

## Investigation into two North Norfolk Towns

### Identification of the Question

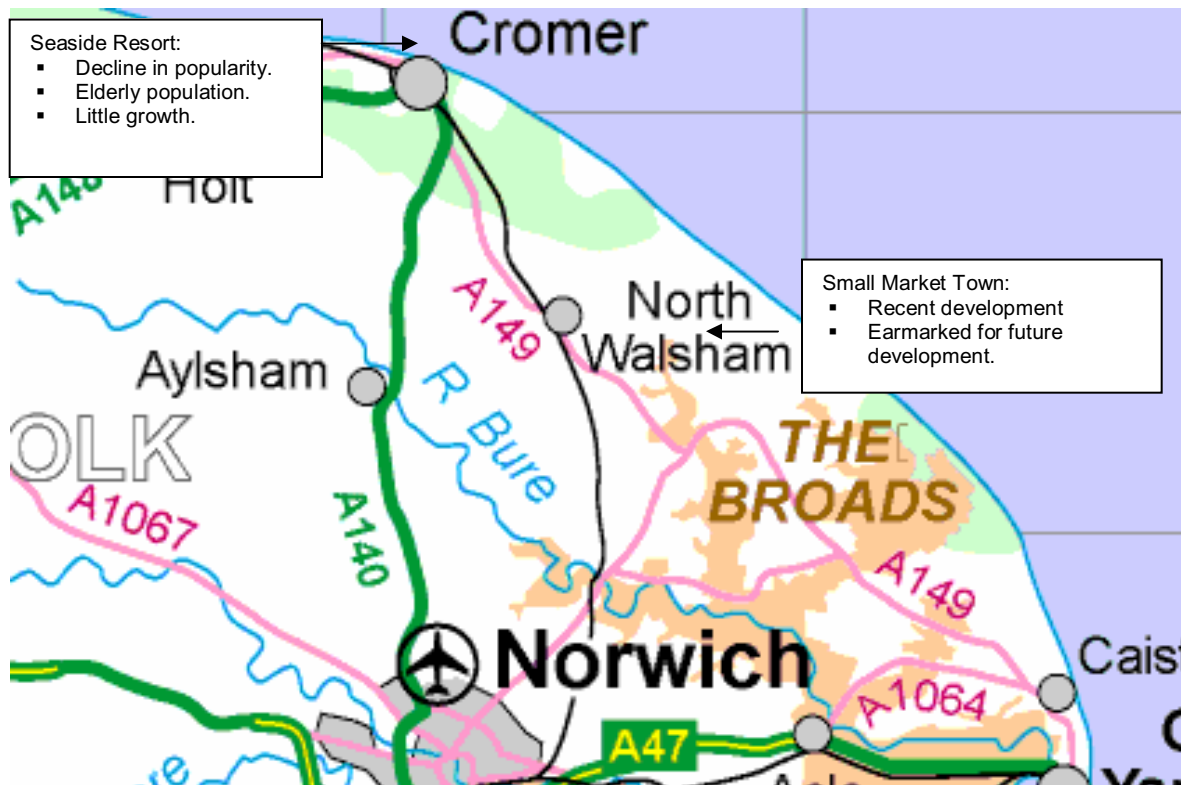
The aim of this study is to see whether Cromer has a different environmental quality pattern to North Walsham. Cromer and North Walsham were chosen for the reasons shown in figure 1.

According to the theory of centrality I would expect that Cromer had a generally lower environmental score than North Walsham and that environmental quality in Cromer decreases from the centre, in North Walsham I would expect to see the environmental quality increase from the centre.

The following hypotheses will be tested:

- Cromer will have a poorer environmental quality than North Walsham.
- Environmental quality decreases from the centre in Cromer

**Figure 1: The location of Cromer and North Walsham.**



### Development of a Strategy

In order to measure the environmental quality of both settlements efficiently we divided the towns into 5 sections and divided into groups of 4 to look at the environmental quality of a section then we compiled our results. At each point where we had to record the environmental quality we checked for risks, the main risk was from traffic.

Figure 2 shows how we recorded our results. In each of the items to be recorded the lower the score the worse the environmental quality of the area.

