



MERSEY TIDAL POWER

Phase 1 Community Consultation

1 October 2024 – 15 November 2024



LIVERPOOL
CITY REGION
COMBINED AUTHORITY

METROMAYOR
LIVERPOOL CITY REGION

IT'S TIME
FOR TIDAL





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Introduction

Why it's time for tidal

The River Mersey and Liverpool Bay are our greatest natural assets.

They've been at the heart of the fortunes of Liverpool City Region for hundreds of years, from the first ferries across the Mersey, to the world's first commercial wet dock to today's Port of Liverpool. How we use them has always evolved.

Now, in a time of climate crisis, we are turning to our great river once more to harness its natural power to secure a greener, cleaner, and more prosperous Liverpool City Region for this and future generations. The Mayor of the Liverpool City Region has declared a climate emergency – with the vision of making our region's economy carbon neutral by 2035 or sooner, a full 15 years before the Government's national target.

Tackling climate change is a global challenge, but Liverpool City Region is uniquely placed to play its part in generating a greener future. We have one of the UK's largest tidal ranges and a long history of research into tidal power. We can harness this heritage and the power of our tides to generate a plentiful, reliable supply of clean, green energy, powering hundreds of thousands of homes.

The twice-daily turn of the tides makes tidal power reliable, complementing other renewable energy sources like solar and wind power. We already have one of the largest wind farm clusters in Europe in Liverpool Bay, which will triple in size over the next decade. And tidal power will keep working when the wind doesn't blow.

The devolution of powers from Westminster and Whitehall to the Liverpool City Region means we can take the lead on tidal power, consolidating our position as a global green leader, with the potential to generate jobs and opportunities in a new, greener economy.

At a time when the UK's vulnerability to fluctuations in the international energy market is all too evident, producing clean, green electricity here in the Liverpool City Region should be an important part of the UK's energy mix. This will add to the country's self-sufficiency in energy, while helping to keep fuel bills down.

The clock is ticking to tackle climate change, but we have the power to turn the tide on the climate emergency by creating the world's largest tidal power scheme, right here on the River Mersey, and put the Liverpool City Region at the vanguard of the Green Industrial Revolution.

It's time for Mersey Tidal Power.





Overview of the project

Tidal range schemes generate electricity using the energy available from the difference in height of high tide and low tide. This is called a 'tidal range' and can be up to 10 metres (33 feet) in Liverpool, offering tremendous potential for tidal power production in the region.

The Mersey Tidal Power Project is made up of:

- A tidal range barrage across the River Mersey, harnessing the power of the tide. It would contain:
 - A Power Generation System with control equipment and a substructure containing turbines which could generate up to 1 GW of electricity.
 - A Hydro Control System, including sluice gates
 - A Marine Navigation System, including locks
 - A Power Export System
 - Onshore operations facilities, including a control centre, car parks, and buildings for maintenance, stores and offices
 - Associated rock armour and breakwaters
- A grid connection to the existing electricity transmission or distribution system.
- Use of local port facilities to support the construction of the Mersey Tidal Power Project.

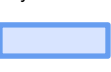
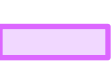
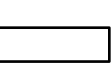

You can find out more about the components making up the tidal barrage on [page 10](#).

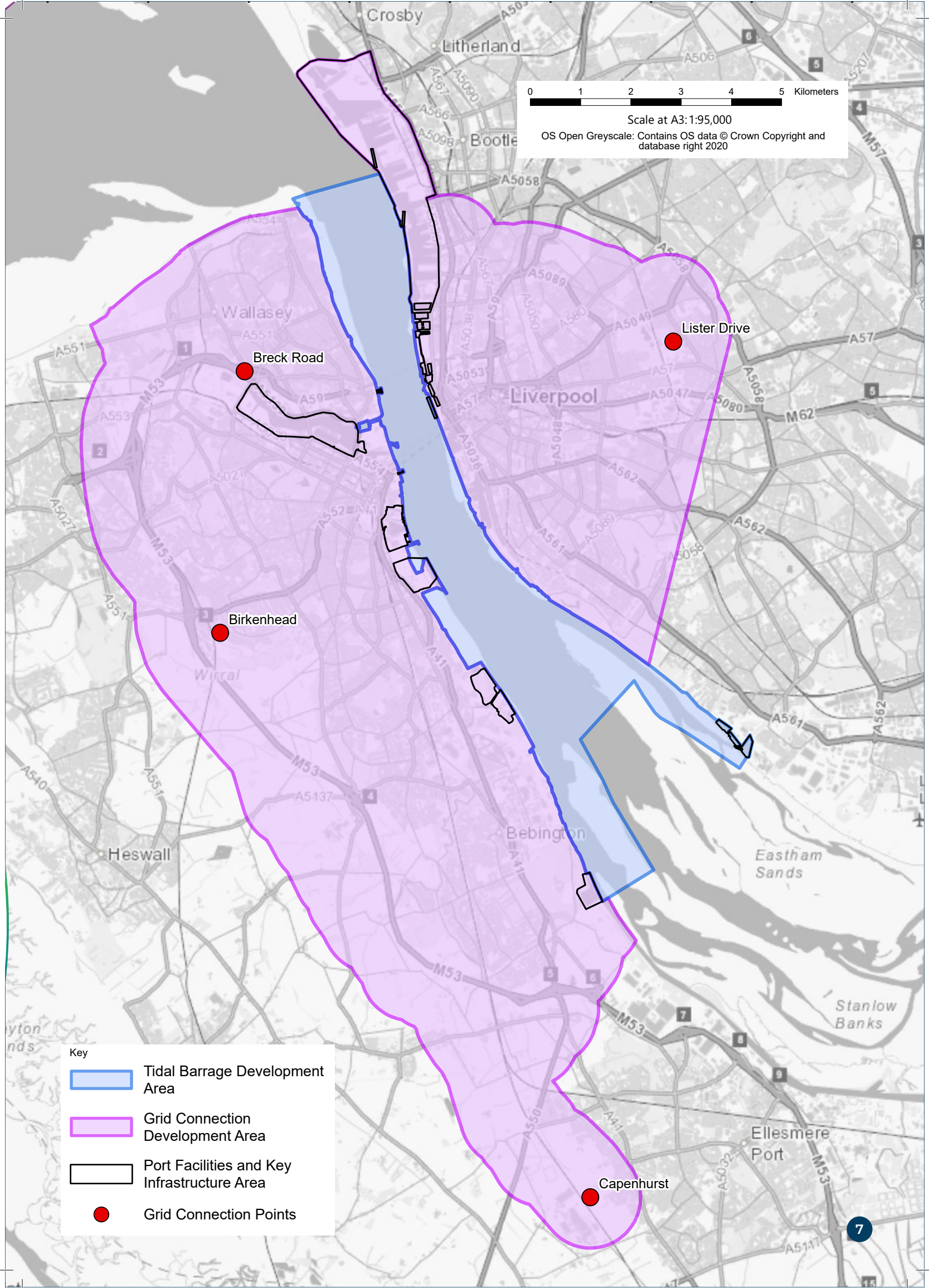
We would need further developments and facilities to support the construction of the Mersey Tidal Power Project. These sites would include vehicle access, security infrastructure, temporary laydown areas, landscaping, drainage, plant, and equipment. We will share further information on these ancillary components as we develop our plans further.



