Opposite The Burbo Bank wind farm is an ambitious project to harness the wind in Liverpool Bay, marking a significant shift in energy policy away from fossil fuels.
Photograph Colin McPherson

RIVER FUTURES

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Imagine it is the year 2050. The electrical pipelines from the Burbo Bank offshore wind farm have stopped pumping their turbine-derived juice into an increasingly marginalised National Grid. The 500 megawatts of energy that their re-powered blades and integrated wave generators produce is now flowing directly into the newly-converted Shell Stanlow Hydrogen Facility. Stanlow has been dedicated to hydrogen production for almost 20 years now, driven by the unprecedented demand for hydrogen fuel cells in transport, households and even small domestic appliances.

Things have changed dramatically from the days when Stanlow handled twelve million tonnes of crude oil per year and powered the rush hour tailbacks across most of the UK. All cars are quiet and come with cappuccino machines hooked up to their tailpipes as hot water replaces carbon monoxide in the resulting exhaust.

Sounds unfeasible? This scale of shift in energy production is perfectly plausible within a single generation. In fact, it is imperative. For the Mersey, there will be an increased focus on offshore schemes like Burbo Bank, as the analysis outlined by Sir Nicholas Stern's review of the economics of climate change makes the economics of wind energy more attractive than ever. At the River's headwaters in the Pennines, ill-informed protests at onshore turbines in the gustiest areas of Europe's windiest country will cease to find favour with the chairs of planning committees: if you want real visual intrusion, try a landscape ravaged by a five degree shift in temperature and a thirty per cent increase in rainfall.

In the coastal areas at the mouth of the Mersey and at the headwaters, change will come as renewable energy comes further into the mainstream but it is in the estuary of the river that the most dramatic new scheme may take shape.

If feasibility studies launched in 2006 are successful, new tidal power technologies within the Mersey could be delivering up to 20 per cent of Liverpool's electricity within a generation. With a ten metre tidal range and remarkably strong currents, the Mersey has more potential to generate energy than most rivers across Britain, perhaps even Europe. Co-sponsored by Peel Holdings, the owners of Manchester Ship Canal, Mersey Docks and large sections of Wirral's waterfront, and with the support of the Northwest Regional Development Agency, a study is underway to consider options which could include a tidal fence with turbines or even a giant modern version of a water wheel measuring 30 metres in diameter. A number of technologies are still being considered, but the scheme, if it comes to fruition, would become one of the largest energy generators in the country.

Peel Holding's plans for tidal power are advanced and ambitious but they are certainly not the only show in town. Back up the Mersey and the 'Manchester Bobber' is taking shape at The University of Manchester. The innovative and patented new wave energy device has already been tested at 1/100th scale and the team behind it are set to build a prototype at 1/10th of the final envisaged scale. The invention will use the rise and fall of waves themselves to drive an onboard generator and produce electricity.

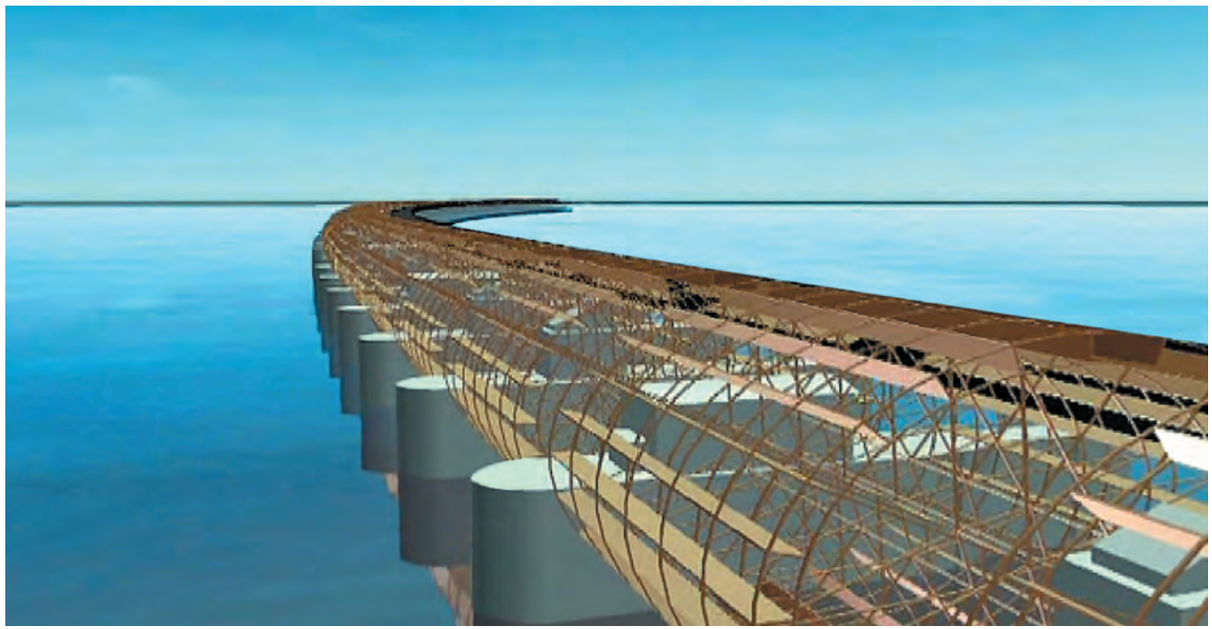
Energy generation will be a defining factor for the future of the Mersey but climate change will not wait for patents to be filed and feasibility studies to be published. The greenhouse gas emissions from the last 50 years are already in play and since 1800, the concentration levels of carbon dioxide in the atmosphere have risen by 30%. In practical terms, this means that we are probably already experiencing some climatic changes as the result of burning fossil fuels and, over the next half century or so, the impacts will get worse before they get better.

