# Methodology

Now I will create my table describing how I will get my data and why I need to collect it.

| Variable | Sampling strategy | Reason for collecting | Explanation of technique | Limitations |
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| Discharge | To get the discharge I will need to use a cross sectional diagram of each site and put in the water level and then get the volume of water in each section and then I will have the discharge at each site. | Hypothesis 1 states that discharge increases as I move downstream, this means the amount of water in the river increases as I move along it, this data is needed to see if any tributaries join the river Darent or if any other water sources affect it. | With this technique I get a rather accurate result and also I will have each discharge easy to see on different cross sectional areas diagrams. | I may get the cross sectional area wrong and it is not completely accurate as it would be hand drawn so it isn't in a complete degree of accuracy. |
| Velocity | To get the data needed for velocity I will firstly need to measure out a five metre course down the river. Then using a cork I will see how long it takes for the cork to travel the whole course by timing it with a stopwatch and I will do this three times in total for accuracy. | This shows the rate that the water flows down the river this I am collecting this to complete aim 2 because if the river has too greater velocity at a site then it is unsafe for children and animals as it poses a drowning hazard. | With this method I will get an accurate result also will get to have fun gathering my data. It also will allow me to get an accurate average to help with my conservation site | If stones obstruct the cork on its journey over the five metre course it will affect the result time also using finding the average by the mean can effect results as if one time is too long it will increase the average but if that happens to make it fair I will remove any outliers. |
| Water level | To collect the data for water level I must firstly put the tape measure all the way across the river to get a cross sectional diagram | I am collecting this data because if there was no water in the river it wouldn't be a real river as we know and perceive them | With this method I can get an accurate degree of results as the centre of the | It could have rained quite soon before or as I am doing this study in June the weather could |

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| | by measuring at 0.5 metre intervals and then with the depth of the complete river I can then measure from the top of the water to the tape measure at the middle of the river and then I will have the water level. | and also if I get the water level it will show if there is a lack of water in this region and will help me asses the environment and how it is coping with either the lack or abundance of water in the river | river is meant to be the deepest part as the river creates a v shaped channel which is obvious in site 1 and with the middle of the river your less likely to get any large rocks in the centre to ruin my cross section diagram so an accurate result | be especially hot and dry so the water could have evaporated. |
| Bed load size | For bed load size I will pick ten rocks/stones at random from the bed at each site and measure them using the callipers but making sure I am measuring from the longest axis. And with these results I can then find the mean and take that as the average for each site. | As you move closer to the river's mouth you would expect the average of the bed load to decrease as it would have been worn away by the other material in the river or debris on the river bed and flowing in the river. | This way I will get my ten samples for accuracy and also it is a slightly fairer method then looking for the largest or smallest rocks that I can see. | I could sub concisely pick unfairly and that would effect my results so it could be a limitation. Also the river could be highly polluted and it could be an unacceptable risk for me to get the samples so stopping the study. |
| Efficiency | To get the efficiency of the river at each site I must draw a cross sectional area that I will already of had to get water level and then find out the cross sectional area of the stream and the wetted perimeter at each. | I require the efficiency to complete the hypothesis and too see what factors can effect it (like bed load size, water level and other things) with this I will be able to get my results and be able to formulate a good conclusion to | To get the efficiency I must firstly have the cross sectional diagram of each site and then calculate the cross sectional area and discharge. Once o have these two | The limitations of this are that if I calculate the wrong cross sectional area I will then end up getting the wrong hydraulic radius which I could also do wrong as it calls for me to as accurately as |

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| | | how the efficiency is effected and what we can do to increase the efficiency. | pieces of data for each site I can then get a long piece of thread and measure the wetted perimeter (the part of the river that is in contact with the water) and then once I have all these pieces of data I can work out the efficiency by dividing the cross sectional area by the wetted perimeter and then multiplying that by the discharge and that will give me the hydraulic radius and the higher the hydraulic radius the greater the efficiency. | possible measure the wetted perimeter and then divide the cross sectional area by the wetted perimeter and then times that by the discharge. |