

## Isostatic Processes| sample answer

**Q. 'Isostatic processes involve adjustments to the balance between land and sea. Discuss how these processes have shaped the Irish landscape.'** (2009 Q3 B.)

The river Barrow is an example of a knickpoint. A knickpoint is created by isostatic processes. The River Nore is an example of river terraces, these are also an example of isostatic processes.

The change in sea level causes isostatic processes. This change in sea level is caused by the movement of the earth's crust. This can be an uplift or sinking of land either by tectonics or glacier movement.

The lithosphere is uplifted by the removal or melting of huge ice sheets at the end of the last ice age.

Eustatic movement is when the local sea level rises and the land is sinking because of this ice action.

The fluctuation of world climate can cause the ice sheets to melt, as a result huge pressure is released off the land and as a result the land slowly returns to its usual level. This land is lifted out of the sea and this is called Isostasy

The effect of isostatic processes on the Irish landscape is to affect the base level of any rivers flowing over the land.

The river's base level is lowered if the land is uplifted and it, therefore, has a new energy to erode the landscape like in the youthful stage. This is called **rejuvenation**.

In the mature stage of the river, the knickpoints are marked by rapids or waterfalls. These are places that the river previously had entered the sea.

Due to the isostatic uplift the sea level was lowered and the river had to travel over a longer course to reach the sea.

In order to reach the sea, the river was given renewed ability to cut down into the land (**vertical erosion**) because of the process of rejuvenation.

The rejuvenated river cuts a new profile for itself and the place where the new profile meets the old profile is seen as the knickpoint.

They are visible on many Irish rivers in the south and east regions at a height of about 150m above sea level.

These knickpoints show us that the sea level was once much higher around Ireland, this is because glaciers were pushing the land into the sea.

When a river is rejuvenated it begins to cut into its existing floodplain and makes a deeper, narrower channel for itself.

The original valley floor appears higher than the floodplain and this gives it a stepped appearance on either side of the rejuvenated river channel. These are called Terraces

Sometimes a river can rejuvenate more than once and so another set of terraces are formed resulting in a river valley with stepped sides.