**Figure 2: Data recording sheet**

	LOCATION CO-ORDINATES										
INDEX											
Housing density											
Size of garden											
Degree of privacy											
Building Conditions											
Density of traffic											
Negative externalities											
Index of decay											
TOTAL											
LAND USE											
BUILDING AGE											

### Collection of Data

To collect the data we used a systematic system shown by figure 3 where points were about 100m apart. For my investigation I chose random transects from the centre of each settlement using complete data sets for each area.

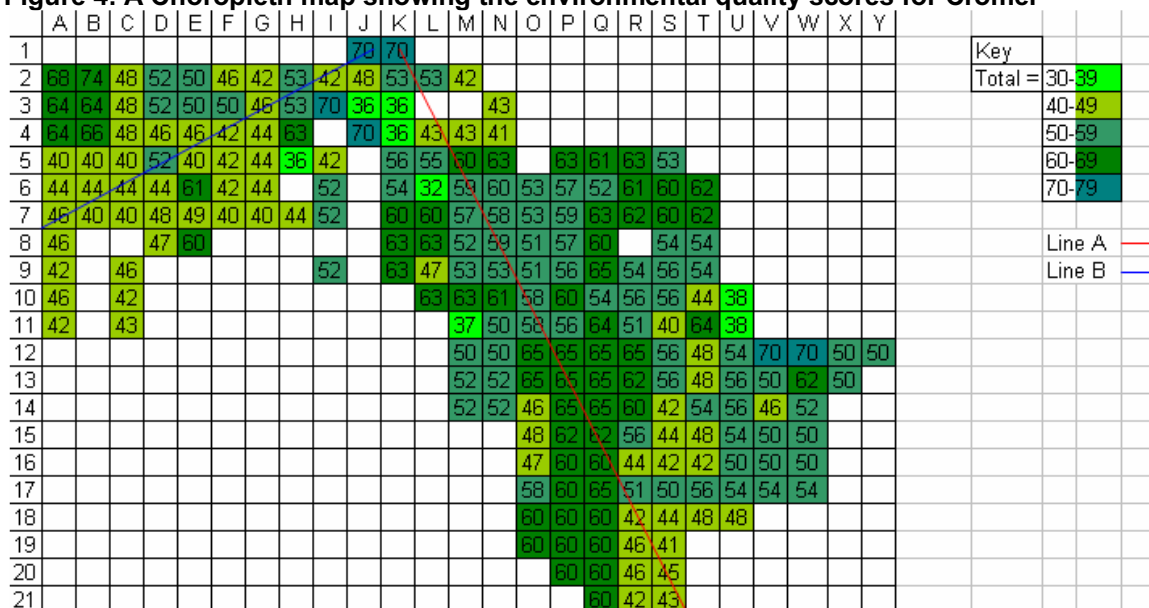
**Figure 3: A section of Cromer which has been divided into a grid.**



Cromer Data:

Figure 4 shows the environmental scores for the different areas of Cromer. Transect A and B are where I have taken the environmental scores. Figure 5 relates to the data that I collected from the relevant sites in Cromer.

