Wirral Waters and Supporting Road Infrastructure: Feasibility Study

Preferred Options

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1 Introduction

Mott MacDonald is working in partnership with Wirral Council to prepare a phased and coordinated package of transport improvements to both help enable the Wirral Waters regeneration initiative, and also better connect surrounding residential populations with key amenities. This report presents the details of the preferred packages of schemes which can be taken forward for the next stages of planning and design.

Following a series of consultation sessions with multiple partners and stakeholders, and with reference to the 'Wirral Waters and Supporting Road Infrastructure – Feasibility Study, Options Identification report', the long list of potential improvement schemes was reviewed to identify the preferred schemes. These schemes are described in detail in this report which should be read in conjunction with the **'Wirral Waters and Supporting Road Infrastructure – Feasibility Study: Preferred Options and Scheme Drawings'** report issued in October 2018. The schemes have been grouped into packages of works for three main phases, as summarised below, with further details in the following chapters.

1.1 Summary of Schemes, Packaging and Phasing

Phase 1 schemes are anticipated for delivery between 0-5 years of the publication of the final strategy. These schemes are as follows:

- Phase 1 Schemes:
  - Gateways to Wirral Waters
    - A5139 Dock Road / A5088 Wallasey Bridge Road Junction
    - Duke Street / Dock Road / Gorsey Lane Junction
    - A5027 Dock Road / A554 Tower Road / A554 Birkenhead Road Junction
    - Duke Street / Corporation Road Junction
    - Rendel Street / Corporation Road Junction
  - Wirral Waters Supporting Road Infrastructure
    - Wallasey Bridge Road Improvements (Component 1)
    - A5027 Gorsey Lane / Kingsway Tunnel Junction
  - Wirral Waters Active Travel
    - Tower Road / Birkenhead Road pedestrian / cycle link
    - Pedestrian crossings on Tower Road
    - Cycle route along Canning Street
    - Wirral Waters pedestrian wayfinding strategy
  - World Class Public Transport
    - Wirral Waters Public Transit Improvements: Phase 1
    - Bus routes diverted via Wirral Waters (e.g. 410, 411, 413, 423)

Phase 2 schemes are anticipated for delivery between 5-10 years of the publication of the final strategy. These schemes are as follows:

- Phase 2 Schemes
  - Wirral Waters Cross-Dock Connectivity
    - Replacement of Duke Street bridge
  - Wirral Waters Supporting Road Infrastructure
    - Beaufort Road and Wallasey Bridge Road
  - Wirral Waters Active Travel
    - City Boulevard (green transport corridor on Corporation Road and Beaufort Road)
    - Footbridge on Dockside route
    - A5027 Duke Street public realm
    - Dock Road pedestrian and cycle route
    - Extend Victoria Park to Dock Road
    - Duke Street Active Travel Improvements
    - Green Link: Wirral Waters to Birkenhead Park
    - Wirral Waters Pedestrian Wayfinding Strategy
    - Wirral Dock Active Travel Route: Phase 1
  - World Class Public Transport
    - Wirral Waters Public Transit Improvements: Phase 2

Phase 3 schemes are anticipated for delivery between 10-20 years of the publication of the final strategy. These schemes are as follows:

- Phase 3 Schemes
  - Wirral Waters Cross Dock Connectivity
    - Replacement of Poulton Bridge with a fixed structure
    - New north-south link and bridge
  - Wirral Waters Active Travel
    - Wirral Dock Active Travel Route: Phase 2
  - World Class Public Transport
    - Wirral Waters Public Transit Improvements: Phase 3

Together these schemes will deliver significant benefits for Wirral Waters and substantially enhance the feasibility and deliverability of much of the proposed development, potentially justifying a future intensification of uses and bringing a currently inactive area back into positive use. The packaged nature of the proposals should facilitate the envisaged phasing of the wider regeneration, ensuring that the transport infrastructure is in place at the right time to support the growth and reintegration of the Wirral Waters area into the wider Wirral economy.

1.2 Document Structure

Following this introductory section, this document is structured as follows:

- Sections 2 – 4 present the schemes identified for inclusion in the Wirral Waters Transport Strategy noting the risks to the delivery of these schemes and approximate budget estimates;
- Section 5 presents a general risk register for the delivery of the schemes as a whole;
- Section 6 provides a review of the various options available for the transit mode referred to in the scheme identification;
- Section 7 outlines the Economic and Social benefits of the schemes, particularly those in which benefits are less easy to define from classic highway and public transport modelling;
- Section 8 discusses the outcomes of the traffic and public transport modelling of the impact of the schemes relating to Wirral Waters and notes potential value for money;
- Section 9 provides a commentary on the various available forms of funding that might be utilised to develop and deliver the scheme options; and
- Section 10 provides final conclusions in relation to the study and notes the next steps on the road to delivery.

2 Preferred Schemes and Phasing: Phase 1

This chapter provides a summary of the details of the schemes suggested to be included in the first phase of the Wirral Waters Transport Strategy. The section includes a description of the scheme, potential risks directly associated with the particular scheme, and a budget estimate for the delivery of the scheme. This section is to be read alongside the earlier report *'Wirral Waters and Supporting Road Infrastructure – Feasibility Study: Preferred Options Scheme Drawings'* issued in October 2018.

2.1 Gateways to Wirral Waters

This package of schemes includes a series of enhancements to key junctions, identified as gateways to Wirral Waters. The package provides junction improvements and public realm improvements, specific to the gateway sites. The objective is to improve traffic flows and movements through providing improvements to the gateway junctions identified. This will benefit both motorists and pedestrians, as well as contribute towards the placemaking of the area, through the design of each gateway into Wirral Waters.

2.1.1 Scheme 1: A5139 Dock Road / A5088 Wallasey Bridge Road Junction

Drawing No. 392767-MMD-00-XX-DR-C-0006

2.1.1.1 Scheme description

This scheme seeks to create a high quality gateway into Wirral Waters. This junction provides the most direct access to the M53 motorway, and hence the most convenient highway access to much of the Wirral peninsula and onwards to the wider northwest region. Its proximity to the motorway network also means that much of the Wirral Waters HGV freight traffic is anticipated to also pass through this junction. The junction consequently plays an important strategic access function to the Wirral Waters area.

However, the junction is a key access route to the residential areas of Liscard and Wallasey to the north, and therefore experiences high daily levels of local traffic. Additionally, due in part to the Birkenhead North rail station to the south off Wallasey Bridge Road, there is a strong demand for north / south pedestrian movement which is not ideally catered for with the existing junction.

Of note is that there is potentially a very large development site to the west of Wallasey Bridge Road and south of the A5139 which currently only has a relatively restricted access. This junction has the potential to be adapted to open up this land, but at present there are no short or medium redevelopment proposals.

The scheme being considered at this time includes the following key elements:

- Removing a large oval shaped roundabout and replacing with a conventional four-arm traffic signal junction;
- Introducing controlled pedestrian crossings on all arms of the junction;
- All works within the highway boundary.

As part of this scheme, further works are proposed to the north along Poulton Bridge Road and its junction with Breck Road. These comprise of:

- Tightening the junction of Limekiln Lane / Poulton Bridge Road to aid pedestrian movement. These works would also include public realm and landscaping improvements to help formalise the new kerb edges and allow for residents parking; and
- Reconfiguring the junction of Poulton Bridge Road / Breck Road to allow controlled pedestrian crossings of all four arms of the junction.

Allowed for in this scheme is the coordination with the Wirral Waters Active Travel Schemes described later in this section.

2.1.1.2 Scheme risk review

Potential risks specifically associated with this scheme can be summarised as follows:

- Access will need to be maintained to the Liverpool Victoria Rowing Club and other commercial premises in the vicinity;
- Access may need to be provided to land to the west which would require a significant change to the scheme design

Note, a general risk review associated with all schemes is included towards the end of this chapter.

2.1.1.3 Scheme budget estimate

£3m

2.1.2 Scheme 2: Duke Street / Dock Road / Gorsey Lane Junction

Drawing No. 392767-MMD-00-XX-DR-C-0006

2.1.2.1 Scheme description

This is a very important junction on the road network local to the Wirral Waters development area as it:

- Gives the most convenient access the Kingsway road tunnel;
- is on one of the main routes to the residential and commercial areas to the north; and
- is the access route between the RoRo docks and the M53 and therefore used by many HGV's.

Similar to Scheme 1, the junction is traversed by many pedestrians and cyclists as it is on one of the limited number of routes between the residential areas to the north and the transport hubs, employment areas and education facilities to the south.

The scheme is focused on the existing four-arm signal junction which has multiple approach lanes on all four-arms. However, currently facilities for pedestrians and cyclists are limited.

The key components of this scheme are:

- To maintain traffic capacity approximately equivalent to the existing junction arrangement;
- To reconfigure traffic islands and footways to enable controlled pedestrian crossing facilities to be incorporated; and
- To update the signal controller to optimise timings for actual traffic flows.

Also allowed for in this scheme is the coordination with the Wirral Waters Active Travel Schemes described later in this section.

2.1.2.2 Scheme risk review

Potential risks specifically associated with this scheme can be summarised as follows:

- To the southeast of the junction is a potential redevelopment site currently being considered for residential. The final preferred junction improvement scheme will need to accommodate the footprint and access requirements of this development.

2.1.2.3 Scheme budget estimate

£2.5m

2.1.3 Scheme 3: A5027 Dock Road / A554 Tower Road / A554 Birkenhead Road Junction

Drawing No. 392767-MMD-00-XX-DR-C-0010

2.1.3.1 Scheme description

This scheme will have two components. The main component will replace the large signalised roundabout at Tower Road / Dock Road with a more conventional three-arm signal junction. The second component will reconfigure the existing signal junction at Kelvin Road / Birkenhead Road.

Due to their close proximity, both junctions will need to be synchronised to work efficiently together.

The scheme includes improved pedestrian and cycle crossing facilities at both junctions to link into the Active Travel works already completed. In addition, the footprint of the reconfigured Tower Road / Dock Road junction is significantly smaller than the existing arrangement which will allow improved landscaping and public realm to be incorporated into the scheme.

2.1.3.2 Scheme risk review

- Proximity to the lifting bridge will limit capacity on this approach which may be an issue when the Ro-Ro terminal is off-loading ferries.

2.1.3.3 Scheme budget estimate

£1.6m

2.1.4 Scheme 4: Duke Street / Corporation Road Junction

Drawing No. 392767-MMD-00-XX-DR-C-0002

2.1.4.1 Scheme description

This scheme will replace the existing four-arm roundabout with a conventional traffic signal control junction, which will incorporate controlled pedestrian and cycle crossing facilities. Utilising the former east / west rail corridor running along the northern side of Corporation Road, allows sufficient space for carriageway widening for right turning lanes and also a landscaped pedestrian and cycle corridor. This corridor could also possibly be utilised as an off-carriageway public transit facility.

In the scheme Duke Street can be narrowed creating a better space for pedestrians, and also allowing landscaping across the dock. Associated with this, redundant dock access points can be stopped to create a more seamless walk route for pedestrians.

The scheme is on a north / south and east / west juncture of the dock area, and as such will likely experience significant volumes of heavy goods vehicles. As such, the layout and geometry of the junction will need to allow for ease of movement of these vehicle types.

2.1.4.2 Scheme risk review

- Scheme will require widening into land which was historically used as a rail corridor. This land will need to be confirmed as non-operational.

2.1.4.3 Scheme budget estimate

£2m

2.1.5 Scheme 5: Rendel Street / Corporation Road Junction

Drawing No. 392767-MMD-00-XX-DR-C-0001

2.1.5.1 Scheme description

This scheme is principally related to the A41 Corridor study but represents an important transition junction between this and the Wirral Waters redevelopment area.

The core of the scheme is to establish a high quality public transport link between Birkenhead (and its transport hubs) and Wirral Waters, by making use of a disused rail corridor which is mainly in a cutting at present. In the option shown, the cutting would be filled in and brought up to the same level as adjacent streets. Sufficient corridor width is available to allow a two-way public transit facility, and adjacent shared footway / cycleway, landscaping and public realm improvements.

At the transition to Wirral Waters, the transit and footway / cycleway would cross Rendel Street via a traffic signal junction which would allow connections to Tower Road and Corporation Road.

2.1.5.2 Scheme risk review

- Scheme will require widening into land which was historically used as a rail corridor. This land will need to be confirmed as non-operational.
- Coordination will be required between the Wirral Waters and A41 / Birkenhead regeneration initiatives.

2.1.5.3 Scheme budget estimate

Included within the A41 Corridor study. This junction forms the northern connection to the proposed segregated transit/ped/cycle corridor to Birkenhead Town Centre and development areas to the south. Overall the scheme has a budget for implementation cost of between £5m and £10m.

2.2 Wirral Waters Supporting Road Infrastructure

The predicted growth in the area created by Wirral Waters will result in the supporting highways requiring greater capacity and increased footfall in the area. This package provides a series of highway and junction improvements at key locations within Wirral Waters with the aim of accommodating future growth to realise the full ambitions of Wirral Waters and attract investment and people into the area. This package will reduce congestion and severance, whilst improving connectivity for pedestrians, futureproofing the area for future development associated with Wirral Waters.

2.2.1 Scheme 6: Wallasey Bridge Road Improvements (Component 1)

No scheme drawing as minor works only as Component 1

2.2.1.1 Scheme description

This is an early implementation scheme along Wallasey Bridge Road between Dock Road and Beaufort Road, which has the objective of improving the walk route by removing barriers to movement between the residential areas to the north and facilities to the south – including Birkenhead North rail station.

The scheme would comprise of the following minor works:

- Resurfacing footways;
- Installing dropped crossings; and
- Removing redundant access points and reinstating as footway.

2.2.1.2 Scheme risk review

None known.

2.2.1.3 Scheme budget estimate

£0.3m

2.2.2 Scheme 7: A5027 Gorsey Lane / Kingsway Tunnel

Drawing No. 392767-MMD-00-XX-DR-C-0008

2.2.2.1 Scheme description

This junction is both one of the main vehicle access points to the Kingsway Tunnel, but is also an important vehicle and pedestrian access to the residential areas of Wallasey to the north. The junction therefore experiences high traffic flows at peak times.

The scheme shown has two main components:

- The signalisation of the Gorsey Lane (north) entry to the junction. This intersection currently has an unconventional layout where the circulatory carriageway needs to give way to traffic entering the roundabout. The signalisation of this node would remove indecision without having to reconfigure the kerbs of the junction; and
- An improved walk route to the west of the junction by widening footways where possible and resurfacing where necessary.

2.2.2.2 Scheme risk review

None known.

2.2.2.3 Scheme budget estimate

£0.5m

2.3 Wirral Waters Active Travel

This package looks to provide a series of active travel measures and infrastructure, improved green links/corridors and enhanced safety for pedestrians/cyclists in the area. This includes schemes that will provide enhanced pedestrian crossings and cycle routes, and new green links that benefit from high-quality public realm features. The package aims to improve the provision and safety of active travel in the area through enhancing pedestrian crossings and cycle routes. Enhancing public realm and developing new green corridors will make the area more attractive for inward investment and to potential residents and visitors, forming a catalyst for growth. A further aim is to increase the uptake of active travel modes

2.3.1 Scheme 8: Tower Road / Birkenhead Road Pedestrian / Cycle Link

No scheme drawing

2.3.1.1 Scheme description

This scheme will establish a good quality pedestrian and cycle route between the Birkenhead Road / Dock Road signal junction to the north and Canning Street to the south.

In part, this scheme has already been constructed.

To the north and south new off-road cycle and pedestrian facilities have recently been implemented as part of the construction of the new lifting dock bridge and upgrades at the Rendel Street / Tower Road junction area.

For the section in between, plans are advanced for a public realm improvement along Tower Road which should include wider footways and off-road cycle facilities. This scheme is being promoted by Peel Investments under the Wirral Waters regeneration initiative.

2.3.1.2 Scheme risk review

- There is a possibility that the section not already constructed along Tower Road may not be taken forward.

2.3.1.3 Scheme budget estimate

None.

2.3.2 Scheme 9: Pedestrian Crossings on Tower Road

No scheme drawing

2.3.2.1 Scheme description

With the implementation of new land-uses to either side of Tower Road as part of the Wirral Waters regeneration, activity will significantly improve along the corridor – and with this, the demand for road crossings by pedestrians and the need to safe crossing facilities.

The location and nature of the crossing facilities will depend upon pedestrian desire lines associated with the land-uses and other facilities (such as public transport stops). Consequently, the type and location of the crossing will only be able to be determined once the land-use planning alongside Tower Road is further advanced.

This scheme allows for the implementation of a new controlled crossing for pedestrians and cyclists between the access to the Stena Line terminal and Canning Street.

2.3.2.2 Scheme risk review

- The new crossing will need to be coordinated with land-use proposals to either side of Tower and also with any highway / public realm works along Tower Road itself.

2.3.2.3 Scheme budget estimate

£0.1m

2.3.3 Scheme 10: Cycle route along Canning Street

No scheme drawing

2.3.3.1 Scheme description

This scheme would help facilitate cycle connection between Wirral Waters, Woodside, Hamilton Square and Birkenhead, and will therefore also coordinate with transport improvement schemes being developed in the A41 Corridor study.

The scheme is proposed to run along Canning Street between Tower Road and Argyle Street and comprise of on-carriageway advisory cycle lanes and advanced cycle stoplines at signal junctions. This scheme will therefore coordinate with the Tower Road cycle improvements that have already been constructed, and those being developed in the Birkenhead area.

2.3.3.2 Scheme risk review

None known.

2.3.3.3 Scheme budget estimate

£0.1m

2.3.4 Scheme 11: Wirral Waters Pedestrian Wayfinding Strategy (Phase 1)

No scheme drawing

2.3.4.1 Scheme description

The Birkenhead regeneration schemes will be improving, opening up and introducing new walking and cycling routes between the town centre and Wirral Waters – such as the Greenway Corridor along a former rail line. To help promote these routes and encourage walking and cycling through the area, a simple supporting directional signage strategy is proposed. This would make use of finger post signs giving key destinations with associated walk times.

The strategy would need to be designed so that it can be readily expanded to accommodate new destinations and opportunities in the Wirral Waters area.

2.3.4.2 Scheme risk review

None known.

2.3.4.3 Scheme budget estimate

£0.1m

2.4 World Class Public Transport

This package contains a series of schemes that are focused on improving public transport across the Wirral Waters area, better linking it to other parts of the borough. This includes aspirations to develop a rapid transit network to serve a population that the existing Merseyrail network is not able to fully serve, facilitating the future growth of Wirral Waters. The objectives of this package are to increase public transport patronage and develop a 'world class' public transport network in Wirral that encourages multi-modal trips with integrated ticketing. This aims to reduce dependence on the car and provide public transport that will meet future demand generated by development, specifically around Wirral Waters.

2.4.1 Scheme 12: Wirral Waters Public Transit Improvements: Phase 1

Drawing No. 392767-MMD-00-XX-DR-C-00101 and 0012

2.4.1.1 Scheme description

A key component of the Wirral Waters transport and access strategy is the facilitation of world class public transport accessibility. The wider area of Birkenhead is exceptionally well served by public bus and rail services, but Wirral Waters itself has currently only limited access – one of the predominant reasons being that its density of population (residential, commercial, education) is currently very low, and therefore cannot sustain a high frequency / capacity public transport system.

However, new development potential in Wirral Waters is now beginning to gain momentum, and, as looks likely, will come forward in the short term. Demand for public transport will therefore increase in-line with this development.

The unique development uses that are being aspired to in Wirral Waters offers a real opportunity to introduce a new form of transit to not only help encourage access by non-car modes, but also to link the area to Birkenhead and other major regeneration / redevelopment initiatives. These include: Woodside; Hamilton Square; Hind Street / Birkenhead Central; and emerging plans from The Wirral Growth Company.

The transit system itself is currently undecided upon, but it will need to be extremely flexible to be able to react to and connect with new opportunities as they happen. The system will also need to be attractive for use by the new populations of the area to help minimise traffic impact; the road network of Birkenhead and Wirral Waters is not designed or planned to cope with a significant increase in traffic volumes. Indeed, much of the Wirral Waters transport and access strategy is about promoting access by more sustainable modes, rather than highway traffic capacity improvements.

Chapter 6 gives a review of possible transit systems which may be suitable for the Wirral Waters and Birkenhead areas, and also means of propulsion and guidance. A separate more detailed assessment is likely to be require before a preferred system can be identified. This review will need to consider: vehicle type, operating costs, implementation costs, funding availability and ownership / operators.

However, in Phase 1, the objective of the public transit improvements is to better link the early phases of Wirral Waters (primarily around East Float / Tower Road) with the transport hubs of Birkenhead – especially, Hamilton Square rail station (giving rail links to Liverpool and the wider Wirral area) and Birkenhead bus station. The Wirral Waters Phase 1 public transit improvements will therefore coordinate with the first phase of works for the A41 corridor initiatives.

2.4.1.2 Scheme risk review

The following could be considered as risks for this particular scheme:

- Development does not progress as anticipated in the Wirral Waters or Birkenhead areas, and hence the patronage needed to support a new transit system.
- Decision is not made on the transit vehicle to run on the new system.
- Transit vehicles are unpopular to use, and therefore do not attract the required patronage.

2.4.1.3 Scheme budget estimate

The budget estimate for this scheme is based only upon the potential vehicles which would run on the transit route during the first phase. Operating costs at this stage are assumed to be covered by revenue generation.

£4.0m

2.4.2 Scheme 13: Bus Routes Rerouting via Wirral Waters

No scheme drawing as minor changes

2.4.2.1 Scheme description

For this scheme, consultation would be undertaken with Merseytravel and Bus Operators to determine the feasibility for existing bus services to reroute via roads adjacent to the early implementation developments of Wirral Waters - in particular, Tower Road and Dock Road.

The 413 and 423 service until recently served Tower Road and Egerton Wharf but have now been truncated to start / terminate at Seacombe. These routes could be reinstated to serve Tower Road providing coverage for the first phase of Wirral Waters. There is also the potential for the 410 and 411 services (and possibly others) to also reroute via Tower Road and Dock Road to cross the East Float dock (rather than Duke Street).

The combination of these services will both give high frequency linkage to Birkenhead town centre, but also access to a good range of destinations around the Wirral.

2.4.2.2 Scheme risk review

The following could be considered as risks for this particular scheme:

- Development does not progress as anticipated in the Wirral Waters or Birkenhead areas, and hence the patronage needed to support the rerouting of the services;
- Unable to secure agreement from bus operators to reroute existing services.

2.4.2.3 Scheme budget estimate

Zero cost.

2.5 Phase 1 Budget Cost Summary

The table below summarises the budget costs for schemes included within Phase 1.

