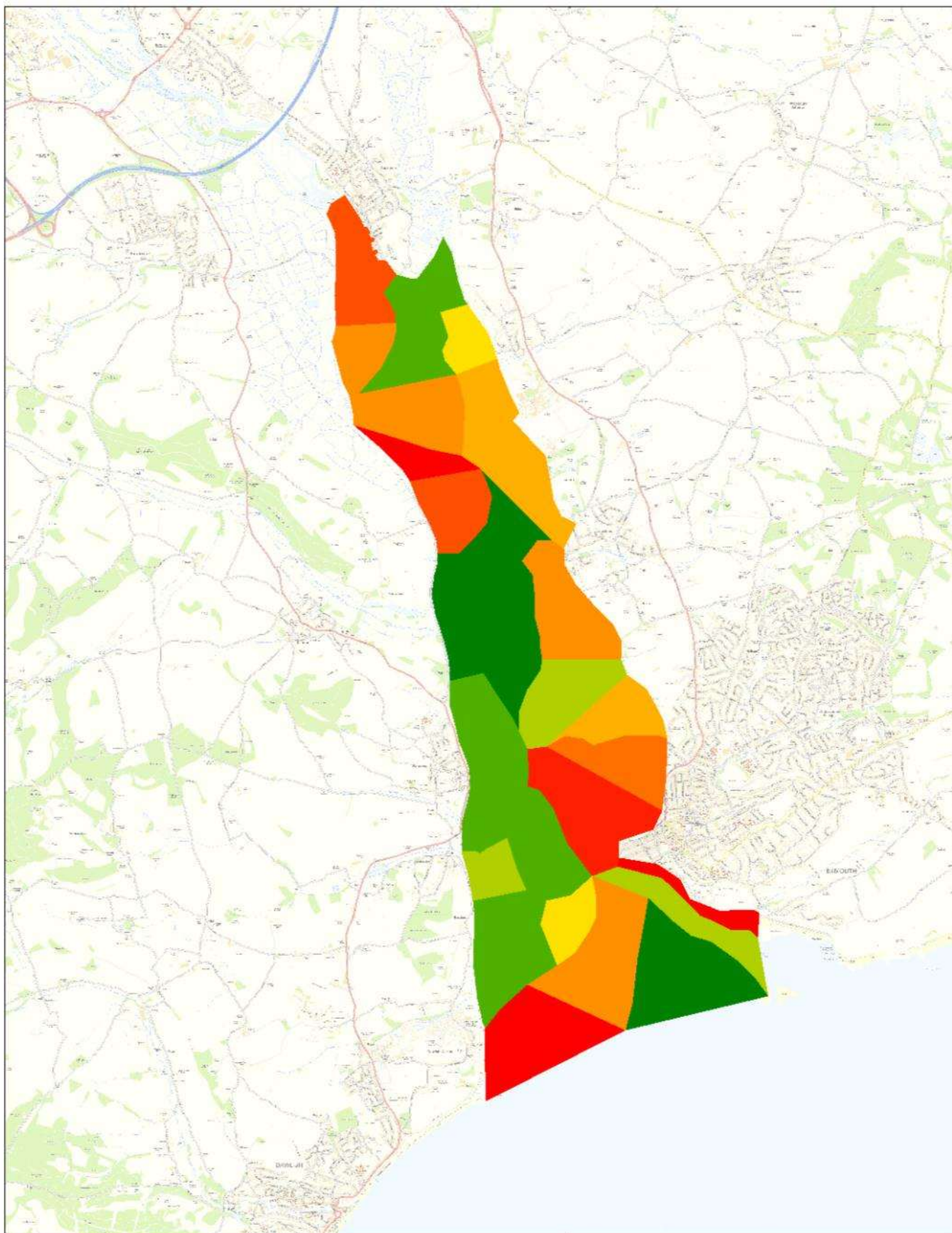


**Map 14. Matrix Scores:
Dogs off-leads on intertidal**

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4 to 4.5 (3)	1 to 1.5 (9)
2.5 to 3 (1)	0.5 to 1 (5)
2 to 2.5 (2)	0 to 0.5 (8)
1.5 to 2 (4)	

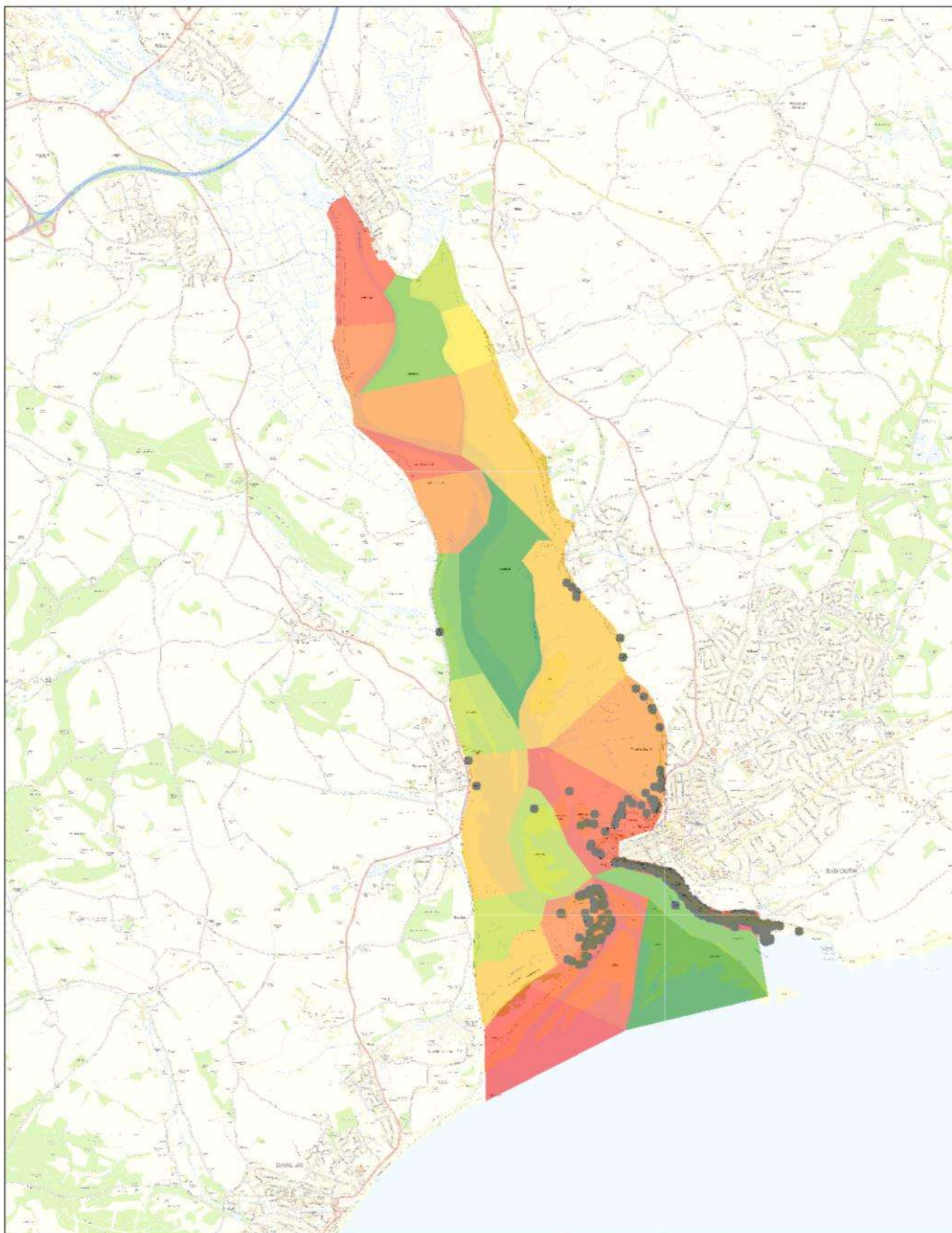
Dots show observations of dogs off lead from total counts (i.e. for the areas of Lympstone only)



**Map 15. Matrix Scores:
Dog walking along shore**

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4.5 to 5 (3)	2 to 2.5 (3)
4 to 4.5 (1)	1.5 to 2 (2)
3.5 to 4 (2)	1 to 1.5 (3)
3 to 3.5 (1)	0.5 to 1 (8)
2.5 to 3 (4)	0 to 0.5 (5)

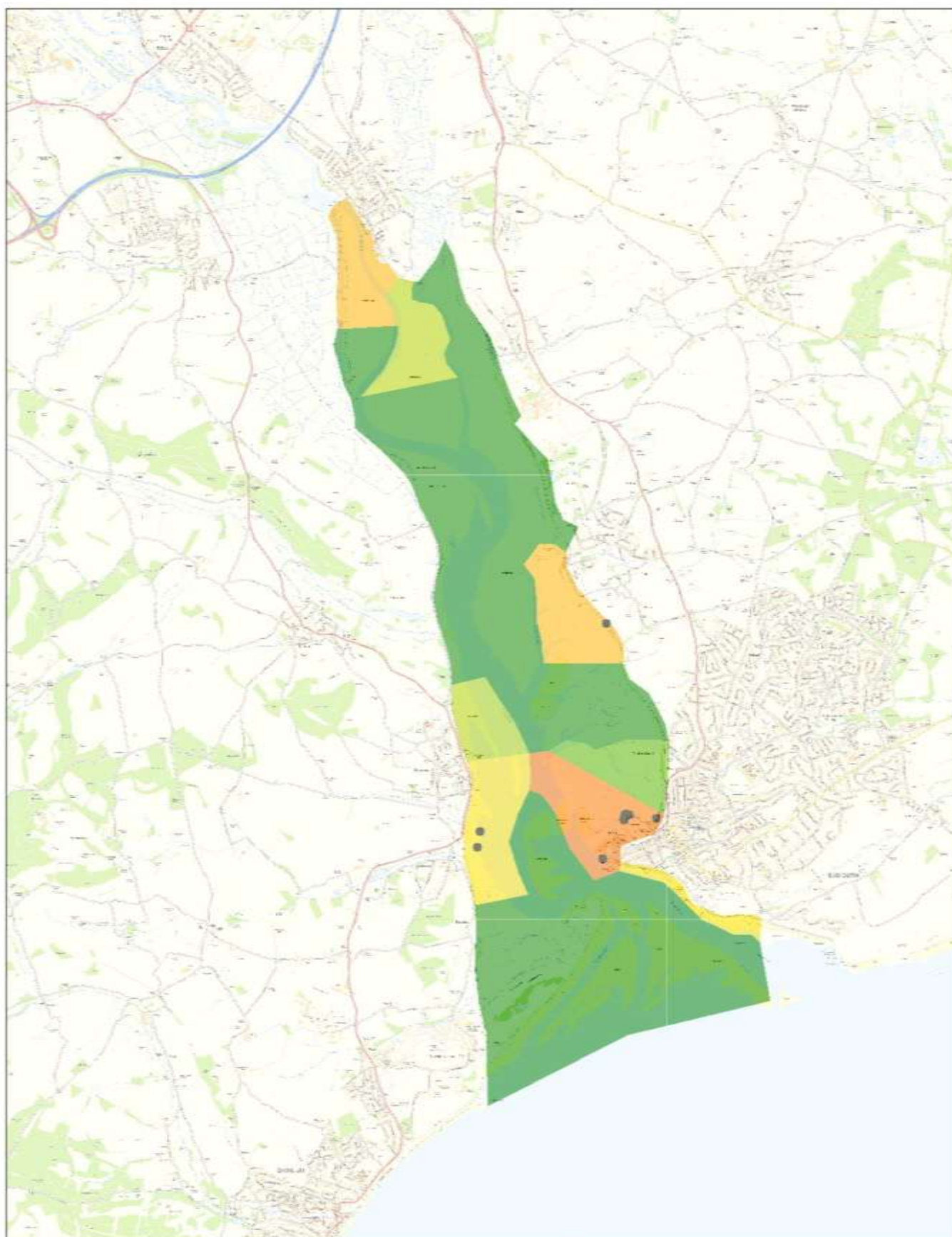


**Map 16. Matrix Scores:
Walking**

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4.5 to 5 (2)	1.5 to 2 (1)
4 to 4.5 (4)	1 to 1.5 (4)
3.5 to 4 (2)	0.5 to 1 (4)
3 to 3.5 (4)	0 to 0.5 (3)
2 to 2.5 (8)	