**Figure 4: A Choropleth map showing the environmental quality scores for Cromer**

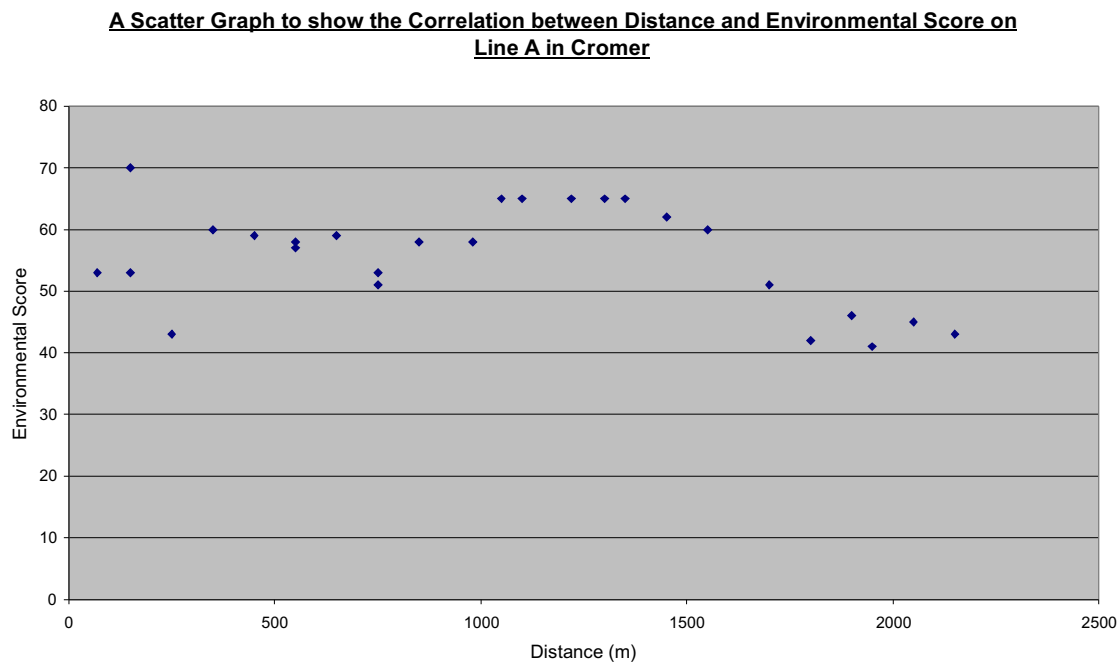


**Figure 5: The table of results relating to the transects on Figure 4**

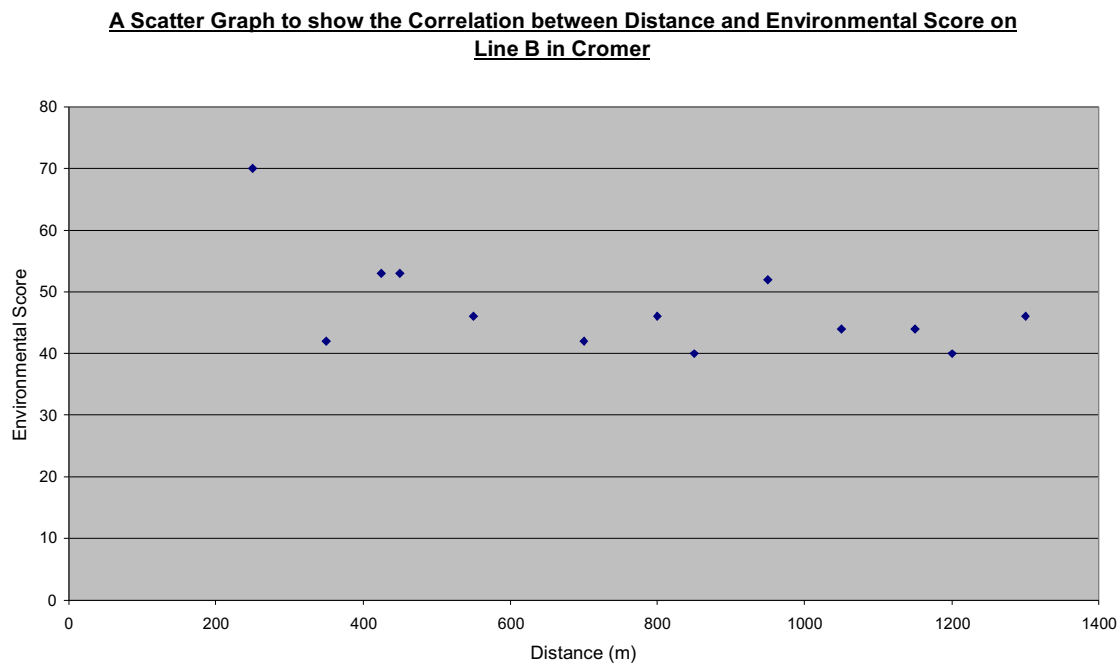
Transect A			Transect B		
Co-Ordinate	Distance from Pier (m)	Environmental Score	Co-Ordinate	Distance from Pier (m)	Environmental Score
K1	150	70	A7	1300	46
K2	150	53	B7	1200	40
L2	70	53	B6	1150	44
L4	250	43	C6	1050	44
M5	350	60	D5	950	52
M6	450	59	E5	850	40
M7	550	57	E4	800	46
N7	550	58	F4	700	42
N8	650	59	G3	550	46
N9	750	53	H3	450	53
O9	750	51	H2	425	53
O10	850	58	I2	350	42
O11	980	58	J1	250	70
O12	1050	65			
P12	1100	65			
P13	1220	65			
P14	1300	65			
P14	1350	65			
Q15	1450	62			
Q16	1550	60			
R17	1700	51			
R18	1800	42			
R19	1900	46			
R19	1950	41			
S20	2050	45			
S21	2150	145			
Spearman's Rank		-0.29718	Spearman's Rank		-0.40247
Does not fall into the 95% significant level.			Does not fall into the 95% significant level.		