Table 1: Phase 1 Budget Costs

Scheme	Budget Cost
Scheme 1: A5139 Dock Road / A5088 Wallasey Bridge Road Junction	£3.0m
Scheme 2: Duke Street / Dock Road / Gorsey Lane Junction	£2.5m
Scheme 3: A5027 Dock Road / A554 Tower Road / A554 Birkenhead Road Junction	£1.6m
Scheme 4: Duke Street / Corporation Road Junction	£2.0m
Scheme 5: Rendel Street / Corporation Road Junction	Included within the A41 Corridor study
Scheme 6: Wallasey Bridge Road Improvements (Component 1)	£0.3m
Scheme 7: A5027 Gorsey Lane / Kingsway Tunnel	£0.5m
Scheme 8: Tower Road / Birkenhead Road Pedestrian / Cycle Link	Funding already secured
Scheme 9: Pedestrian Crossings on Tower Road	£0.1m
Scheme 10: Cycle route along Canning Street	£0.1m
Scheme 11: Wirral Waters Pedestrian Wayfinding Strategy (Phase 1)	£0.1m
Scheme 12: Wirral Waters Public Transit Improvements: Phase 1	£4.0m
Scheme 13: Bus Routes Rerouting via Wirral Waters	No cost
Totals	£14.2m

Source: Mott MacDonald

3 Preferred Schemes and Phasing: Phase 2

This chapter provides a summary of the details of the schemes suggested to be included in the second phase of the Wirral Waters Transport Strategy. This section is to be read alongside the earlier report *'Wirral Waters and Supporting Road Infrastructure – Feasibility Study: Preferred Options Scheme Drawings'* issued in October 2018.

3.1 Wirral Waters Cross-Dock Connectivity

The current condition of highway crossings in the Wirral Docks area forms a significant constraint to the continued growth in movement that is necessary to maintain the area's role in supporting economic development throughout Wirral/LCR. This package aims to overcome the existing constraints on the highway network around Wirral Docks to provide greater capacity in the area to meet future demand, and provide high-quality access to proposed employment and residential areas.

3.1.1 Scheme 1: Replacement of Duke Street Bridge

Drawing No. 392767-MMD-00-XX-DR-C-0002

3.1.1.1 Scheme description

This scheme aims to improve the cross-dock connectivity at Wirral Waters through the delivery of a new bridge at Duke Street. The current condition of the bridge forms a significant constraint to the continued growth in movement that is necessary to maintain the Wirral Dock's role in supporting economic development throughout Wirral/LCR.

This scheme would replace the Duke Street Bridge, with the size dependent on the Wirral Waters masterplan and the incorporation of active travel measures and/or public transport transit scheme. The scheme would be delivered in the same way as the new bridge on the A554 Dock Road and final structure would be similar, to support shipping movements into and out of the East Float Wirral Docks.

The scheme would enhance north-south movements around Wirral Waters and address a pinch point on the network. The delivery of this scheme would support the junction improvement schemes to be delivered as part of the Gateways to Wirral Waters in Phase One.

The scheme being considered at this time included the following key elements:

- Replacement of the existing bridge with a new structure in line with the Wirral Waters masterplan.
- Lifting mechanisms to ensure the movement of shipping through the Wirral Docks between West and East Float.
- Active travel infrastructure to support pedestrian and cyclist movements.

3.1.1.2 Scheme risk review

Potential risks specifically associated with this scheme can be summarised as follows:

- The delivery of the scheme will require the closure of the route for long periods and diversion routes must be put in place.
- The design of the scheme is dependent on the emerging Wirral Waters masterplan.

Note, a general risk review associated with all schemes is included towards the end of this chapter.

3.1.1.3 Scheme budget estimate

£10m

3.2 Wirral Waters Supporting Road Infrastructure

See description and objectives in Section 2.2.

3.2.1 Scheme 2: Beaufort Road and Wallasey Bridge Road

Drawing No. 392767-MMD-00-XX-DR-C-0005

3.2.1.1 Scheme description

The existing A5030 Beaufort Road/A5088 Wallasey Bridge Road junction is constrained by the existing junction layout and this impacts upon journey times and road safety at this point on the network. There are poor pedestrian/cyclist facilities in the area which is located close to Birkenhead North rail station, presenting issues for pedestrian/cyclist movements to the station.

The current form of the junction is a 30-metre diameter which requires improvements to increase capacity at this point on the network and improve pedestrian and cyclist infrastructure at the junction. This scheme will provide a larger diameter roundabout by using former railway land.

Through increasing the size of the roundabout, additional capacity at the junction will serve future highway demand that is induced on the network from the growth of Wirral Waters. The new junction layout will also provide improved pedestrian and cyclist facilities that will support flows across the junction, particularly to Birkenhead North rail station, as well as improving road safety for vulnerable road users.

The scheme will also allow for improved landscaping, including in the central island, coordinating with landscaping measures already provided or proposed along Beaufort Road and Wallasey Bridge Road.

3.2.1.2 Scheme risk review

Potential risks associated with this particular scheme could be as follows:

- The junction itself appears to be built over The Birket watercourse, but the details and condition of the underground structure is unknown;
- The junction improvement will require land outside of the current footprint of the intersection, and the ownership of which is currently unknown.

3.2.1.3 Scheme budget estimate

£1.1m

3.3 Wirral Waters Active Travel

See description and objectives in Section 2.3.

3.3.1 Scheme 3: City Boulevard (green transport corridor on Corporation Road and Beaufort Road)

Drawing No. 392767-MMD-00-XX-DR-C-0001, 0002, 0003, 0004 and 0005

3.3.1.1 Scheme description

This scheme is to deliver a new green transport corridor along Beaufort Road and Corporation Road to create the City Boulevard, utilising the existing disused rail alignment. The total length of this corridor would be about 2.6 kilometres. This transit corridor would serve as a segregated cycle route running along the south of the Wirral Waters area. The scheme links in to the wider corridor development around Wirral Waters to support active travel connectivity, improving the uptake in sustainable travel modes.

The scheme would look to utilise the former rail alignment which can support the long-term aspirations for a transit corridor at this point within Wirral Waters. The scheme would be delivered with the associated landscape features to enhance the public realm along the corridor and deliver a high-quality, safe pedestrian and cycling environment.

Where possible, landscaping along the south side of the corridor would also be improved, but it is recognised that opportunities are more limited on this side of the road.

3.3.1.2 Scheme risk review

Potential risks specifically associated with this scheme can be summarised as follows:

- The corridor may need to allow for future use by public transport vehicles. However, the type of vehicle and its means of running are currently unknown.
- Access points will be required to development plots within Wirral Waters which will need to cross the greenway, but their location and nature are currently unknown.
- The land on which the green corridor is proposed to run has a mixture of owners and operational statuses. The component required for this scheme element is owned by Peel Group and use for this purpose would need to be negotiated in this context.

3.3.1.3 Scheme budget estimate

£2.5m

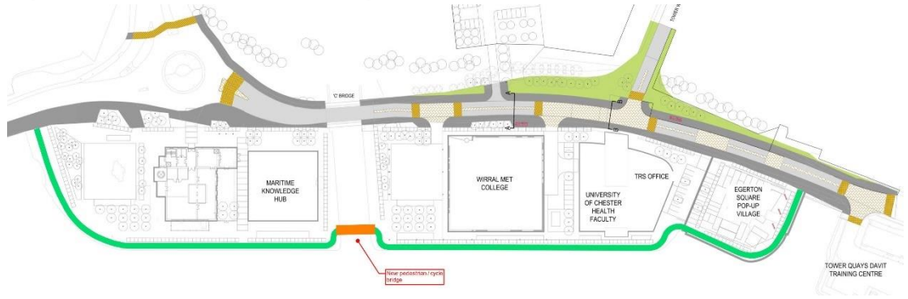
3.3.2 Scheme 4: Footbridge on Dockside route

No scheme drawing

3.3.2.1 Scheme description

The proposal for this scheme is to provide a fixed pedestrian / cycle bridge across a redundant East Float dock access – as indicated in the sketch below. The redundant access is a watercourse which is situated just to the north of the existing Wirral Met College of Tower Road, and just to the south of the Maritime Knowledge Hub.

Figure 1: Dockside Route Footbridge Illustration



Source of background drawing: Vectos (2018)

The new bridge would form part of a high quality waterside route and would help connect the development proposals along this corridor, and would also complement the public realm proposals for Tower Road.

3.3.2.2 Scheme risk review

Potential risks specifically associated with this scheme can be summarised as follows:

- Implementation of the bridge would require agreement from landowners of the dockside properties;
- Public access to the scheme would be required.

3.3.2.3 Scheme budget estimate

£0.6m

3.3.3 Scheme 5: A5027 Duke Street public realm

Drawing No. 392767-MMD-00-XX-DR-C-0002 and 0008

3.3.3.1 Scheme description

This scheme involves a series of public realm enhancements along the A5027 Duke Street to make the area more attractive to live, work and invest in as part of the wider Wirral Waters development.

It is noted that an on-going cycleway scheme is being implemented along Duke Street between Park Road North and Dock Road. This scheme will also deliver improvements of the quality of the route, encouraging greater uptake in cycling along the corridor.

Phase 1 between Park Road North and Cleveland Street was completed in early 2018 and Phase 2 between Corporation Road and Dock Road is provisionally due to start in August 2018. The cycleway scheme will form the first element of a series of public realm improvements that will enhance the A5027 Duke Street corridor.

Key elements of this scheme are:

- Locally narrowing Duke Street to provide additional space for pedestrians and cyclists;

- Removing redundant access points along Duke Street;
- Providing a high-quality pedestrian cycle route on the east side of Duke Street;
- Upgrading footways along the west side of Duke Street; and
- Introducing landscaping where possible.

3.3.3.2 Scheme risk review

Potential risks specifically associated with this scheme can be summarised as follows:

- The scheme will require agreement of landowners to either side of the Duke Street corridor;
- Similarly, the scheme will need to coordinate with development proposals on land to either side of the corridor.

3.3.3.3 Scheme budget estimate

£1.5m

3.3.4 Scheme 6: Dock Road pedestrian / cycle route

No scheme drawing

3.3.4.1 Scheme description

To the west of Duke Street and east of Wallasey Bridge Road, Dock Road narrows and there are active commercial uses to either side. In addition, footways also narrow, and in places, discontinuous. Consequently, it would be impractical in the short term to provide a continuation of the pedestrian and cycle measures being proposed for other sides of the Wirral Waters docks (East and West Float).

This scheme is therefore a marker for when redevelopment occurs along this section of West Float that similar quality pedestrian and cycle facilities are also provided. The measures could be adjacent to Dock Road, be incorporated into the development proposals or run along the waterside of the dock.

3.3.4.2 Scheme risk review

Potential risks specifically associated with this scheme can be summarised as follows:

- The scheme is dependent upon redevelopment along this section of West Float.

3.3.4.3 Scheme budget estimate

n/a

3.3.5 Scheme 7: Extend Victoria Park to Dock Road

Drawing No. 392767-MMD-00-XX-DR-C-0007

3.3.5.1 Scheme description

Victoria Park is a hidden area of greenspace abutting the Kingsway Tunnel access which is in cut in this location. The park currently includes a grassed football pitch (which appears to be disused) and areas of shrubs and trees. To the east of the park former molasses storage tanks have recently been cleared, but the land requires further remediation. Importantly, to the northeast of the park there is a pedestrian overbridge of the Kingsway Tunnel access which connects to the residential areas of Wallasey to the north.

This scheme proposes to extend Victoria Park down to Dock Road and open up its aspect by removing boundary walls. This will introduce a valuable green resource into what is currently a very industrial corridor. Also included with the scheme would be the following:

- An improved walk route through the park linking residential areas to the north with the opportunities within Wirral Waters;
- Improved lighting to enhance personal security; and
- An upgrade and extension of the green space to help ensure its use as a valuable local amenity.

The upgraded park should also have the benefit of improving the attractiveness of adjacent land for redevelopment.

3.3.5.2 Scheme risk review

Potential risks specifically associated with this scheme can be summarised as follows:

- Delivery of the scheme may require land outside of the current park boundaries.

3.3.5.3 Scheme budget estimate

£0.6m

3.3.6 Scheme 8: Duke Street Active Travel Improvements

Drawing No. 392767-MMD-00-XX-DR-C-0002 and 0008

3.3.6.1 Scheme description

This scheme is combined with, and an integral part of Scheme 5: A5027 Duke Street public realm, and forms also the improvements to pedestrian and cycle facilities along this link.

3.3.6.2 Scheme risk review

Potential risks specifically associated with this scheme can be summarised as follows:

- The scheme would not proceed in the proposed form without supporting public realm improvements.

3.3.6.3 Scheme budget estimate

£0.6m

3.3.7 Scheme 9: Green Links – Wirral Waters to Birkenhead Park

Drawing No. 392767-MMD-00-XX-DR-C-0001 and 0002

3.3.7.1 Scheme description

This scheme would establish three new green corridors that would connect Wirral Waters with Birkenhead Park. The new links would be situated along Livingstone Street, Duke Street and Cavendish Street. Each link would incorporate high-quality active travel infrastructure and enhanced public realm providing accessibility to Wirral Waters from the south.

Each green link would promote active travel movements, encouraging pedestrian and cyclist movements making the Wirral Waters area more accessible for large populations located around Birkenhead.

The delivery of green corridors to link Birkenhead Park into the regeneration of Wirral Waters can have a positive impact upon the placemaking of the area, to make Wirral Waters a more attractive place to live, work and invest in.

3.3.7.2 Scheme risk review

Potential risks specifically associated with this scheme can be summarised as follows:

- The level of intervention along the corridors will be dependent upon consultation with adjacent residential and commercial occupiers.

3.3.7.3 Scheme budget estimate

£0.4m

3.3.8 Scheme 10: Wirral Waters Pedestrian Wayfinding Strategy (Phase 2)

No scheme drawing

3.3.8.1 Scheme description

Phase 2 wayfinding strategy would be an extension of Phase 1 to bring the strategy up to date with new destinations and opportunities both in Wirral Waters and also in the Birkenhead areas.

3.3.8.2 Scheme risk review

Potential risks specifically associated with this scheme can be summarised as follows:

- Phase 1 signage strategy will need to be flexible enough to allow it to be expanded upon for Phase 2 routes and destinations.

3.3.8.3 Scheme budget estimate

£0.1m

3.3.9 Scheme 11: Wirral Dock Active Travel Route (Phase 1)

Drawing No. 392767-MMD-00-XX-DR-C-0012

3.3.9.1 Scheme description

This scheme proposes a new pedestrian and cycle route to help open up the River Mersey waterfront to Wirral Waters. Currently, even though Wirral Waters is centred around the East and West Float docks, it is relatively divorced from the actual river waterfront by the segregation caused by the Stena Line Ro-Ro terminal.

In the first phase of this scheme, a new link is proposed to be opened up between Canning Street, around Morpeth Dock and to join with the Wirral Circular trail up the Ro-Ro-terminal.

Key elements of the scheme will be:

- Coordination with the A41 corridor transport improvement initiatives;
- Advisory cycle facilities and signage to connect the new link to existing and planned pedestrian and cycle routes;
- Creation of a new shared pedestrian cycle facility from Shore Road (just to the east of the Twelve Quays College, around the south side of Morpeth Dock to connect with Wirral Circular Trail; and
- Creation of a new publicly accessible pocket beside Morpeth Dock with views across the River Mersey to the Liverpool skyline.

3.3.9.2 Scheme risk review

Potential risks specifically associated with this scheme can be summarised as follows:

- Land within Morpeth Dock is believed to be under the control of the Canal and River Trust. The Trust would therefore either need to become a development partner, or the land transferred to the control of Wirral Council.

3.3.9.3 Scheme budget estimate

£0.4m

3.4 World Class Public Transport

See description and objectives in Section 2.4.

3.4.1 Scheme 12: Wirral Waters Public Transit Improvements: Phase 2

Drawing No. 392767-MMD-00-XX-DR-C-0001, 0002, 0008, 0009 and 0010

3.4.1.1 Scheme description

Phase 2 of the Wirral Waters public transport improvements will build upon Phase 1 by extending the services to take advantage of new development which should be occurring in the area by this time.

In Phase 2, it is currently planned for the transit system to circulate around the entirety of East Float and link back to the transport hubs in Birkenhead. There are several options for the routing of the new services – particularly in and around Birkenhead. But, ultimately the service will depend upon which transport improvement schemes have been implemented, and what new developments have come forward.

3.4.1.2 Scheme risk review

Potential risks specifically associated with this scheme can be summarised as follows:

- The nature and routing of the service will depend upon new development and transport infrastructure improvements;
- The service will need to run to a high frequency if it is to be popular as a regular mode of travel for residents and employees of the area.

3.4.1.3 Scheme budget estimate

The budget estimate for this scheme is based only upon the potential vehicles which would run on the transit route during the first phase. Operating costs at this stage are assumed to be covered by revenue generation.

£1.4m

3.5 Phase 2 Budget Cost Summary

The table below summarises the budget costs for schemes included within Phase 2.

Table 2: Phase 2 Budget Costs

Scheme	Budget Cost
Scheme 1: Replacement of Duke Street Bridge	£10.0m
Scheme 2: Beaufort Road and Wallasey Bridge Road	£1.1m
Scheme 3: City Boulevard (green transport corridor on Corporation Road and Beaufort Road)	£2.5m
Scheme 4: Footbridge on Dockside route	£0.6m
Scheme 5: A5027 Duke Street public realm	£1.5m
Scheme 6: Dock Road pedestrian / cycle route	To be determined based upon redevelopment in the area
Scheme 7: Extend Victoria Park to Dock Road	£0.6m
Scheme 8: Duke Street Active Travel Improvements	£0.6m
Scheme 9: Green Links – Wirral Waters to Birkenhead Park	£0.4m
Scheme 10: Wirral Water Pedestrian Wayfinding Strategy (Phase 2)	£0.1m
Scheme 11: Wirral Dock Active Travel Route (Phase 1)	£0.4m
Scheme 12: Wirral Waters Public Transit Improvements: Phase 2	£1.4m
Totals	£19.3m

Source: Mott MacDonald

4 Preferred Schemes and Phasing: Phase 3

This chapter provides a summary of the details of the schemes suggested to be included in the third phase of the Wirral Waters Transport Strategy. This section is to be read alongside the earlier report *'Wirral Waters and Supporting Road Infrastructure – Feasibility Study: Preferred Options Scheme Drawings'* issued in October 2018.

4.1 Gateways to Wirral Waters

See description and objectives in Section 3.1.

4.1.1 Scheme 1: Replacement of Poulton Bridge

Drawing No. 392767-MMD-00-XX-DR-C-0006

4.1.1.1 Scheme description

Poulton Bridge on Wallasey Bridge Road was formerly a swing bridge allowing shipping to access between the West Float dock and Wallasey Pool. The dock to the east of Wallasey Bridge Road has now been infilled, and therefore the swing bridge is now redundant. In addition, the existing footways to either side of the bridge are narrow and will form a pinch point in the active travel routes identified for Phase 2.

This scheme will therefore remove the redundant swing bridge and replace it with standard carriageway with footway to the west and a shared cycleway / footway to the east.

4.1.1.2 Scheme risk review

The following risks should be considered for this scheme:

- The structural stability of the swing bridge is unknown;
- Land to either side of the swing bridge may be required to implement the improvement.

4.1.1.3 Scheme budget estimate

£9.2m

4.1.2 Scheme 2: New North / South Link and Bridge

Drawing No. 392767-MMD-00-XX-DR-C-0004, 0007 and 0008

4.1.2.1 Scheme description

This scheme will provide a new highway link of approximately one kilometre in length between the Gorsey Lane / A59 roundabout to the north of West Float and Beaufort Road to the south of West Float. The objectives of the scheme will be to:

- Provide a high quality transport link between the strategic road network (The Kingsway Tunnel and the M53) and the proposed MEA Park employment site within Wirral Waters;
- To open up potential development land to the north of Dock Road and east of Victoria Park which is currently land-locked;
- Provide an alternative access route into the regeneration area, and hence take pressure away from the Dock Road junctions of Duke Street and Wallasey Bridge Road; and
- Give an additional north / south connection between Wallasey and North Birkenhead helping local residents access employment, leisure and commercial opportunities.

Key elements of the scheme are planned to include:

- A single carriageway road suitable for use by commercial vehicles;
- A shared footway / cycleway to one side of the road;
- A number of access junction to open up land to either side;
- A new junction with Dock Road;
- Landscaping coordination with the extended Victoria Park;
- A new lifting bridge across West Float to enable continued use of the dock by commercial shipping; and
- A new junction with Beaufort Road which will also facilitate access to the MEA Park employment site.

4.1.2.2 Scheme risk review

The following risks should be considered for this scheme:

- Land outside of the highway boundary will be required to implement this scheme;
- A new lifting bridge will be required across West Float – the position of which will need to maintain commercial shipping operations;
- The need for the new road link will be very much dependent upon new commercial development within MEA Park.

4.1.2.3 Scheme budget estimate

£17m

4.2 Wirral Waters Active Travel

See description and objectives in Section 2.3.

4.2.1 Scheme 3: Wirral Dock Active Travel Route (Phase 2)

Drawing No. 392767-MMD-00-XX-DR-C-0011 and 0012

4.2.1.1 Scheme description

This scheme is proposed to provide the final section of the pedestrian and cycling Wirral Circular riverside link between Seacombe and Birkenhead. Currently, the trail diverts away from the riverside and loops around the Stena Line Ro-Ro terminal which detracts from its ambience and requires pedestrians and cyclists to mix with general traffic.

The proposal would provide a segregated walking and cycling track directly along the river front at the times when the Ro-Ro ships are not loading or unloading. During these times, the trail would need to divert via its current route. Key elements of the scheme would be:

- Secure gates and fencing to segregate pedestrians and cyclists from the operational area of the Ro-Ro terminal;
- A new shared pedestrian and cycle way;
- A new pedestrian and cycle connection over the lock access to East Float.

4.2.1.2 Scheme risk review

The following gives a summary of potential risks associated with this particular scheme:

- Agreement will need to be gained with both Peel Ports and Stena Line on the provision and operation of the facility;
- The security of the Ro-Ro terminal will need to be maintained.

4.2.1.3 Scheme budget estimate

£0.9m

4.3 World Class Public Transport

See description and objectives in Section 2.4.

4.3.1 Scheme 4: Wirral Waters Public Transit Improvements: Phase 3

Drawing No. 392767-MMD-00-XX-DR-C-0003, 0004, 0005, 0006, 0007, 0008 and 0010

4.3.1.1 Scheme description

Phase 3 of the public transit scheme is planned to extend the Phase 2 element by:

- Extending the transit routing around West Float to serve the MEA Park employment site, and interchanging with Birkenhead North rail station;
- Also extending the routes out to New Brighton potentially along the A554 providing a high quality public transport service for residents along the corridor; and
- Coordinating and linking with the emerging regeneration initiatives in and around Birkenhead.

There is also the significant potential for the transit scheme to link through the Birkenhead Queensway tunnel to connect with Liverpool city centre and hence provide high quality public transport link between the two centres.

Connected with this scheme is the future operation of the Queensway tunnel, and whether it remains open to general traffic, or if it is later repurposed for use by public transport only. Should it be the latter, there would also be the option for the service to access the Queensway tunnel via the disused entrance at Rendel Street which would enable a high-speed connection between Wirral Waters and Liverpool city centre.

Other destinations within Liverpool that could be connected by the transit service include: Liverpool Waters; the Knowledge Quarter; and other commercial areas.

