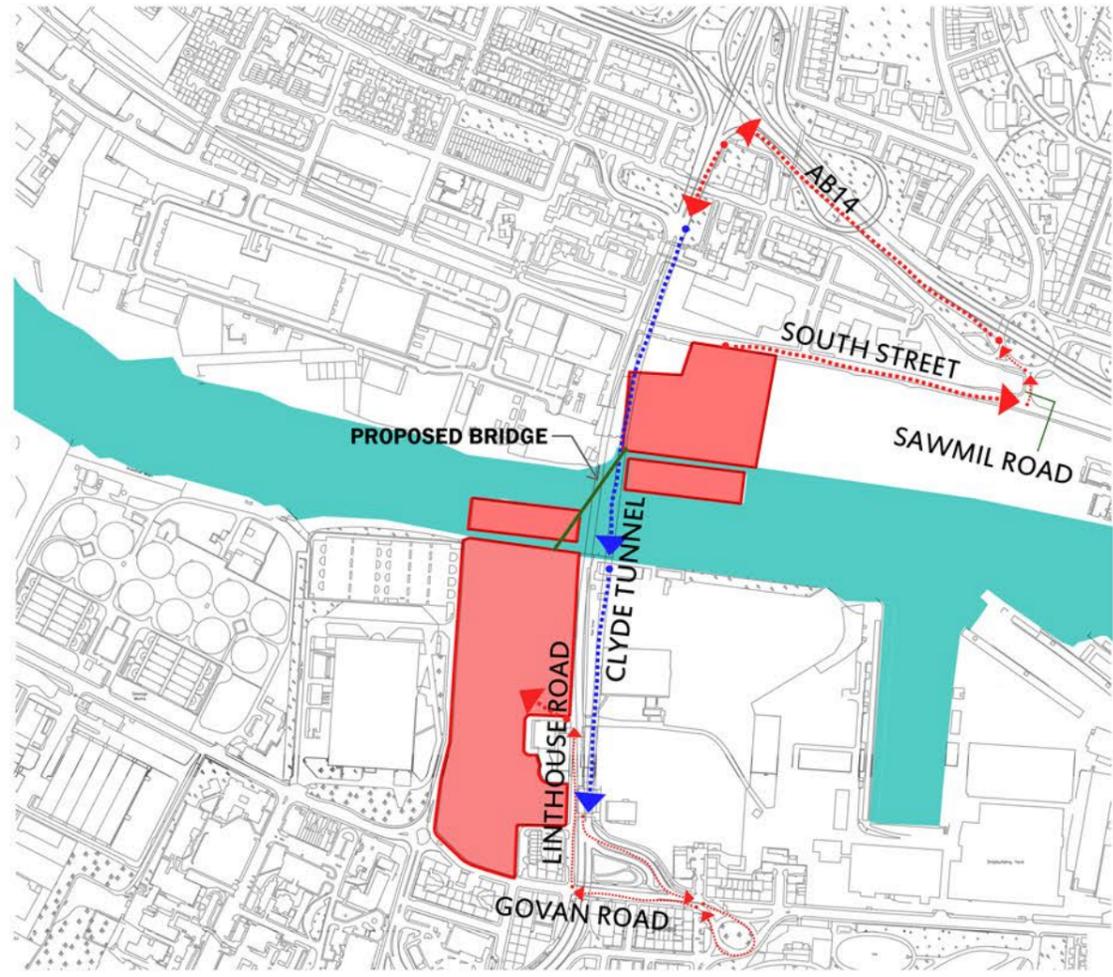


# LOGISTIC



To reach from one sites to another, a vehicles need to go through a roundabout then to the river clyde tunnel to another site. This could affect the energy and cost spend on the logistic of transferring Algae or services. Besides, visitors might need to visit both center. Thus, a bridge is proposed to cope with the distance of site.

## PLANNING REGULATION

In Scotland, the agreement between Local Planning Authority (LPA) and SEPA is needed before any work adjacent to or in watercourses, or on or adjacent to sea defences may proceed.

Works above and beyond basic maintenance proposed on or near to rivers might need the permission, known as Flood Defence Consent, of the Environment Agency. The type of permission required will depend upon the designation of the watercourse in question:

If it is a "Main River", permission will be needed under the Water Resources Act for work within the channel (e.g. a bridge pier). Permission under the Bylaws that are appended to this Act is required if the works are within the floodplain.