0 1 2 3 4 5 Kilometers
 Scale at A3: 1:95,000
 OS Open Greyscale: Contains OS data © Crown Copyright and database right 2020

Key

-  Tidal Barrage Development Area
-  Grid Connection Development Area
-  Port Facilities and Key Infrastructure Area
-  Grid Connection Points



Where are we at?

This non-statutory consultation is our first phase of public consultation on the Mersey Tidal Power Project. This is your opportunity to learn about and have your say on our initial proposals for the tidal barrage and associated infrastructure. We want your feedback in order help us develop our proposals further, and we will consider this alongside our ongoing engineering design and environmental assessment work.

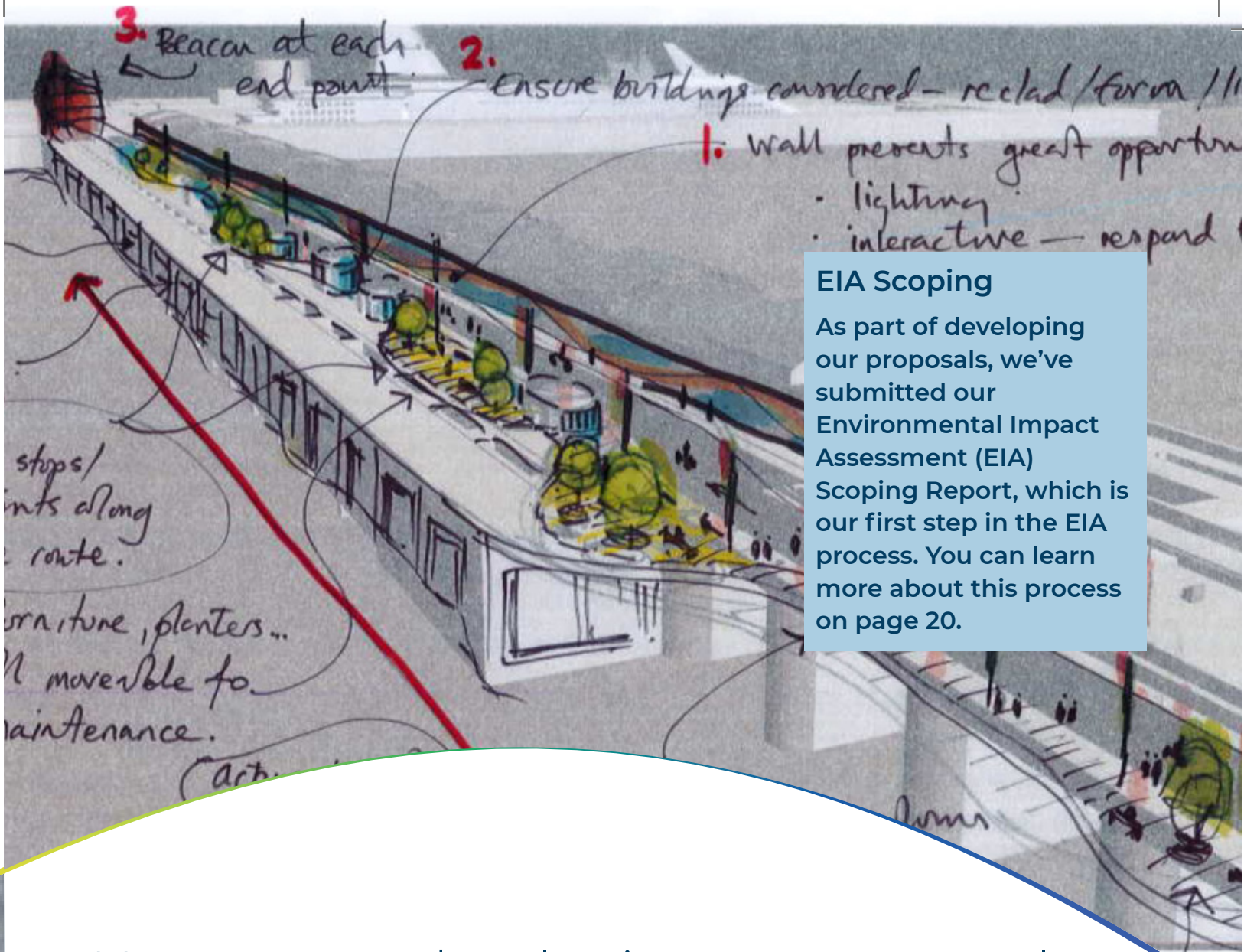
The rest of this booklet provides information on the different elements of our proposals, how we have developed them, and what the next steps are. More details on how you can provide your feedback are on page 24 - **the deadline for comment is 15 November 2024.**

There will be further opportunities to provide feedback as the project progresses. We are aiming to hold a further round of statutory consultation in 2025, during which we will present our refined proposals for comment. Following the statutory consultation, we will then work to finalise our proposals which will be submitted in our application for a Development Consent Order. You can learn more about the process on page 23.



tower
Beacon at
each end

You can view our marine license application for our marine-based surveys on the public register. You can access our application by visiting marinelicensing.marinemanagement.org.uk and using the case reference 'MLA/2023/00552'.



How we are developing our proposals

In developing our proposals, we have undertaken a number of surveys, assessments and analyses to make best use of our natural assets.

We have undertaken significant engagement over the last four years on different aspects of our proposals. This includes scheme development, technical engagement on hydrodynamic modelling, baseline survey data collection and marine licence applications for baseline surveys. This engagement has predominantly been through discussive and collaborative workshops on technical environmental matters, including an Environmental Stakeholder Forum which has been held regularly since 2020.