The correlation between distance and environmental score can be better illustrated using scattergraphs shown by figures 6 and 7 and a Spearman's Rank Test can be used to test whether trends shown by the scattergraphs are statistically significant.

**Figure 6: A Scattergraph for Transect A**



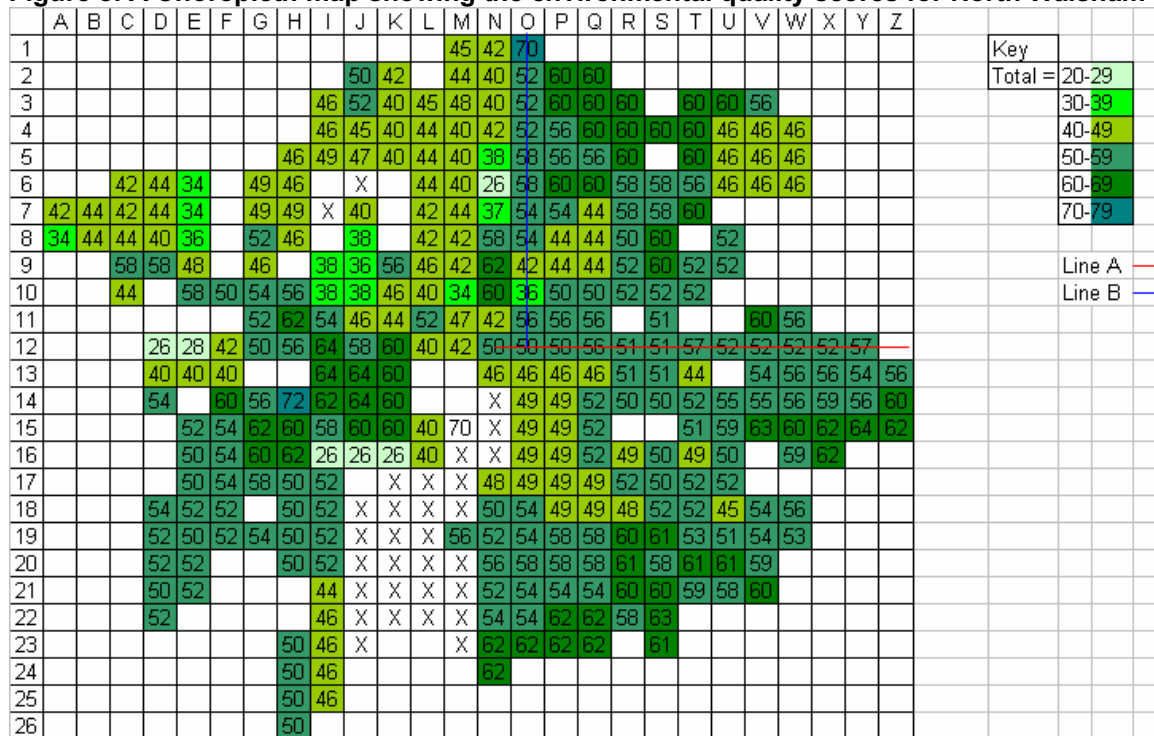
**Figure 7: A Scattergraph for Transect B**



Average Scores for Cromer:  
Mean = 52  
Median = 53  
Mode = 60

Figure 8 shows the environmental scores for the different areas of North Walsham. Transect A and B are transects from which I have taken the environmental scores. Figure 9 relates to the data that I collected from the relevant sites in North Walsham.