4.3.1.2 Scheme risk review

Potential risks specifically associated with this scheme can be summarised as follows:

- The nature and routing of the service will depend upon new development and transport infrastructure improvements;
- The service will need to run to a high frequency if it is to be popular as a regular mode of travel for residents and employees of the area.

4.3.1.3 Scheme budget estimate

The budget estimate for this scheme is based only upon the potential vehicles which would run on the transit route during the first phase. Operating costs at this stage are assumed to be covered by revenue generation.

£12.8m

4.4 Phase 3 Budget Cost Summary

The table below summarises the budget costs for schemes included within Phase 2.

Table 3: Phase 3 Budget Costs

Scheme	Budget Cost
Scheme 1: Replacement of Poulton Bridge	£9.2m
Scheme 2: New North / South Link and Bridge	£17.0m
Scheme 3: Wirral Dock Active Travel Route (Phase 2)	£0.9m
Scheme 4: Wirral Waters Public Transit Improvements: Phase 3	£12.8m
Totals	£39.9m

Source: Mott MacDonald

5 Risk Register

The following table provides an overview of general risks associated with all schemes described in the previous chapters.

Table 4: Risk Register

Item	Risk	Severity	Mitigation
Ground conditions	Adverse ground conditions significantly increasing cost of scheme delivery	High	Undertake ground investigation
Planning applications	Delay to scheme delivery. Potential for objections to schemes	Medium	Consultation with public and stakeholders
Ecology	Potential for protected habitats and species	Low	Undertake Stage 1 assessments to determine extent of potential issues
Utilities	Diversion / protection of utilities significantly increasing cost of scheme delivery	High	Effective liaison with utility providers
Scheme costs	Potential for scheme delivery to be significantly greater than budgets	Medium	Undertake more detailed cost estimates with additional design information
Scheme funding	Packages of schemes do not attain funding approval	High	Prepare business case for phased packages of schemes
Land ownership issues	Schemes are undeliverable	Medium	Undertake detailed land ownership searches for all schemes
Type and density of development	Development within Wirral Waters does not progress as proposed, significantly reducing requirement for transport interventions	High	Maintain dialogue with primary land use developers
Change in Council priorities	Wirral Council not supporting new development in Wirral Waters	Low	Regular reporting to Council members

Source: Mott MacDonald

From the above it can be seen that the key risks are considered to be:

- Adverse ground conditions, especially around the former and active operational areas of the docks where it is likely that there will be contamination and buried structures that may need to be mitigated;
- Currently no information of type and scale of utilities which could have a significant influence on the deliverability of schemes;
- The availability of sufficient scheme funding to deliver the suites of schemes, rather than just individual elements of the packages; and
- The speed and the type of development that comes forward in Wirral Waters and the surrounding areas. Low take-up and / or low development density would have a significant influence on the type and requirement for transport schemes.

6 Public Transit Options

6.1 Background

One of the key schemes to support the Wirral Waters Transport Strategy laid out in the preceding chapters is the implementation of a high quality, high frequency transit system to provide users of the development with a real alternative to the private car. Considerable work to date has been undertaken to develop the 'Wirral Streetcar' system – a light rail system, the first phase of which would be designed to run on the existing heritage tram tracks between Woodside Ferry Terminal and Shore Street, extending on new rails to Wirral Waters via Egerton Wharf and Tower Road. Later phases would then extend around Wirral Waters and further afield, utilising the existing track-bed from the previous freight railway in the area.

Opportunities to extend the existing Heritage Tramway to make it part of the commercial offering of Birkenhead were explored by Wirral Council in a 1996 study, with further investigation of costings in 2001. A further presentation to Merseytravel in late 2008 recognised that Birkenhead needed to establish itself as an attractive destination for inward investment by creating attractive links to the signature locations in the town (Birkenhead Park, Europa Boulevard, and Hamilton Square) connecting new development (including Wirral Waters) to Merseyrail and Mersey Ferries. It was discussed that a more attractive and higher capacity mode was required for this purpose than the existing offer of service buses; the Hamilton Square – Birkenhead Park axis is already served by buses but these did not serve to boost the town's image, nor were the existing service buses suitable for use in the pedestrianised areas and parklands likely to arise as part of the regeneration of the area.

Merseytravel commissioned a Wirral Tram Reinvigoration Study in 2009, considering whether the assets and current operating pattern of the heritage tram system in place could be used to greater effect to generate increased use and revenue whilst future improvements and extension plans were being developed. Engagement with Peel Holdings late in 2009 enabled the project to be refined to integrate with the transport and place making needs of the Wirral Waters development, including development of the Wirral Waters Loop to serve the dockside developments, providing the link to the wider transport network at Hamilton Square and assisting in local movement within Wirral Waters.

Previous appraisal of mode options was undertaken at high level in early 2013 which looked at:

- The potential transport impacts of Wirral Waters;
- Options for dealing with impacts;
- Improving sustainable transport accessibility of the development; and
- The potential for the system to form part of the sustainable transport and economic development strategy for Wirral Waters.

During this study it was concluded that light rail operations perform better than bus modes over a range of criteria. Despite this, it is considered worthwhile to review some of the more specific mode options for the proposed transit system since the network proposals put forward in this document extend beyond the original aspirations of Streetcar to serve corridors including New Brighton via Seacombe, and Liverpool via the Queensway tunnel, and therefore present a different set of requirements to those originally envisaged. Indeed, as a result of the wide geographic extent of the proposed network, it is clear that other options should be considered in enhancing the network and the ultimate solution may involve a different type of transit mode or indeed a combination of different modes working in concert.

A full review of the various transit options that may be considered in this context is included as **Appendix A** of this document, however this section provides an overview of those considered to be the most suitable of these in a Wirral Waters context.

6.2 The Wirral Streetcar Pilot Scheme (Phase 1A)

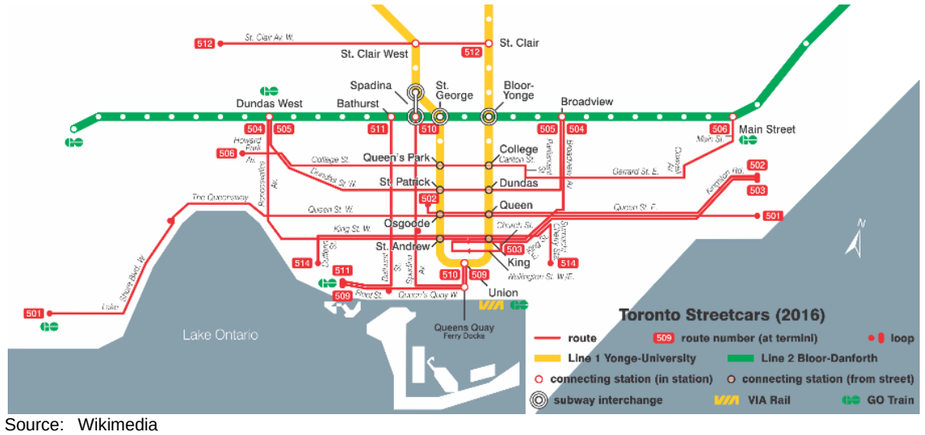
Figure 2: The Wirral Streetcar

Source: Streetcar Feasibility Report

Although not yet constructed, Wirral Streetcar Phase 1A has been proposed, developed and heavily promoted as a transit solution to serve the Wirral Waters development area. In general Streetcars are a form of Light Rapid Transit (LRT) guided by tracks usually on or partially on highway and receive electricity from overhead wires which are responsible for powering the vehicle; as they are directly electrically powered they tend to have low levels of emissions. Streetcars are a form of local transport, which implies that they are usually better for shorter journeys with more frequent stops allowing passengers to get closer to their desired destination.

6.3 Other Streetcars

Figure 3: Streetcars



Source: Wikimedia

Case study: Toronto Streetcar

- Location: Toronto
- Population: 2,732,000
- Population Density: 4,334 p/km2
- Cost Per Streetcar: £2.5 million
- Frequency: 4-9 minutes
- Length of Track: 83 km
- Track Gauge: 1495 mm
- Minimum Radius of Curvature: 10.973 meters
- Electrification: Trolley Wire 600 V DC
- No. of Streetcars: 264+
- No. of Stops: 685
- No. of Lines: 11
- No. of daily rides: 292,000 passengers
- Dimensions: 30.2 meters long, 2.4 meters wide and 3.84 meters high
- Capacity: 250 (70 seated, 150 standing)
- Speed: maximum 43 mph
- Driven: Driver
- Power: Electricity

Advantages

- These streetcars have a smaller minimum radius of curvature than other methods of transport discussed, this would be ideal for use in the Wirral as there is restricted space.
- High capacity compared to other methods of transit discussed, this would be good in the later stages in the redevelopment.
- Tram systems have a proven ability to act as a catalyst for economic development, investment and regeneration, and to attract motorists to switch modes and thus reduce traffic congestion, providing added environmental benefits.

Disadvantages

- It would be more difficult to expand widely than some of the other methods discussed as new tracks would have to be implemented.

Table 5 <Streetcar>

Criteria	
Flexibility of the system How easy is it to react to changes	
Implementation Cost – Wirral Streetcar Phase 1A	
Implementation cost – wider system	
Operating Cost	
Branding & Legibility How recognisable is it and how easy is it to use	
Capacity	
Environmental Impact	
Deliverability How acceptable is this system, amount of physical required and constraints	

Note: This comparative analysis table and those that follow in sub-sections below provide a high level overview only and are not intended to form a rigorous quantified appraisal of the relative merits of each mode. Further work will be required on this subject to establish the optimum mode for the transit system proposed considering such criteria as economy, image, safety, accessibility, integration, mode share, and as noted previously, the ultimate solution may be formed of a combination of different modes which, together, form an integrated network.

6.4 Electric Trolleybus

Figure 4: Electric Trolleybus


Source: Wikimedia

Electric trolleybuses are rubber-tired vehicles powered by electricity from overhead using spring-loaded trolley poles, this means there is no need to stop to refuel or recharge. Being solely powered by electricity, trolleybuses have extremely low emissions.

Modern trolley buses also have a battery which allows them to travel off-wire and reroute around anything obstruction blocking their path, or detour for short sections of route.

6.4.1 Case study: San Francisco Muni

- Location: San Francisco
- Population in Catchment Area: 884,400
- Population Density 7,132 p/km2
- Cost Per Trolleybus: £300,000 - £1 million depending on age and specification
- Frequency: 20 minutes
- No. of Trolleybuses: 268
- No. of Stops: 142
- No. of Lines: 16
- Dimensions: 12-25 meters long and 2.55 meters wide
- Capacity: 82-200 passengers
- Speed: maximum speed 50 mph, average speed 38 mph
- Driven: Driver
- Power: Electricity

Advantages

- The trolleybus is significantly quieter than an original diesel bus which could be more suitable in residential areas.
- If there is an obstruction in its normal path, it can drive off wire for a period of time to manoeuvre around the obstruction, unlike streetcars or trams that operate on fixed tracks.

Disadvantages

- They are less manoeuvrable than traditional buses.
- Other forms of transport are easier to adjust or expand as overhead wires would have to be added or amended.

Table 6 <Electric Trolleybus>

Criteria	
Flexibility of the system How easy is it to react to changes	
Implementation cost	
Operating Cost	
Branding & Legibility How recognisable is it and how easy is it to use	
Capacity	
Environmental Impact	
Deliverability How acceptable is this system, amount of physical required and constraints	

6.5 Tram bus

A tram bus is a tram on pneumatic tyres instead of tracks. The tram bus must have its own infrastructure to reach a good operating speed. What makes the tram bus so unique is that it combines the efficiency and stability of a tram with the flexibility of a bus. The tram bus has a much larger capacity compared to a traditional bus and can also run as an electric or hybrid vehicle, making it even more environmentally-friendly.

6.5.1 Case Study: Malmo Sweden

Figure 5: Skanetrafiken Tram bus

Source: Wikimedia, YouTube - MediaServiceTV1

- Location: Malmö, Sweden
- Population in Catchment Area: 341,457
- Population Density: 2,175 p/km^2
- Cost of Buses: approximately £650,000, based on 30 being bought for £19million
- Frequency: 5 minutes
- Length of Route:
- No. of Buses: 15
- No. of Stops: 40
- No. of Lines: 1
- No. of Daily Rides: estimated 13,700 -21,000
- Dimensions: 24 meters long
- Capacity: 55 seated with 95 standing
- Driven: Driven
- Power: Compressed Natural Gas (other options available)

Advantages

- There is little construction cost, primarily only the cost of the vehicles.
- Routes can easily be changed or extended.

Disadvantages

- Much higher capacity than possibly required in the case of Wirral Waters.
- Would need trained drivers and would not be able to rely on volunteers as the Wirral street car proposes to do.

Table 7 <Tram buses>

Criteria	
Flexibility of the system How easy is it to react to changes	
Implementation cost	
Operating Cost	

Branding & Legibility How recognisable is it and how easy is it to use	
Capacity	
Environmental Impact	
Deliverability How acceptable is this system, amount of physical required and constraints	

6.6 Bus Rapid Transit

Bus Rapid Transit is a form of rapid transit which involves stretches of highway being segregated and dedicated for the use of specialist buses. Where this is not possible due to land constraints, the specialist buses will use public highways. When using public highways, the buses will typically be given priority over other road users to reduce delays. Station platforms should be level with the bus floor for quick and easy boarding, making the system fully accessible for wheelchairs and disabled passengers with minimal delays.

6.6.1 Case study: BRT Sunway Line

Figure 6: BRT – Sunway Line

Source: Wikimedia

- Location: Subang Jaya, Malaysia
- Population in Catchment Area: 6,071,644
- Population Density: 6,581 p/km^2
- Cost of Buses: £3.3million for 8 double deckers and 6 larger single deckers in York
- Planning & Capital Cost: £24.5 million
- Frequency: 4 minutes
- Length of track: 5.4 km
- No. of Buses: 15
- No. of Stops: 5
- No. of Lines: 1
- No. of daily Rides: 5,300 passengers
- Dimensions: 11-12 meters long
- Capacity: 80
- Speed: 50 mph

- Driven: Driven
- Power: Electric,

Advantages

- Electric Buses mean virtually zero emissions
- Faster than some other methods of transport discussed

Disadvantages

- High capital cost compared to the Wirral streetcar

Table 8 <Electric BRT>

Criteria	
Flexibility of the system How easy is it to react to changes	
Implementation cost	
Operating Cost	
Branding & Legibility How recognisable is it and how easy is it to use	
Capacity	
Environmental Impact	
Deliverability How acceptable is this system, amount of physical required and constraints	

6.6.2 Case study: New York BRT

Figure 7: BRT – New York

Source: nyc.streetsblog.org and nyc.gov

- Location: New York
- Population in Catchment Area: 8,538,000
- Population Density: 10,630 p/km^2
- Cost p/km: $1,072,000
- Frequency: 3-4 minutes
- Length of track: 90 km
- No. of Buses: 398

- No. of Stops: 145
- No. of Lines: 7
- No. of daily Rides: 245,566
- Dimensions: 11-12 meters long
- Capacity: 120
- Average Speed: 10.2 mph (average speed including stopping time)
- Driven: Driven
- Power: Hybrid & CNG

Advantages

- High frequency and capacity which means it would be more reliable than just having one streetcar every 15 minutes.

Disadvantages

- The vehicles only travel at 10mph on average making journeys even longer than using other methods of transport
- Hybrid engines are not as eco-friendly as other methods of transport discussed.

Table 9 <Hybrid BRT>

Criteria	
Flexibility of the system How easy is it to react to changes	
Implementation cost	
Operating Cost	
Branding & Legibility How recognisable is it and how easy is it to use	
Capacity	
Environmental Impact	
Deliverability How acceptable is this system, amount of physical required and constraints	

6.6.3 Case Study: Cambridgeshire Guided Busway

Figure 8: Cambridgeshire Guided Busway

Source: Geograph & Flickr

- Location: Cambridge
- Population in Catchment Area: 123,867
- Population Density: 3,135 p/km^2
- Cost p/km: Bronze average £7,400,000
- Frequency: 5 minutes
- Length of track: 40 km
- No. of Stops: 8
- No. of Lines: 1
- No. of daily Rides: 12,000
- Dimensions: 11-12 meters long
- Capacity: 120
- Average Speed: 37mph
- Driven: Driven and Kerb guidance
- Power: Diesel

Advantages

- Provides faster transport than other methods discussed
- Has 25km of segregated busway that is specifically for these buses which limits the impact of traffic disruption

Disadvantages

- The buses are powered by diesel and will produce the highest amount of emissions compared to other methods discussed.

Table 10 <Diesel BRT>

Criteria	
Flexibility of the system How easy is it to react to changes	
Implementation cost	
Operating Cost	
Branding & Legibility How recognisable is it and how easy is it to use	
Capacity	
Environmental Impact	
Deliverability How acceptable is this system, amount of physical required and constraints	

6.7 Summary

Based on the analysis above, and the various costs, constraints and characteristics of each system in the context of Wirral Waters, four of the potential available modes have been shortlisted as representing the most likely to offer benefit and value-for-money for the travelling public. As well as the Streetcar mode which is at a more advance state of development in the

Wirral Waters context than other modes and has considerable support from multiple parties, the following modes are shortlisted for further consideration:

- Tram-Bus
- Bus Rapid Transit
- Electric Trolley Bus

At this stage, no ultimate preference is expressed for any one of these modes over the other within this document. The considerable work that has been undertaken previously to develop the Streetcar scheme is noted, including the work undertaken to establish a Light Rail mode as the most suitable in a Wirral Waters context[1]. Despite this, the expansion of the network to north (New Brighton), south (Birkenhead Central and potentially ultimately Rock Ferry or beyond) and east (Liverpool City Centre) may alter the conclusions of this modal analysis, particularly in light of the need and desire to integrate with plans on the Liverpool side of the Mersey to create transit links to Liverpool Waters and the Knowledge Quarter etc. As such it is recommended that further future consideration of modes be undertaken noting that the ultimate solution may represent a combination of different modes working in concert with each other.

The table overleaf summarises the key considerations with regard to each of these four modes, and a wider review of additional modes is provided in Appendix B of this document.

[1] Wirral Waters Transport Options Appraisal, 2013 - Vectos

Table 11<Comparison of Transit Modes – Summary Table>

	Street Car	Tram Bus	Bus Rapid Transit	Electric Trolley Bus
Example				
	Toronto Street Car	Skanetrafiken Tram Bus (Sweden)	Cambridgeshire Guided Busway	San Francisco Electric Trolley Bus
Attributes	• Frequent stops ensure passengers can get very close to desired destination. • Provide a frequent and reliable service. • Attractive to passengers as 10% of Toronto's population use streetcars each day.	• Routes can be easily altered, or new routes added as the vehicles operate on the existing road network. • Can become a 'transit like system' if investment is made in e.g. real time passenger information, priority signals, enhanced shelters etc.	• Magnetic or kerb guidance with the ability to travel on-carriageway, when land restrictions are poor at the end of routes or in urban areas. • Many new guided busways also incorporate shared use paths along their length	• Much quieter than traditional buses, which is preferred in residential areas. • Able to drive 'off-wire' for short periods using battery power to avoid obstructions in the normal path or to detour from the wired section. • Low emissions as electricity is sole source of power.
Opportunities	• Streetcars typically have a longer lifespan than traditional motor buses. • Potential to add additional streetcars to increase frequency and capacity. • More reliable journey times and higher frequency than other buses	• Low outline cost as no rails or overhead power lines are needed. • Low outline capital costs could lead to lower ticket prices for passengers. As the main capital cost would be purchasing the vehicles. • Higher frequencies and capacity, giving more opportunity to provide dedicated areas for different user groups	• More reliable journey times and higher frequency than other buses • Promotes increased levels of active travel if appropriate infrastructure is developed alongside the routes • Conventional bus routes can be withdrawn, reducing traffic levels in certain areas.	• Can operate on roads with higher gradients than traditional buses. • Typically have a longer lifespan than traditional motor buses. • The cost of a trolley bus can be considerably lower than that of a Streetcar.
Constraints	• Less manoeuvrable or flexible than traditional busses. • The cost to replace a streetcar or to upgrade to newer model is relatively high. • Longer routes cannot be easily altered or extended as new tracks would need to be implemented.	• Running on open highway in some areas can add delay to services, decreasing customer confidence in the network.	• High outline capital cost to develop key infrastructure (track, stops, car parks etc.) • High initial costs likely to be passed onto passengers in ticket prices • Difficult and expensive to expand or alter guided section of routes, but flexibility allows onward travel on traditional highway.	• High outline capital cost to construct overhead cables. • Less manoeuvrable or flexible than traditional busses. • Longer routes cannot be easily altered or extended as new overhead wires would need to be implemented. • Overhead cables can have a poor aesthetic value.

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7 Economic Impacts / Benefits Review

7.1 Introduction

In the next section (Section 8) the preferred schemes described earlier in the document are modelled and appraised using various traffic modelling tools, providing an understanding of the benefits versus costs involved with each. In reality many of the schemes' most significant benefits are not identifiable from traditional traffic models since they relate to public realm improvements, reduced severance for pedestrians and cyclists, enhanced quality of place and other less tangible effects. In many cases, the benefits are only identifiable as economic effects in terms of land value increase, GVA gains and employment growth. As a result, and prior to discussing the modelling results, this section provides a discussion of the qualitative benefits that may be expected from the implementation of nineteen of these schemes to demonstrate the value in terms of benefits to Wirral of implementing these schemes and to its residents and employers.

The purpose of this section is to demonstrate the value of these shortlisted schemes in terms of benefits that they could provide should they be constructed. In place of transport benefits this chapter will provide a narrative of the potential economic benefits in terms of jobs created and quantum of development unlocked as well as other social benefits such as improvements in health, increased equality for minority groups and access to employment and other facilities and amenities.

7.2 Schemes considered in this section

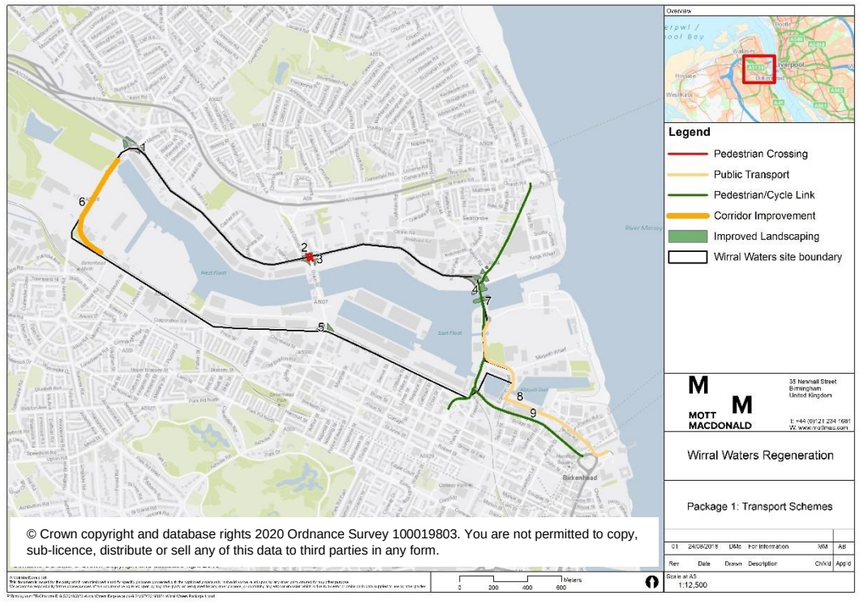
As noted above, this chapter deals exclusively with the nineteen schemes for which the modelling tools available are not able to discern transport benefits but for which clear economic and/or social benefits exist. The twelve schemes that can be modelled using the available modelling tools are discussed in the next section.