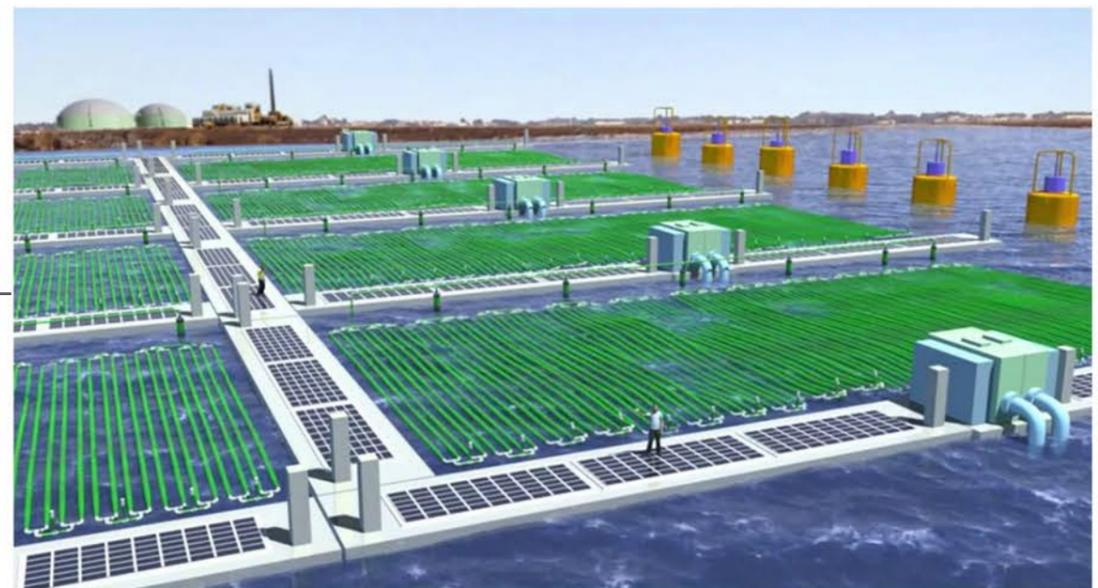
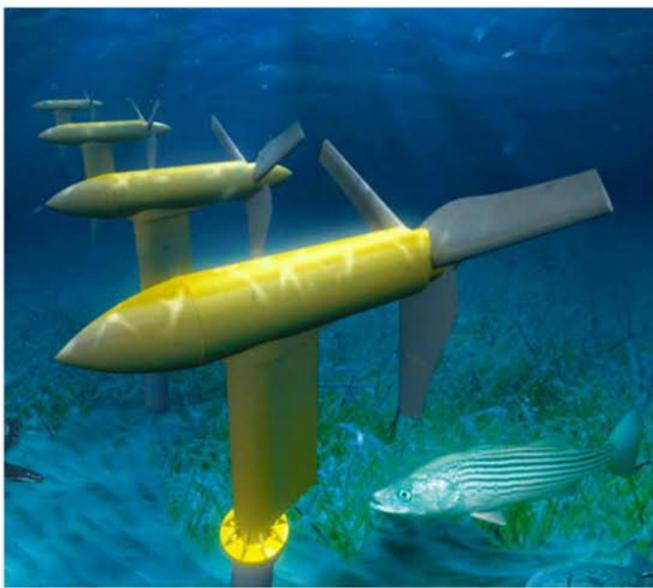
While building a path alongside, or even a new bridge spanning such a watercourse should not need the EA's formal approval.

## Heating

Inpired by the Bio Intelligent Quotient (BIQ) building, in Hamburg (Figure above), the Algae center could have self-generated heating system by Algae. It will have facade and algae cultivating pot on river Clyde that generate heats. When the sunlight hits the "bioreactors,"on the wall systems or the algae pot on the river, photosynthesis will cause the algae to multiply and give off heat (the water can go to about 40 degrees Celcius). The warmth is then captured for heating water or storing in saline tanks in Algae center. It could reduce the overall heating energy needs by 50%. The energy to operate the heating system is drawn from Tidal Turbine Energy

## Tidal Turbine Energy for Operating the building, Caltivating and harvesting Algae

Tidal turbine can be used to generate electricity for operating the center and to harvest and extract oil from Algae. While Biofuel from Algae still can be used as energy for electricity. It is cheaperer to use River Clyde tidal as the source of energy.



Integrated tidal turbine to power and operate the Algae Cultivating areas

## BUILDING WALL MATERIALS



ETFE (Ethylene tetrafluoroethylene)is a potential material to be used as the wall system for this proposal. While in the future, it is believed that Algae could be used to make as part of the biodegradable content of ETFE. The Urban Algae Canopy by ecoLogicS tudio integrating micro-algae within a custom designed four-layered ETFE cladding system