**Figure 8: A Choropleth map showing the environmental quality scores for North Walsham**



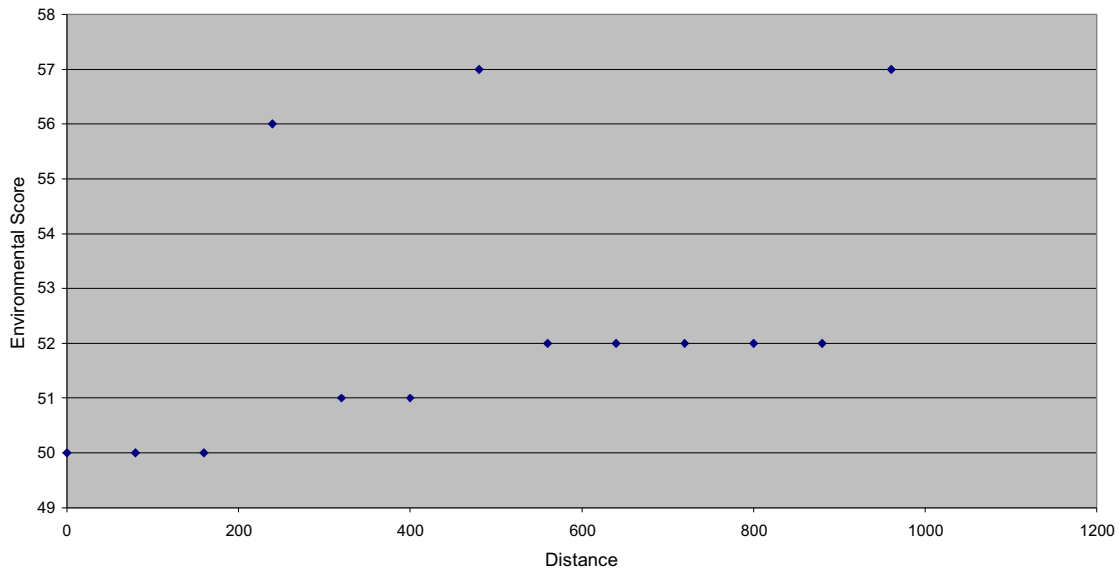
**Figure 9: The table of results relating to the transects on Figure 8**

Transect A			Transect B		
Co-Ordinate	Distance from N12 (m)	Environmental Score	Co-Ordinate	Distance from N12 (m)	Environmental Score
N12	0	50	O1	830	70
O12	80	50	O2	770	52
P12	160	50	O3	700	52
Q12	240	56	O4	630	52
R12	320	51	O5	560	58
S12	400	51	O6	490	58
T12	480	57	O7	420	54
U12	560	52	O8	360	54
V12	640	52	O9	290	42
W12	720	52	O10	230	36
X12	800	52	O11	150	56
Y12	880	52	O12	100	50
Z12	960	57			
Spearman's Rank		+0.747253	Spearman's Rank		+0.472028
Does fall into the 95% significant level			Des not fall into the 95% significant level		

The correlation between distance and environmental score can be better illustrated using scattergraphs as shown by figures 10 and 11. A Spearman's Rank Test can be used to test whether trends shown by the scattergraphs are statistically significant.

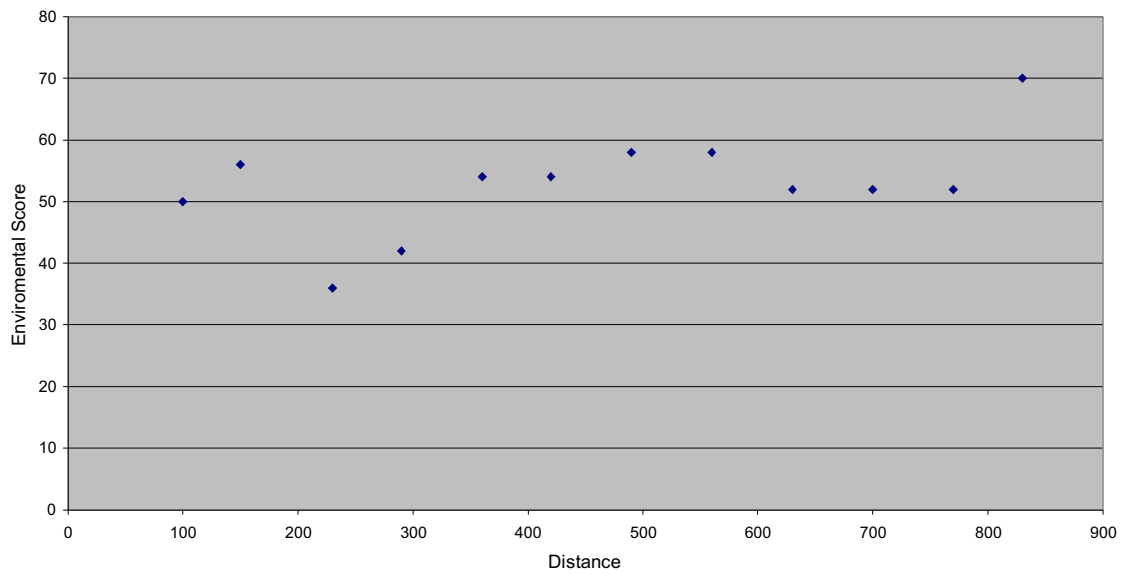
**Figure 10: A Scattergraph for Transect A**