Dots show observations of walkers from total counts (i.e. for the area s. of Lympstone only)

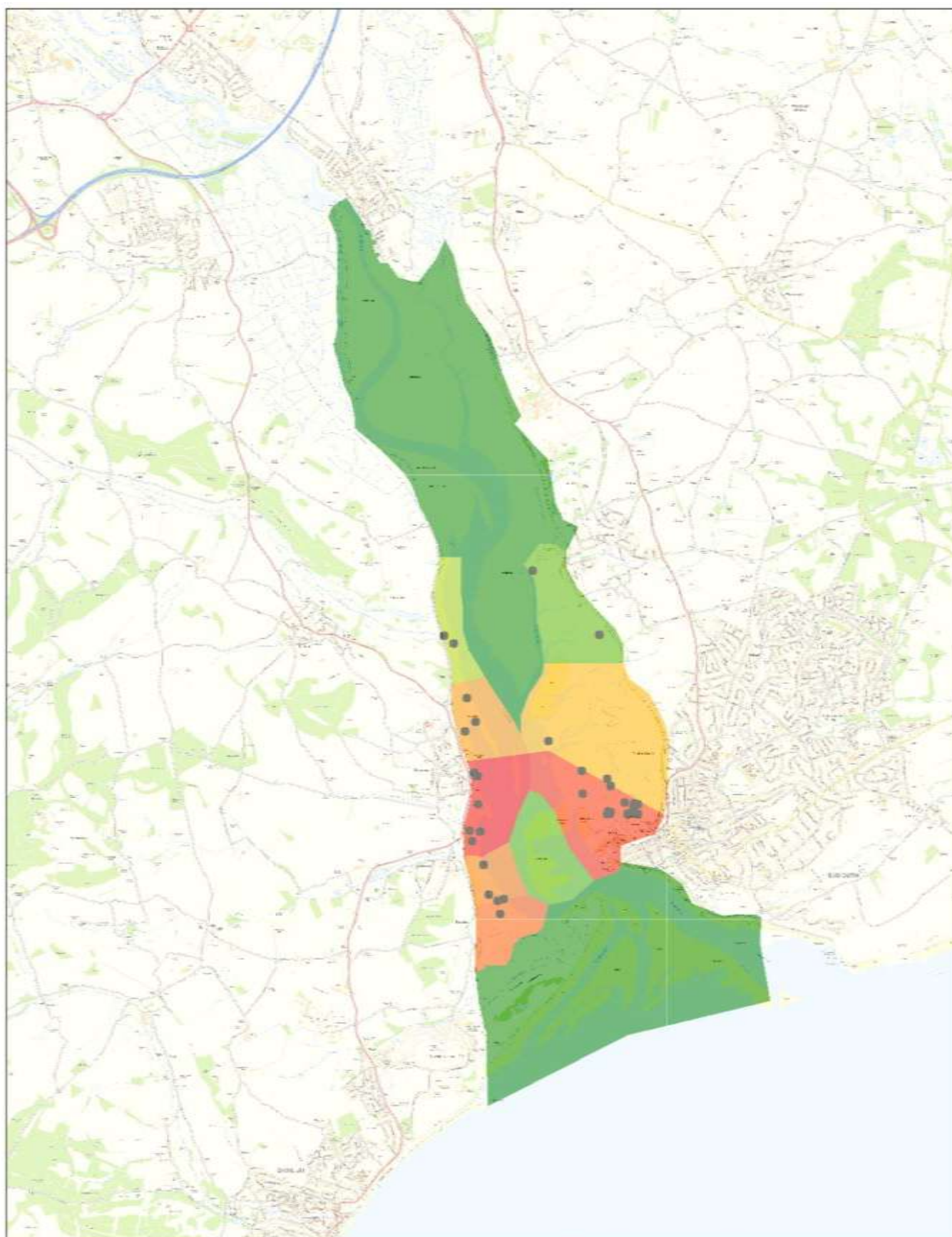


**Map 17. Matrix Scores:
Motor-vehicles on intertidal/sea-wall**

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3 to 3.5 (1)	1 to 1.5 (2)
2 to 2.5 (2)	0.5 to 1 (1)
1.5 to 2 (4)	0 to 0.5 (22)

Dots show observations of vehicles from total counts (i.e. for the area s. of Lymestone only)

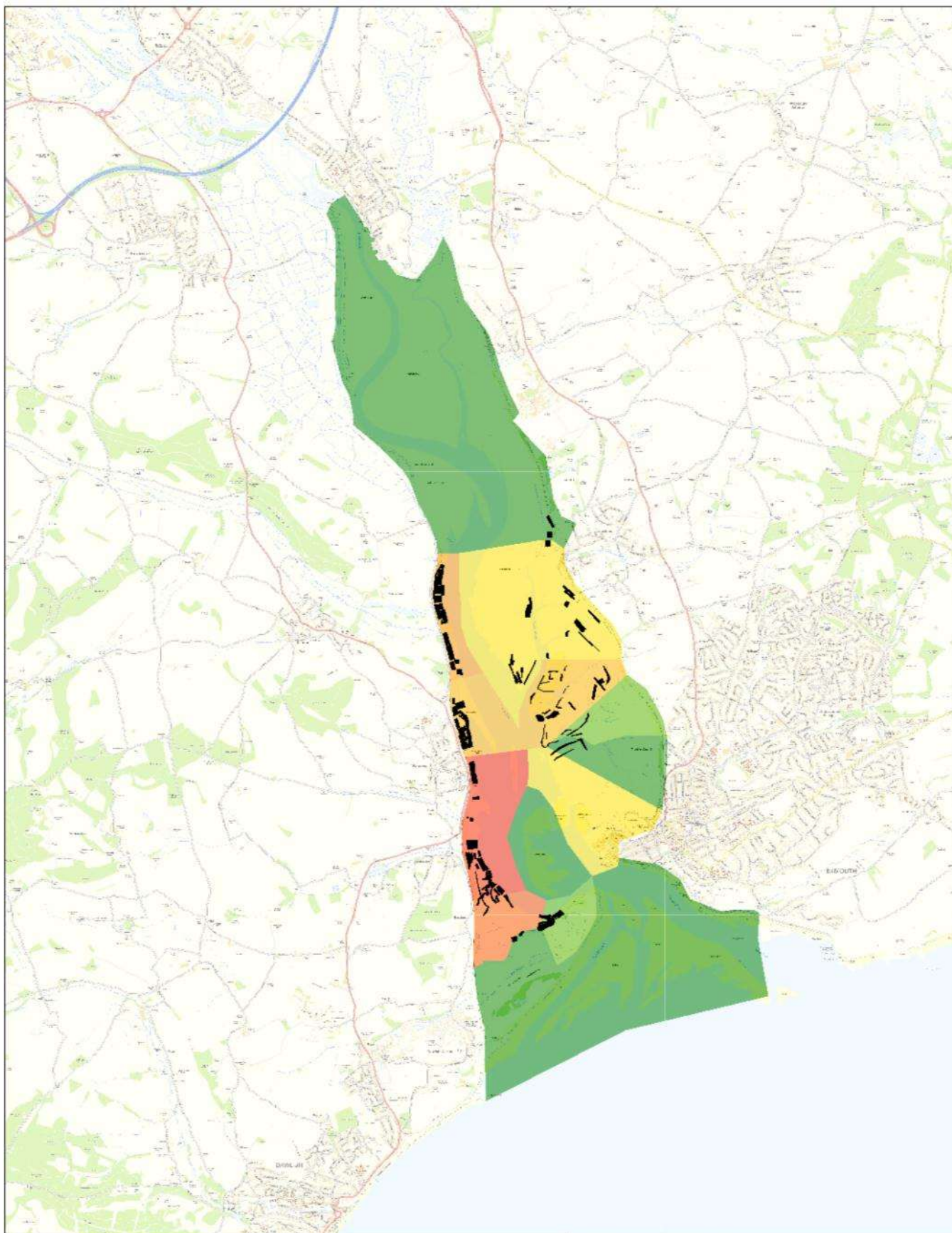


**Map 18. Matrix Scores:
Bait-digging**

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4.5 to 5 (2)	2 to 2.5 (3)
4 to 4.5 (1)	1 to 1.5 (2)
3.5 to 4 (1)	0.5 to 1 (2)
3 to 3.5 (1)	0 to 0.5 (19)
2.5 to 3 (1)	

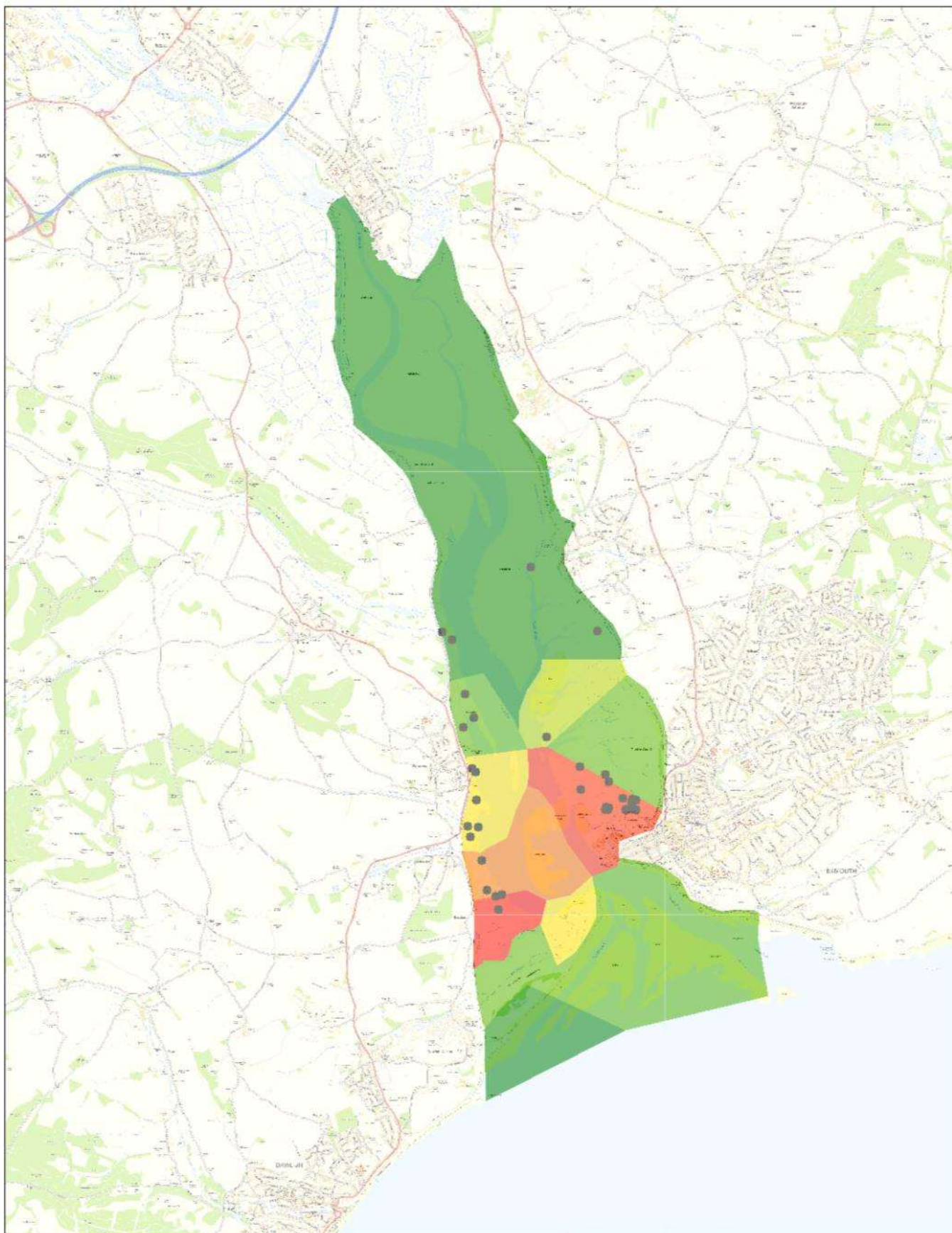
Dots show observations of bait digging/tiling/shellfishing from total counts (i.e. for the area s. of Lymington only)



**Map 19. Matrix Scores:
Crab Tiling**

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Black polygons show actual crab-tiling locations. Data provided by the Exe Estuary Management Partnership.

