

It is barely half a century since parts of the Thames were declared 'biologically dead' because the river was so dirty. But with the water now cleaner than at any time in living memory, entrepreneurs want to build a 10 million open-air swimming pool in the middle of the Thames in Central London. Purification specialists from Germany – which has the highest water cleanliness standards in Europe – have designed a system which the scheme's backers say will ensure that bathing is safe for visitors of all ages.

The Thames Baths at Temple Stairs on the Embankment will be surrounded by reed beds to filter water from the river before it is pumped into the 82ft by 32ft main lap pool, with a secondary filtration device underneath the poolside decking. Health concerns have been raised about the project because of sewage overflows during heavy rain and the experience of comedian David Walliams, who suffered a bout of 'Thames tummy' during a 140-mile charity swim in 2011. But experts from German firm Polyplan, which has built natural swimming pools all over Europe, have come up with a solution. Tim Evans, director of British firm Gartenart, which is working on the project, said the water – unheated and chlorine-free – will be 'as clean as anything you would find in a mountain lake'.

The lido will have changing rooms, a 130ft ramp leading from the shore to the water, a plunge pool and a children's paddling area, while a 4ft-high glass balustrade will protect swimmers from waves caused by river traffic. Chris Romer-Lee, of Studio Octopi – the London architects behind the scheme – said he hoped an initial 300,000 to cover consultancy costs and other fees would be raised by crowd-funding, where members of the public can contribute to community schemes.

If planning permission is granted, the lido could open late next year.