The nineteen schemes are listed in the following sub-sections and divided into phases as detailed previously.

7.2.1 Phase 1 Schemes

The transport schemes assessed in this section that are part of Phase 1 are shown below in Figure 9. These schemes are anticipated to be delivered between 0-5 years of the publication of the final strategy.

Figure 9: Phase 1 Wirral Waters transport schemes



Source: Mott MacDonald

Table 12 below sets out the details of the ten schemes within Phase 1.

Table 12: Details of Phase 1 Wirral Waters transport schemes

Scheme number	Scheme name	Description
1	A5139 Dock Road / A5088 Wallasey Bridge Road junction: Component 3	This scheme would comprise of an environmental improvement to the A5139 / A5088 Wallasey Bridge Road junction as a key gateway to Wirral Waters. In this component improvements are made to landscaping and public realm around the existing junction.
2	Duke Street / Dock Road / Gorsey Lane junction: Component 1	Gorsey Lane / Duke Street provides one of the key north / south pedestrian routes between residential areas and employment, education and transport hubs. However, the junction presents a barrier with minimal crossing facilities for pedestrians. In this component, the junction is reconfigured to provide controlled pedestrian crossing facilities.
3	Duke Street / Dock Road / Gorsey Lane junction: Component 2	This component introduces improved landscaping and public realm around the junction to help enhance its image in the context of Wirral Waters Enterprise Zone.

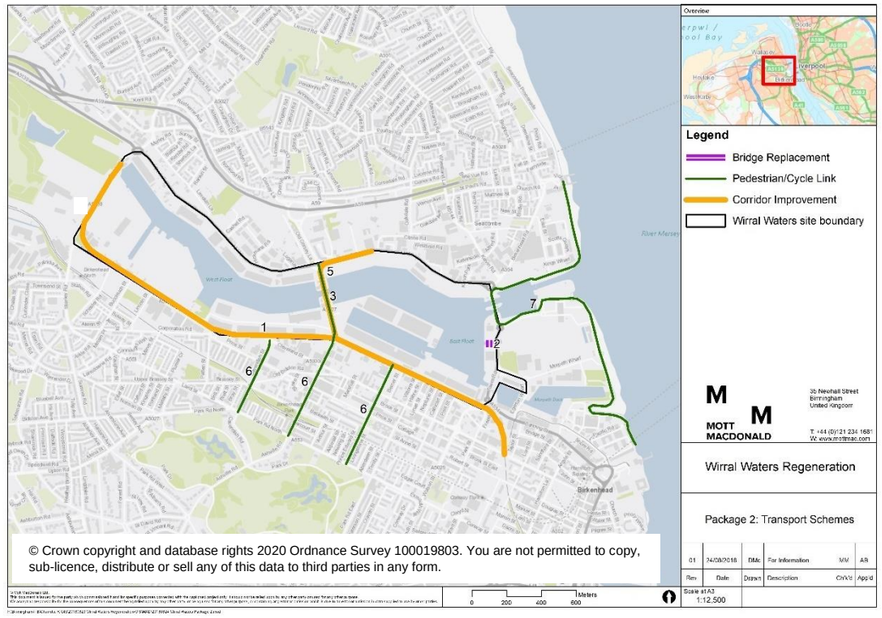
4	A5027 Dock Road / A554 Tower Road / A554 Birkenhead Road junction: Component 2	This component introduces improved landscaping and public realm around the junction to help enhance its image in the context of Wirral Waters Enterprise Zone.
5	Duke St / Corporation Road junction: Component 4	This component introduces improved landscaping and public realm around the junction.
6	Wallasey Bridge Road Improvements: Component 1	Wallasey Bridge Road is not only an important highway corridor, it is also used by many pedestrians and cyclists to access employment and transport hubs. This component would improve footways, remove barriers, stop up redundant junctions, and potentially provide enhanced corridor boundary treatment to the current fencing.
7	Tower Road / Birkenhead Road ped / cycle link	This scheme would provide a new pedestrian and cycle link at the Tower Bridge / Birkenhead Road junction, linking to new college and housing at Wirral Waters.
8	Pedestrian crossings on Tower Road	This scheme would provide new pedestrian crossings on Tower Road to reduce severance in the area and providing greater accessibility to Wirral Waters.
9	Cycle Route along Canning Street	This scheme would provide a new cycle route along Canning Street to enhance the active travel infrastructure in the area and improve accessibility into Wirral Waters via active modes.
Not mapped	Wirral Waters Pedestrian wayfinding strategy: Phase 1	This scheme would develop a strategy to enhance pedestrian wayfinding around Wirral Waters. This would include improved signage and pedestrian infrastructure, building upon other proposed active travel schemes for Wirral Waters.

Source: Mott MacDonald

7.2.2 Phase 2 Schemes

The transport schemes assessed in this report that are part of Phase 2 are shown below in Figure 9. These schemes are anticipated to be delivered between 5-10 years of the publication of the final strategy.

Figure 10: Phase 2 Wirral Waters transport schemes



Source: Mott MacDonald

Table 13 below sets out the details of the ten schemes within Phase 2.

Table13: Details of Phase 2 Wirral Waters transport schemes

Scheme number	Scheme name	Description
1	City Boulevard (green transport corridor) Corporation Road and Beaufort Road)	This scheme involves the development of a green transport corridor, named City Boulevard from Canning Street, along Corporation Road and Beaufort Road.
2	Footbridge on Dockside Route	The scheme would provide a footbridge on the dockside route next to college development, improving accessibility for active modes in the area.
3	A5027 Duke Street public realm	This scheme involves a series of public realm enhancements along the A5027 Duke Street, making the area more attractive to live, work and invest in.
4	No longer being taken forward.	
5	Duke Street Active Travel	A series of Duke Street Active Travel Improvements are proposed to enhance the pedestrian and cyclist infrastructure around Wirral Waters. This includes improved cycleways and widening of pedestrian footways.

6	Green Link: Wirral Waters to Birkenhead Park	This scheme would provide a Green Links between Wirral Waters and Birkenhead Park. These links would incorporate high-quality active travel infrastructure and enhanced public realm providing accessibility to Wirral Waters from the south.
7	Wirral Dock Active Travel Route: Phase 1	Creation of a pedestrian / cycle link along the waterfront from Woodside to Seacombe (and continuing via the Promenade) through the Ro Ro Ferry Terminal and connecting to the Wirral Coastal Path.
Not mapped	Wirral Waters Pedestrian wayfinding strategy: Phase 2	This scheme would develop a strategy to enhance pedestrian wayfinding around Wirral Waters. This would include improved signage and pedestrian infrastructure, building upon other proposed active travel schemes for Wirral Waters.

Source: Mott MacDonald

7.2.3 Phase 3 Schemes

Only one further transport scheme is assessed in this chapter under Phase 3. This scheme is anticipated to be delivered between 10-20 years of the publication of the final strategy.

Table 14 below sets out the details of the scheme within Phase 3.

Table14: Details of Phase 3 Wirral Waters transport schemes

Scheme number	Scheme name	Description
1	Wirral Dock Active Travel Route: Phase 2	Creation of a pedestrian / cycle link along the waterfront from Woodside to Seacombe (and continuing via the Promenade) through the Ro Ro Ferry Terminal and connecting to the Wirral Coastal Path.

Source: Mott MacDonald

7.3 Wirral Waters - Masterplan

Wirral Waters is the largest regeneration project in the UK and received planning permission in 2012. Wirral Waters forms part of the Mersey Waters Enterprise Zone and has also been designated as a Housing Zone. The vision for Wirral Waters is to create a mixed-use, high-density, highly sustainable project that will elevate and regenerate the area to the benefit of its existing community. The current proposals for Wirral Waters include over 3,500 homes and 104,000m^2 of employment floorspace.

The entire Wirral Waters development site spans from the docklands on the River Mersey, along the north and south banks of the inland docks up to the boundary of Bidston Moss. Current masterplanning for Wirral Waters has identified two distinct areas within the site divided by the Duke Street bridge crossing the site – East Float and West Float. Greater detail on the development planning with the East Float and West Float areas is set out in the following subsections.

7.3.1 East Float

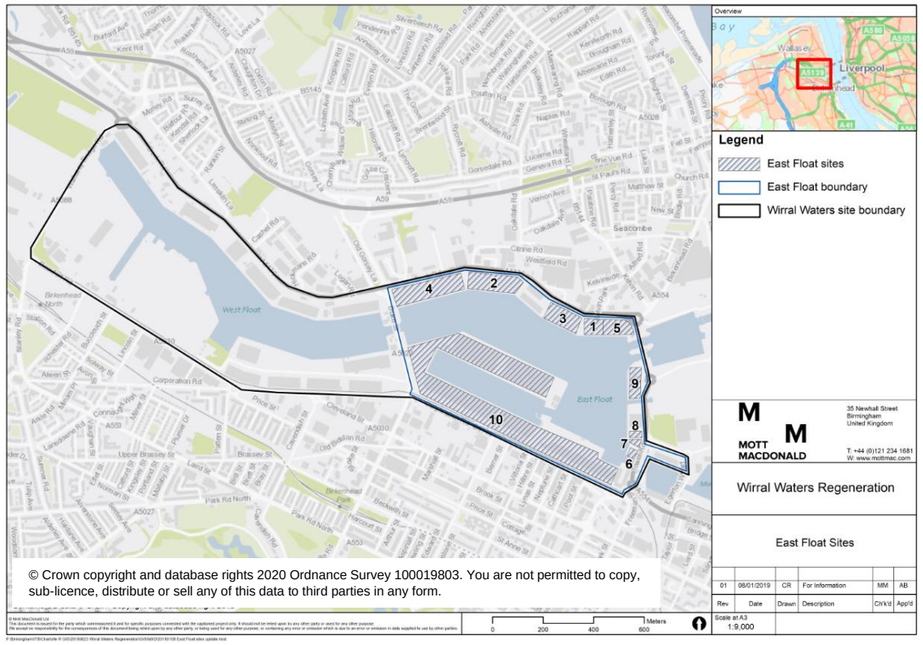
The East Float area of Wirral Waters received planning permission in 2012 for the demolition of existing buildings and the creation of a new, mixed-use city neighbourhood. Transport Planning consultants Vectos undertook an analysis of the development trajectory for the site in October 2018 that identified:

- 3,550 residential units; and,
- 11,000m^2 of employment floorspace across the East Float area.

East Float is divided into northern and southern banks. The Northbank development contains 1,056 homes and all 11,000m^2 of the identified employment space, while the southern area contains the remaining 2,494 homes. Additional employment space to the south may be identified in the future, but at present, no individual employment sites have been highlighted[2].

This total amount of development will be spread across the East Float area in several distinct urban quarters as shown in the map overleaf.

Figure 11: East Float development proposals



Source: Mott MacDonald

Some development has already been completed in the East Float area of Wirral Waters. In the Four Bridges area the award-winning Wirral Met College was completed in September 2015 and was the first new building in Wirral Waters. The college is circa 2,100m^2 with construction courses aligned to Wirral Waters and focused on the Built Environment. In November 2015, the

[2] Vectos, Wirral Waters – Development Trajectory Information, October 2018

4,500 m^2 Tower Wharf office development was completed. The new office currently accommodates approximately 400 jobs with a total capacity of 1,200 jobs.

Further future residential and employment development will continue across the East Float area of Wirral Waters. The proposed future development of the distinct urban quarters in the East Float area are outlined in the table below.

Table 15: East Float residential sites

No.	Description	Land use	Units
1	Belong Northbank East	Residential – retirement housing	109
2	Urban Splash West	Residential - apartments	227
3	Urban Splash East	Residential – town houses	120
4	Legacy Northbank West	Residential - apartments	500
5	Peel Site Northbank East	Residential - apartments	100
10	East Float residential area	Residential - mixed	2,494
	Total		**3,550**

Source: Vectos, 2018

Table 16: East Float employment sites

No.	Description	Land use	Size (m2)	Hotel beds
5	Peel Site Northbank East	Hotel		150
6	Egerton Village (breakdown below)	Pop-up village	1,404	
	Flexible Workspace	D1 / B1 / Educational	542	
	Managed Workspace	B1	102	
	Restaurant	A3 Restaurant	462	
	Visitor Centre	D1 / B1 / Educational	71	
	Four Kiosks	A1 Retail	227	
7	No. 1 Tower Road South Office	Office	2,896	
8	Higher Education Facility	College	2,110	
9	Maritime Knowledge Hub	Office/Research/Educational	4,645	
Total			**11,055**	150

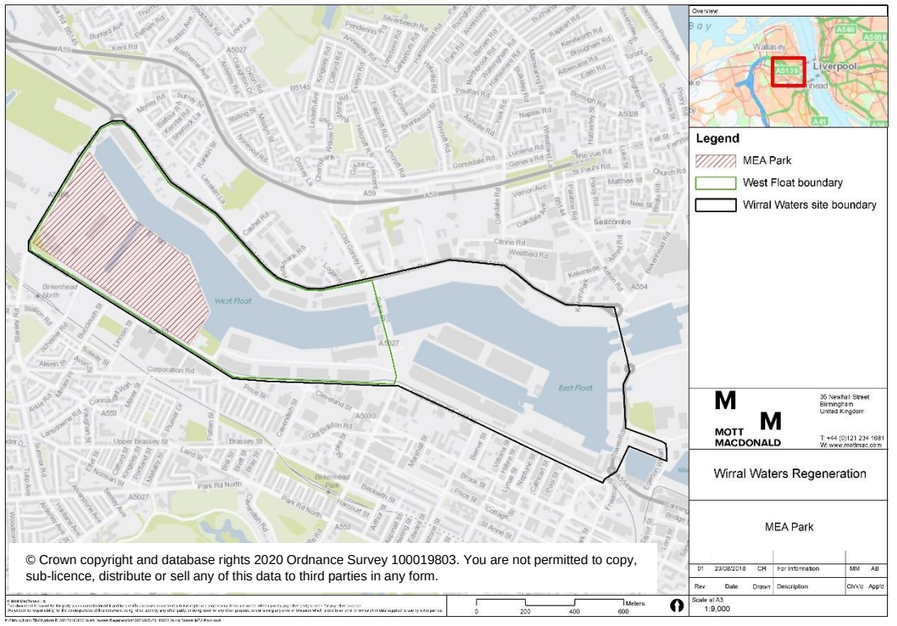
Source: Vectos, 2018

7.3.2 West Float

The West Float area is the second part of the overall Wirral Waters site and is primarily dominated by the proposed Marine, Energy and Automotive (MEA) Park. This 60-acre industrial development is envisioned to become a multi-unit, 92,000m^2 waterside manufacturing, logistics, R&D and assembly campus that is focused on supporting the Marine, Maritime and Energy sectors.

The map below presents the scope of the proposed MEA Park in the West Float area of Wirral Waters.

Figure 12: West Float development



Source: Mott MacDonald

Phase 1 of MEA Park will be 5,180m^2 development of a mixed B-class site this is split between B1c (light industrial), B2 (industrial and manufacturing) and B8 (distribution centre) uses. Phase 2 totals more than 87,000m^2 of mixed B-class use sites. The sites identified across the MEA park are set out in Table 17 below.

Table 17: MEA park sites

Phase	Site	Land use	size (m2)	Completion
1	Wirral Waters Skills Factory	B1c / B2 / B8	2,390	2022
1	Module Development Centre	B1c / B2 / B8	2,790	2022
2	MEA Park Phase 2	B1c / B2 / B8	6,500	2021
2	Remainder of MEA Park	B1c / B2 / B8	81,225	2031
Total			**92,905**	

Source: Vectos, 2018

7.3.3 Masterplan Summary

Wirral Waters is one of the largest regeneration sites in the UK and is essential to the future vision for the economic and social growth of the Wirral. The vision for Wirral Waters is to create a mixed-use, high-density, highly sustainable project that will elevate and regenerate the area to the benefit of its existing community by **delivery of 104,000m^2 of employment floorspace as well as 3,550 new homes** to support local economic growth.

Current masterplanning for Wirral Waters has identified two distinct areas – East Float and West Float – each with their own proposed development uses as outlined in the table.

Table 18: Wirral Waters development

Area	Proposed development
East Float	• 3,500 residential units • Up to 11,000m^2 amount of built floorspace, accommodating a range of land uses.
West Float	• A multi-unit, 92,000m^2 waterside manufacturing, logistics, R&D, and assembly campus that is focussed on supporting the marine, maritime and energy sectors.

Source: Mott MacDonald

7.4 Quantified Economic Impact

The Wirral Waters Transport Strategy schemes have the potential to support the development of these sites for both employment and residential uses. To demonstrate the potential value of these sites to the local economy, the potential gross number of jobs that can be accommodated at these sites has been assessed using Mott MacDonald's Transparent Economic Assessment Model (TEAM). TEAM assesses the economic benefits arising from land-use change calculated in line with HM Treasury Green Book principles of additionality.

TEAM has been used to assess the gross employment impacts each site could deliver to the area, based on the site information provided by Vectos. Each site was entered into TEAM whereby a standard employment density was applied based on the proposed use for the site. The level of additionality has not been assessed due to limited information available.

The employment sites entered into TEAM are set out in Table 19.

Table 19: Employment sites

Area	Site name	Land use	Size (m²)
East Float	Peel Site Northbank East	Hotel	150 (rooms)
	Egerton Village (breakdown below)	Pop-up village	1,404
	Egerton Village- Flexible Workspace	D1 / B1 / Educational	542
	Egerton Village- Managed Workspace	B1	102
	Egerton Village- Restaurant	A3 Restaurant	462
	Egerton Village- Visitor Centre	D1 / B1 / Educational	71
	Egerton Village- Four Kiosks	A1 Retail	227
	No. 1 Tower Road South Office	Office	2,896
	Higher Education Facility	College	2,110
	Maritime Knowledge Hub	Office / Research / Educational	4,645
West Float/MEA park	Wirral Waters Skills Factory	B1c / B2 / B8	2,390
	Module Development Centre	B1c / B2 / B8	2,790
	MEA Park Phase 2	B1c / B2 / B8	6,500
	Remainder of MEA Park	B1c / B2 / B8	81,225

Source: Vectos, 2018

7.4.1 Assumptions used

As TEAM was used in this instance only to assess gross-level impacts, no additionality assumptions (such as deadweight, displacement or leakage) were used. The assumptions that were used for this assessment are set out in Table 20.

Table 20: Assumptions used

Assumption	Justification
Employment densities	
General B1 land use – 20m² of Net Internal Area (NIA) per Full Time Equivalent (FTE) job.	Where the proposed land use was listed as B1, with no further information provided, an assumption of 20m² NIA/FTE was applied, this is average of all B1 employment densities provided in Homes England (formerly the HCA) Employment Density Guide 2015.
B1c land use – 47m² NIA/FTE.	Where B1c land use was specified (in the West Float sites), the standard employment density of 47m² NIA/FTE from the HCA Employment Density Guide 2015 was used.
B8 land use - 77m² Gross External Area (GEA)/FTE.	All sites identified for B8 use were assumed to be regional distribution centres, with an employment density of 77m² NIA/FTE. This is the approximate mid-point of three B8 employment densities provided in the Employment Density Guide 2015.
A1 land use – 18 m² NIA/FTE.	A1 retail was assumed to be equivalent to high street retail and accordingly was aligned to the standard assumption of 18m² NIA/FTE from the Employment Density Guide 2015.
A3 land use - 18 m² NIA/FTE.	The Employment Density Guide (2015) proposes an employment density of 18 m² NIA/FTE for A3 restaurants.
Hotels – assumed to be three staff per hotel bed.	The hotel was assumed to be a mid-range quality hotel as a mid-point assumption, the Employment Density Guide (2015) proposes an employment density of three staff per hotel bed.
Other assumptions	
Even split of uses where not otherwise stated.	Where a site is to be divided between multiple land uses, it is assumed that this division is evenly split between all stated uses, this was assumed due to the lack of information on the actual proposed split.
Inability to model D1 non-residential institutions and educational facilities.	As D1 and educational facilities vary so widely, it is not possible to accurately model sites identified for these uses. Accordingly, sites and parts of sites identified for these uses have been excluded from the analysis.
GVA per worker - £44,852	GVA per worker UK NUTS Level 3 (Wirral), ONS, 2017.

Source: Mott MacDonald

7.4.2 Outputs

The high-level analysis of the employment sites identified for the Wirral Waters scheme has found that the sites could support approximately 1,700 gross jobs and £76m of GVA per annum. These figures are shown at a gross-level only, and the analysis did not take into account the scale of additionality with regard to these jobs and GVA. The breakdown of the potential employment and GVA impact of each site is shown in Table 21.

Table 21: TEAM outputs

Site	Gross jobs	Gross GVA, £m
Peel Site Northbank East	50	£2.2
Egerton Village	41	£1.8
No 1 Tower Road South Office	109	£4.9
Maritime Knowledge Hub	58	£2.6
Wirral Waters Skills Factory	37	£1.7
Module Development Centre	43	£1.9
MEA Park Phase 2	101	£4.5
Remainder of MEA Park	1,260	£56.5
Total	**1,699**	**£76.2**

Source: Mott MacDonald

The outputs from TEAM demonstrate that the sites identified as part of this development could have a significant impact on employment in the area. The MEA Park in particular accounts for approximately three-quarters of all gross jobs identified through this analysis. While this analysis follows best-practice for the assessment of gross employment and GVA impacts, there are a number of caveats to the outputs that may ultimately impact the scale of the employment benefits ultimately delivered by this scheme, these are:

- As stated, this analysis only assesses employment and GVA impacts at a gross level, therefore not addressing the likely level of additionality. The level of additionality of the benefits of this development will reduce the scale of these benefits; high leakage or the displacement of benefits from elsewhere in the Wirral may result in a lower overall impact than anticipated.
- Where individual sites were designated for a mix of uses (such as B1c / B2 / B8 sites in West Float/MEA Park), the total floorspace was divided between the three uses evenly. The eventual level of demand for each type of floorspace and the needs of the occupants of these sites may result in a different split of uses. As each land use has a different employment density, a different division of uses among B-class land uses can impact the number of jobs at each site. This analysis is based on the assumption that the division of the site is equal between the three use classes, although the actual division may vary.
- As the GVA produced by different sectors and industries varies, the GVA supported at these sites may ultimately differ from that shown in this analysis, depending on the nature of the businesses that occupy these sites, although a reasonable average figure has been applied here.
- Jobs in sectors such as education and D1 (non-residential institutions) sites cannot be reliably modelled, due to the high degree of variation between sites used for these purposes. Accordingly, sites such as Egerton Village and the Maritime Knowledge Hub, will support a greater number of jobs than reported here as each has parts of the site identified for educational uses, which have not been included in this analysis.