In August 2024, a marine licence was granted by the Marine Management Organisation for our application to undertake further marine-based surveys. This will allow further marine baseline data collection to continue in addition to the three years of ornithological surveys already completed.

While tidal power is new to the UK, it has been operating successfully for over 50 years in some countries, including France and South Korea. For example, the La Rance tidal range plant, near St Malo, France has been operating since 1966, and has 24 turbines each of 10 MW capacity. In South Korea, the Sihwa Lake tidal power station - opened in 2011 - has 10 turbines each of 25.4 MW capacity. We have built strong relations with both projects to inform our designs.

The tidal barrage

The tidal generation equipment will stretch across the River Mersey between Liverpool and the Wirral, harnessing the power of the tide while still allowing the natural flow of the tidal cycle. As a structure designed to operate for up to 120 years or more, the Mersey Tidal Power Project will generate clean, reliable, renewable power for generations to come.

Partially submerged, most of the barrage will lie beneath the water level in the estuary bed. It will be made of reinforced concrete or similar materials, with various steel components supporting. We are still in the early stages of developing our proposals and the configuration of the components making up the barrage is subject to further design work.

The barrage will include the following components:

1 Power Generation System

The main structure of the barrage, the Power Generation System will contain control equipment and a sub-structure housing turbines that will produce up to 1 GW of electricity. The turbines will be fully submerged at all times, producing electricity as either one-way or two-way generation, using the incoming (flood) and outgoing (ebb) tides. Further equipment, such as a cooling water system for the turbines, firefighting equipment, dewatering pumps, and internal cranes would also be contained within the Power Generation System.

2 Hydro Control System structure

The barrage structure will include a Hydro Control System structure, in the form of vertical or radial sluice gates, that will control water levels and flows during tidal cycles. This would include a stationary foundation and movable gates to allow water to pass when required. As they will have continuous contact with salty river water, the Hydro Control System structure will have passive or cathodic protection to prevent corrosion of the steel.

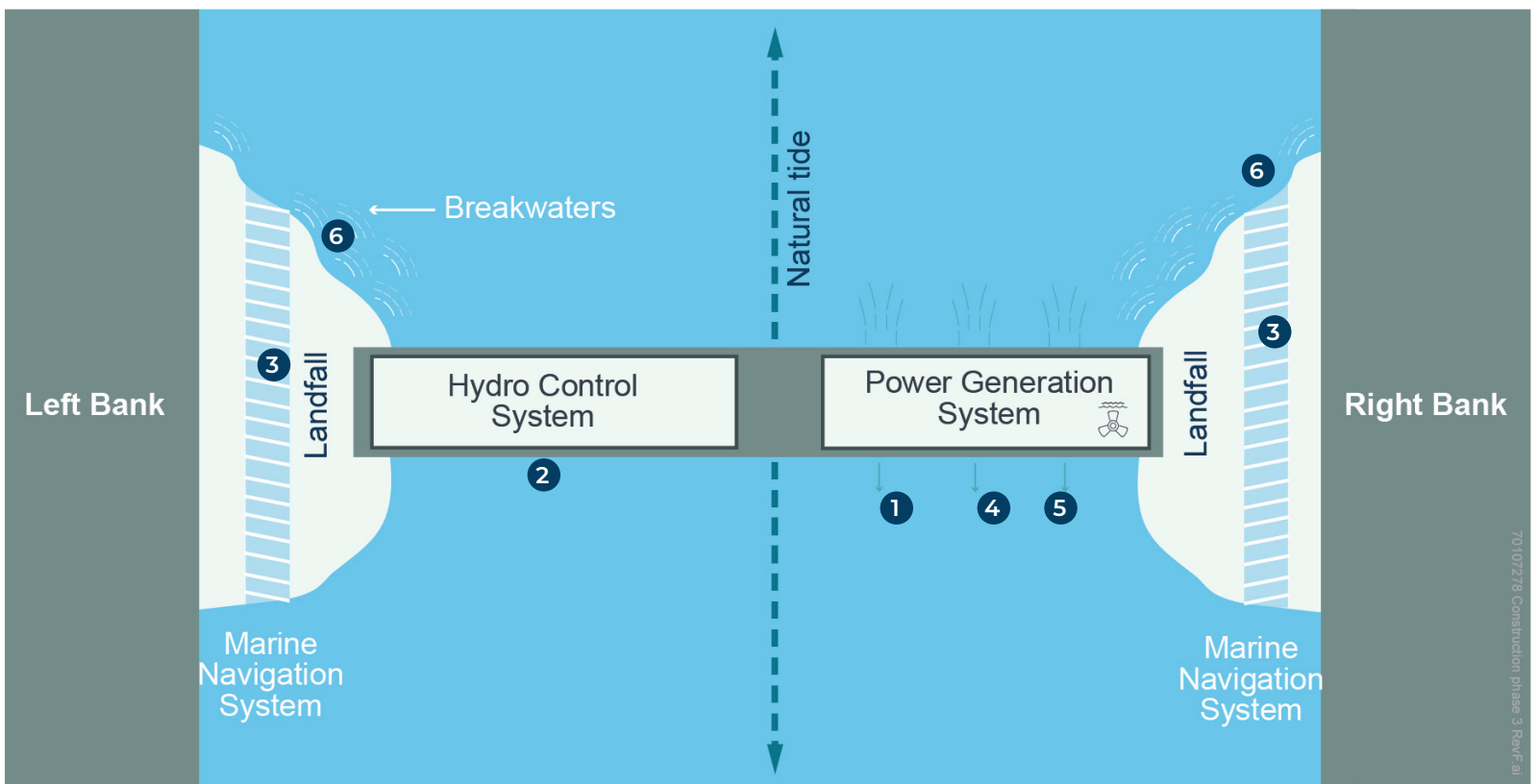
3 Marine Navigation System

The Marine Navigation System, composed of a combination of locks, will enable ships and vessels to pass through the barrage, maintaining the Mersey Estuary's role as a key shipping and navigation route. The size and number of locks are subject to further studies and discussions with port operators, and could be located together on one side or on both sides of the barrage. The size of the locks will be based on vessel requirements, such as leisure, commercial and military vessels, to ensure they can pass through the barrage and up the River Mersey.