**A Scatter Graph to show the Correlation between Distance and Environmental Score on Line A in North Walsham**



**Figure 11: A Scattergraph for Transect B**

**A Scatter Graph to show the Correlation between Distance and Environmental Score on Line B in North Walsham**



Average scores for North Walsham:  
Mean = 41  
Median = 52  
Mode = 52

## Analysis, Interpretation and Evaluation

### Analysis

Cromer –

The scattergraphs for transects A and B show there is no correlation between the distance and environmental quality.

The choropleth map (figure 4) does show on both transects that the environmental quality appears to be getting worse as you move from the centre.

Spearman's Rank Results for Cromer	
Transect A	Transect B
Spearman's Rank = -0.29718	Spearman's Rank = -0.40247

The Spearman's Rank for both Transect A and Transect B shows that the correlation between distance and environmental score is not within the 95% significant level therefore the link between distance and environmental score in Cromer is not significant.

North Walsham –

The scattergraph for Transect A does show a positive correlation between distance and environmental score with three anomalous results clearly shown. The scattergraph for Transect B shows no correlation between distance and environmental score.

The choropleth map (figure 8) does not show clearly that the environmental score for Transect A increases significantly as you move further from the centre. However for transect B it is clearer to see that the score does increase with distance from centre.

Spearman's Rank Results for North Walsham	
Transect A	Transect B
Spearman's Rank = +0.747253	Spearman's Rank = +0.472028

The Spearman's Rank for Transect A gives a number which falls into the 95% significant level therefore there is a strong link between distance and environmental score on Transect A. However Transect B shows that the correlation between distance and environmental score is not within the 95% significant level therefore the link between distance and environmental score on Transect B is not significant.

Average Scores for Cromer	Average Scores for North Walsham
Mean = 52	Mean = 41
Median = 53	Median = 52
Mode = 60	Mode = 52

Comparing the mean, median and mode of both North Walsham and Cromer it is clear that overall Cromer has a higher average environmental score than North Walsham. This goes against my hypothesis however a possible reason for this is that there is more industry in North Walsham which can bring the average environmental score down for the whole town.

### Interpretation

Theory suggests that the environmental quality of Cromer should be better in the centre than on the suburbs as this is a tourist town that has grown around its central pier which attracts visitors. However my results show that this is not the case as the results are not showing 95% significance on the Spearman's Rank Test and are not producing a positive correlation on the scattergraphs. Possible reasons for this are that we visited Cromer in winter when there are few

tourists and few attractions are open therefore less money is spent on the area, had we have visited in the summer months then the results could have been very different.

For North Walsham theory suggests that environmental quality should increase with distance from the centre because North Walsham is a growth spot in North Norfolk and more people are moving to the town. My results for Transect A do show my hypothesis occurring as the results gave a 95% significance on the Spearman's Rank and the scattergraph for Transect A shows a positive correlation. However for Transect B, the results do not fall into the 95% significant range and the scattergraph for this transect shows no correlation. One reason for the significance of Transect A is that it moves from the commercial centre of the town to the residential outskirts which are newly built. Transect B however follows a main road which is older than the area covered by Transect A therefore there is going to be more urban decay.

### **Evaluation**

Looking at my method I can see that there are areas that could be improved on. Mainly the data collection, because each persons interpretation of environmental quality at an area is going to be different from another's, one way to standardise the results would be to have one person recording all of the results.

### **Summary**

From my survey I can see that there is a spread of environmental quality over a town however the results went against my Cromer hypothesis that the environmental quality would decrease with distance from their pier. However my hypothesis for North Walsham was proved true, the environmental quality would improve with distance from the centre, this was only true for one of my transects.

To extend this investigation it maybe interesting to compare Cromer in the summer as well as the winter and see if there is a difference in the environmental quality at different times of year. It would also be interesting to visit more than two sites so there is more data to compare therefore more significant results may be found.