Based on the sites identified for the Wirral Waters project and the assumptions set out above, this high-level analysis has found that the development of Wirral Waters could support approximately:

- 1,700 jobs; and,
- £76m in GVA per annum.

This varies from the figures for employment and GVA previously quoted by Peel based on the outline planning application for Wirral Waters but is a reflection of the recently scaled-down aspirations for the site as detailed in the sited report from Vectos[3].

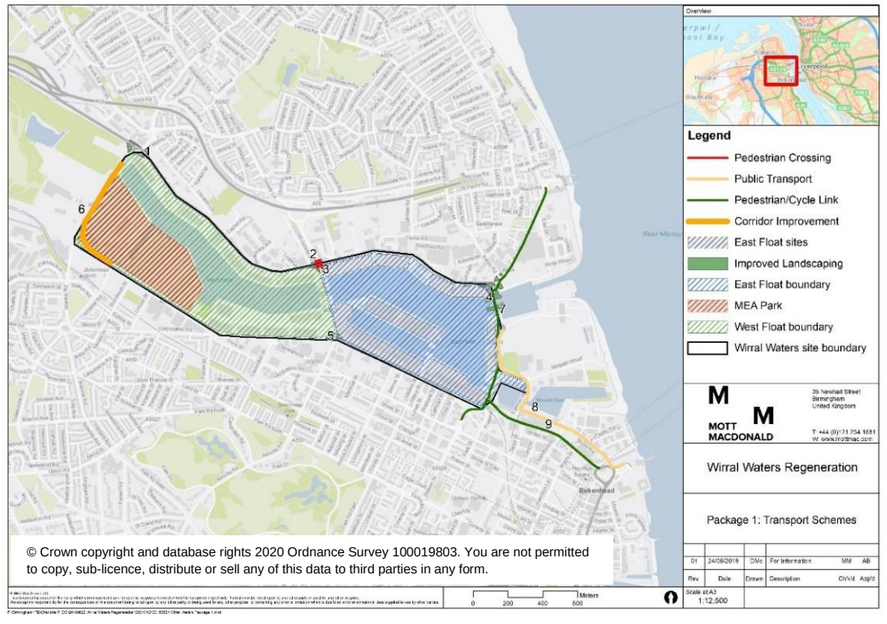
While no comment has been made on the degree to which each phase of interventions may support the delivery of these sites, this analysis quantifies the value of the Wirral Waters scheme to the Wirral's economy, ultimately demonstrating the case for intervention to support the development of Wirral Waters.

The phases of interventions involved in this scheme are set out in the following sub-sections.

7.4.3 Phase 1

The Phase 1 transport schemes are shown in Figure 13 in the context of the planned and ongoing development in Wirral Waters. These transport schemes in Phase 1 are anticipated to be delivered between 0-5 years of the publication of the final strategy.

Figure 13: Economic impact of Phase 1 schemes



Source: Mott MacDonald

The table below outlines the potential qualitative economic impacts for the transport schemes included in Phase 1.

[3] Vectos, Wirral Waters – Development Trajectory Information, October 2018

Table 22: Economic impact of Phase 1 schemes

Scheme number	Scheme name	Economic impact
1	A5139 Dock Road / A5088 Wallasey Bridge Road junction: Component 3	• Improvements in public realm surrounding the site will support the attractiveness of the site to business investment.
2	Duke Street / Dock Road / Gorsey Lane junction: Component 1	• Improved connectivity, especially for pedestrians, will support labour market accessibility and business investment.
3	Duke Street / Dock Road / Gorsey Lane junction: Component 2	• Improvements in public realm surrounding the site will support the attractiveness of the site to business investment and those seeking residential opportunities.
4	A5027 Dock Road / A554 Tower Road / A554 Birkenhead Road junction: Component 2	• Improvements in public realm surrounding the site will support the attractiveness of the site to business investment and those seeking residential opportunities.
5	Duke St / Corporation Road junction: Component 4	• Improvements in public realm surrounding the site will support the attractiveness of the site to business investment and those seeking residential opportunities.
6	Wallasey Bridge Road Improvements: Component 1	• Improved connectivity and capacity for pedestrians and cyclists will support labour market accessibility and business investment. • Directly support access to current and future development in the MEA Park.
7	Tower Road / Birkenhead Road ped / cycle link	• Improved connectivity and capacity for pedestrians and cyclists will support labour market accessibility and business investment.
8	Pedestrian crossings on Tower Road	• Improved connectivity and reduction of severance for pedestrians will support labour market accessibility and business investment.
9	Cycle Route along Canning Street	• Improved connectivity and capacity for cyclists will support labour market accessibility and business investment.
Not mapped	Wirral Waters Pedestrian wayfinding strategy	• Improved accessibility for pedestrians around Wirral Waters will support labour market accessibility and business investment.

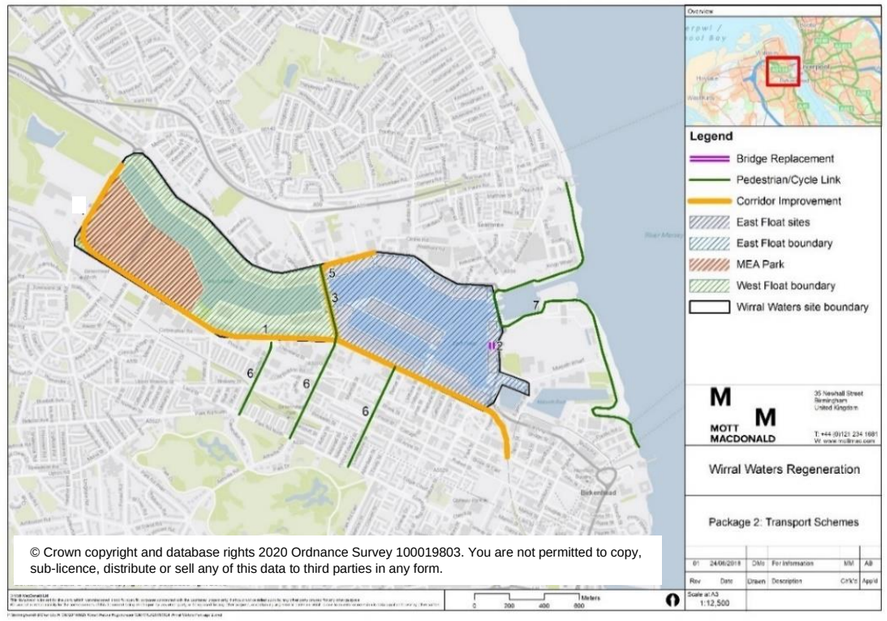
Source: Mott MacDonald

The focus of the transport schemes within Phase 1 are on the improvement of connectivity for pedestrians and cyclists, mostly towards the east side of the site. By improving connectivity to the site Phase 1 will thereby support accessibility to the current and future labour market and may support confidence in businesses to invest in the area. Several schemes also focus on improving public realm of key gateways into Wirral Waters that will make the site more aesthetically attractive thereby acting as a further incentive for businesses and residents to locate to the area.

7.4.4 Phase 2

The Phase 2 transport schemes are shown below in Figure 14 in the context of the planned and ongoing development in Wirral Waters. These transport schemes in Phase 2 are anticipated to be delivered between 5-10 years of the publication of the final strategy.

Figure 14: Economic impact of Phase 2 schemes



Source: Mott MacDonald

The table below outlines the potential qualitative economic impacts for the transport schemes included in Phase 2.

Table 23: Economic impact of Phase 2 schemes

Scheme number	Scheme name	Economic impact
1	City Boulevard (green transport corridor) Corporation Road and Beaufort Road)	• Improvements in public realm surrounding the site will support the attractiveness of the site to business investment and those seeking residential opportunities. • Improved connectivity and capacity for pedestrians and

		cyclists will support labour market accessibility and business investment.
2	Footbridge on Dockside Route	• Improved connectivity and capacity will support labour market accessibility and business investment. • Directly supports development in the East Float area of Wirral Waters.
3	A5027 Duke Street public realm	• Improvements in public realm surrounding the site will support the attractiveness of the site to business investment and those seeking residential opportunities.
4	No longer being taken forward.	
5	Duke Street Active Travel	• Improved connectivity from both North and South for pedestrians and cyclists will support labour market accessibility and business investment.
6	Green Link: Wirral Waters to Birkenhead Park	• Improvements in public realm surrounding the site will support the attractiveness of the site to business investment and those seeking residential opportunities. • Improved connectivity between Wirral Waters and Birkenhead will support labour market accessibility and business investment.
7	Wirral Dock Active Travel Route: Phase 1	• Improved connectivity for pedestrians and cyclists along the coast from North/South will support labour market accessibility and business investment.

Source: Mott MacDonald

Phase 2 continues improved connectivity to and from the site with a continued focus on pedestrians and cyclists. The impact of this will continue to support accessibility to the labour market and support market confidence leading to continued investment. Several schemes in Phase 2 also continue to focus on improving public realm in Wirral Waters. The majority of Phase 2 focuses on the centre of the Wirral Waters site.

7.4.5 Phase 3

These transport scheme in Phase 3 is anticipated to be delivered between 10-20 years of the publication of the final strategy.

The table below outlines the potential qualitative economic impacts for the transport scheme included in Phase 3.

Table 24: Economic impact of Phase 3 schemes

Scheme number	Scheme name	
1	Wirral Dock Active Travel Route: Phase 2	• Improved connectivity for pedestrians and cyclists along the coast from North/South will support labour market accessibility and business investment.

Source: Mott MacDonald

7.4.6 Summary of Economic Impact

In order for Wirral Waters to maximise its full potential as an economic hub there is a requirement for additional transport infrastructure to be implemented to support current and future development. The transport schemes in Phases 1-3 represent part of the proposed transport solution and could support the economic performance of Wirral Waters in a number of ways including:

- Improving labour market access and mobility.
- Supporting business investment and growth.
- Supporting land utilisation impacts.

Phases 1 and 2 are set to make significant strides forward in these area by improving connectivity, especially for pedestrians and cyclists, as well as reducing severance from the surrounding area to Wirral Waters. This will enable increased accessibility to and from residential and economic opportunities within Wirral Waters that will in turn increase market confidence leading to increased investment in the area. Other schemes will improve the public realm on key gateways into Wirral Waters thereby making the area more attractive to residents and businesses alike.

In the longer term future, the transport schemes in Phase 3 will continue to build on the improvements set to be made by the previous phases.

7.5 Social Impact

The Wirral Waters development area has been identified as a spatial priority for delivering growth and investment across the borough.[4] The proposed packages of schemes that have been developed as part of the STF aim to achieve this through improved public spaces and community connectivity that supports a more accessible and healthy transportation experience for those that visit, live or work in Wirral.

[4] Wirral Council (2017). 'Wirral Strategic Regeneration Framework' Available at https://www.wirral.gov.uk/sites/default/files/all/business/Regeneration/Strategic%20Regeneration%20main%20report.pdf

The analysis below provides a high-level appraisal of the social impacts which could be supported by each package, through linking the schemes to relevant literature and local socio-economic demographics. Social impacts are also linked to relevant policy objectives where they are supported.

7.5.1 Community health and wellbeing

Scheme proposals focussing on improvements to active travel facilities, green spaces/corridors or the public realm are likely to support positive health and wellbeing outcomes for Wirral.

The Wirral Strategic Regeneration Framework (SRF) sets out priorities and challenges for economic growth in the borough. Positive health and wellbeing outcomes are supported by two of the strategic themes of the SRF: 'healthier lifestyles', 'safer neighbourhoods', 'sustainable development' and a 'high-quality environment'.[5] Health and wellbeing impacts are also relevant to the Wirral 2020 themes of 'protecting the most vulnerable' and 'improving the local environment'.[6]

The health benefits that are supported by each package of schemes are detailed in the summary table in Section 7.5.3.

7.5.1.1 Air quality

Schemes resulting in increases to green space or the promotion of sustainable modes of transportation, including active and non-motorised modes, can help to improve local air quality. Research has shown that there is a link between both long and short-term exposure to particulate matter emissions, respiratory health, and long-term health outcomes;[7] air pollution disproportionately impacts children, older people, and people with a pre-existing condition (including asthma, chronic obstructive pulmonary disease and coronary artery disease).[8] Air quality improvements resulting from reduced emissions and increased capture of pollutants would have particular benefits for Wirral, which has a high under 75 mortality rate due to respiratory disease, when compared to the national average (51.1 and 33.8 per 100,000, respectively), and a higher under 75 rate of mortality due to cardiovascular disease than the national average, at 82 per 100,000, compared to 73.5 in England.[9] In addition, elevated levels of pollution are typically concentrated amongst socially deprived neighbourhoods,[10] and Wirral contains ten LSOAs which are among the 1% most deprived LSOAs in England.[11]

- *Improvements in air quality may be supported by schemes: 1-14 and 16-19.*

7.5.1.2 Noise

Schemes that improve walking and cycling facilities and introduce green, motor vehicle-free corridors may help to reduce local road traffic. Reduced road traffic can have indirect positive health benefits due to decreased levels of noise. Research shows that raised noise levels can cause high blood pressure in children, and can negatively affect their cognitive learning and memory.[12] Noise can also cause several adverse health outcomes for older people, including cardiovascular disease, stress, dementia and sleep disturbance.[13]

- *Noise reductions may be supported by schemes 2, 6-14, and 16-19.*

7.5.1.3 Exercise

Cumulative health benefits can be realised through schemes that promote exercise through active travel, while simultaneously improving local air quality by reducing motor vehicle use. Increased exercise through active travel can contribute positively to improving cardiovascular health in Wirral, which has a high under 75 mortality rates for cardiovascular and respiratory disease.[14] Improved opportunities for exercise could also have positive health outcomes for children in the Wirral, where child obesity (20.6%) is slightly higher than the national average (20%).[15]

- *Health benefits resulting from exercise may be supported by schemes: 2, 6-14, and 16-19.*

7.5.1.4 Road safety

Improvements to walking and cycling facilities and minimisation of conflicts between transportation modes (e.g. through improved crossings) can also result in positive health outcomes for Wirral, which has a higher rate of people killed and injured on roads (41.7) than both the North West and England (39.8 and 39.7, respectively).[16] Research also shows that

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[5] Wirral Council (2017). 'Wirral Strategic Regeneration Framework' Available at https://www.wirral.gov.uk/sites/default/files/all/business/Regeneration/Strategic%20Regeneration%20main%20report.pdf

[6] Wirral Council (2017) 'Wirral Plan 2020' Available at: https://www.wirral.gov.uk/about-council/wirral-plan-2020-vision#wgSM-0

[7] Kilbane-Dawe, !. and Clement, L. (2014). 'The impacts of air pollution on health: a summary of the state of current knowledge'. Parliament Hill Research. Available at: https://www.cityoflondon.gov.uk/business/environmental-health/environmental-protection/air-quality/Documents/Impacts-Of-Air-Pollution-On-Health.pdf

[8] Department for Environment, Food and Rural Affairs (2018). '*The health impacts of poor air quality'*. Available at: h https://publications.parliament.uk/pa/cm201719/cmselect/cmenvfru/433/43308.htm#footnote-259

[9] Public Health England (2014-16). '*Public Health Profiles –Under 75 mortality rate from respiratory disease''*. Available at: https://fingertips.phe.org.uk/search/respiratory%20disease#page/1/gid/1/pat/6/par/E12000002/ati/102/are/E08000015

Public Health England (2014-16). '*Public Health Profiles –Under 75 mortality rate from all cardiovascular diseases''*. Available at: https://fingertips.phe.org.uk/search/cardiovascular#page/1/gid/1/pat/6/par/E12000002/ati/102/are/E08000015

[10] Goodman, A., Wilkinson, P., Stafford, M., & Tonne, C. (2011). '*Characterising socio-economic inequalities in exposure to air pollution: a comparison of socio-economic markers and scales of measurement'*. Health & place, 17(3), 767-774.

[11] Wirral Council Public Health Intelligence Team (2015). '*Indices of Multiple Deprivation for Wirral'* Available at: https://www.wirralintelligenceservice.org/media/1145/imd-2015-report-final.pdf

[12] World Health Organisation (2011): *'Burden of disease from environmental noise Quantification of healthy life years lost in Europe'*. Available at: http://www.who.int/quantifying_ehimpacts/publications/e94888.pdf?ua=1

[13] World Health Organisation (2011): *'Burden of disease from environmental noise Quantification of healthy life years lost in Europe'*. Available at: http://www.who.int/quantifying_ehimpacts/publications/e94888.pdf?ua=1

[14] Public Health England (2014-16). '*Public Health Profiles –Under 75 mortality rate from all cardiovascular diseases''*. Available at: https://fingertips.phe.org.uk/search/cardiovascular#page/1/gid/1/pat/6/par/E12000002/ati/102/are/E08000015

Public Health England (2014-16). *'Public Health Profiles –Under 75 mortality rate from respiratory disease''*. Available at: https://fingertips.phe.org.uk/search/respiratory%20disease#page/1/gid/1/pat/6/par/E12000002/ati/102/are/E08000015

[15] Public Health England (2016-17). '*Public Health Profiles –Year 6: Prevalence of obesity''*. Available at: https://fingertips.phe.org.uk/search/obesity#page/1/gid/1/pat/6/par/E12000002/ati/102/are/E08000015

[16] Public Health England (2016-17). '*Public Health Profiles –Killed and seriously injured casualties on England's roads''*. Available at: Public Health England (2016-17). '*Public Health Profiles –Year 6: Prevalence of obesity''*. Available at: https://fingertips.phe.org.uk/search/obesity#page/1/gid/1/pat/6/par/E12000002/ati/102/are/E08000015

children in low income groups, such as those in deprived areas of the Wirral, have much higher rates of casualties from road traffic collisions due to greater exposure to higher levels of traffic.[17]

- *Road safety improvements may be supported by schemes: 2, 6-14, and 16-19.*

7.5.1.5 Travel safety and comfort

Improvements to the public realm can positively impact upon travel safety and comfort for women, ethnic minority groups, and Lesbian, Gay, Bisexual and Transgender people, as research shows that these groups often fear for their safety and well-being in public spaces and on pedestrian journeys.[18] Using environmental design to prevent antisocial behaviour, such as spaces with clear sightlines that are well-maintained and well-lit, may improve safety and feelings of safety for these groups.

- *Feelings of safety and comfort in the public realm may be supported by schemes 1, 3-5, 12, and 15.*

7.5.2 Social mobility, inclusion and accessibility

Scheme proposals focussing on improving infrastructure and connections between or within communities may support positive equality outcomes, including improved social mobility, inclusion and accessibility.

Improved social mobility, inclusion and accessibility is in line with strategic themes of the SRF, including: 'employment, skills and economic development', 'transport connectivity', 'sustainable development' and 'a high-quality environment'. Impacts are also relevant to the key themes for Wirral 2020 of 'protecting the most vulnerable' and 'driving economic growth'.[19]

Social mobility, inclusion and accessibility benefits that are supported by each package of schemes are outlined in the summary table in section 4.3

7.5.2.1 Connections to employment, education and social resources

Improved connectivity between communities may include further connections to places of employment and education close to or within the Wirral Waters development, such as Wirral Met College or MEA Park. Improved opportunities to access employment and education can serve to address issues of inequality and improve social mobility. This would benefit the Wirral region, which has areas of high deprivation in neighbourhoods near to Wirral Waters, in Birkenhead and Wallasey.[20] In addition, Wirral has a lower percentage of people in employment (73.8%) than the average for Great Britain (75%), and a higher percentage of households that are workless (19%, compared to 14.5% for Great Britain).[21]

Improved connectivity between neighbourhoods may also provide better access to social infrastructure including facilities for health, early years provision, education, community, worship, play and recreation. Increased access to open space, such as Birkenhead Park, may impact children in deprived areas of Wirral, as children living in deprived areas are nine times less likely to be able to access green space than those living in less deprived areas.[22] Increased connectivity to social infrastructure can also benefit older people, who often experience feelings of isolation and loneliness due to physical isolation and a lack of social resources.[23]

- *Connections to places of employment, education and social connection may be supported by schemes: 2, 6-14, and 16-19.*

7.5.2.2 Equality and Inclusion

Creating inclusive neighbourhoods and taking steps to create a more equal and welcoming community can be achieved through removing barriers to access or use of the streetscape. This includes schemes that create more comfortable public spaces, and public facilities and infrastructure that work for many different types of people.

In Wirral, there is a higher proportion of older people and people with a limiting long-term illness or disability than the national average,[24] who might benefit from schemes that improve accessibility of pedestrian infrastructure. The 2015 National Travel Survey found that the proportion of people with mobility difficulties increases with age.[25] The installation of infrastructure such as new footbridges (scheme 14) may decrease walking distances, which could benefit older people. Pedestrian infrastructure improvements could also benefit disabled people, as research from the DfT indicates that of people with a disability who are able to walk, around 30 per cent can walk no more than 50 metres without stopping or experiencing severe discomfort[26].

Children and young people could also benefit from improved pedestrian and cycle facilities, as approximately half of children in England walk or cycle to school[27], and young people are more likely to be users of non-motorised forms of transport[28]. Households without access to a car, of which Wirral has a higher than average proportion[29], may also benefit from active travel schemes.

Finally, wayfinding strategies can improve public realm inclusion for disabled people and ethnic minority groups. This includes those with physical, cognitive or sensory impairments, or those

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[17] Social Exclusion Unit (2003). '*Making the connections: transport and social exclusion'*. Social Exclusion Unit, *The Stationery Office, London*.

[18] Stonewall (2017) LGBT in Britain: Hate Crime. Available at: https://www.stonewall.org.uk/comeoutforLGBT/lgbt-in-britain/hate-crime

Department for Transport (2006), *Personal security issues in pedestrian journeys*, available at: http://webarchive.nationalarchives.gov.uk/+/http:/www.dft.gov.uk/pgr/crime/personalsecurity/personalsecurityissuesinpede3005?page=5

[19] Wirral Council (2017) 'Wirral Plan 2020' Available at: https://www.wirral.gov.uk/about-council/wirral-plan-2020-vision#wgSM-0

[20] Department for Communities and Local Government (2015). '*English Indices of Deprivation, 2015'* https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/465791/English_Indices_of_Deprivation_2015_-_Statistical_Release.pdf

[21] ONS (2011): '*Census*'. Available at: https://www.ons.gov.uk/census/2011census

[22] Quoted in King's Fund, Access to green and open spaces and the role of leisure services Available at: https://www.kingsfund.org.uk/projects/improving-publics-health/access-green-and-open-spaces-and-role-leisure-services

[23] Age UK, (2012): 'Loneliness and isolation evidence review'.