Leading up to the Marine Navigation System, navigation measures – such as buoys, dolphin piles, visual barriers, guide walls, signs and safety zones - will be in place to guide vessels safely. The Marine Navigation System will be managed and monitored from the control room, and will operate 24 hours a day, all year round. There is the potential for guide walls to create a navigation channel on the approach to the barrage.

What are sluice gates?

Sluice gates are movable barriers that help control the flow, level and direction of water. Vertical sluice gates are straight, whereas radial sluice gates are curved like the segment of a circle and cause backwater in the flume. Either of these can be lowered or raised to control the flow of water.



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4 Onshore Operational facilities

The tidal barrage will require a range of onshore facilities to ensure its effective, round-the-clock operation. These will include operational, maintenance and administrative buildings, stores, office buildings, and car parks. A control room will also be built to monitor and manage the barrage and operate the sluice gates and Marine Navigation System. These may be located along the barrage structure itself, or on adjacent areas of reclaimed land.

5 Power Export System and onward grid connection

Electricity produced by the turbines will be collected by a range of equipment (such as cables, control cubicles and transformers) within the Power Export System. An export substation would be located on or near the barrage and handle the electricity generated by the turbines. This will ensure that the electricity generated can be connected to the high-voltage electricity transmission or distribution system.

6 Breakwater

The tidal barrage will be connected to their adjacent banks by a breakwater. This is a watertight structure, likely with a rock face and a sand or rock-filled core.

The tidal barrage will offer flood protection as a mitigation against future sea level rises and provide a walking and cycling route between Liverpool and the Wirral. You can read more about our walking and cycling proposals on [page 12](#). Once operational, the tidal barrage will include new offices, workshop facilities, and a staff car park. To ensure its ongoing safe operation, security fencing, lighting, CCTV and maintenance equipment will also be in place.

Our proposals for the tidal barrage are at an early stage, and we want your feedback to help further shape them. We will provide more detailed information on our refined proposals at our statutory consultation, which we expect to hold in 2025.

We are still in discussions with port operators and will provide further information on our proposals for the Marine Navigation System and associated navigational measures once they have been further developed.

Linking Liverpool and the Wirral

The Mersey Tidal Power Project could not only harness the power of our greatest natural assets — the River Mersey and Liverpool Bay — but would also serve as a vibrant public space for local communities to enjoy. Our proposals are in keeping with our vision for a well-connected network of safe and high-quality routes for active travel across the City Region. This will help us enhance the Liverpool City Region’s connectivity, creating a vibrant place for people to live, work and visit.

New walking and cycling links

Our groundbreaking proposals for a tidal barrage could connect Liverpool and Wirral, allowing pedestrians to cross the River Mersey. The new accessible scenic paths would encourage people of all ages to travel in a healthy and active way, providing a safe route across the river and seamlessly integrating active travel links like cycleways and walkways with onward routes. It is envisaged that separate paths for cyclists and pedestrians would be provided to create safe routes for those using the space.

The tidal barrage would attract visitors, provide opportunity for outdoor recreation and become a community asset. The barrage would feature street furniture, providing rest points where people can meet, relax and admire the scenery, marine life, and the surrounding landscape. Through thoughtful design and pedestrian-friendly features, our proposals will enhance quality of life for residents and visitors, to secure a greener, cleaner and more prosperous Liverpool City Region for future generations.

Visitor centre

We are considering within our proposals the potential for a visitor centre associated with the project and are in discussions with local stakeholders on what this could look like and where it could be located. Visitors could come and learn more about the technology behind the tidal barrage, how it provides clean electricity to our homes, and its historical significance. We will share more details on our plans for a potential visitor centre once our proposals have been further refined.





Grid connection

In order to provide clean, reliable, renewable power to our region and the country, a grid connection will be required from the barrage to an existing substation, which would be the point of connection. We are in discussions with National Grid and SP Energy Networks on the best location for this grid connection with the required capacity and have identified four potential points of connection at existing substations:

- Birkenhead substation, off Prenton Dell Road in Prenton
- Capenhurst substation, off Capenhurst Lane in Capenhurst, Cheshire
- Lister Drive substation, off Carnegie Road in Liverpool
- Breck Road substation, off Breck Road in Wallasey

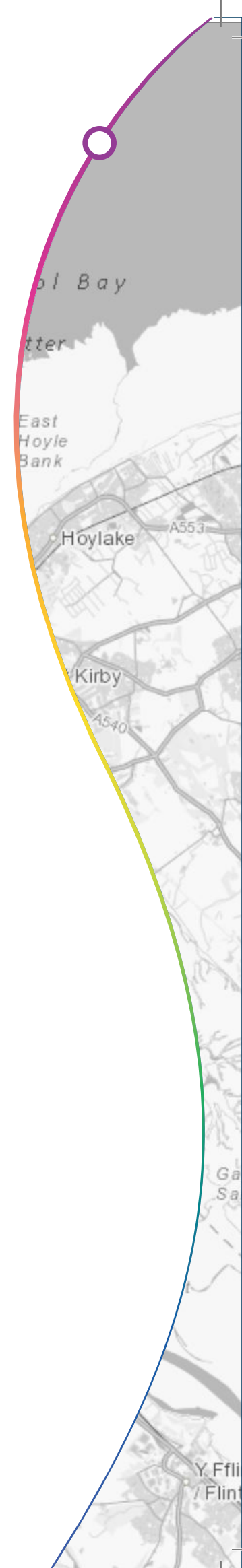
Connecting would involve a power cable running from the Power Export System to the point of connection. For **all connections**, it is likely that this onward connection would be a new buried underground cable, with potential for a short section of subsea cabling, dependant on the option. For the connection to the **Lister Drive substation**, this could involve some routeing through the existing underground tunnels and cable routes towards the substation.