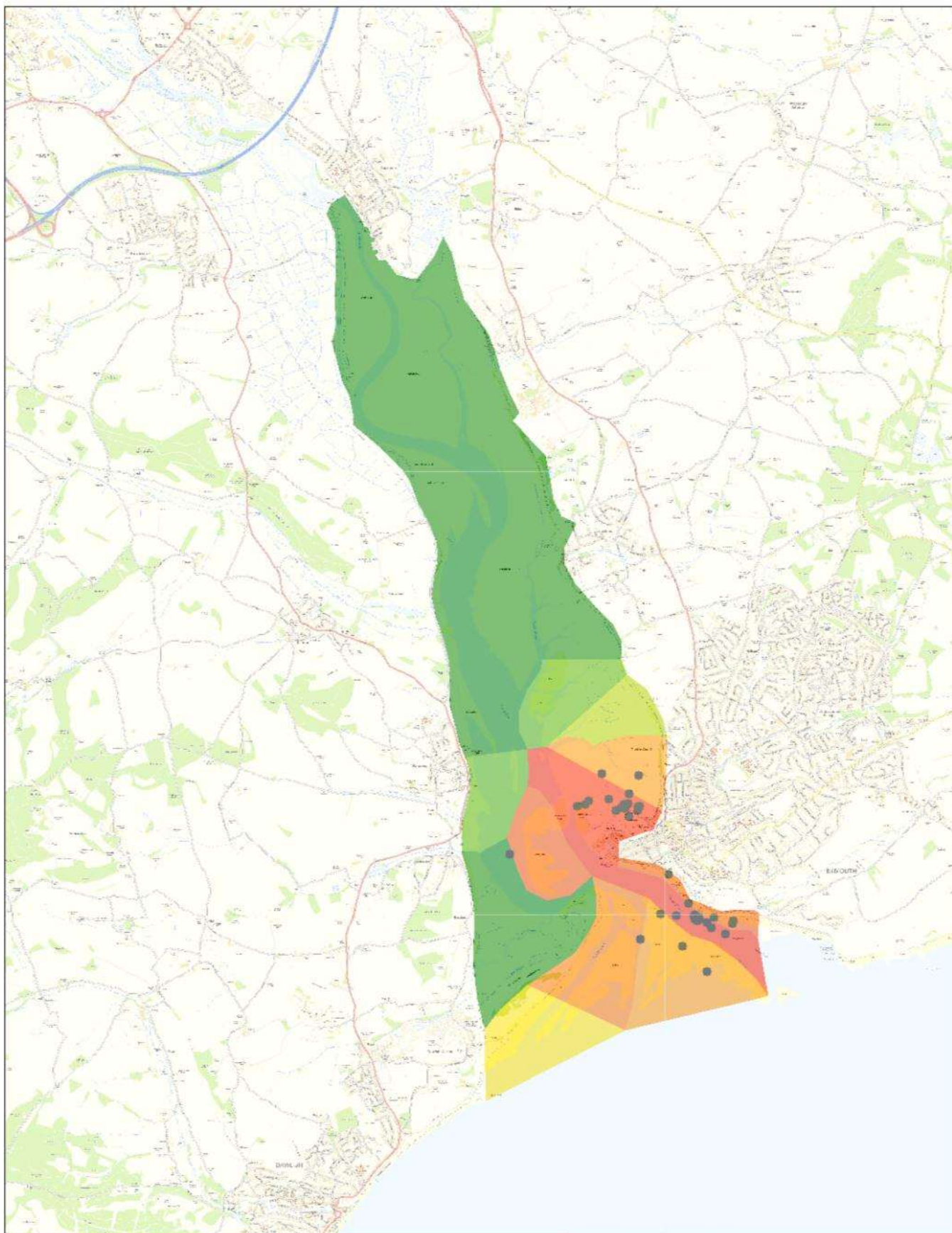


**Map 20. Matrix Scores:
Shell fishing**

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4.5 to 5 (1)	1 to 1.5 (1)
4 to 4.5 (1)	0.5 to 1 (8)
3 to 3.5 (2)	0 to 0.5 (16)
1.5 to 2 (3)	

Dots show observations of bait digging/tiling/shellfishing from total counts (i.e. for the area s. of Lymington only)

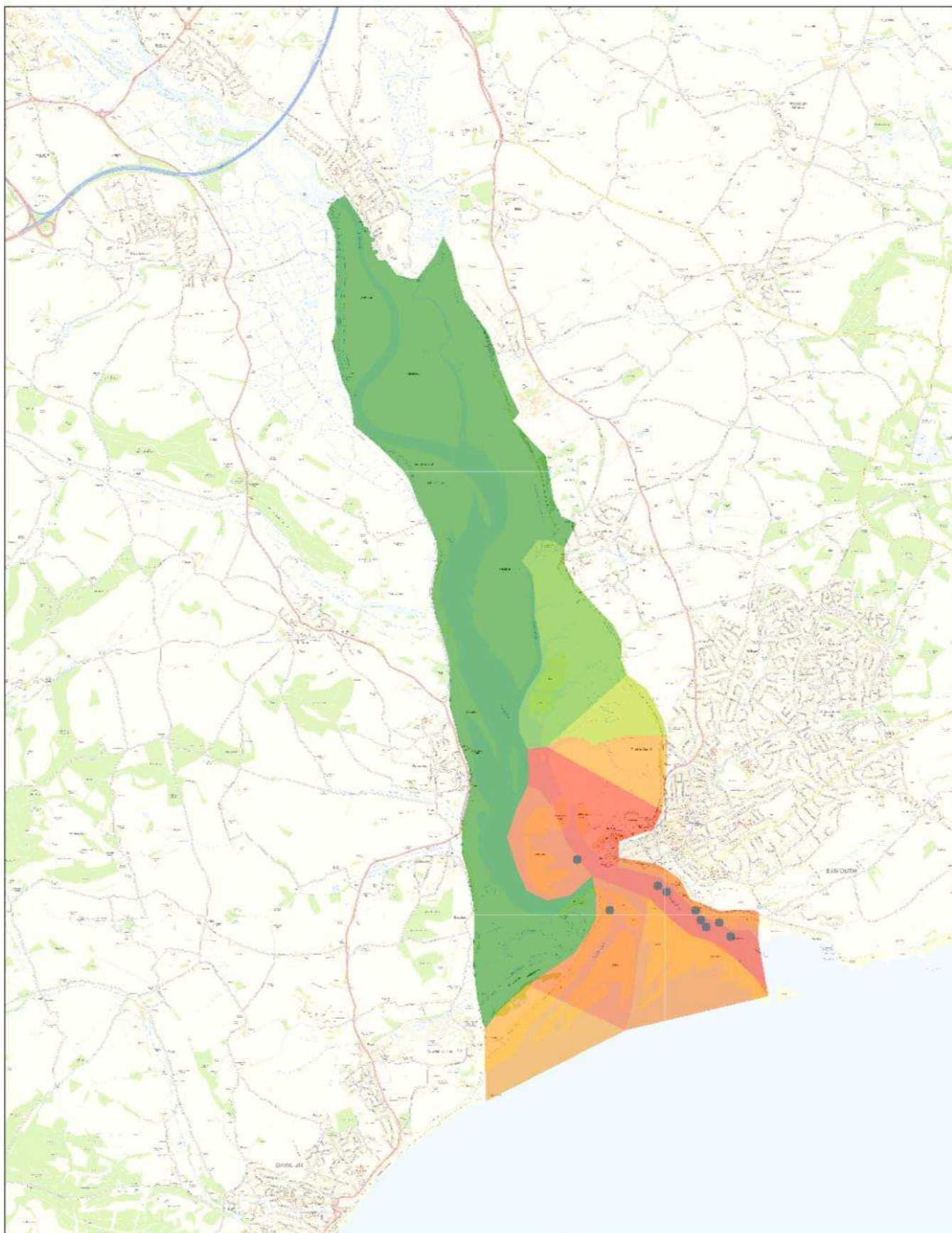


**Map 21. Matrix Scores:
Kite Surfing**

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4 to 4.5 (2)	1.5 to 2 (1)
3.5 to 4 (2)	1 to 1.5 (1)
3 to 3.5 (1)	0.5 to 1 (3)
2.5 to 3 (2)	0 to 0.5 (20)

Dots show observations of kitesurfers from total counts (i.e. for the area s. of Lymington only)

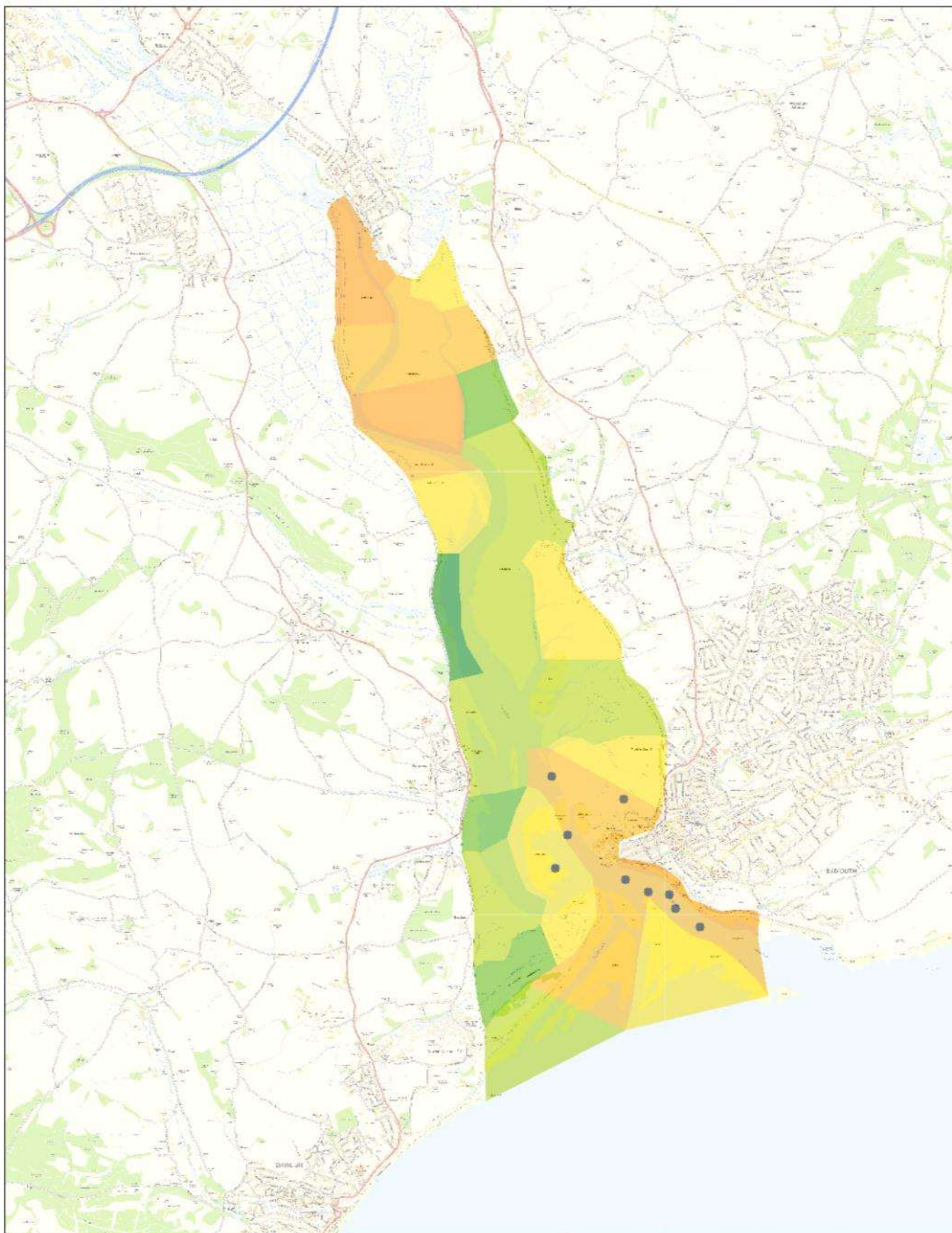


**Map 22. Matrix Scores:
Windsurfing**

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4 to 4.5 (2)	1 to 1.5 (1)
3.5 to 4 (3)	0.5 to 1 (2)
3 to 3.5 (1)	0 to 0.5 (21)
2.5 to 3 (2)	