[24] ONS (2011): '*Census*'. Available at: https://www.ons.gov.uk/census/2011census

[25] [25] Department for Transport, *National Travel Survey: England 2015*, available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/551437/national-travel-survey-2015.pdf

[26] Department for Transport (2002), *Inclusive mobility: A Guide to Best Practice on Access to Pedestrian and Transport Infrastructure*, available at: https://www.gov.uk/government/publications/inclusive-mobility

[27] Department of Transport (2017) '*Walking and Cycling Statistics: England, https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/736909/walking-and-cycling-statistics-england-2017.pdf*

[28] Department for Transport (2015-16), *Walking and cycling levels demographic breakdown: England*, available at https://www.gov.uk/government/statistical-data-sets/walking-and-cycling-levels-demographic-breakdown-england-cw020

[29] ONS (2011): '*Census*'. Available at: https://www.ons.gov.uk/census/2011census

who may have a limited understanding of English or the local area, such as tourists who may come from an ethnic minority background.[30] Benefits may arise from orientation support that includes clear information, signage and intuitive wayfinding (provided by scheme 10).

7.5.3 Summary of Social Impacts

The following summary table details the potential social impacts that may arise from each scheme.

Table 25: Potential Social Impacts

Package number	Scheme number	Potential health/safety impacts					Potential social mobility /inclusion / accessibility impacts	
		Air quality	Noise	Exercise	Road safety	Travel safety and comfort	Connections to employment, education and social resources	Equality and inclusion
1	1	✓				✓		
	2	✓	✓	✓	✓		✓	✓
	3	✓				✓		
	4	✓				✓		
	5	✓				✓		
	6	✓	✓	✓	✓		✓	✓
	7	✓	✓	✓	✓		✓	✓
	8	✓	✓	✓	✓		✓	✓
	9	✓	✓	✓	✓		✓	✓
	10	✓	✓	✓	✓		✓	✓
2	11	✓	✓	✓	✓		✓	✓
	12	✓	✓	✓	✓		✓	✓
	13	✓	✓	✓	✓		✓	✓
	14	✓	✓	✓	✓		✓	✓
	15					✓		
	16	✓	✓	✓	✓		✓	✓
	17	✓	✓	✓	✓		✓	✓
3	18	✓	✓	✓	✓		✓	✓
	19	✓	✓	✓	✓		✓	✓

Source: Mott MacDonald

7.6 Conclusion

The analysis in this section has highlighted that, whilst many of the benefits of the schemes proposed for Wirral Waters are not measurable by the traffic modelling tools available for the purposes of this study, there are nonetheless significant and widespread benefits to be derived from these schemes. In economic terms, even the simplest public realm scheme can have a noticeable impact upon the attractiveness of an area for investment, and the social benefits for such a scheme can be major when taken against the size of the population of people that will make use of that space.

A full summary of the results of the Economic and Social Impact Analysis is provided as **Appendix B**.

In the following chapter, a variety of modelling tools will be utilised to derive actual quantified benefits for the schemes for which this is possible. In this way, the benefits derived via these quantified methods may be considered a lower bound on the actual benefits that will be realised since the economic and social impacts discussed in this section will also contribute substantial benefit to the overall scheme.

[30] NHS (2005). 'Wayfinding'. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/148500/Wayfinding.pdf

8 Traffic Modelling

8.1 Introduction

A transport modelling exercise has been undertaken to ascertain the benefits of the proposed schemes at Wirral Waters, by phase. For the purpose of the modelling, Phases 2 and 3 have been combined so the impacts of the combined schemes can be more accurately established.

The highway and public transport schemes for Wirral Waters have been modelled separately using the appropriate models, as part of the wider Wirral Regeneration modelling commission. The highway schemes have been modelled in the Wirral Traffic Model (WTM) and the public transport schemes in the Liverpool City Region Transport Model (LCRTM). This section will discuss the modelling process and results for the Wirral Waters schemes. Both models have been run for the 2020 and 2030 future year scenarios.

8.2 Wirral Waters Trip Generation

Vectos acting on behalf of Peel Land and Property have provided updated development assumptions regarding Wirral Waters. The assumptions have been incorporated in the 2030 future year only as there is only minimal development expected to be completed in the 2020 future year. Table 26 details the development assumptions that have been input to the model.

Table 26: Wirral Waters Development Assumptions

	Year	Additional Housing	Additional Employment Floorspace (sqm)
East Float	2030	3,275	59,415
West Float	2030	0	83,880

All other forecasting assumptions are the same as in the default WTM forecasts as detailed in the WTM forecasting report[31].

The development assumptions have been input into the LCRTM trip generation process. Table 27 presents the Wirral Waters trip generation for all modes.

Table 27: Wirral Waters Trip Generation (All Modes, 2030)

	Person Trips			
	AM Peak Hour		PM Peak Hour	
	Arrivals	Departures	Arrivals	Departures
East Float	323	640	667	341
West Float	368	96	61	378

In terms of distribution around 60% of the highway trips are to/from Liverpool. In relation to public transport, 75% of the bus trips are from Wirral with 25% from Liverpool. The majority of the rail trips are to/from Liverpool.

The highway matrices have been converted to the more detailed WTM zones for assignment using details on the quantum of development in each location and loading points provided by Vectos.

[31] WirralTrafficModel_ForecastingReport_RevA

8.3 Highway

8.3.1 Modelling Approach

All highway schemes have been modelled using WTM, a SATURN model providing detailed representation of traffic conditions within Wirral district. Wirral Waters schemes focused on public realm and active travel have not been assessed at this stage. Table 28 below provides a full list of the highway schemes that have been modelled for Wirral Waters. Full details of the schemes have been provided in Sections 2-4.

Table 28: Wirral Waters highway schemes modelled in WTM

Phase	Scheme	Package Name	Drawing Reference
Phase 1	• A5139 Dock Road/A5088 Wallasey Bridge Road junction • Duke Street/Dock Road/Gorsey Lane junction • A5027 Dock Road/A554 Tower Road/A554 Birkenhead Road junction • Duke Street/Corporation Road junction • Rendel Street/Corporation Road junction	Gateways to Wirral Waters	• 392767-MMD-00-XX-DR-C-0001 • 392767-MMD-00-XX-DR-C-0002 • 392767-MMD-00-XX-DR-C-0006 • 392767-MMD-00-XX-DR-C-0010
	• Wallasey Bridge Road Improvements • A5027 Gorsey Lane/Kingsway tunnel junction improvements	Wirral Waters Supporting Highways	• 392767-MMD-00-XX-DR-C-0008
Phase 2/3	• Replacement of Poulton Bridge with a fixed structure • Replacement of Duke Street Bridge • New north-south link and bridge	Wirral Waters Cross-Dock Connectivity	• 392767-MMD-00-XX-DR-C-0002 • 392767-MMD-00-XX-DR-C-0004 • 392767-MMD-00-XX-DR-C-0006 • 392767-MMD-00-XX-DR-C-0007 • 392767-MMD-00-XX-DR-C-0008
	• A5030 Beaufort Road/A5088 Wallasey Bridge Road junction improvements • Corporation Road/Cavendish Street/Cleveland Street junction improvements	Wirral Waters Supporting Highways	• 392767-MMD-00-XX-DR-C-0001 • 392767-MMD-00-XX-DR-C-0002 • 392767-MMD-00-XX-DR-C-0003 • 392767-MMD-00-XX-DR-C-0004 • 392767-MMD-00-XX-DR-C-0005

Phase 1 is primarily concerned with the modelling of gateway junctions to facilitate future growth and development around Wirral Waters. Phase 2/3 builds on the junction improvements in Phase 1 to enhance cross-dock connectivity and supporting highways, this is primarily delivered through a new north-south link and bridge.

WTM has default future years of 2020 and 2030. Phase 1 has been modelled in 2020 and Phase 2/3 in 2020 and 2030.

8.3.2 Results

The modelling results for Phases 1 and 2/3 are contained below. The operational performance of the local highway network has been reviewed using the maximum turn volume over capacity (V/C) relationships for turning movements at junctions.

The junctions have been plotted on the network and colour classified according to the following capacity bands:

- **Red (>115% V/C):** This junction is operating significantly over capacity for at least one turning movement. Queues and delays at this location are likely to grow exponentially.
- **Orange (>100% V/C):** This junction is operating over capacity for at least one turning movement. Queues and delays at this location are likely to grow exponentially.
- **Yellow (85% V/C to 100% V/C):** This junction is operating with at least one turning movement that is approaching capacity and as a result there are increased queue lengths and delays.

8.3.2.1 Phase 1

The junctions over capacity in the 2020 AM peak are shown for the Do Minimum and Phase 1 in Figure 15 and Figure 16 respectively. Figure 17 presents changes in the junction V/C for junctions that have a V/C of greater than 85% in either the Do Minimum or Phase 1.

In the Do Minimum many of the key junctions to the north of Wirral Waters have a junction V/C of between 100% and 115%. There are a cluster of junctions which are over capacity situated around the Wallasey Bridge Road/A5139 Dock Road roundabout.

In Phase 1, the Duke Street/A5139 Dock Road and A554 Birkenhead Road/A5139 Dock Road junctions records a reduction in V/C compared to the Do Minimum. The junctions now have a V/C of between 85% and 100%, down from between 100% and 115%. The Wallasey Bridge Road/A5139 Dock Road junction remains over capacity.

The Wallasey Bridge Road/A5030 Beaufort Road is redesigned to improve active travel connectivity and public realm in the area close to Birkenhead Park rail station. This has reduced the capacity of the junction and increased the V/C to between 100% and 115% in Phase 1.

The modelling shows local reassignment of trips only.

Figure 15: Do Minimum 2020 AM Junctions Over Capacity

Title				
Wirral Regeneration				
Date	Drawn	Checked	Approved	Scale at A4
30.08.2018	D.Davies	S.Pierce	T.Millward	1:25,000

MOTT MACDONALD
Mott MacDonald House
8-10 Sydenham Road
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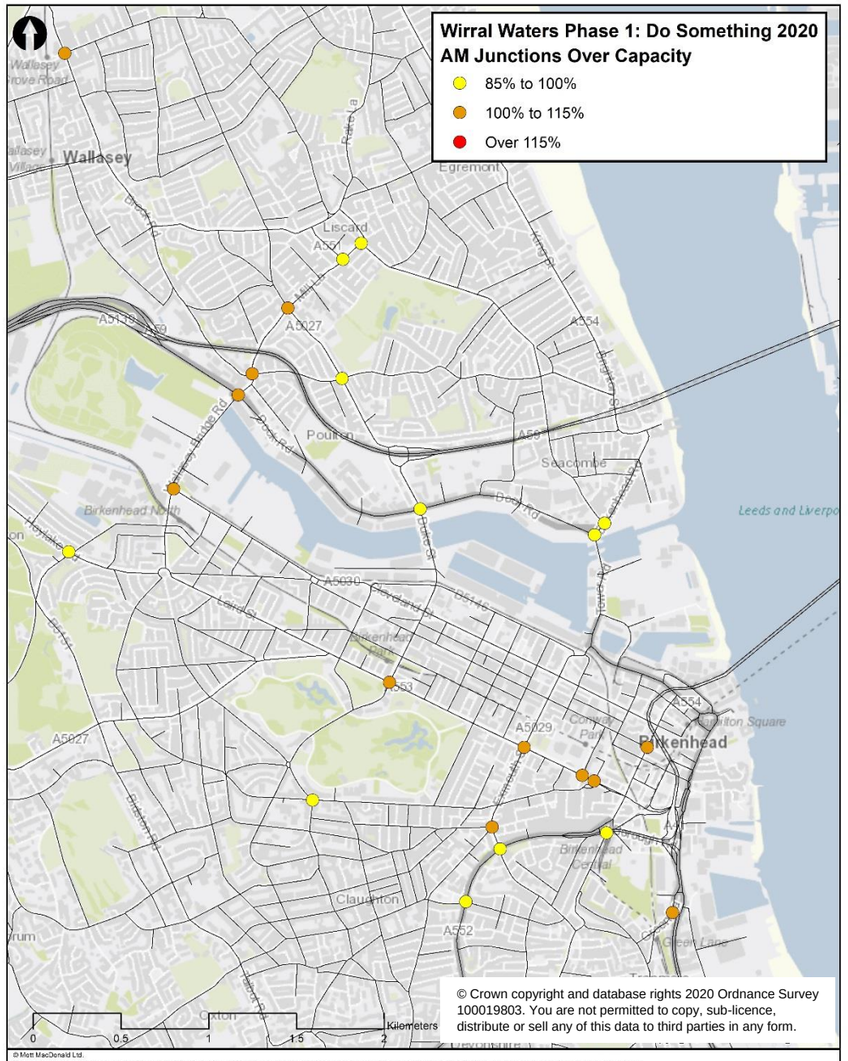
United Kingdom
T +44 (0)20 8774 2000
F +44 (0)20 8681 5706
W mottmac.com

Figure 16: Wirral Waters Phase 1 2020 AM Junctions Over Capacity



Title				
Wirral Regeneration				
Date	Drawn	Checked	Approved	Scale at A4
01.10.2018	D.Davies	S.Pierce	T.Millward	1:25,000

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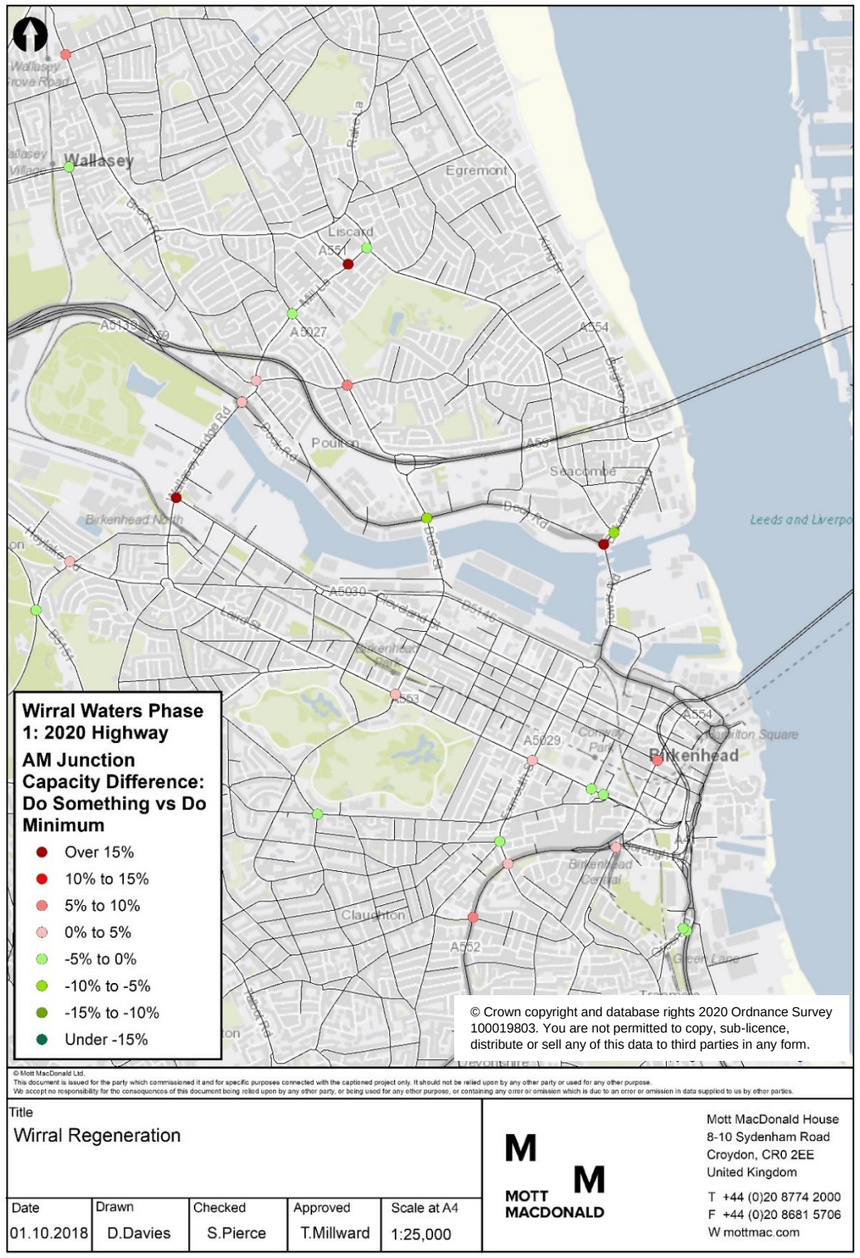
Figure 17: Wirral Waters Phase 1 to Do Minimum 2020 AM: Changes in Junction V/C (percentage point)



8.3.2.2 Phase 2/3

The junctions over capacity in the 2030 AM peak are shown for the Do Minimum and Phase 2/3 in Figure 18 and Figure 19 respectively. Figure 20 presents changes in the junction V/C for junctions that have a V/C of greater than 85% in either the Do Minimum or Phase 2/3.

In the Do Minimum it has been assumed that Duke Street Bridge is no longer operational as it is understood to be already close to the end of its lifespan. In the Do Minimum many of the key junctions around Wirral Waters are over capacity. This includes:

- A554/A5029.
- Wallasey Bridge Road/A5139 Dock Road.
- Duke Street/A5139 Dock Road.
- A554 Birkenhead Road/A5139 Dock Road.

All of the above junctions experience a V/C of between 100% and 115%, with an additional two junctions along the A554 Tower Road experiencing a V/C of between 85% and 100%. The main cluster of junctions which are approaching or over capacity are situated around the Wallasey Bridge Road/A5139 Dock Road roundabout, where performance has deteriorated. Capacity issues become more severe compared to the 2020 Do Minimum scenario.

The Phase 2/3 scenario shows a reduction in the number of over capacity junctions around Wirral Waters compared to the Do Minimum. The V/C at junctions along A554 Tower Road is reduced to the extent that only one junction has a V/C of between 85% and 100% in Phase 2/3.

The Wallasey Bridge Road/A5139 Dock Road junction remains over capacity. With the development of the link road between the A59/Gorsey Lane roundabout and A5030, the V/C at the Duke Street/A5139 Dock Road junction has reduced to between 85% and 100%. However, the new junction on the A5139 Dock Road with the link road experiences a V/C between 85% and 100%. As the scheme progresses a more detailed design process will be undertaken to address some of the junctions that remain over capacity.

The modelling shows local reassignment of trips only.

Figure 18: Do Minimum 2030 AM Junctions Over Capacity

Title				
Wirral Regeneration				
Date	Drawn	Checked	Approved	Scale at A4
12.12.2018	D.Davies	S.Pierce	T.Millward	1:25,000

MOTT MACDONALD
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Figure 19: Wirral Waters Phase 2/3 2030 AM Junctions Over Capacity

Title				
Wirral Regeneration				
Date	Drawn	Checked	Approved	Scale at A4
12.12.2018	D.Davies	S.Pierce	T.Millward	1:25,000

MOTT MACDONALD
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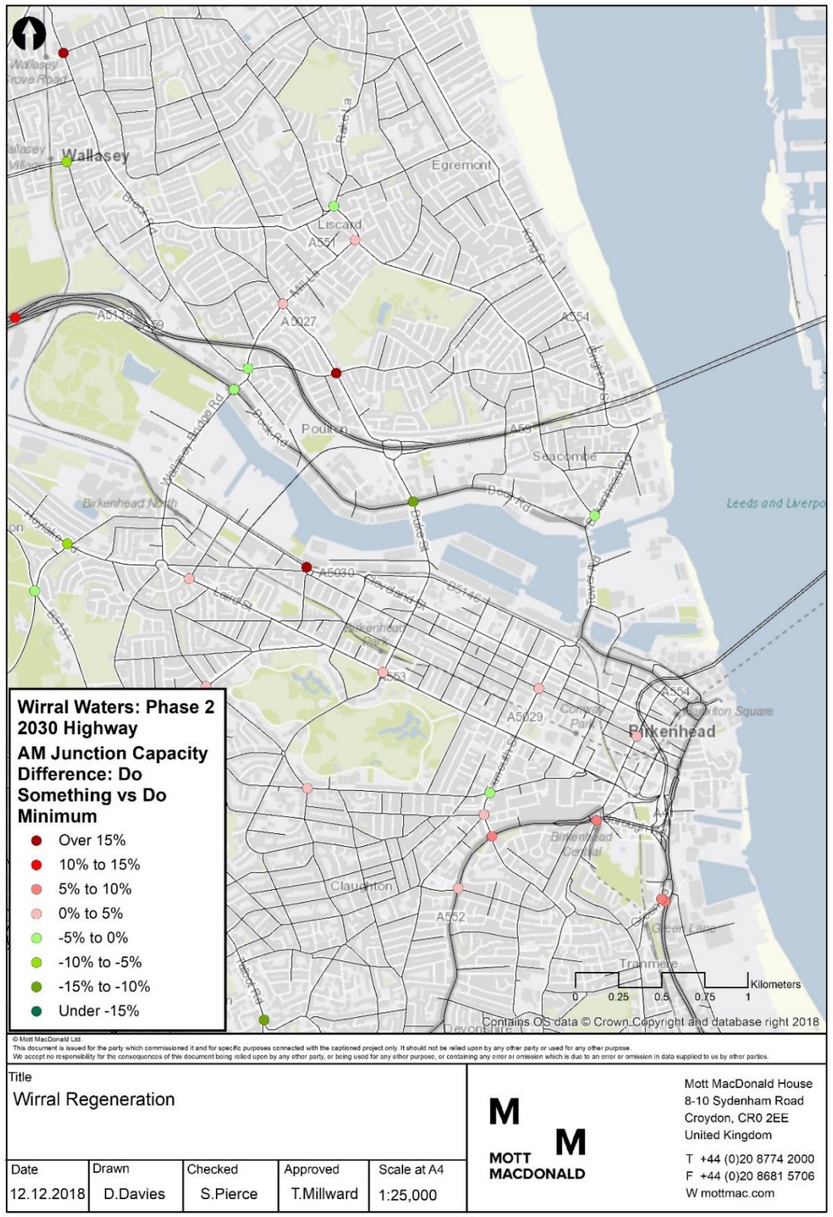
Figure 20: Wirral Waters Phase 2/3 to Do Minimum 2030 AM: Changes in Junction V/C (percentage point)



A more detailed account of the scheme coding and results are contained in the *Wirral Regeneration Modelling Report, Mott MacDonald (2019)*. This includes flow difference plots for Wirral Waters.

8.3.3 Transport Economic Assessment

An assessment of the transport economic benefits has been undertaken. Table 29 below contains a summary of the results from the modelling exercise for Wirral Waters Phases 1 and 2/3. Optimism bias of 44% has been applied to all scheme costs.

Table 29: Wirral Waters Phases 1 and 2/3 results

Scheme	Present Value of Benefits	Present Value of Costs	Benefit Cost Ratio
Wirral Waters Phase 1	£2m	£10m	0.2
Wirral Waters Phase 2/3	£114m	£47m	2.4

All entries are present values discounted to 2010, in 2010 prices.

The benefit cost ratio (BCR) for Phase 1 is 0.2. This is categorised as poor value for money (VfM) in the Department for Transports VfM Framework[32]. However, Phase 1 is the first phase of a staged approach, therefore when the BCR is interpreted within the context of the overall study it can be seen that it provides a small amount of monetary benefit but more importantly acts as an enabler for Phase 2/3.

The benefit cost ratio for Phase 2/3 is 2.4. This is categorised as high value for money according to DfT guidelines.