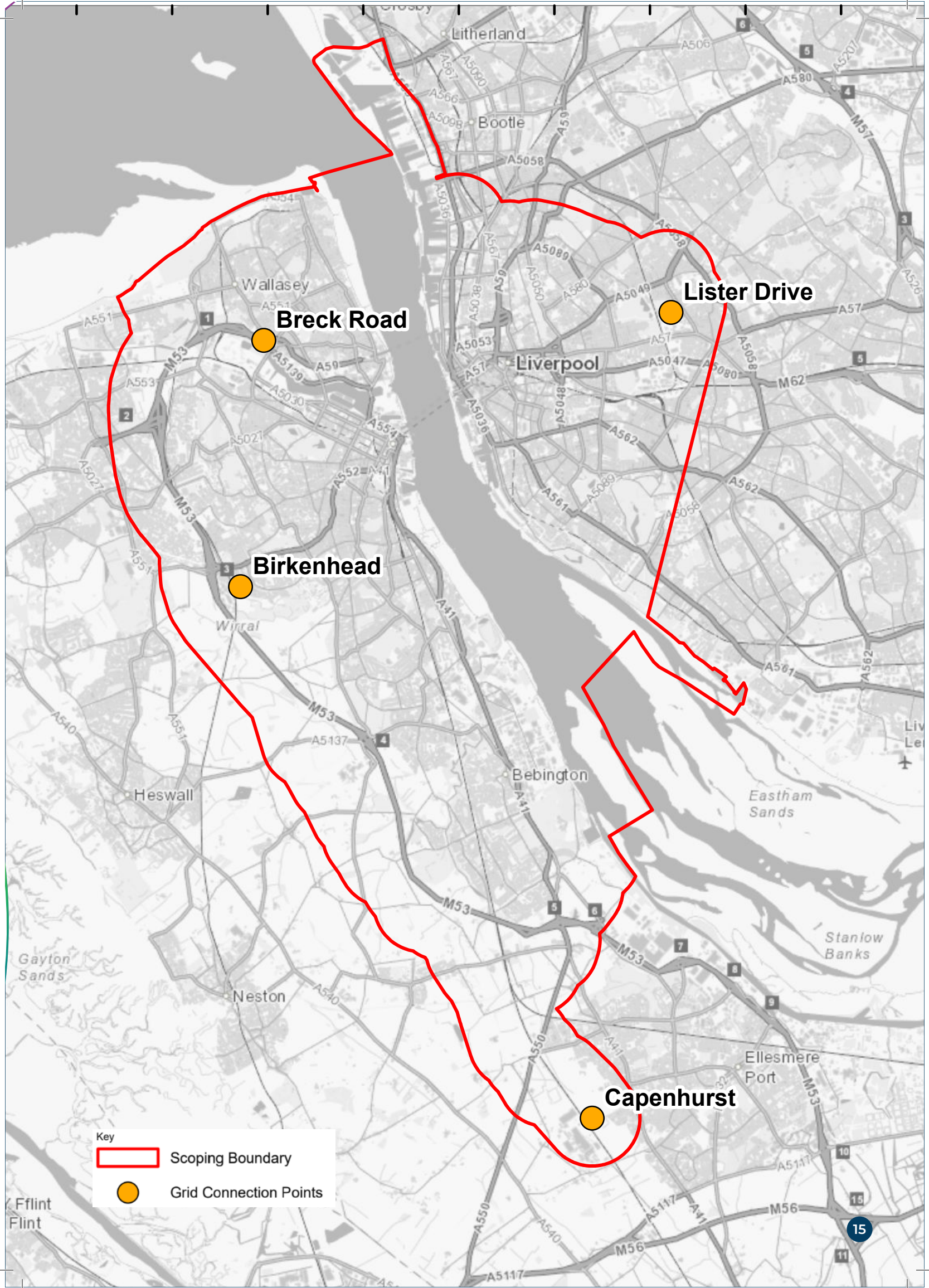
For connections to the **Birkenhead, Capenhurst or Breck Road substations**, this could alternately involve the reinforcement or restringing of the existing overhead lines.

We are still at an early stage in forming our grid connection proposals and will continue to work with National Grid, SP Energy Networks and other stakeholders and bodies in developing these further.



We will undertake routing studies to consider a range of factors in deciding cable routing. This would involve considering a number of technical, engineering, environmental, and land interest factors which would help identify options to be appraised and compared. From this, the most suitable corridors can be selected for cable to be routed within.

We will share more information on our grid connection proposals at our statutory consultation, which we hope to hold next year.





Key

-  Scoping Boundary
-  Grid Connection Points

Breck Road

Lister Drive

Birkenhead

Capenhurst

Constructing Mersey Tidal

The tidal barrage will either be constructed within a temporary cofferdam and/or constructed using in-situ caissons. Both of these will mean that the barrage will be constructed in the River Mersey. It is anticipated that construction could take between 7 and 10 years depending on the method of construction selected. Whichever method used, we will take a staged approach to minimise impacts to river users, the environment and local communities.

- **Temporary cofferdam:** Sheetpiles are installed deep into the riverbed to create watertight walls in which a dry working area can be formed by dredging the contained water. Turbines/generators and associated structures can then be built in the dry working area using cranes within the river.
- **Caissons:** Concrete structures which are either towed to the marine working area and sunk into position (modular) or constructed in-situ within a temporary coffer dam.

Where possible, the construction activity will happen in the River Mersey, including the delivery of equipment and materials to the working area. We will require construction routes, compounds and access onshore near the tidal barrage landfalls.