Dots show observations of windsurfers from total counts (i.e. for the area s. of Lympstone only)

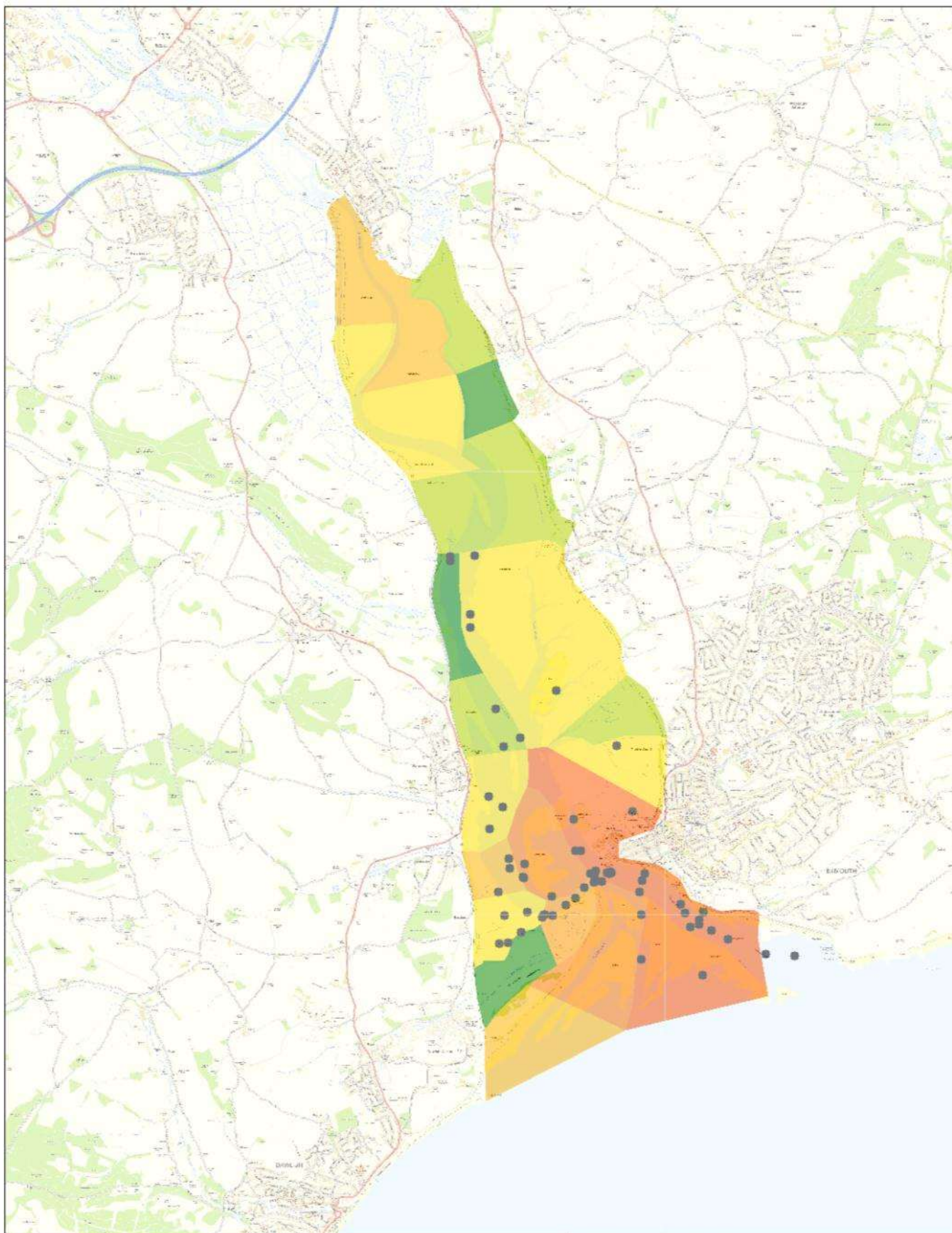


**Map 23. Matrix Scores:
Canoes/kayaks**

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2.5 to 3 (3)	1 to 1.5 (10)
2 to 2.5 (7)	0.5 to 1 (3)
1.5 to 2 (7)	0 to 0.5 (2)

Dots show observations of canoes/kayaks from total counts (i.e. for the area s. of Lymington only)

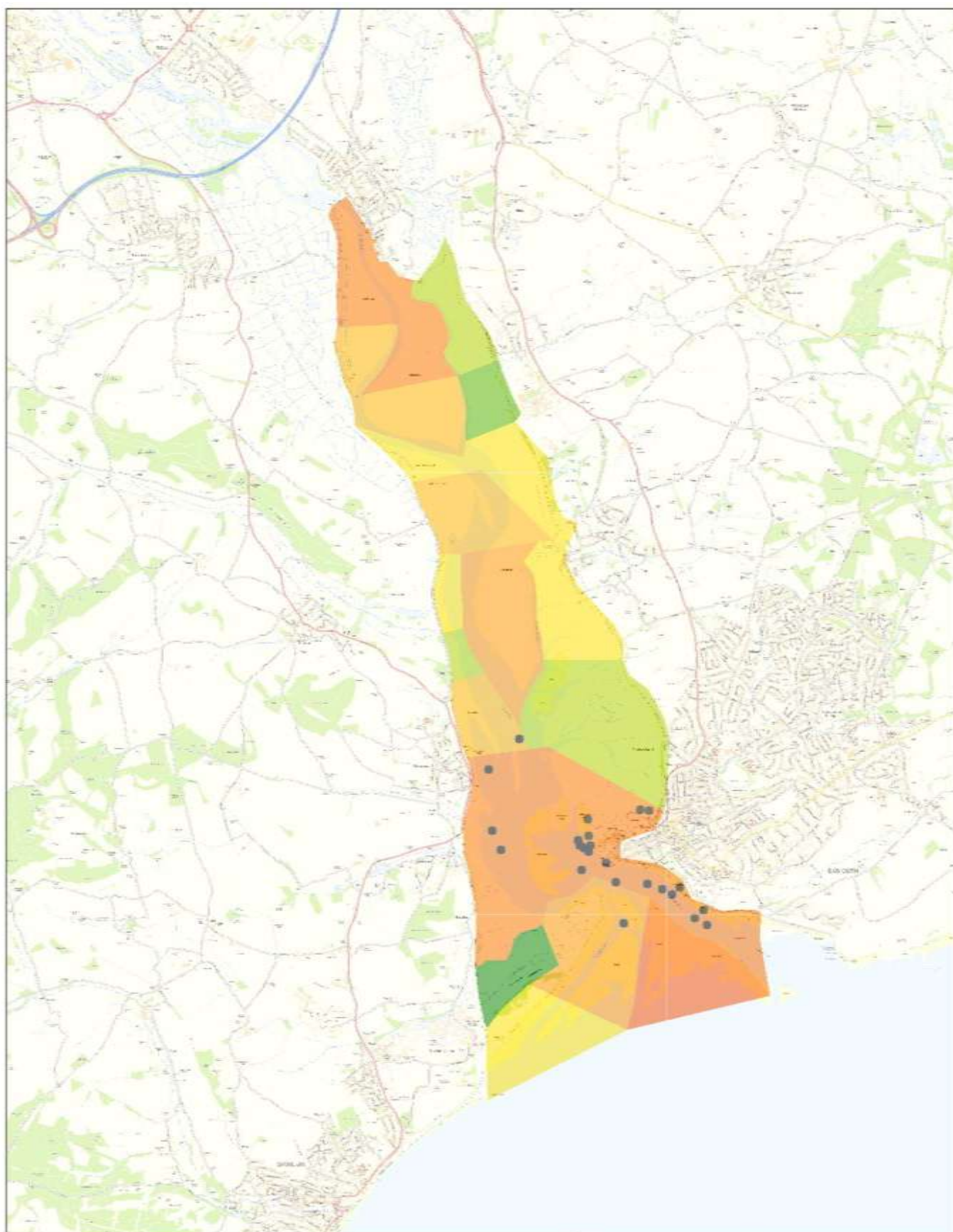


**Map 24. Matrix Scores:
RIBs/small boats on outboard motor**

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3.5 to 4 (4)	1.5 to 2 (10)
3 to 3.5 (2)	1 to 1.5 (7)
2.5 to 3 (1)	0 to 0.5 (4)
2 to 2.5 (4)	

Dots show observations of motor-powered boats from total counts (i.e. for the area s. of Lymstone only)