8.4 Public Transport

8.4.1 Modelling Approach

All public transport schemes have been modelled using the public transport assignment module of the Liverpool City Region Transport Model (LCRTM) to take into account reassignment impacts.

The modelling of public transport schemes includes both the Wirral Waters and A41 Corridor public transport schemes as it is not possible to separate the schemes (rapid transit routes start at Wirral Waters and go through the A41 area).

Phase 1 includes reduced bus journey time at the exit of Queensway Tunnel due to the network reconfiguration introduced as part of the A41 Corridor schemes. Bus services have been rerouted along Duke Street Bridge instead of Tower Road.

Phase 2 then introduces the rapid transit system around the East Float of Wirral Waters, the use of the former dock railway for rapid transit and improving bus access around Hamilton Square. The rapid transit system has been modelled as a bus for this high-level exercise, but this simplification is for modelling purposes only.

A full breakdown of the public transport schemes that have been modelled are contained in Table 30 below.

Table 30: Public Transport Schemes

Phase	Scheme	Package Name	Drawing Reference
Phase 1	• Bus routes diverted via Wirral Waters (410, 411, 413, 414) • Reduced bus journey time at the exit of Queensway Tunnel	World-Class Public Transport	• N/A • N/A
Phase 2	• Hamilton Square two-way outside station	Regenerating Woodside and Hamilton Square	• 392148-MMD-00-XX-DR-C-0002 • 392148-MMD-00-XX-DR-C-0004 • 392148-MMD-00-XX-DR-C-0004A
	• Rapid Transit – East Float – Woodside – Birkenhead Central (10 minute frequency)	World-Class Public Transport	• N/A
	• Use of former Dock Railway for Rapid Transit	A41 Sustainable Connectivity	• 392148-MMD-00-XX-DR-C-0001 • 392148-MMD-00-XX-DR-C-0003 • 392148-MMD-00-XX-DR-C-0005

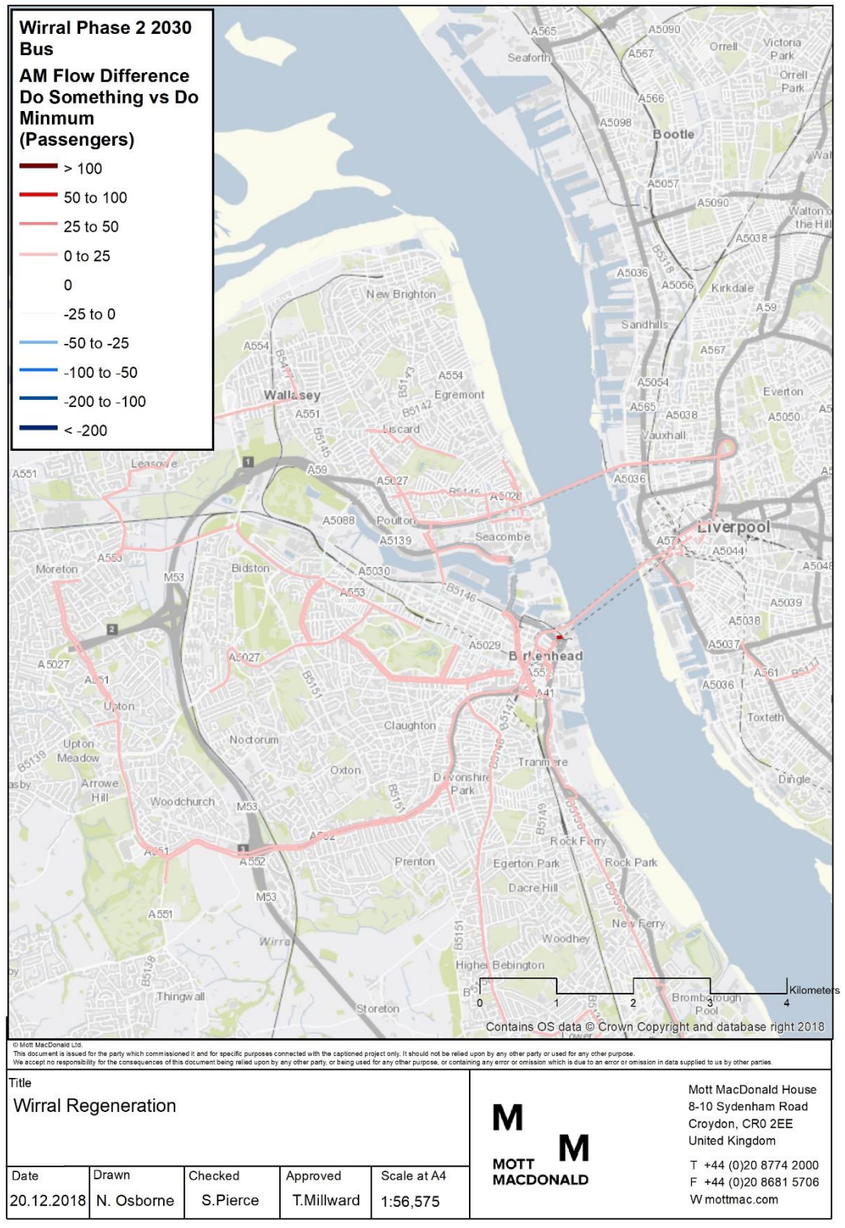
8.4.2 Results

The results from Phase 1 indicate that the reduced bus journey times at exit of Queensway Tunnel and the re-routeing of bus services along Duke Street Bridge instead of Tower Road has a negligible impact on patronage.

Figure 21 presents a passenger difference plot between Phase 2 and the Do Minimum for 2030 AM. This show some increase in bus patronage in the A41/Wirral Waters areas.

[32] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/630704/value-for-money-framework.pdf

Figure 21: Phase 2 to Do Minimum 2030 AM: Bus Passenger Volume Differences



A more detailed account of the scheme coding and results from the modelling is contained in the *Wirral Regeneration Modelling Report, Mott MacDonald (2019)*.

8.4.3 Transport Economic Assessment

An assessment of the transport economic benefits has been undertaken. Table 31 below contains a summary of the results from the modelling exercise for Public Transport Phases 1 and 2. Optimism bias of 44% has been applied to all scheme costs.

Table 31: Public Transport Phase 1 and 2 Results

Scheme	Present Value of Benefits	Present Value of Costs	Benefit Cost Ratio
Phase 1	£11m	£0m*	-
Phase 2	£14m	£10m	1.4

All entries are present values discounted to 2010, in 2010 prices.
** Costs are included as part of the A41 scheme*

Phase 1 provides £11m of benefits largely due to the journey time savings at Queensway Tunnel exit. The cost associated with this is included in the highway assessment.

The benefit cost ratio (BCR) for Phase 2 is 1.4. According to DfT guidance this is categorised as low value for money. However, it is noted that the improvements are required to better link Wirral Waters with the Birkenhead transport hubs. Also, the public transport schemes incorporate significant walking and cycling improvements (as detailed in previous sections) to also better connect the area to wider residential communities.

9 Funding Opportunities

A review of available funding sources for the implementation of schemes within the Wirral Waters and Supporting Infrastructure Feasibility Study has been undertaken, including both short and long-term funding opportunities. Alongside a number of sub-regional funding streams, there is also an opportunity for Wirral Council and the Liverpool City Region Combined Authority to obtain funds from national funding streams such as the recent national allocation of £475m to major schemes. Working in conjunction with private developers and the planning system offers a further opportunity to raise funding for infrastructure that would be beneficial to both the Council and developers. This can include the Community Infrastructure Levy and Section 106 and 278 funding as well as other non-Government funding through working with charity groups such as Sustrans. It will be critical to get schemes developed to both attract interest and ensure a strong position for requesting funding from public sources.

9.1 Sub Regional Funding

9.1.1 Liverpool City Region Local Enterprise Partnership (LEP) & Local Growth Fund

The Liverpool City Region LEP works with Government to set out investment priorities for transport infrastructure at a regional and local level. LEPs play a key role in facilitating the devolution of transport decision making to local areas and are expected by Government to support sustainable economic growth in their engagement with local authorities and through funding bids.

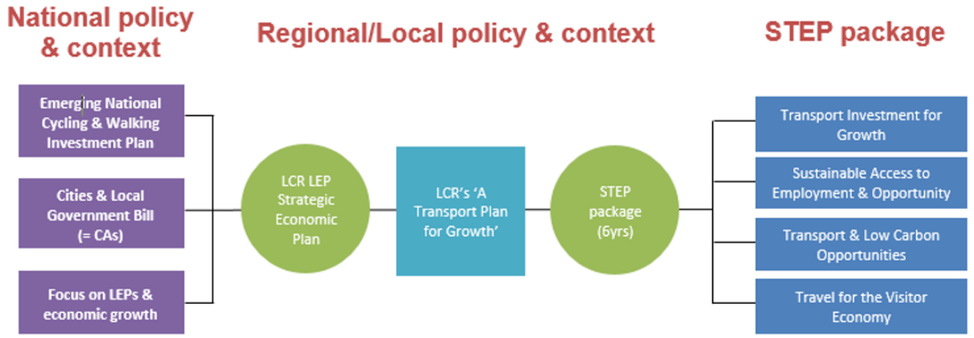
The Local Growth Fund forms the Government's funding pot of at least £2 billion per year from 2015/16 to 2020/21. Through the Liverpool City Region LEPs submission of their Economic Strategy in July 2014, a £230 million Growth Fund was awarded for this period to unlock the region's economic potential. Within this fund a transport package totalling over £97 million was established, of which £51.6 million was allocated to enhancing the connectivity and attractiveness of the Liverpool City Region. The initial Growth Deal was expanded in January 2015 with a further £31.6 million of devolved funding granted to the LEP. Since then two further growth deals have been announced in March 2016 and January 2017. In total, the Liverpool City Region LEP have secured £336 million of Growth Deal funding from Government to date.

Ensuring efficient and futureproofed connectivity to the Wirral Waters area will be key to unlocking the economic potential of both Wirral and the Liverpool City Region as a whole over the coming years. A great number of the schemes proposed in this study are thus well positioned to tap into this funding pot.

9.1.2 Liverpool City Region Sustainable Transport Enhancements Package (STEP)

The Liverpool City Region Sustainable Transport Enhancement Package (STEP) comprises a £41.4 million package of sustainable transport improvement measures to be delivered over a six-year period from 2015/16 to 2020/21. It was announced in July 2014 as part of the Growth Deal aimed to provide funds to LEPs for projects that benefit the local area. The STEP investments form a critical part of this Growth Plan, as well as the Liverpool City Region Strategic Economic Plan, and are shaped around four interrelated Strategic Packages of works, as indicated below in Figure 22.

Figure 22: STEP in the National and Regional Policy Context



Source: Mersey Travel, 2016

STEP is being delivered over two phases: Years 1-2 and Years 3-6. £13.8 million of capital funding was made available for Years 1-2 across 7 key growth zones. Within Years 1-2, a number of improvement schemes were funded in and around Wirral Waters as part of Growth Zone 2 improvements. These schemes pulled in over £3 million of STEP funding, to deliver schemes such as access improvements, focusing on sustainable travel links, to be implemented along Poulton Swing Bridge and Duke Street Bridge as part of the Wirral Waters Eastern Portal project.

Further Investments for Years 3-6 have also been approved across the 7 growth zones. Again growth Zone 2, which encompasses the Mersey Waterfront, has secured £980,000 to enhance connectivity at a number of Wirral and Liverpool Waters destinations, including further improvements to walking and cycling links to key Wirral Waters destinations. A further £3,002,000 has also been approved for Growth Zone 5 along the A41 corridor which will also facilitate improved accessibility to the Wirral Waters area.

Many of the schemes this study proposes, covering improved pedestrian, cycle and vehicular accessibility, align well with and would complement these established schemes. Due to the strong focus on sustainability imbedded in most of the proposed schemes, this funding package is set up well to support them. Most of this funding has, however, already been allocated and making use of any remaining funds available will require a quick turnaround by the applicant.

9.1.3 Single Investment Fund (SIF)

The SIF forms the key funding tool for the Liverpool City Region and addresses its strategic priorities. Over £458 million is being invested in the City Region through to March 2021 as part of the City Region's Devolution Agreement with the Government. This pot is made up from a number of sources including the Local Growth Fund and the funding secured through the Devolution Agreement.

9.1.4 Transforming Cities Fund

The £1.7 billion Transforming Cities Fund (TCF) was launched as part of the Industrial Strategy in the 2017 Autumn Budget. It supports ambitious and innovative transport projects that seek to increase productivity and reduce highway network congestion through delivering investment in active and sustainable modes. The investment also falls within the Government's £31 billion

National Productivity Investment Fund aimed at improving productivity, which is thought to be key to raising living standards.

The Transforming Cities Fund invited city regions across England to bid for funding from a £1.7 billion pot. In 2018 the first £840 million of the fund was allocated between six Mayoral Combined Authorities empowered to deliver schemes to facilitate better, safer and faster commuter journeys. Liverpool City Region was awarded £134 million in capital grant for local transport investment over a 4-year period. Funding is being awarded through Merseytravel, with recent awards to projects to develop business cases for a new Mersey Ferry and a smart ticketing solution for the LCR. Scheme 3 (City Boulevard) as well as our range of transit schemes represent good examples of preferred schemes within this work that are well placed to benefit from TCF funding going forward. Work beyond the scope of this commission should take place to secure development funding for these schemes from TCF.

9.2 Regional / National Funding

9.2.1 Transport for the North (TfN)

In November 2017 Transport for the North (TfN) became the UK's first statutory sub-national transport body. Backed with £260 million of government funding, TfN plan to transform transport across the North of England, providing the infrastructure needed to drive economic growth. By working alongside local transport authorities, TfN fund, promote and deliver transport-based projects. TfN published its draft Strategic Transport Plan for consultation in January 2018, in which it sets out the case for investment by 2050 to help transform the North's road, rail, sea and air connections to help drive long term economic growth. The larger road infrastructure-based improvement schemes as well as transit schemes detailed within this study have good potential to receive funding for early case making from TfN.

9.2.2 Road Investment Strategy

The first Road Investment Strategy (RIS 1) outlines a long-term funding programme for motorways and major roads. It comprises a multi-year investment plan that is being used to improve the network through high-level objectives for the first period from 2015 through to 2020. Over £15 billion was allocated to the first strategy which aims to enhance the strategic highway network, improving connectivity, journey times and road safety.

For the next Road Investment Strategy (RIS 2) for the period 2020 through to 2025, a grant of £25.3 billion has been allocated, significantly higher than the available funding through RIS1. will also be awarding significantly more than the £15 billion made available through RIS 1. The Department for Transport (DfT) will continue to work with Highways England, the Office for Road and Rail and stakeholders to ensure that RIS2 is a robust strategy and any opportunities for Wirral Council to feed into the RIS2 development process will help advance work against our major highways scheme.

9.2.3 Major Road Network (MRN)

As part of the Transport Investment Strategy announced in 2017, the government committed to creating a Major Road Network (MRN). Approximately 5,000 miles of 'A' road were brought into scope for extra funding from the National Roads Fund for upgrades and improvements. Through investment in the MRN, the government aims to reduce congestion and support economic growth, housing delivery and the strategic road network.

Local highways authorities are eligible for up to £100 million of government funding for successful bids to deliver investment in the MRN. Both the A41 and A59 which serve the Wirral Waters area are proposed to be included in the MRN. As such, the supporting road infrastructure projects proposed around the Wirral Waters area are potentially eligible to benefit from this funding source. Phase 1 Scheme 7 (A5027 Gorsey Lane / A59 Kingsway Tunnel) proposes signalisation of the Gorsey Lane (north) entry to the junction and would be well placed to attract MRN funding. .

9.2.4 Clean Air Fund

In March 2018 a package of funding worth over £260 million was launched by the Government to assist air quality improvements in some of England's most polluted areas. The investment package was launched on the back of the UK Plan for Tackling Roadside Nitrogen Dioxide Concentrations released in July 2017, which outlined a need for councils with high levels of air pollution at busy road junctions and hotspots to take quick and robust action. Fulfilling a commitment to support local authorities to deliver these plans, the government launched the £220 million Clean Air Fund alongside a further £40 million from the £255 million Implementation Fund. The Implementation Fund was made available to councils in 2017 to accelerate the development of local clean air plans. Together these funds aim to support local authorities to take action to improve air quality and minimise the impact of Local Plans on individuals and businesses. The Clean Air Fund will be available from 2018 to 2021.

The Liverpool City Region was among the eight local authorities recently required by Government to carry out a detailed study to be submitted by the 31st October 2019, outlining how they will tackle air quality problems. The Government has ensured they will continue to provide funding, such as the funds received through the Clean Air Fund, to authorities. Many of the schemes proposed in this study, especially those related to active travel, could benefit from this funding as they will aid in the improvement of local air quality.

9.2.5 Air Quality Grant

The Air Quality Grant scheme facilitated by Defra provides additional funding to eligible local authorities to aid in the improvement of air quality. Since it was first made available in 1997 the scheme has awarded over £57 million in funding to a variety of projects. A total of £2,394,956 was given to successful projects in 2017/18, including a £450,000 investment into a cycling infrastructure and communications package project carried out by Portsmouth City Council. Each year applications must generally be received by the end of November to be considered for the following year's grants.

9.2.6 Cycling and Walking to Work Fund

In January 2017 the Government announced a £64 million investment fund to help encourage more people to cycle and walk to work. The funding, that will support local projects over three years from 2017 to 2020, forms part of a wider government package of more than £300 million to boost walking and cycling during the current parliament.

All English transport authorities were invited to bid for the £60 million Sustainable Travel Access Fund of which 25 authorities received a share. The remaining £3.8 million formed the Cycling and Walking to Work Fund to be invested in three City Regions over the 2017-18 period to connect people with employment and apprenticeships. Liverpool City Region was awarded £770,000 to be invested over the 2017-2018 period. Applications for this round of funding closed in March 2018, however, the active travel packages proposed within this study will have great potential to receive support from similar funding rounds in the coming years.

9.2.7 Large Local Majors Fund

The Large Local Majors Fund was announced in 2016 as part of the £12 billion Local Growth Fund. It forms a competitive process for LEPs in which funding can be provided for exceptionally large, potentially transformative, local schemes. The initial fund of £475 million was made available for projects up to 2021. This funding pot became fully allocated in 2018, however, the Government recently awarded a further £173 million to three road schemes in Devon, East Riding of Yorkshire and Leicester, which took the total funding pledged through the fund to £603 million. Through this the Government have shown continued commitment to fund projects through to 2021, reinforcing the Large Local Majors Fund as a potential source of funding for schemes proposed within this study.

9.2.8 Town Centre Fund

Specifically, regarding the LCR. £5m - £1m per district with a town centre for the five districts excluding Liverpool.

It is understood that it is the town (or the district on its behalf) which applies for funding through the City Region Town Centre Commission, which is a new body. Districts choose which of their towns they would like to put forward. The types of eligible scheme that it could be used for includes: restructuring retail, business space, public sector hubs, event venues and cultural offers. Implies each of the five districts can have £1m, it's not a competition between them, but they have to make case for where the funding will be implemented.

9.2.9 Future High Street Fund

Nationally announced in October 2018 budget. £675m available altogether spread out around the country.

Applications to it require a supporting vision document for the town centre. It will fund physical infrastructure to support residential and employment developments, and support existing local communities and the regeneration of heritage high streets. The aim is to support regeneration of high streets and adaptation to consumer trends/demands. Exact application process is yet to be confirmed, but full prospectus will be launched 'later this year' detailing the objectives of the fund, further detail on nature of projects eligible, and assessment criteria. The process will also include a High Street Taskforce to support scheme development. In addition, the process will need to demonstrate how specific scheme supports overall vision for town/city high street, and will be assessed according to Value for Money and deliverability, strategic fit etc.

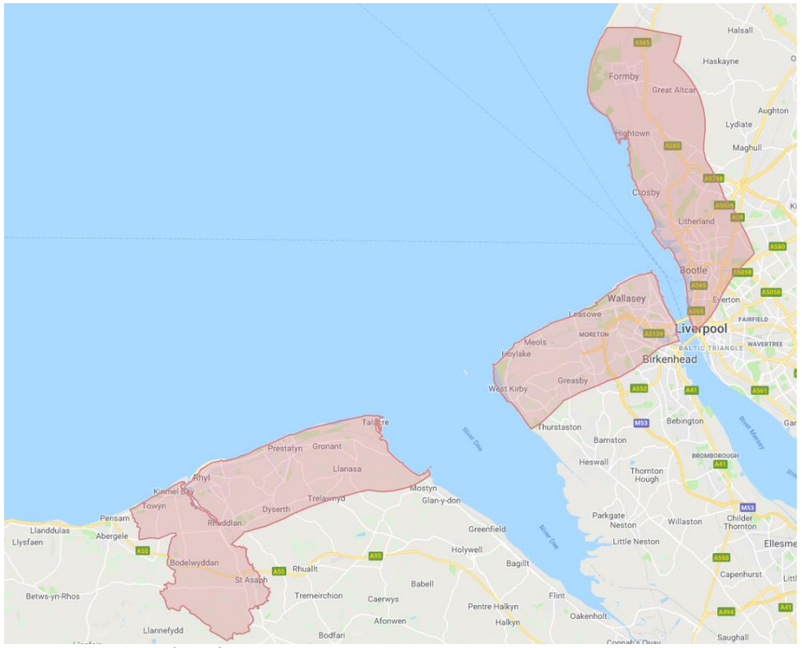
9.3 Non-Government Funding

In recent years, the use of non-Government funding for local and major transport schemes has become increasingly important as the DfT has sought to reduce its spending. This section details a number of funding arrangements and agreements that Wirral Council and the Liverpool City Region Combined Authority could take advantage of to finance packages within this study. Where new developments require enhancements to the local transport network and other infrastructure, planning obligations will be sought by local authorities to fund the necessary works.

9.3.1 Community Benefit Fund

The Community Benefit Fund is used to support community and environmental projects in coastal areas which host major wind energy projects. Ørsted (formerly DONG Energy) are providing grants as part of the community support associated with their extension project for their Burbo Bank wind farm, off the coast of Wirral. Approximately £225,000 is being made available for community projects that will benefit the local area throughout the expected 25-year lifetime of the wind farm. The fund launched in 2015 to all community organisations located coastally in Denbighshire, Flintshire, Wirral and Sefton, as demonstrated in Figure 23. The fund is managed by GrantScape and applications can be made for individual grants of between £500 and £25,000. For each year that the fund is open, two application rounds are available. The next application closing date is on 3rd April 2019 and decisions on successful grants will be announced approximately 3 months after each closing date.

Figure 23: Burbo Bank Community Fund (Funding Area)



Source: GrantScape/Google Maps

9.3.2 Community Infrastructure Levy (CIL)

Larger scale infrastructure which is identified as being required through the Council's Infrastructure Delivery Plan can be funded through the Community Infrastructure Levy. The levy is paid by land owners and developers to the relevant local council, with charges based on the size and type of new development. Money raised can then be spent in line with council priorities and needs. Wirral Council has not yet made a decision on whether to introduce a levy in Wirral , with further consideration required to explore the feasibility and viability of introducing a CIL for Wirral.