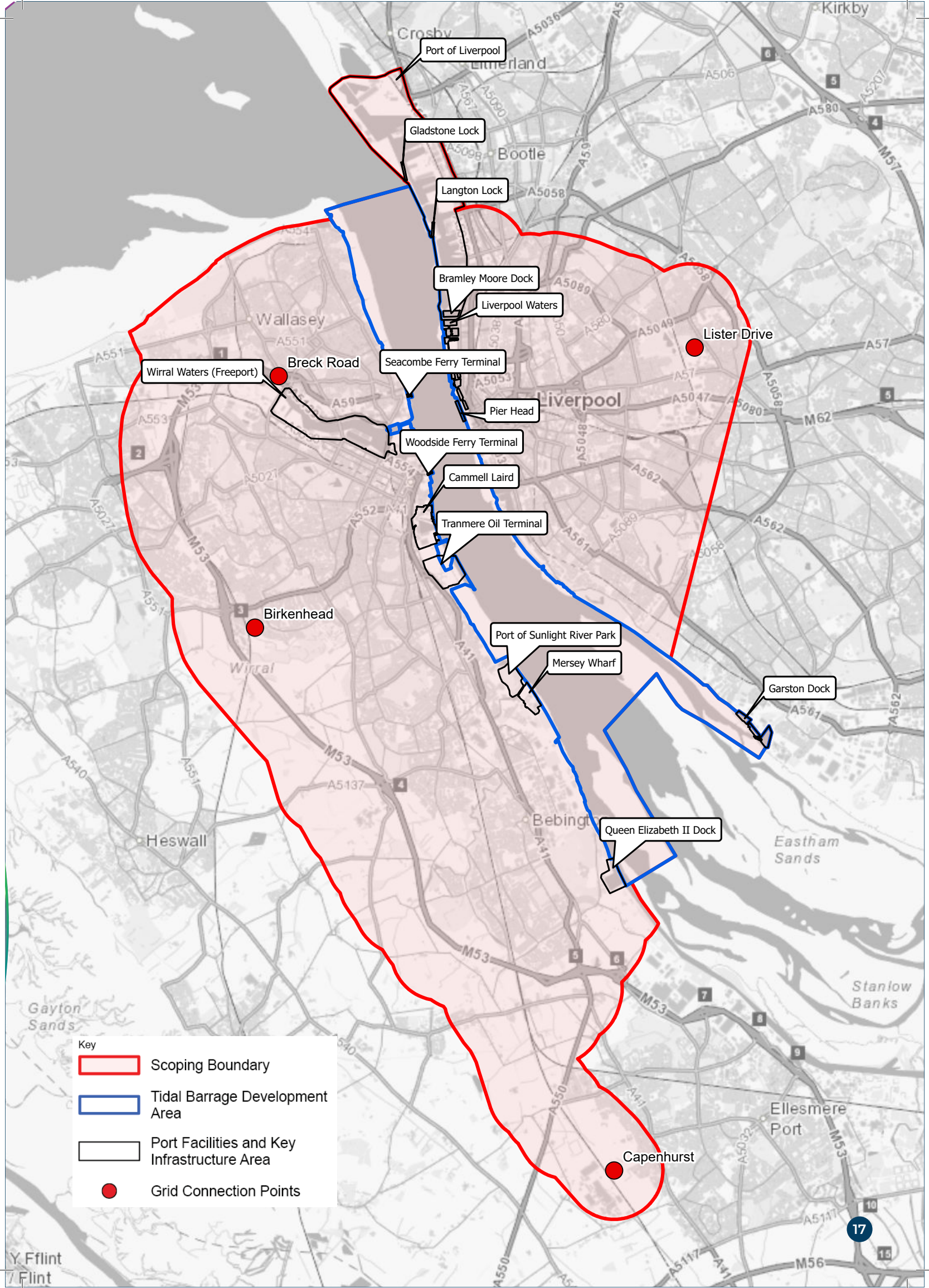
Using local ports

While the reclaimed areas on the left and right banks will provide some temporary construction compounds and storage areas, we will look to use local port and industrial facilities to house other temporary construction facilities.



Example image of a coffer dam used for the construction of the La Rance tidal range plant (reproduced courtesy of EDF)





Key

- Scoping Boundary
- Tidal Barrage Development Area
- Port Facilities and Key Infrastructure Area
- Grid Connection Points

How would electricity be generated?

The North West Coast is well suited for tidal power, with a predictable tidal pattern that repeats itself every 17.6 years. Designed to harness the power of the River Mersey and generate clean, green electricity for up to 120 years, the Mersey Tidal Power Project will ensure a plentiful and reliable energy supply for future generations. The tidal barrage can operate 24 hours a day, depending on the movement of the tide, operational mode, and requirement to increase or decrease generation to meet demand.

The tidal barrage generates electricity using one-way or two-way generation by using the incoming (flood) and outgoing (ebb) tides within the River Mersey. Depending on the operational mode, up to four generation periods are possible in a 24-hour period. Sluice gates within the Hydro Control System will control these water levels and flows along with the turbines within the Power Generation Structure.

When the generation cycle is finished and the 'head difference' (the difference in water level between both sides) is low, a pumping mode can be used to increase the volume of storage of water available upstream available for generation. The mode of operation for the tidal barrage is subject to final configuration and machine selection, and we will consider future requirements like generation demand and the management of water levels in developing our proposals.





Impact on water levels and flooding

We know that tidal barrages could potentially result in changes to water levels upstream of it. We are carefully considering these impacts and have undertaken extensive modelling to understand the effects on habitats along the river. As the tidal barrage can control the amount of water going in and out of the Mersey Estuary, it can provide protection from sea level rise and tidal flooding to areas upstream of it.

Maintenance

We will work to maintain the tidal barrage to ensure safe and efficient working throughout its operational lifetime. This would include dredging to support maintenance activities, the frequency of which will be confirmed once we've selected a location for the tidal barrage. In the event of an emergency, like flooding, the tidal barrage can allow the natural flow of the tide to pass through the sluice gates, or alternately restrict flows by partial closure.



Minimising our environmental impact

The unique geography of the River Mersey and Liverpool Bay makes it one of the best places in the UK where it is possible to generate plentiful, predictable, green tidal electricity to help combat global climate change.

Building any infrastructure project has potential to generate effects on the local environment. This has been a key consideration in the development of the project so far and we are committed to understanding, minimising and mitigating any effects where possible. To date, we have engaged with key environmental stakeholders and undertaken initial studies to understand more about any local environmental changes.


Protecting our river

The River Mersey is protected by a number of national and internal designations, including Sites of Special Scientific Interest and Special Areas of Conservation. We therefore have a legal duty to carefully consider the conservation of the River Mersey within our proposals. The river is a diverse ecosystem and home to a range of birds, sea life and other species. We are committed to protecting our environment and are working to design our proposals in the most environmentally sensitive way possible.

Environmental Impact Assessment process

A key part of the process to gain a Development Consent Order (DCO) for the project is to undertake an Environmental Impact Assessment (EIA). This will identify and assess the environmental, social and economic effects of the project which will inform its further design and development.

We have been through the 'scoping' process which determines what will be covered in the EIA. As part of this, we prepared an EIA Scoping Report setting out what we consider should be included ('scoped in') or excluded ('scoped out') from the EIA. Having received our Scoping Report, the Planning Inspectorate will consult with a wider range of parties including local planning authorities to ask their views on how we intend to assess the environmental impact of the project. A Scoping Opinion will then be provided by the Planning Inspectorate (on behalf of the Secretary of State) for the project, which we expect to receive in October 2024.