Along the River Mersey, this will mean a hike in temperatures during summer of between two and six degrees. Summer rainfall may fall by up to 50 per cent, while in winter the rainfall levels could rise by up to 30 per cent. There will also be a rise in sea levels by 2080 of up to 67cm. The overarching pattern will be one of extreme weather events and increased

Right The ten metre tidal range of the Mersey is one of the biggest in Europe. By harnessing its power, up to 20% of energy needs could be provided by Peel Holdings ambitious plan for a barrier of waterwheels across the river.

Opposite The increase in size of containerships has necessitated new facilities – called post-panamax – to cope with the new ships. Liverpool will have the first such facility in the UK, effectively doubling the Port's capacity.

Images courtesy of Peel Holdings



intensity: when it gets hot, it will get really hot; when it rains, it will rain hard. Back in those Pennine hills that feed the Mersey, the rains will increase soil erosion and potential run-off into waterways; as the Mersey snakes through towns and cities on its way to the Irish Sea the risk of flooding will grow significantly; and at the mouth of the River a rise in sea levels and an increased 'storm surge' will put coastal areas at risk.

The opportunities that come from confronting climate change will bring with them challenges for those who manage, use or live alongside the river. They will have to adapt to the changes that lie ahead and build climate change into the very centre of their future plans.

Yet people living in the two great cities along the River Mersey – Liverpool and Manchester – have always relished a challenge, climatic or otherwise. First passenger railway? No problem. First computer? OK. How about bringing the ocean to Manchester and making a land-locked city the third busiest port in Victorian England? Time to roll up those sleeves …

Frustrated at having to rely on the Port of Liverpool for access to trade (four fifths of Manchester's trade passed through the Port), industrialist Daniel Adamson and a group of politicians, businessmen and engineers set about bringing the sea to Manchester in 1882. With typical Victorian chutzpah they raised an initial £5 million to cover construction costs, got an act through Parliament in the face of stiff resistance from Liverpool and the railway companies, and began building the eighth largest canal in the world on 11 November 1887. At its height, the project employed around 17,000 workers.

You know what they say about time and tide. Ironically, today the docks

at Liverpool and the Ship Canal are both owned by the same company – Peel Holdings – and the latest challenge for Peel relates not to a factional fight between Liverpool and Manchester, but to a certain canal in Central America: the Panama.

Opened in 1914, the Panama Canal has become one of the most important waterways in the world. More recently, globalised trade has upped its game and a growing number of container ships – known as 'post-panamax' – are simply too big to squeeze through the link between the Atlantic and Pacific oceans. By 2011 it is estimated that 37 per cent of the world's container ships will be post-panamax. This is creating a headache for the Panamian government as it works to raise US$5 billion to upgrade the canal, but for Liverpool, it's a new market opportunity.

In 2005 the Mersey Docks and Harbour Company submitted its plans to build a new post-panamax container terminal at Seaforth Dock in the Port of Liverpool. The new £90 million terminal, given the go-ahead by Government in March 2007, will be the first of its kind on the UK's West Coast and will, at a stroke, double the Port's container capacity; it will secure Liverpool's current reputation as the most important port for trade with North America and give it the ability to secure other important lines of global trade.

The sci-fi sounding post-panamax facility is not the only new dockside development that will shape Liverpool's maritime future. In 2005 approval was given for £17 million in funding from the Northwest Regional Development Agency and Europe for a new cruise liner facility. Tall ships, naval vessels and the most glamorous of cruise liners will be able to drop

Right Peel Holdings ownership of the dock estates on both sides of the river have created the opportunity for potentially the most ambitious city planning in Liverpool and Birkenhead's history. Facing twin developments called Wirral Waters (right) and Liverpool Waters (far right) will create a waterside that will rival Sydney, Shanghai or Manhattan. The £10 billion developments will create tens of thousands of jobs and bring back to life the hundreds of acres of derelict docks on both sides of the river.
Images courtesy of Peel Holdings

anchor in Liverpool, including the Queen Mary II, the Queen Elizabeth II and the Grand Princess.