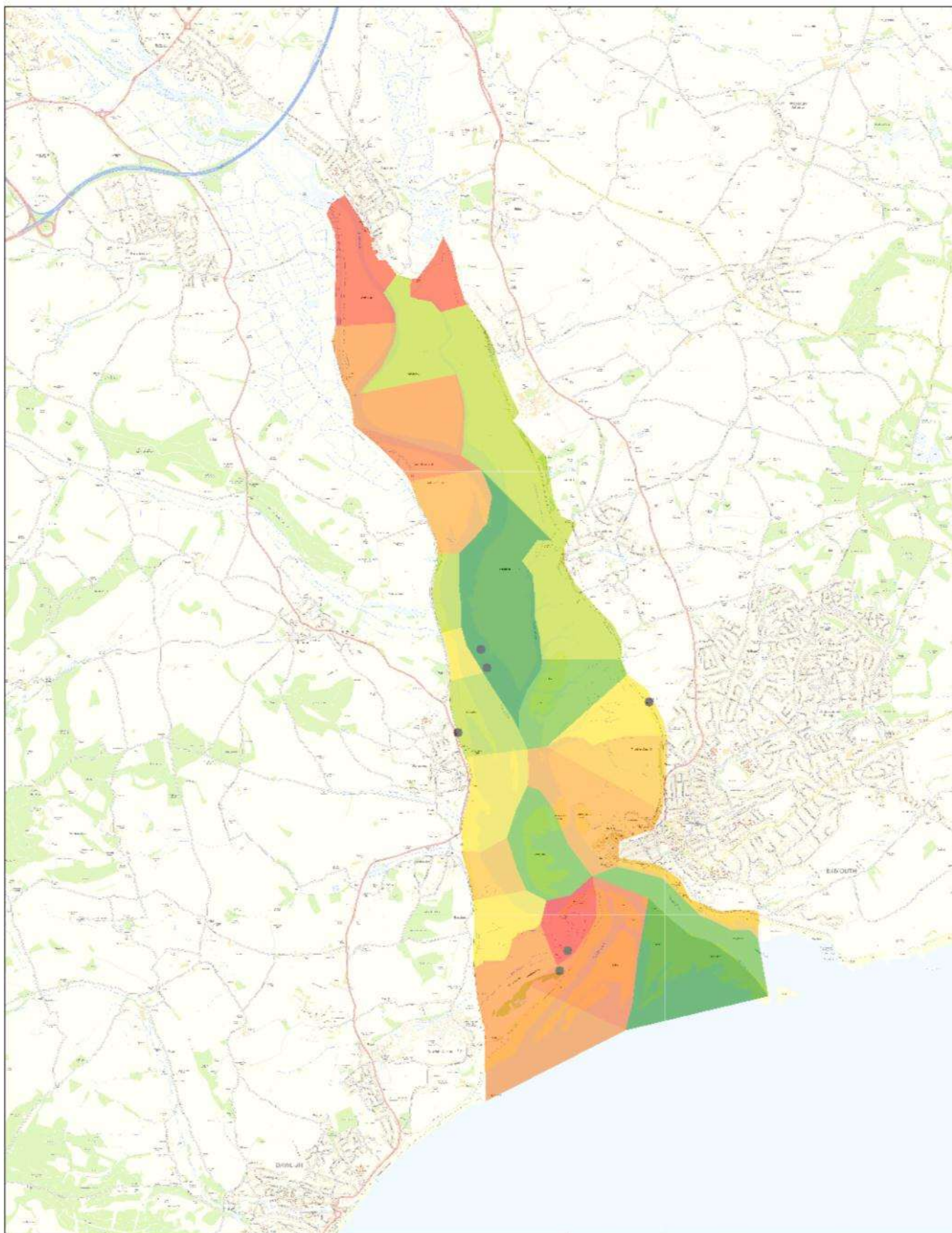


**Map 25. Matrix Scores:
Other boats, sailing etc.**

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3.5 to 4 (1)	1.5 to 2 (5)
3 to 3.5 (10)	1 to 1.5 (6)
2.5 to 3 (3)	0.5 to 1 (1)
2 to 2.5 (5)	0 to 0.5 (1)

Dots show observations of sail and row boats from total counts (i.e. for the area s. of Lymestone only)

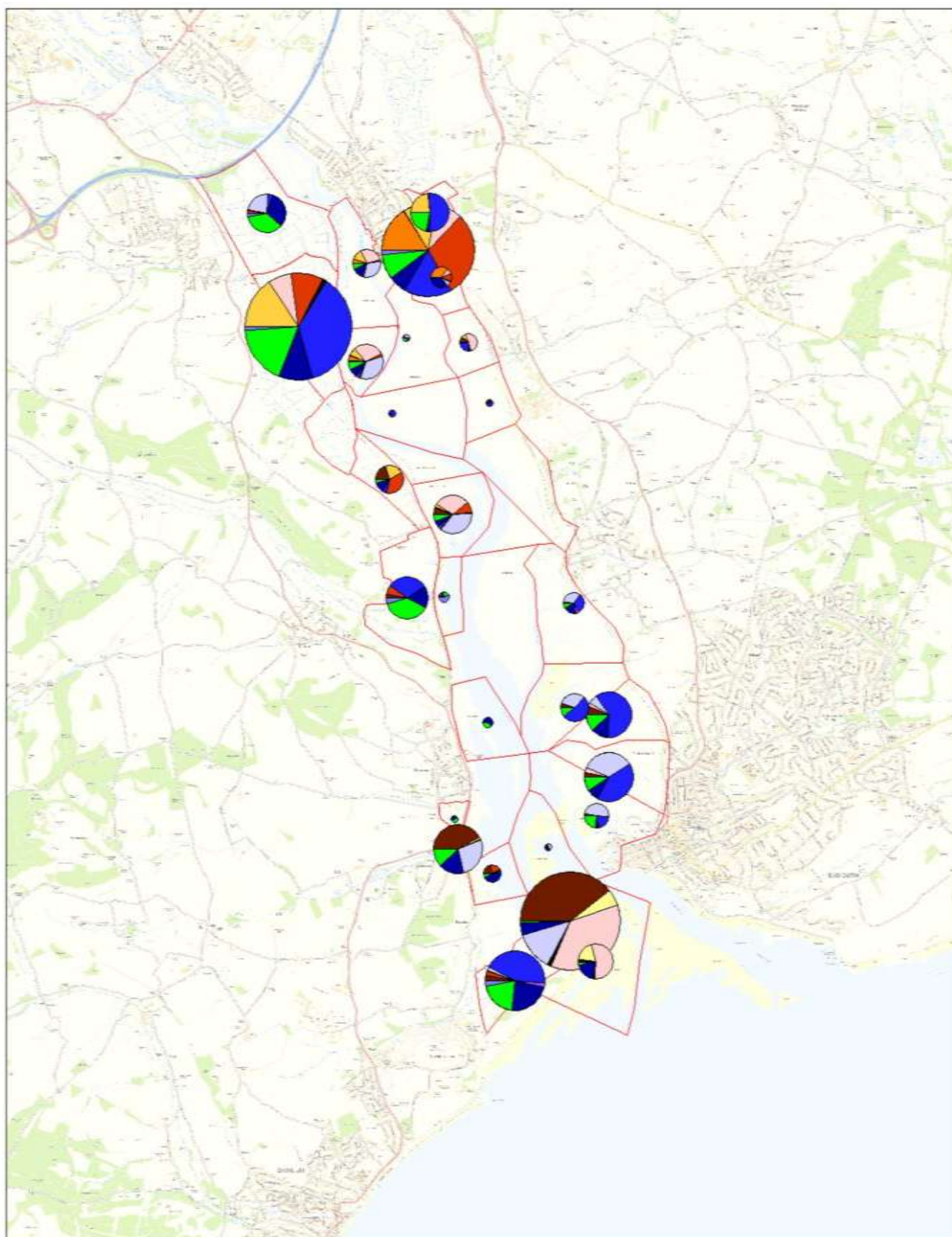


**Map 26. Matrix Scores:
Birdwatching**

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4.5 to 5 (1)	2 to 2.5 (3)
4 to 4.5 (2)	1.5 to 2 (5)
3.5 to 4 (2)	1 to 1.5 (7)
3 to 3.5 (4)	0.5 to 1 (3)
2.5 to 3 (2)	0 to 0.5 (3)

Dots show observations of birdwatchers
from total counts (i.e. for the area
s. of Lymington only)



**Map 27. WEBS data:
High tide**

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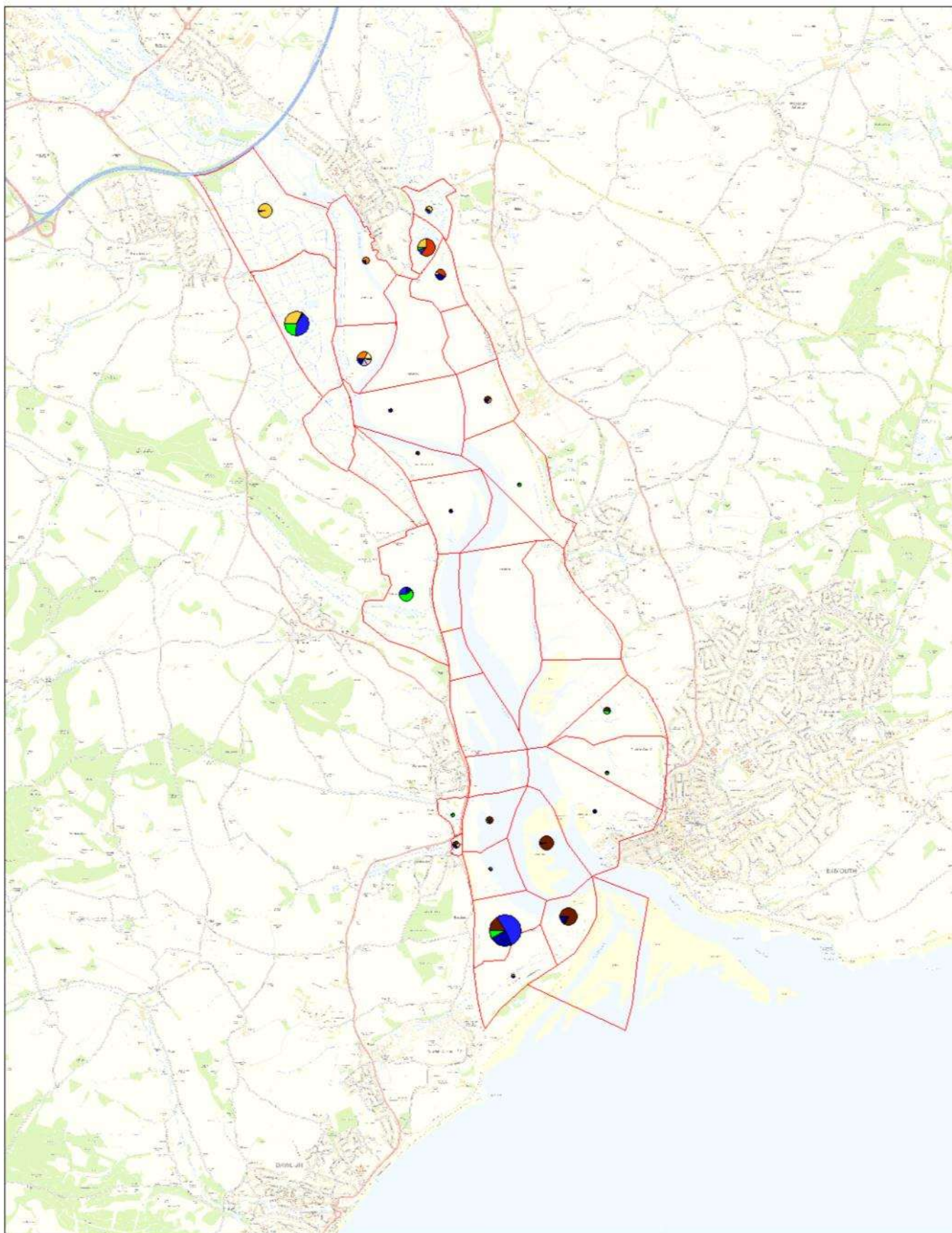


