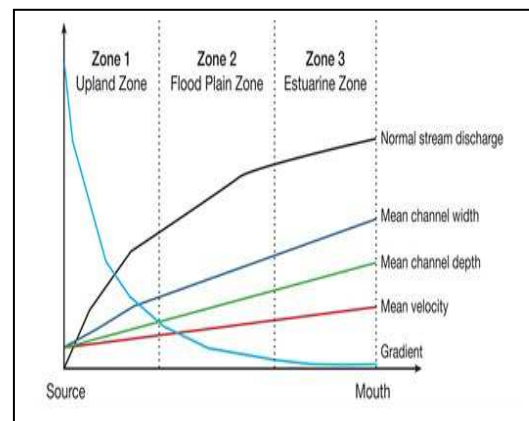
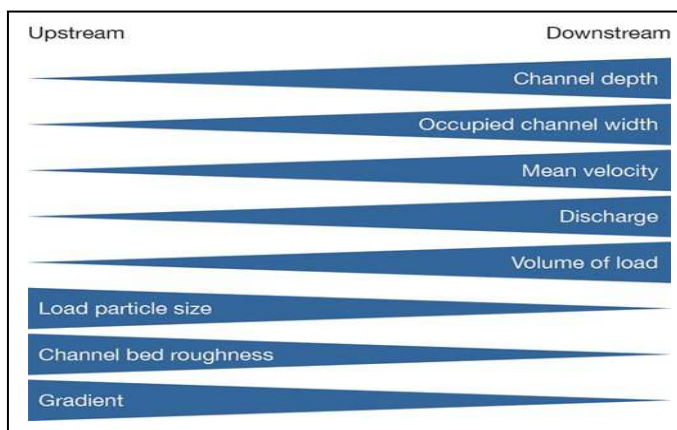


# AIM / AIMS / THEORIES / CONCEPTS / HYPOTHESIS / HYPOTHESES

The main aim of the enquiry was to investigate the downstream changes in a river. Waithe Beck was the river, a small river flowing eastwards from the chalk of the Lincolnshire Wolds over the Boulder Clay of the coastal plain of Lincolnshire to the North Sea near Tetney just to the south of Grimsby and Cleethorpes

I looked at downstream changes in 3 main areas; the channel size, shape and efficiency; the flow / discharge and velocity; and the size of the bedload. The Bradshaw model predicts how these characteristics should change in a downstream direction, so a major aim was to see how far Waithe Beck conformed to the model's predictions and those indicated by the earlier Schumm model.



The theory suggests that channel width, average depth and channel cross section area increase in a downstream direction. This is in response to an increase in the discharge of the river as tributaries feed it and it drains an increasingly larger proportion of the drainage basin / catchment area. The Hydraulic radius, calculated by using the area of the channel and the wetted perimeter should rise downstream, as the channel becomes larger and deeper, indicating an increase in channel efficiency and a related decrease in friction on the flow. This increase in channel efficiency, reduction in friction and less rugged nature of the bed in a downstream direction account for the predicted increase in velocity in that direction. The theory also suggests that the average size of bedload will decrease downstream due to the erosional process of attrition. As the bedload becomes smaller the process of attrition should cause the bedload to become more rounded (less angular/fewer sharp edges) and better sorted (a smaller range of sizes at any site)

The 3 hypotheses are:-

The channel size; width, depth and cross section area will increase in a downstream direction, as will the hydraulic radius and channel efficiency

The discharge and average velocity of the river will increase in a downstream direction

The average size of the bedload material will decrease, become more rounded and better sorted in a downstream direction