To view our EIA Scoping Report, visit national-infrastructure-consenting.planninginspectorate.gov.uk/projects/EN0110006 or scan the QR code



What we will be assessing

To understand the potential impacts of the construction, operation and decommissioning of our proposals, we are undertaking assessments and studies on a range of areas. These include, but are not limited to:

- Traffic and transport, both onshore and marine navigation (shipping)
- Ecology and biodiversity, terrestrial, ornithological and in the marine environment
- Commercial fisheries
- Seascape, landscape and visual impacts
- Coastal processes and benthic, subtidal and sediment quality
- Archaeology and cultural heritage, both onshore and in the marine environment
- Flood risk and water resources
- Infrastructure and other marine users
- Socio-economics and land use
- Noise and vibration
- Air quality, climate change and greenhouse gases

Our EIA will address these likely significant effects and, where required, propose measures to minimise or mitigate them. At our future statutory consultation, we will publish a Preliminary Environmental Information Report to provide an update on our EIA and seek feedback from consultees on its preliminary findings. Feedback received will help us to refine our plans before we submit our application for a DCO to the Planning Inspectorate. This application will include an Environmental Statement setting out the results of our EIA.

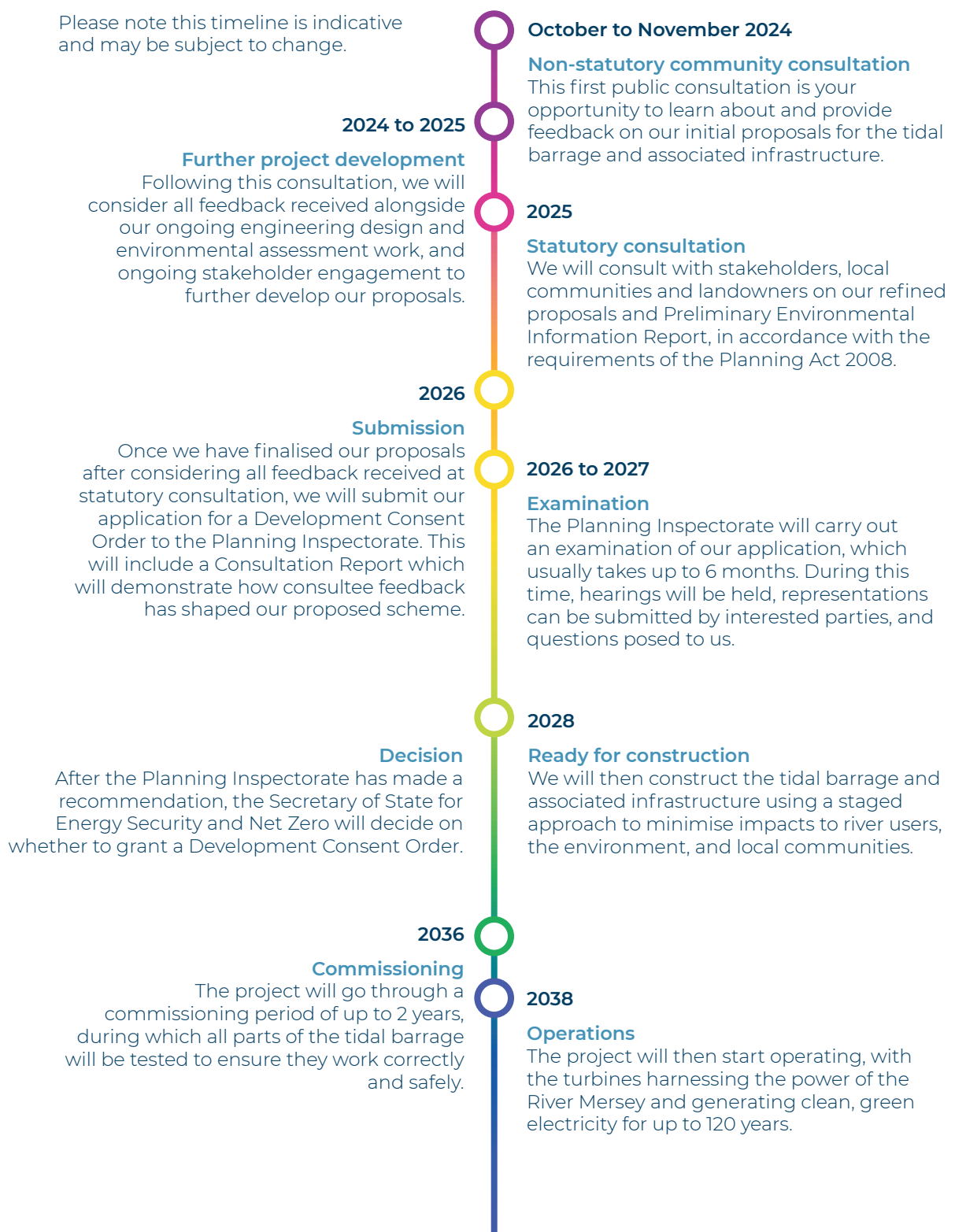
We want your views on how our proposals can best deliver environmental enhancements and benefits

What happens next

After this consultation closes on Friday 15 November 2024, we will consider all the feedback we have received on our proposals at this early stage.

Following this consultation, we will continue our engineering design and environmental assessment work to better understand the local environment. These will help us to refine our proposals, and we will present these, alongside our Preliminary Environmental Information Report, at our statutory consultation, which we hope to hold next year.

Please note this timeline is indicative and may be subject to change.



The application process

The Mersey Tidal Power Project is classified as a Nationally Significant Infrastructure Project (NSIP) under the Planning Act 2008. This means we will need to apply to the Planning Inspectorate and the Secretary of State for Energy Security and Net Zero for a Development Consent Order (DCO) to construct and operate the project.

Before we apply for a DCO, we will continue to engage with stakeholders and local communities to further develop and refine our proposals. This will include seeking feedback at a further round of statutory consultation.

You can find out more about the DCO process here: infrastructure.planninginspectorate.gov.uk/application-process/the-process/



Have your say

We want to hear from you. This consultation is running **from Tuesday 1 October 2024 to Friday 15 November 2024**. Your feedback will help to shape our proposals alongside ongoing engineering design and environmental assessment work.