1,000

500

100





**Map 28. WEBS data:
Falling tide, roosting**

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1,000

500

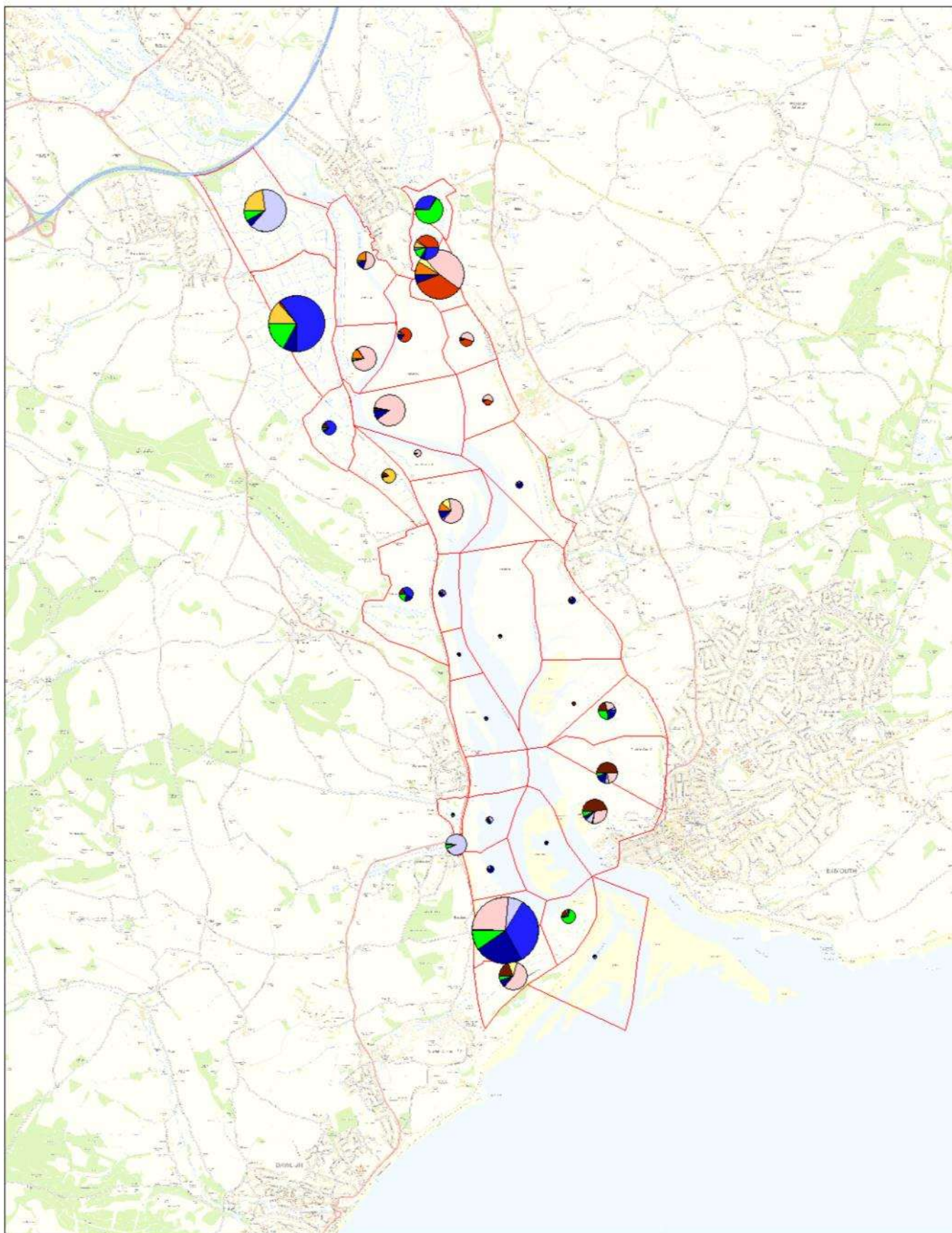
100

Oystercatcher
Avocet
Grey Plover
Lapwing

Dunlin
Black-tailed Godwit
Cormorant
Brent Goose

Wigeon
Red-breasted Merganser
Slavonian Grebe
Whimbrel

Other Waders
Other Waterfowl
Other Species



**Map 29. WEBS data:
Falling tide, feeding**

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2,000

1,000

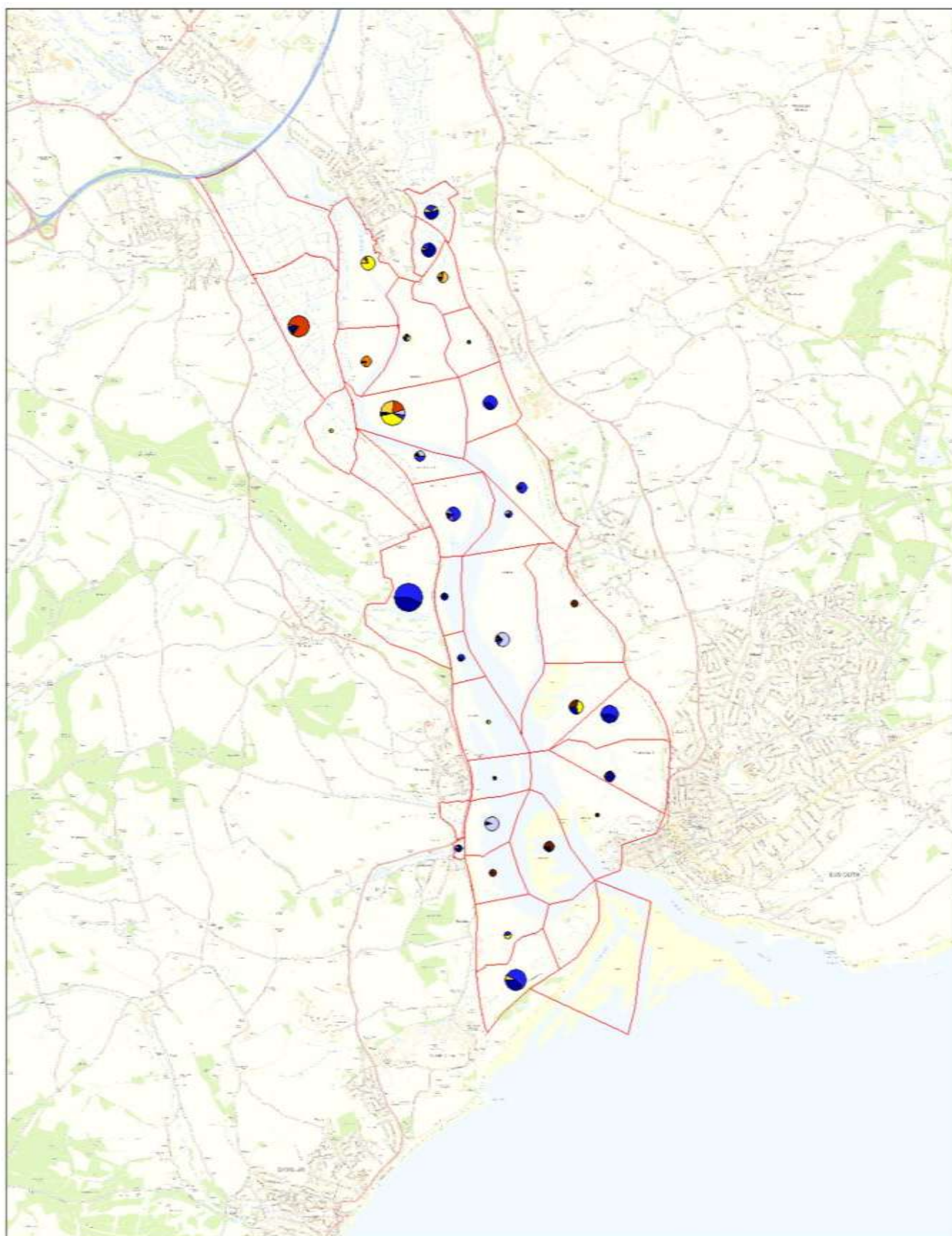
200

Oystercatcher
Avocet
Grey Plover
Lapwing

Dunlin
Black-tailed Godwit
Cormorant
Brent Goose

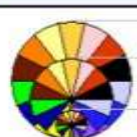
Wigeon
Red-breasted Merganser
Slavonian Grebe
Whimbrel

Other Waders
Other Waterfowl
Other Species

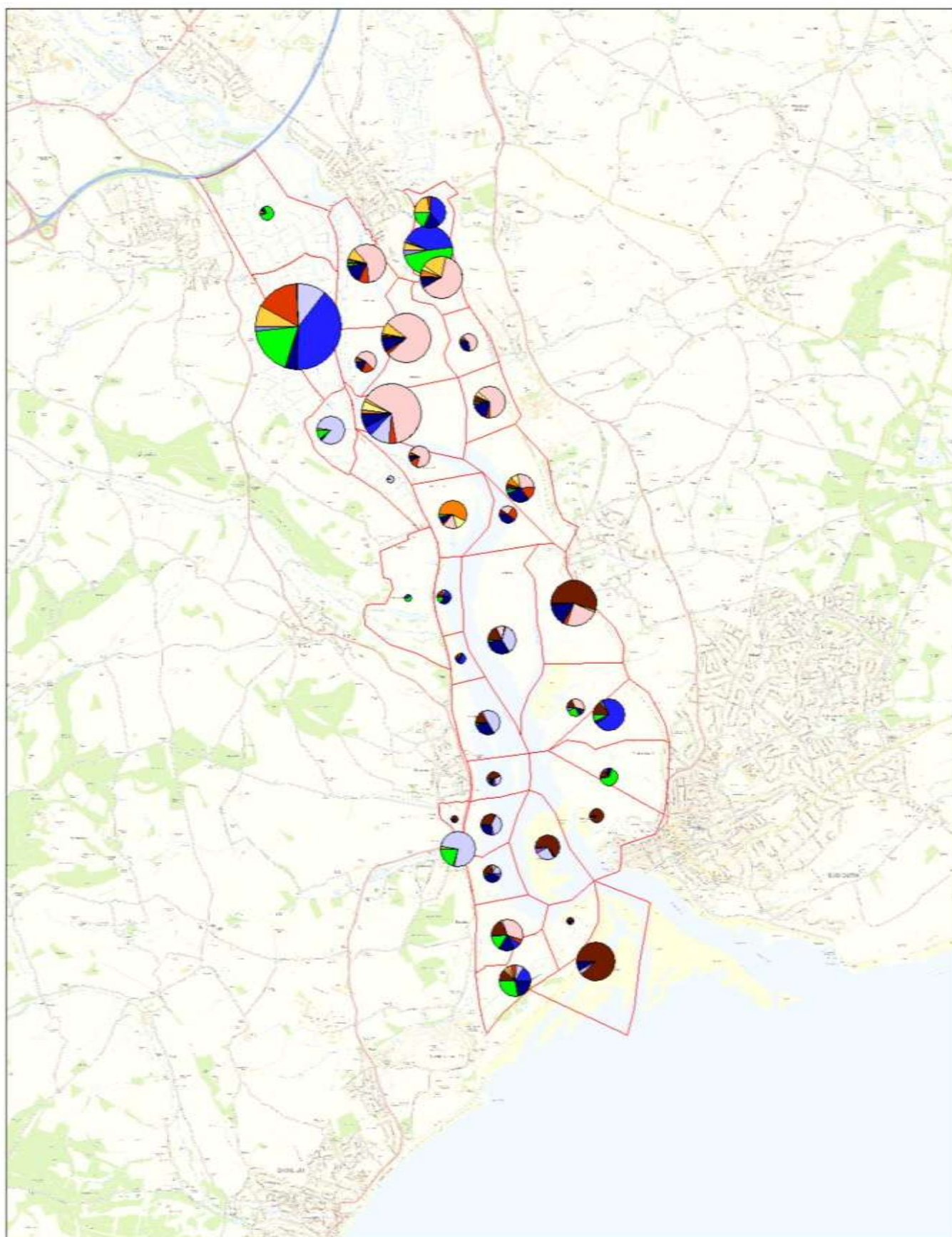


Map 30. WEBS data:
Low tide, roosting

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Oystercatcher	Dunlin	Wigeon	Other Wildfowl
Avocet	Black-tailed Godwit	Red-breasted Merganser	Other Species
Grey Plover	Cormorant	Slavonian Grebe	
Lapwing	Brent Goose	Other Waders	