Whether it's turbines, new visitors looking to encounter Liverpool Capital of Culture for 2008 or container ships trading with North America, one corporate entity more than any other re-occurs as a constant as the future of the Mersey is considered: Peel Holdings.

With an asset base of more than £4.5 billion, Peel is fundamental to the future of the Mersey. The company owns the Trafford Centre, a major retail and leisure complex on the outskirts of Manchester; it operates the Mersey Docks, Clydeport and the Manchester Ship Canal; and it operates airports at Liverpool, Durham Tees Valley and Doncaster Sheffield.

In addition to the tidal power scheme and new container ship facility, on the Wirral Peninsula the company is planning 'Wirral Waters'. The level of aspiration for the scheme is high, with Peel planning a £4.5 billion redevelopment of Birkenhead docks that will create a waterside destination to rival Sydney, New York and Shanghai. Covering a massive 18 million square feet, the scheme will include new employment areas, a major new retail and leisure quarter, not to mention 50 storey skyscrapers. The shorthand for the vision for some is a new 'Manhattan on the Mersey' and Peel estimates that it will create some 27,000 new jobs.

Wirral Waters is mirrored across the estuary in 'Liverpool Waters', this time a £5.5 billion development with a similar mix of skyscrapers, landscaping and in this case a monorail linking through to the (Peel-owned) Liverpool Airport. It is the biggest scheme of its kind to occur in the Northwest for more than a century and will include 25,000 apartments, four hotels, shops, bars, restaurants and marina facilities.

Peel's reach extends back along the Ship Canal to Salford and another development that will have national implications. The Ship Canal ends at

Opposite The regions growth has always depended on good transport links. The northwest led the way with canals, railways and roadbuilding (the first stretch of motorway was the M6). Congestion slows down economic growth and the need for a second Mersey crossing at Runcorn is essential to cope with the future level of road traffic predicted.

Pomona Docks where a footbridge connects through to Salford Quays (another regeneration success story where pioneering environmental techniques have been used to such good effect that the formerly polluted waters are in such a good state that they now play host to an annual triathlon).

Here Peel is building a new home for the BBC, called MediaCity:UK. More than just a new headquarters for the Corporation's sports, digital and Five Live output, MediaCity:UK will become Britain's first purpose built media city, based on a 200-acre site just outside the city centre of Manchester. Given the final go-ahead by the Government in January 2007, the BBC has confirmed the site as its chosen location and will be the catalyst for a major programme of development that will bring £1 billion into the economy over the next five years, will attract private investment of over £300m in the first phase, will create the space for 1,150 creative businesses and provide jobs for 15,500 people. It will take its place alongside the Lowry and Imperial War Museum North and will include a new iconic building on the waterfront for the BBC.

Some of the visions jar with each other. How can so much development take place as we begin a global battle to reduce our ecological footprint? Where does a deep sea container port fit in to the fight against climate change? How can the benefits of a new media industry or a new cultural renaissance be felt through every community, in each and every neighbourhood?

Thud, thud. The residents of North Wirral heard the shafts of Burbo Bank wind farm being pile driven into the sands of the Irish Sea day after day, after day. Thud, thud. Along the beach at Crosby, 100 metre-long foundation poles have been set and then topped off with life-sized sculptures in man-shaped forms, Antony Gormley's Another Place. Thud, thud. A new arena is looming on the historic waterfront at Liverpool. Business is brisk at Liverpool John Lennon Airport. Stanlow is still making petrol, not hydrogen.

Great care will have to be taken to avoid the mistakes of the past in the name of truly sustainable development, but with a few caveats, perhaps, the future is looking good along the Mersey.

At its mouth of the Mersey, Liverpool stands square as a European Capital of Culture. From the Gormley sculptures that the good people of Crosby have fought to keep in the face of bureaucracy and petty-mindedness, to the endlessly pioneering Liverpool Biennial of Contemporary Art, the city seems to act as a factory of ideas regardless of powerplays or media speculation.

It must be something in the water.

The river courses with change and with dreams. It is an artery in every sense. But what of the people, of the local communities? If there were one challenge greater than any other in the Mersey's future it would be reaching through to the forgotten, the disenfranchised and the disillusioned. The Mersey tracks its course through some of England's most deprived communities and if new power, or new culture are to mean anything, they have to deliver social change, as well as a better environment.