There are a number of ways you can provide feedback:

Complete our online feedback form: available on our website www.merseytidal.co.uk

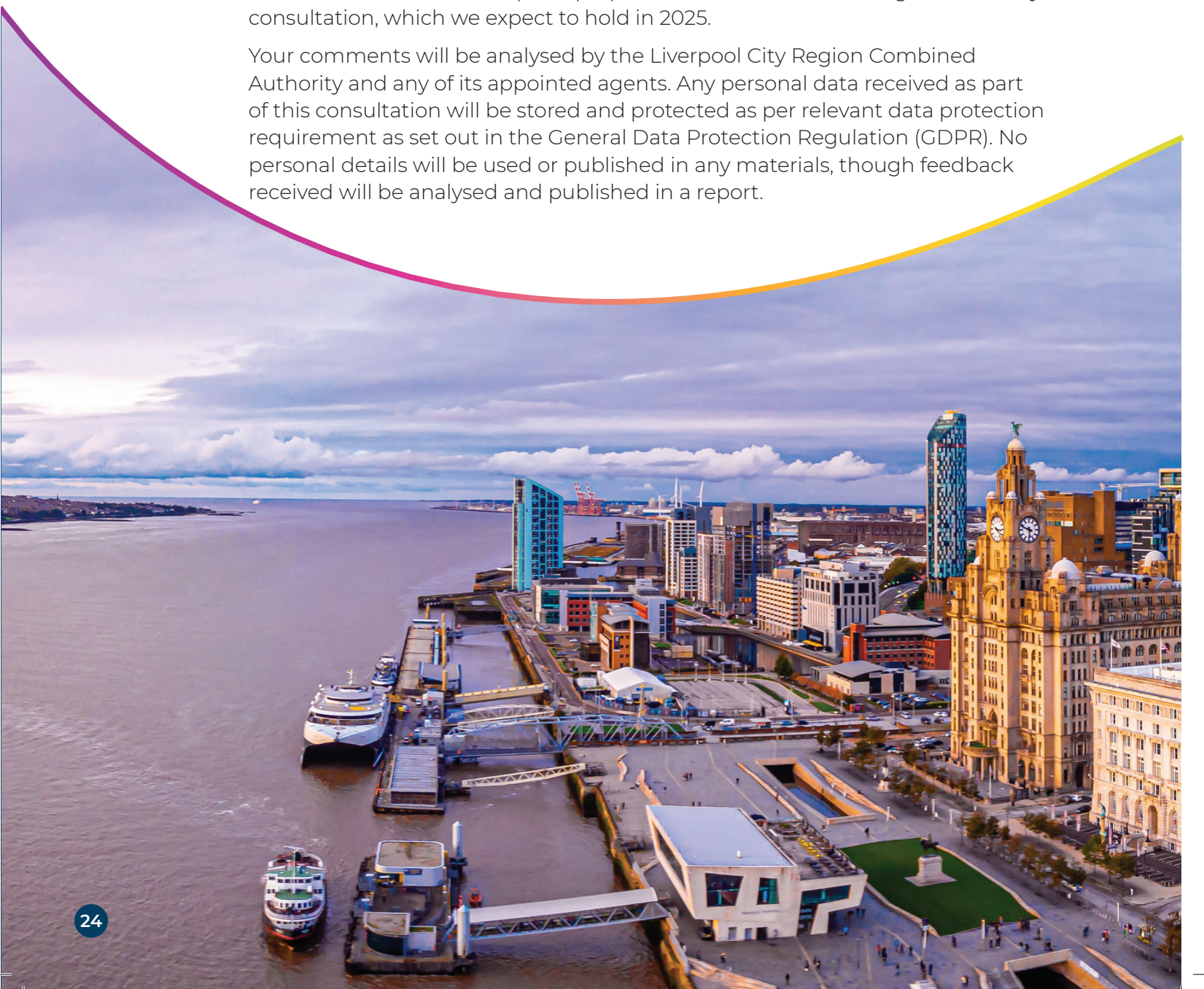
Hard copy feedback form: available at our in-person exhibition events or on request via the email address below.

Email: Email your comments to MerseyTidal@liverpoolcityregion-ca.gov.uk

Freepost: Post your comments (no stamp required) to **Freepost MERSEY TIDAL**

Following this non-statutory consultation, we will consider all feedback received and work to further develop our proposals ahead of a further stage of statutory consultation, which we expect to hold in 2025.

Your comments will be analysed by the Liverpool City Region Combined Authority and any of its appointed agents. Any personal data received as part of this consultation will be stored and protected as per relevant data protection requirement as set out in the General Data Protection Regulation (GDPR). No personal details will be used or published in any materials, though feedback received will be analysed and published in a report.



Public events

We are running public events within the local community to provide an opportunity for you to learn more about our proposals and speak to our team who will be on hand to answer any queries you may have.

Museum of Liverpool, Mann Island, Liverpool L3 1DG	Thursday 3 October	3pm to 7pm
Delamere Community Centre, Delamere Avenue, Eastham, Wirral CH62 9ED	Friday 11 October	2pm to 7pm
The Gateway, 85-101 Sankey Street, Warrington WA1 1SR	Saturday 12 October	10am to 4pm
The Lake House, Cambridge Road, Waterloo, Liverpool L22 1RR	Monday 14 October	2pm to 7pm
Floral Pavilion Theatre, Marine Promenade, New Brighton, Wirral CH45 2JS	Thursday 17 October	2pm to 7pm
The Florrie, 377 Mill Street, Dingle, Liverpool L8 4RF	Saturday 19 October	10am to 4pm
Shakespeare North Playhouse, Prospero Place, Prescot L34 3AB	Saturday 26 October	10am to 4pm
Ellesmere Port Civic Hall, Civic Way, Ellesmere Port CH65 0AZ	Monday 4 November	2pm to 7pm
Totally Wicked Stadium, McManus Drive, St Helens WA9 3AL	Tuesday 5 November	2pm to 7pm
Runcorn Masonic Hall, York Street, Runcorn WA7 5BB	Saturday 9 November	10am to 4pm

For those who can't make our events, or if you would like to review our materials in your own time, visit our website: www.merseytidal.co.uk

Hard copies of documents

All of our documents and materials are available to view online on our website or at our events. If you have difficulty accessing the internet, you can request a copy of our consultation documents by getting in touch with our team.



Call us on **0300 131 2881**



Email us at **MerseyTidal@liverpoolcityregion-ca.gov.uk**



Visit our **[website www.merseytidal.co.uk](http://www.merseytidal.co.uk)**

Notes

These pages have been intentionally left blank so that you can make your own notes during your visit to our exhibition.



Contact us

If you would like more information about our proposals or require documents in alternate formats (e.g. in Braille or other languages), you can contact us directly using the details below.



Call us on **0300 131 2881**



Email us at **MerseyTidal@liverpoolcityregion-ca.gov.uk**



Visit our website **www.merseytidal.co.uk**

Scan this QR code to visit our website



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