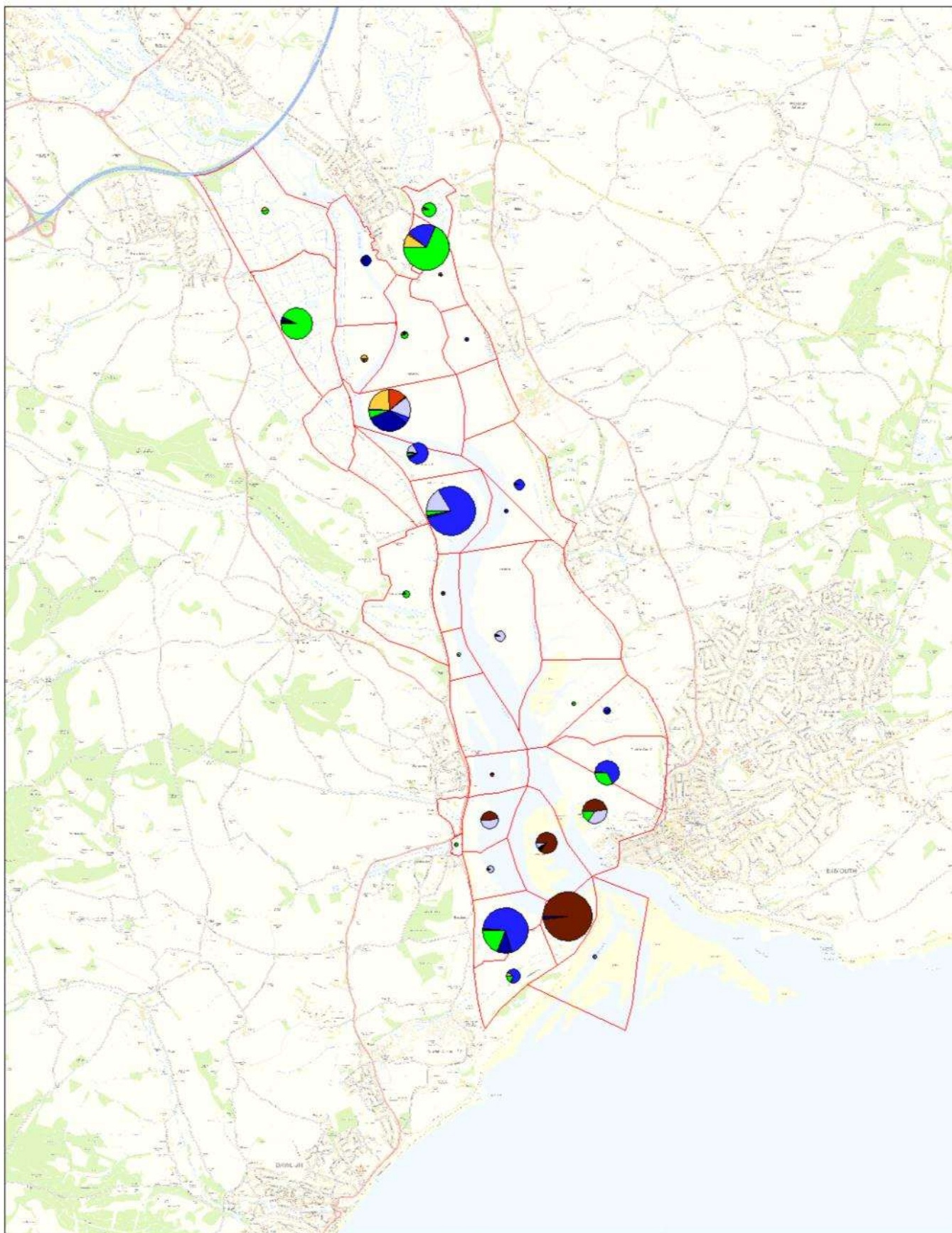


**Map 31. WEBS data:
Low tide, feeding**

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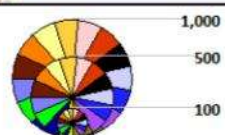


Oystercatcher	Dunlin	Wigeon	Other Wildfowl
Avocet	Black-tailed Godwit	Red-breasted Merganser	Other Species
Grey Plover	Cormorant	Slavonian Grebe	
Lapwing	Brent Goose	Other Waders	

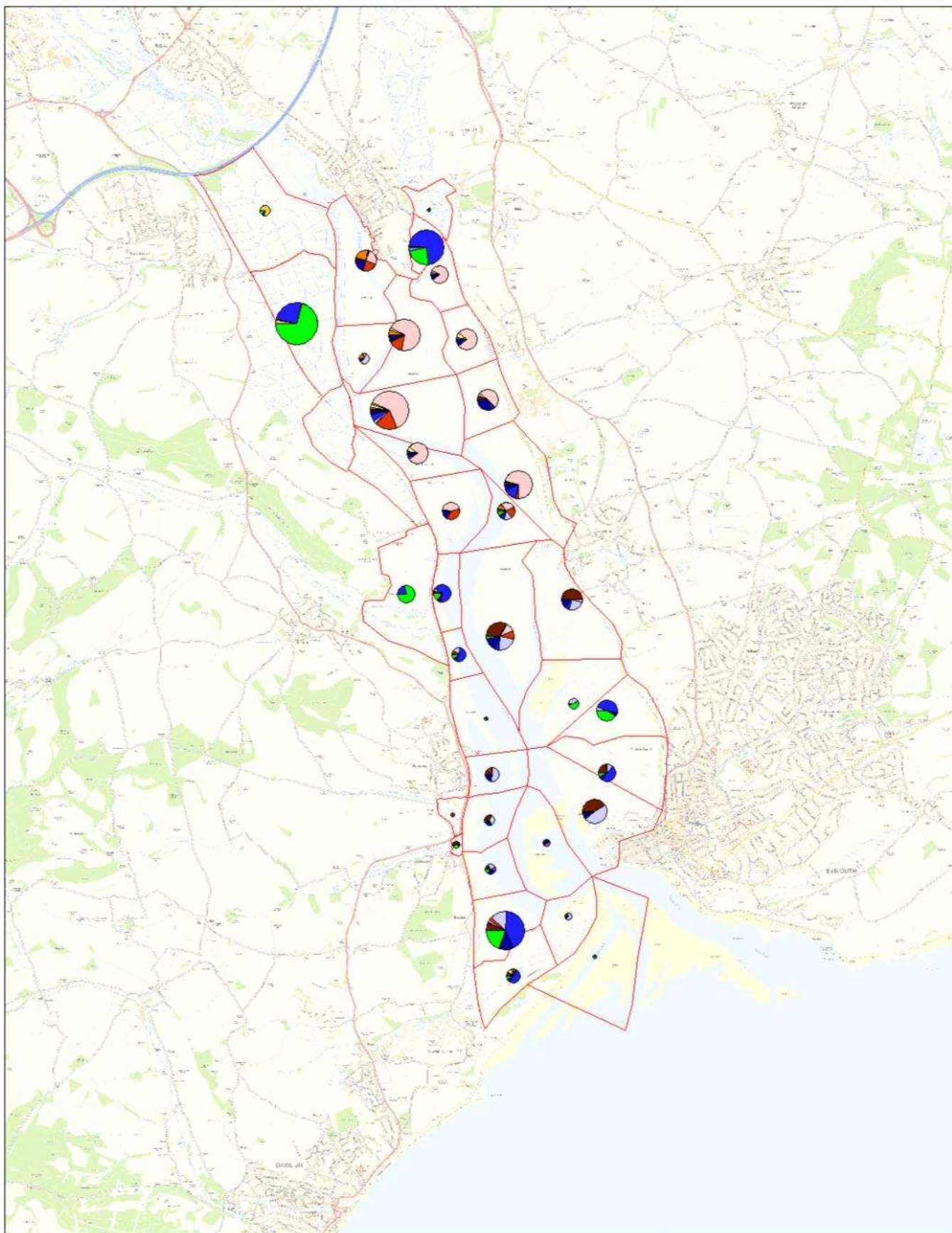


**Map 32. WEBS data:
Rising tide, roosting**

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- | | | | |
|---------------|---------------------|------------------------|----------------|
| Oystercatcher | Dunlin | Wigeon | Other Waders |
| Avocet | Black-tailed Godwit | Red-breasted Merganser | Other Wildfowl |
| Grey Plover | Cormorant | Slavonian Grebe | Other Species |
| Lapwing | Brent Goose | Whimbrel | |



**Map 33. WEBS data:
Rising tide, feeding**

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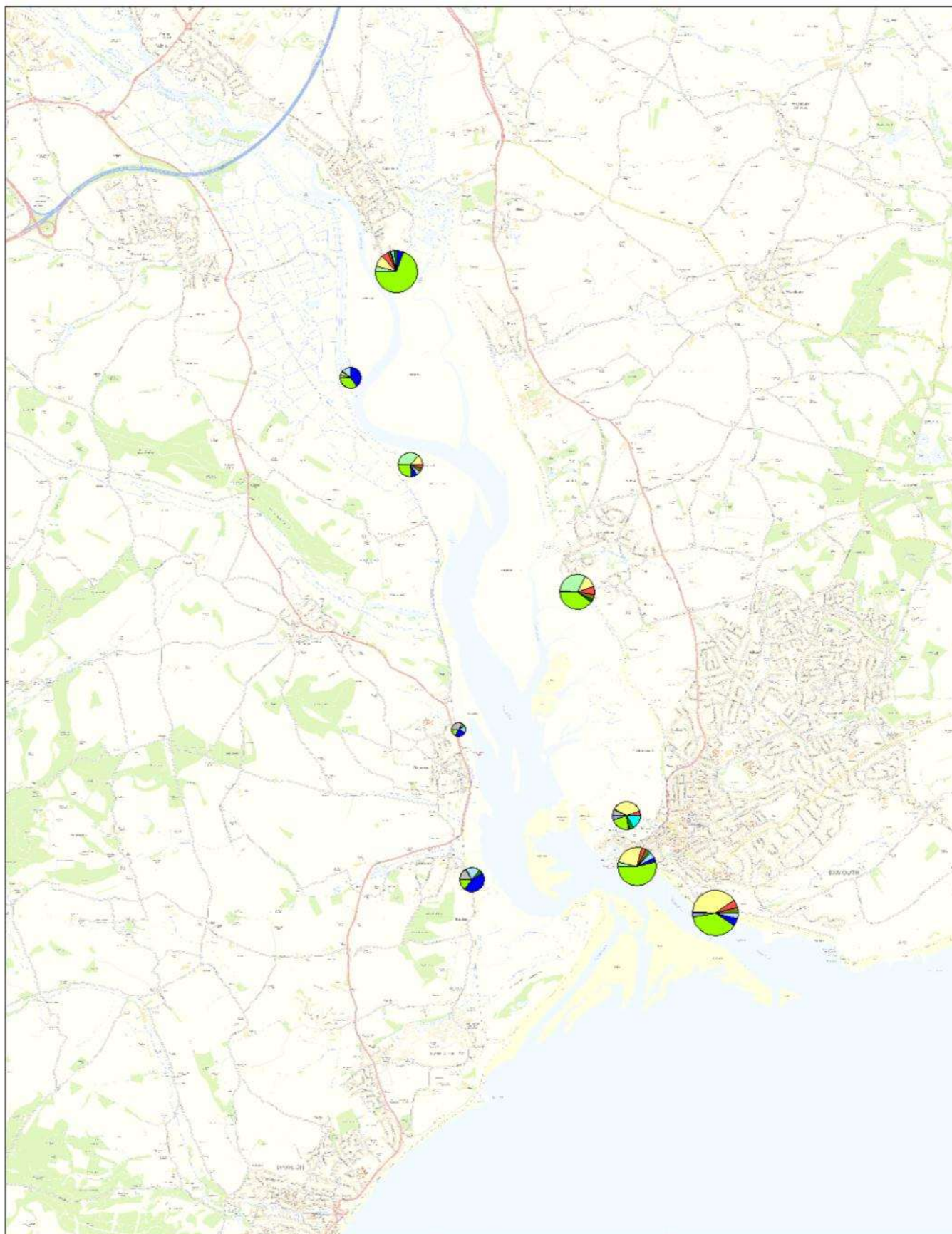
1,000
500
100

Oystercatcher
Avocet
Grey Plover
Lapwing

Dunlin
Black-tailed Godwit
Cormorant
Brent Goose

Wigeon
Red-breasted merganser
Slavonian Grebe
Whimbrel

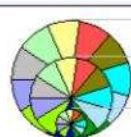
Other Waders
Other Wildfowl
Other Species



Map 34. Standard watch diary data

Graduated pie-charts give rates per hour for commonly recorded activities

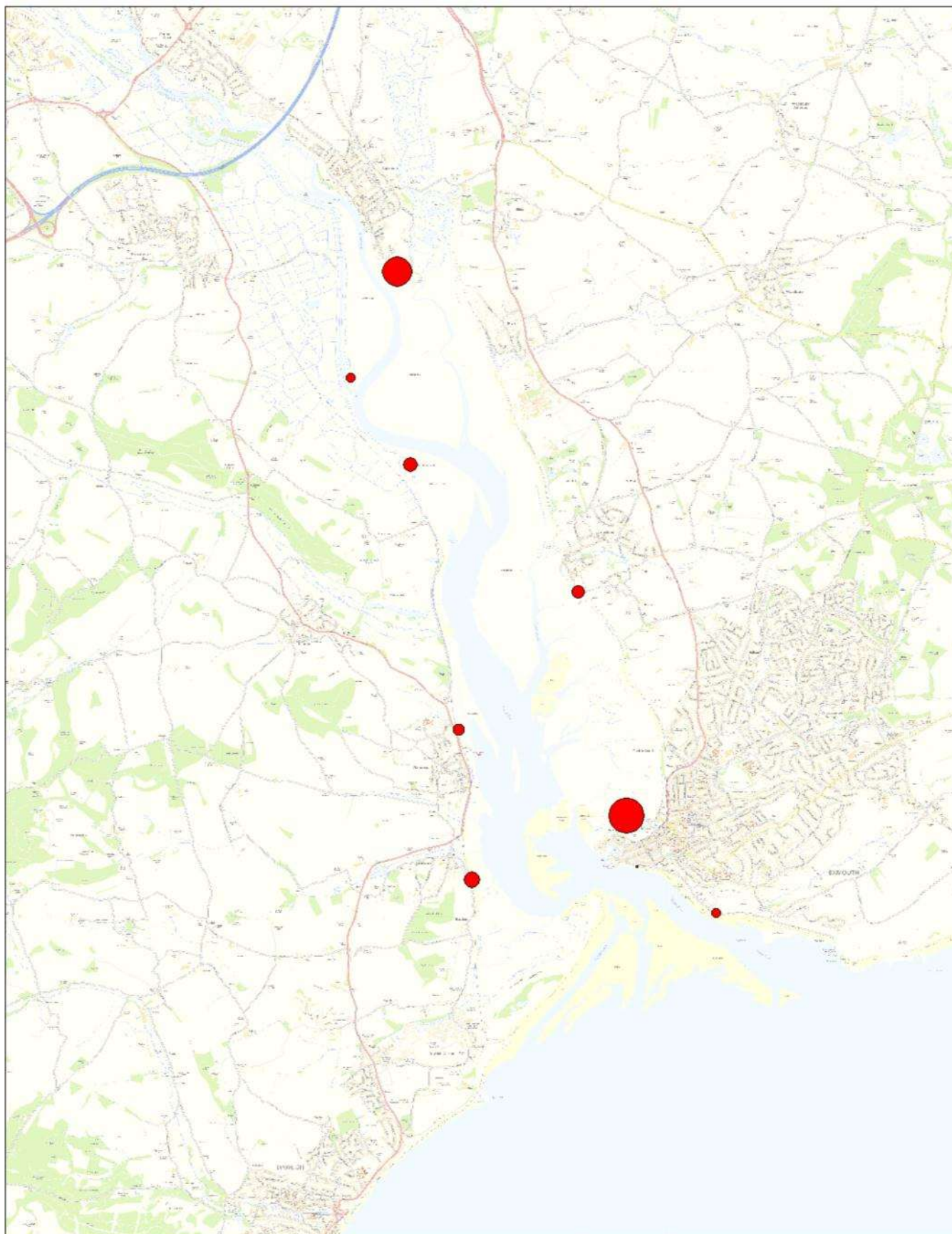
Contains Ordnance Survey data. © Crown copyright and database right 2011.



- Bait/Crab tiling/shellfishing
- Cycling
- Dog walker, dog off lead
- Dog walker, dog on lead

- Jogger
- KiteSurfer on water
- Lrg. boat, outboard motor
- Motor vehicle

- Rib or similar
- Walking
- Windsurfer

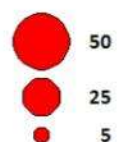


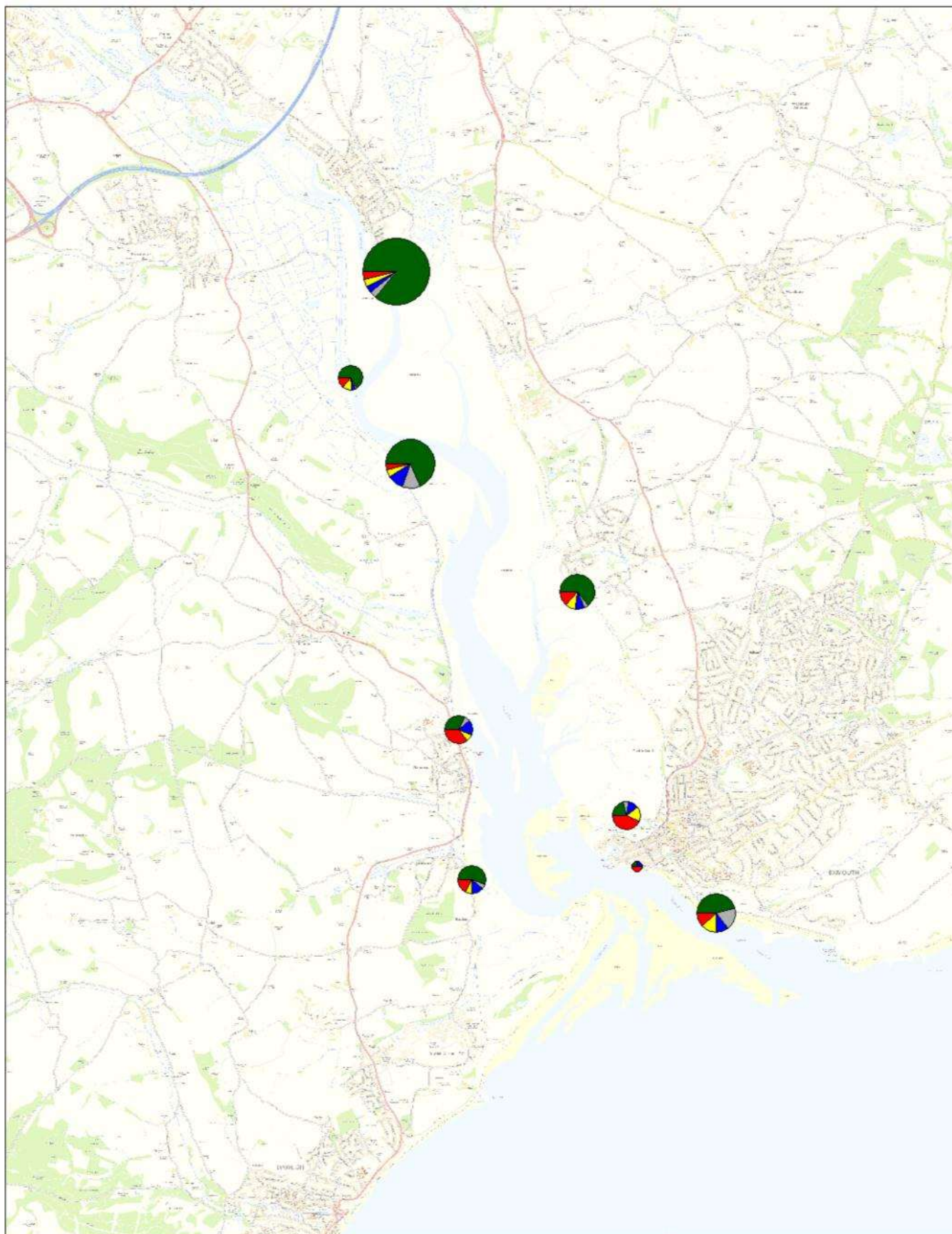
Map 35. Number of birds associated with Major Flight events

Graduated symbols show number of individual birds counted where major flight events occurs

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Rate (Number flushed per hour)

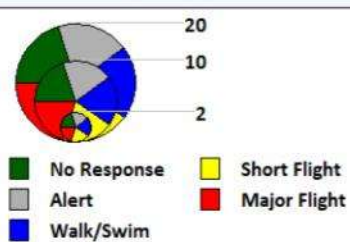


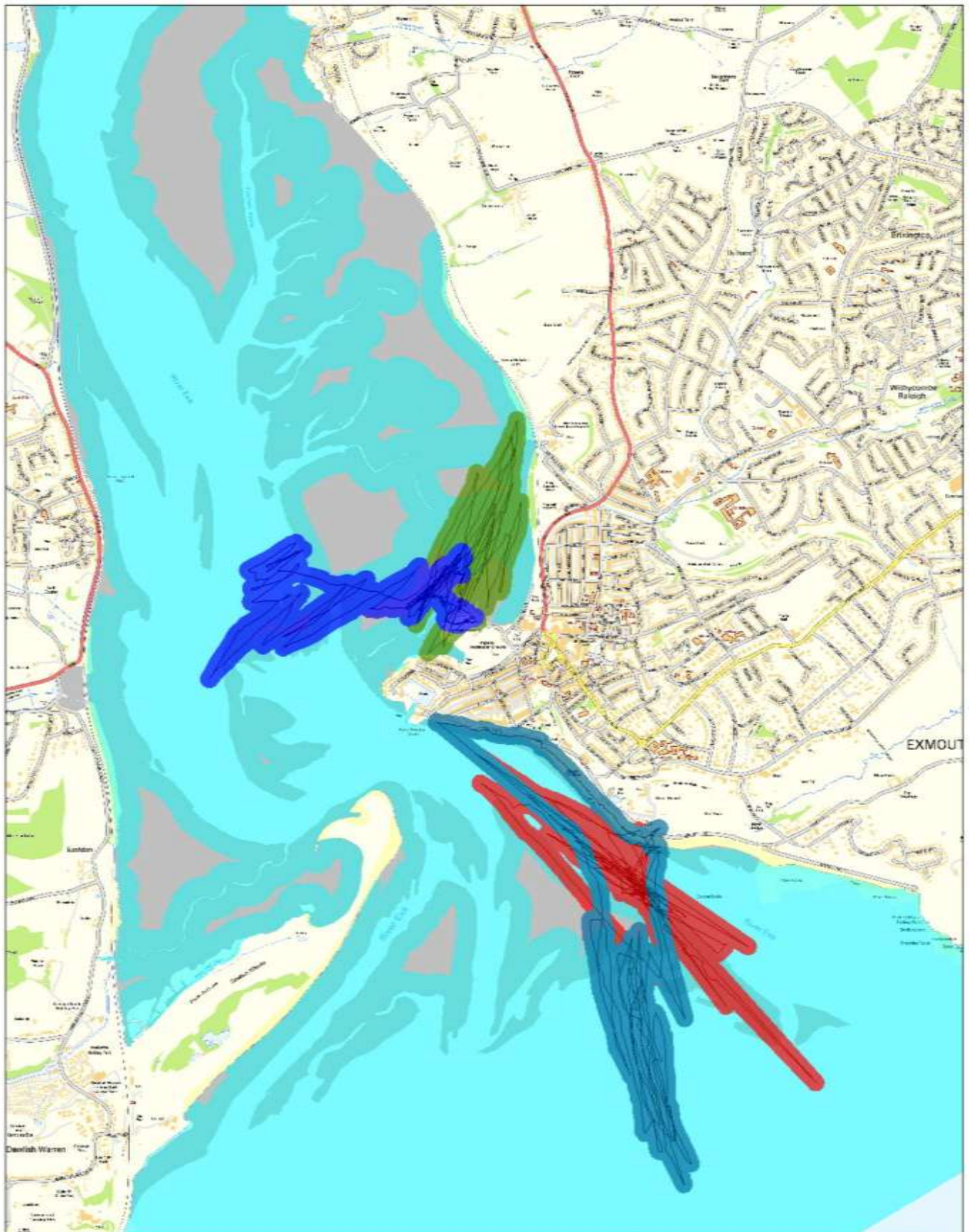


Map 36. Responses of birds at standard watch locations

Graduated pie-charts are adjusted for survey effort and reflect the hourly rate at which each response was recorded

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Map 37. Illustrative example of effective disturbance distance for the kite surfing routes shown in Map 10. (44.15m buffer used)

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 Intertidal habitat

Pale blue shows the area below MLWM and the darker blue/grey colour shows the 100m buffer