9.3.3 Section 106 and 278 Funding

Section 106 and 278 agreements negotiated with developers allow funds to be raised to mitigate the potentially negative impacts of new developments. Typically, section 106 and 278 agreements include requirements to make contributions to new infrastructure in the vicinity of

the development. In some cases, sums of money from a number of arrangements can be put towards larger mitigation measures. Therefore, section 106 and 278 agreements provide an opportunity to use funds raised to build up a pot of money to deliver identified and prioritised schemes.

9.3.4 Private Business/Employers

Beyond section 106 and 278 contributions, developers and private investors should also contribute to the delivery of the strategy through schemes that enhance the individual development as well as providing an upgrade to the general setting of Wirral.

9.3.5 Charities and Voluntary Groups

Within the promotion, funding and delivery of schemes, Wirral Council could take advantage of the interest and expertise that charities and voluntary groups have in relation to transport. Sustrans, a charity concerned with promoting everyday travel by foot, bike and public transport, could help to promote a number of schemes within the Wirral Waters and Supporting Road Infrastructure Study, which encompass active travel-based improvements. In 2014/15, Sustrans delivered £41.6m of projects and have worked on the design and construction of cycling facilities in a number of locations including Bristol, Edinburgh and Newcastle. As such, Sustrans are well positioned to provide funding towards the multitude of active travel and public transport-based improvement schemes proposed within this study. For instance, the Wirral Waters Active Travel package encompassing Phase 1 schemes 8-11 proposes a number of physical pedestrian and cycle infrastructure additions which mirror previous schemes Sustrans has financed.

10 Conclusions and Next Steps

10.1 Conclusions

Following on from previous reports in the suite of documents associated with Wirral Regeneration Schemes, including Wirral Strategic Transport Framework Action Plan (2019), and Wirral Waters Baseline and Options Appraisal Reports (2018), this document presents the preferred set of schemes identified for Wirral Waters. The Wirral Waters site has stood largely derelict and underused for many years since the height of its industrial heyday, yet its clear potential as an exemplar zone of industrial regeneration is demonstrated in its recognition as one of the key spatial priority areas in Wirral's Strategic Regeneration Framework. It is clear that it is not enough to simply develop the area with mixed-use residential and commercial opportunities since the transport infrastructure serving the area is currently unsuitable for a largescale increase in movements to and from the area each day.

As a result, this document proposes a series of schemes packaged and phased into three timescales for delivery. These schemes are aimed at resolving existing constraints and issues within the wider transport network, increasing the capacity of the road and public transport networks serving the Wirral Waters area, better tying the development zone into the wider context within Birkenhead and the wider Wirral borough, and significantly improving conditions for pedestrians and cyclists.

Although initial early components of the strategy are focussed on increasing capacity of nearby road junctions and accessibility of the site by active modes, ultimately the solution for Wirral Waters will need to be entirely multi-modal in nature. To this end, and building upon the work undertaken by Peel on their Wirral Streetcar project, to link Wirral Waters with Woodside and Hamilton Square, we propose a comprehensive transit network (which could be formed of one of a variety of available mode types as detailed in this document, or even a combination of these). The network is designed to support and tie into the existing Merseyrail and bus networks to provide seamless multi-modal travel across Wirral Waters, via an off-street alignment into Central Birkenhead and the A41 area, and ultimately north towards New Brighton via Seacombe and west to Liverpool City Centre. The system will provide high quality and frequent public transport to the heart of Wirral Waters and will provide residents and users of the zone with a true choice of modes.

The document has discussed the economic and social impact of the transport interventions on the area, noting the gross number of jobs, residents and GVA growth that will be supported by the project. In this way it may be seen that the measures to improve active travel and quality of place such as the walking, cycling and public realm schemes, have an important role to play in the overall economic benefit of the strategy. Traffic and public transport modelling tools were then used to determine the benefit of the more traditionally measurable components and determined that, when all phases are taken into account, the interventions proposed are likely to offer sound value for money even without the impact of the non-measurable (at this level of detail) components.

Finally, some initial thought has been given within this document to the potential future funding mechanisms for the schemes proposed. Given the widely varying size and scale of the interventions, and the different bodies with which they must interface, it is likely that a kaleidoscope of multiple potential funding sources is the most likely outcome for delivering the individual elements with some of the most strategic and impactful likely to be delivered via the devolved major scheme process (Local Growth Fund) at a City Region Level. Conversely some of the smaller scale interventions could be delivered through new opportunities such as those provided by the Town Centre or Local High Street funds, or non-Governmental funding mechanisms such as the Community Benefit Fund. Given the fact that the transport schemes support local development so strongly it is also likely that a substantial proportion of the ultimate funding package will come from local developer contributions either through the established S106/278 mechanisms or a future Community Infrastructure Levy.

To sum up, the future is bright for the Wirral Waters area as part of a rejuvenated and regenerated wider Birkenhead and Wirral borough, and for its existing and future residents, employees and users. The challenge is to ensure that the significant level of aspiration for the area is matched by the delivery of vital, efficient and effective transport solutions to create a truly multi-modal and sustainable network in which choice is provided to the benefit of all.

10.2 Next Steps

Following the publication of this report, the transport strategy for Wirral Waters will need to be progressed in the following ways:

- Further consultation with cabinet members within Wirral Council and leadership within Liverpool City Region to ensure buy-in and support at the highest level of decision making within the borough and wider city region;
- Further consultation with key stakeholders to disseminate the findings of the study, gain feedback and refine the results and scheme development;
- Identification of funding for further development, detailed design and delivery of the core scheme components via a variety of sources – the key schemes contained within packages as reported in the recent Strategic Transport Framework Action Plan report are in the process of being submitted to Liverpool City Region for consideration within their own scheme pipeline process;
- Development of Business Cases for the key components of the strategy (or the strategy as a whole if this is deemed appropriate) to test and prove value for money. This will form a key aspect of application for funding and is a requirement for national or regional funding mechanisms;
- Delivery of the schemes in phases as envisaged over the next ten to fifteen years to coincide with the build-out of Wirral Waters and the wider Birkenhead Town Centre regeneration.

Appendices

A: Transit Review

This section provides a review of potential public transport options to operate on the proposed Wirral Waters transit scheme. As will be seen, the options include vehicles which run on dedicated infrastructure, and vehicles which would mix with general traffic.

StreetCars

Figure 1: Streetcars

Source: Wikimedia

Streetcar routes operate on street tracks shared with other vehicles. Streetcars stop on demand at frequent stops like buses and provide a crucial role in providing frequent, reliable transport.

Case study: Toronto Streetcar

- Location: Toronto
- Population: 2,732,000
- Population Density: 4,334 p/km2
- Cost Per Streetcar: £2.5 million
- Frequency: 4-9 minutes
- Length of Track: 83 km
- Track Gauge: 1495 mm
- Minimum Radius of Curvature: 10.973 meters
- Electrification: Trolley Wire 600 V DC
- No. of Streetcars: 264+
- No. of Stops: 685
- No. of Lines: 11
- No. of daily rides: 292,000 passengers
- Dimensions: 30.2 meters long, 2.4 meters wide and 3.84 meters high
- Capacity: 250 (70 seated, 150 standing)
- Speed: maximum 43 mph
- Driven: Driver
- Power: Electricity

Advantages

- These streetcars have a smaller minimum radius of curvature than other methods of transport discussed, this would be ideal for use in the Wirral as there is restricted space.
- High capacity compared to other methods of transit discussed, this would be good in the later stages in the redevelopment.

Disadvantages

- The cost is considerably higher than the proposed Wirral Streetcar
- It would be more difficult to expand than other methods discussed as new tracks would have to be implemented.

Table 1 <Streetcar>

Criteria	
Flexibility of the system How easy is it to react to changes	
Implementation cost	
Operating Cost	
Branding & Legibility How recognisable is it and how easy is it to use	
Capacity	
Environmental Impact	
Deliverability How acceptable is this system, amount of physical required and constraints	

Note: This comparative analysis table and those that follow in sub-sections below provide a high level overview only and are not intended to form a rigorous quantified appraisal of the relative merits of each mode. Further work will be required on this subject to establish the optimum mode for the transit system proposed considering such criteria as economy, image, safety, accessibility, integration, mode share, and as noted previously, the ultimate solution may be formed of a combination of different modes which, together, form an integrated network.

Electric Trolleybus

Figure 2: Electric Trolleybus

Source: Wikimedia

Electric trolleybuses are rubber-tired vehicles powered by electricity from overhead using spring-loaded trolley poles, this means there is no need to stop to refuel or recharge. Being solely powered by electricity, trolleybuses have extremely low emissions.

Modern trolley buses also have a battery which allows them to travel off-wire and reroute around anything obstruction blocking their path, or detour for short sections of route.

Case study: San Francisco Muni

- Location: San Francisco
- Population: 884,400
- Population Density 7,132 p/km2
- Cost Per Trolleybus: £300,000 - £1 million depending on age and specification
- Frequency: 20 minutes
- No. of Trolleybuses: 268
- No. of Stops: 142
- No. of Lines: 16
- Dimensions: 12-25 meters long and 2.55 meters wide
- Capacity: 82-200 passengers
- Speed: maximum speed 50 mph, average speed 38 mph
- Driven: Driver
- Power: Electricity

Advantages

- The trolleybus is significantly quieter than an original diesel bus which could be more suitable in residential areas.
- If there is an obstruction in its normal path, it can drive off wire for a period of time to manoeuvre around the obstruction, unlike streetcars or trams that operate on fixed tracks.

Disadvantages

- They are less manoeuvrable than traditional buses.
- Other forms of transport are easier to adjust or expand as overhead wires would have to be added or amended.

Table 2 <Electric Trolleybus>

Criteria	
Flexibility of the system How easy is it to react to changes	
Implementation cost	
Operating Cost	
Branding & Legibility How recognisable is it and how easy is it to use	
Capacity	
Environmental Impact	
Deliverability How acceptable is this system, amount of physical required and constraints	

Light Rapid Transit

Figure 3: Light Rapid Transit – DLR & Manchester Metrolink

Source: Wikimedia & geograph.org.uk

Light rail systems are guided by tracks and most have overhead lines supply the electricity. The exception to this is The Docklands Light Railway in London as this uses an inverted third rail for its electrical power which allows the electrified rail to be covered and the power drawn from the underside. Trams in Bordeaux, France use a special third-rail configuration where the power is only switched on beneath the trams as the vehicle passes, making it safe to use on city streets.

Light rail systems provide easy access to city centres as they can run right up to pedestrianised areas, this provides a very attractive alternative to driving in busy areas.

Case study: The Docklands Light Rail

- Location: London
- Population: 150,000
- Population Density: 5,285 p/km2

- Cost Per km: The average in Europe is between £9 million - £12 million
- Frequency: 10 minutes
- Length of track: 38km
- Track Gauge: 1435 mm
- Minimum Radius of Curvature: 40 meters
- Electrification: 750 V DC third rail
- No. of Trains: 149
- No. of Stops: 45
- No. of Lines: 7
- No. of daily Rides: 340,000 passengers
- Dimensions: Train consists of 2 or 3 cars and dimensions are 2.65m wide and 56-84m long
- Capacity: 278 per car
- Speed: Maximum 65 mph and an average 50mph
- Driven: Autonomous
- Power: Electricity

Advantages

- Autonomous, this could reduce costs as no drivers are needed, the system could run for longer periods to satisfy demand.
- Higher speed than most other forms of transport discussed, gets the passengers to their desired destination much quicker.

Disadvantages

- Minimum radius of curvature is 40 meters which would make this type of system very difficult to implement in the Wirral.
- Very expensive compared to other forms of transport.

Table 3 <LRT – Docklands Light Rail>

Criteria	
Flexibility of the system How easy is it to react to changes	
Implementation cost	
Operating Cost	
Branding & Legibility How recognisable is it and how easy is it to use	
Capacity	
Environmental Impact	
Deliverability How acceptable is this system, amount of physical required and constraints	

Case study: Manchester Metrolink

Figure 4: Manchester Metrolink

Source: Wikimedia

Manchester's Metrolink has more than doubled the number of passenger journeys from 19.2 million journeys in the 2010/2011 fiscal year to 41.2 million passenger journeys in 2017/2018 fiscal year. It achieves 89.3% of trams departing less than 2 minutes late and 98.9% of planned miles operated. It has step-free access for wheelchair-users, free Wi-Fi and provides a useful app that includes real time data, line status, planned improvements and much more to enhance passenger satisfaction.

- Location: Manchester
- Population: 545,500
- Population Density: 9,689 p/km2
- Frequency: 12 minutes
- Length of track: 100 km
- Track Gauge: 1435 mm
- Minimum Radius of Curvature: 25 meters
- Electrification: Overhead line 750 V DC
- No. of Trains: 147
- No. of Stops: 93
- No. of Lines: 7
- No. of Daily Rides: 113,187
- Dimensions: 28.4 meters long
- Capacity: 212
- Speed: Maximum speed 50 mph
- Driven: Driver
- Power: Electricity

Advantages

- Increasing passenger satisfaction by introducing a useful app and free Wi-Fi
- Could make passengers journeys through the Wirral very short in comparison to other forms of transport.

Disadvantages

- Very expensive compared to other systems discussed and this system is only worthwhile if there is a high demand that would be travelling using it frequently.

Table 4 <LRT – Manchester Metrolink>

Criteria	
Flexibility of the system How easy is it to react to changes	
Implementation cost	
Operating Cost	
Branding & Legibility How recognisable is it and how easy is it to use	
Capacity	
Environmental Impact	
Deliverability How acceptable is this system, amount of physical required and constraints	

Personal Rapid Transit

PRT is a concept based on driverless vehicles which operate on a segregated track, travelling from point to point rather than using a fixed route. These vehicles are typically lightweight and battery powered which means that any necessary structures are much cheaper than those for a conventional transit system, and that emissions at point of use are virtually zero. If clean energy sources can be used to generate electricity, then such systems can be effectively carbon-neutral.

Case study: Heathrow PRT System

Figure 5: PRT-Heathrow

Source: Wikimedia & Mott MacDonald

- Location: Heathrow, London
- Cost per Km: £5.4 million - £11.5 million
- Planning & Capital Cost: £25 million
- Frequency: 0 -15 seconds
- Length of track: 3.8km
- No. of Pods: 21
- No. of Stops: 3
- No. of Lines: 1
- Dimensions: 4 meters wide, 1.8 meters high
- Capacity: 4
- Speed: 25 mph
- Driven: fully autonomous
- Power: Electric motor & 4 batteries

Advantages

- The headway can be less than 15 seconds which is much more frequent than any other type of transport.
- Passengers do not have to share pods, making the mode more attractive to users.
- Very small dimensions, there does not need to be lots of free space to implement this system.
- They are fully autonomous, reduced costs as no drivers are needed.

Disadvantages

- The capacity is usually only around 4 passengers per pod which means a high number of pods would be needed to satisfy total demand.
- They travel at 25 mph, this could make some journeys very long and could be completed by other forms of transport much quicker.

Table 5 <PRT – Heathrow>

Criteria	
Flexibility of the system How easy is it to react to changes	
Implementation cost	
Operating Cost	
Branding & Legibility How recognisable is it and how easy is it to use	
Capacity	
Environmental Impact	
Deliverability How acceptable is this system, amount of physical required and constraints	

Case study: Morgantown

Figure 6: PRT- Morgantown

Source: Wikimedia

- Location: West Virginia USA
- Population: 30,855
- Population Density: 1,181 p/km2
- Planning & Capital Cost: around $120 million
- Frequency: 5 minutes
- Length of track: 5.8km
- Track Gauge: Concrete guideway
- No. of Pods: 71
- No. of Stops: 5
- No. of Lines: 1
- No. of Daily Rides: 15,000
- Dimensions: 4.72 meters long, 2.03 meters wide and 2.67 meters high
- Capacity: 20
- Speed: 30 mph
- Driven: Pods are autonomous but are monitored in a control centre
- Power: Electric

Advantages

- The units travel directly to the desired destination with no stops.
- The capacity is much higher per pod than the previous PRT system discussed.

Disadvantages

- It would be difficult to expand or change the track if flexibility is needed.

Table 6 <PRT – Morgantown>

Criteria	
Flexibility of the system How easy is it to react to changes	
Implementation cost	
Operating Cost	
Branding & Legibility How recognisable is it and how easy is it to use	
Capacity	
Environmental Impact	
Deliverability How acceptable is this system, amount of physical required and constraints	

Demand Responsive Transport (DRT)

Figure 7: Arrivaclick

Source: BBC & PJB

DRT systems such as Arrivaclick combine the convenience of a taxi with the price of a bus ticket. Arrivaclick is a minibus service that picks multiple passengers all heading in the same direction and gets them to their desired location. It is ordered via an app where you enter your pick up ad drop off point and Arriva plan the rest.

Case study: Arrivaclick

- Location: Liverpool
- Population: 489,421
- Population Density: 3,889 p/km^2
- Cost Per Minibus: Around £30,000
- Frequency: Depends on availability
- Capacity:15
- No. of Minibuses: 6 currently but expanding to 25 mid 2019
- No. of Stops: Passengers can be picked up and dropped off anywhere
- No. of daily Rides: 186 in week 34 of operation
- Driven: Driver
- Power: Diesel

Advantages

- There is no construction cost, only the cost of the vehicles, drivers, software development and maintenance
- Provides a quick and easy service for passengers
- Would be very easy to change routes if necessary

Disadvantages

- Only has a capacity of 15, requiring large numbers of units to satisfy total demand.
- Reliability is dependent on availability and during peak times users may not be able to find a local available mini bus
- There is a need to further develop algorithms and software if the system is to be expanded to include Wirral
- Customers will need access to the app via smartphone or tablet. Some older people may not have access and these this could lead to them being unable to access the service

Table 7 <Arrivaclick>

Criteria	
Flexibility of the system How easy is it to react to changes	
Implementation cost	
Operating Cost	
Branding & Legibility How recognisable is it and how easy is it to use	
Capacity	
Environmental Impact	
Deliverability How acceptable is this system, amount of physical required and constraints	

Tram bus

A tram bus is a tram on pneumatic tyres instead of tracks. The tram bus must have its own infrastructure to reach a good operating speed. What makes the tram bus so unique is that it combines the efficiency and stability of a tram with the flexibility of a bus. The tram bus has a much larger capacity compared to a traditional bus and can also run as an electric or hybrid vehicle, making it even more environmentally-friendly.

Case Study: Malmo Sweden

Figure 8: Skanetrafiken Tram bus

Source: Wikimedia, YouTube - MediaServiceTV1

- Location: Malmö, Sweden
- Population: 341,457
- Population Density: 2,175 p/km^2
- Cost of Buses: approximately £650,000, based on 30 being bought for £19million
- Frequency: 5 minutes
- Length of Route:
- No. of Buses: 15
- No. of Stops: 40
- No. of Lines: 1
- No. of Daily Rides: estimated 13,700 -21,000
- Dimensions: 24 meters long
- Capacity: 55 seated with 95 standing
- Driven: Driven
- Power: Compressed Natural Gas (other options available)

Advantages

- There is little construction cost, primarily only the cost of the vehicles.
- Routes can easily be changed or extended.

Disadvantages

- Much higher capacity than possibly required in the case of Wirral Waters.
- Would need trained drivers and would not be able to rely on volunteers as the Wirral street car proposes to do.

Table 8 <Tram buses>

Criteria	
Flexibility of the system How easy is it to react to changes	
Implementation cost	
Operating Cost	
Branding & Legibility How recognisable is it and how easy is it to use	
Capacity	
Environmental Impact	
Deliverability How acceptable is this system, amount of physical required and constraints	

Bus Rapid Transit

Bus Rapid Transit is a form of rapid transit which involves stretches of highway being segregated and dedicated for the use of specialist buses. Where this is not possible due to land constraints, the specialist buses will use public highways. When using public highways, the buses will typically be given priority over other road users to reduce delays. Station platforms should be level with the bus floor for quick and easy boarding, making the system fully accessible for wheelchairs and disabled passengers with minimal delays.

Case study: BRT Sunway Line

Figure 9: BRT – Sunway Line

Source: Wikimedia

- Location: Subang Jaya, Malaysia
- Population: 6,071,644
- Population Density: 6,581 p/km^2
- Cost of Buses: £3.3million for 8 double deckers and 6 larger single deckers in York
- Planning & Capital Cost: £24.5 million
- Frequency: 4 minutes
- Length of track: 5.4 km
- No. of Buses: 15
- No. of Stops: 5
- No. of Lines: 1
- No. of daily Rides: 5,300 passengers
- Dimensions: 11-12 meters long
- Capacity: 80
- Speed: 50 mph
- Driven: Driven
- Power: Electric,

Advantages

- Electric Buses mean virtually zero emissions
- Faster than some other methods of transport discussed

Disadvantages

- High capital cost compared to the Wirral streetcar

Table 9 <Electric BRT>

Criteria	
Flexibility of the system How easy is it to react to changes	
Implementation cost	
Operating Cost	
Branding & Legibility How recognisable is it and how easy is it to use	
Capacity	
Environmental Impact	
Deliverability How acceptable is this system, amount of physical required and constraints	

Case study: New York BRT

Figure 10: BRT – New York

Source: nyc.streetsblog.org and nyc.gov

- Location: New York
- Population: 8,538,000
- Population Density: 10,630 p/km^2
- Cost p/km: $1,072,000
- Frequency: 3-4 minutes
- Length of track: 90 km
- No. of Buses: 398
- No. of Stops: 145
- No. of Lines: 7
- No. of daily Rides: 245,566
- Dimensions: 11-12 meters long
- Capacity: 120
- Average Speed: 10.2 mph (average speed including stopping time)
- Driven: Driven
- Power: Hybrid & CNG

Advantages

- High frequency and capacity which means it would be more reliable than just having one streetcar every 15 minutes.

Disadvantages

- The vehicles only travel at 10mph on average making journeys even longer than using other methods of transport
- Hybrid engines are not as eco-friendly as other methods of transport discussed.

Table 10 <Hybrid BRT>

Criteria	
Flexibility of the system How easy is it to react to changes	
Implementation cost	
Operating Cost	
Branding & Legibility How recognisable is it and how easy is it to use	
Capacity	
Environmental Impact	
Deliverability How acceptable is this system, amount of physical required and constraints	

Case Study: Cambridgeshire Guided Busway

Figure 11: Cambridgeshire Guided Busway

Source: Geograph & Flickr

- Location: Cambridge
- Population: 123,867
- Population Density: 3,135 p/km^2
- Cost p/km: Bronze average £7,400,000
- Frequency: 5 minutes
- Length of track: 40 km
- No. of Stops: 8
- No. of Lines: 1
- No. of daily Rides: 12,000
- Dimensions: 11-12 meters long
- Capacity: 120
- Average Speed: 37mph
- Driven: Driven and Kerb guidance
- Power: Diesel

Advantages

- Provides faster transport than other methods discussed
- Has 25km of segregated busway that is specifically for these buses which limits the impact of traffic disruption

Disadvantages

- The buses are powered by diesel and will produce the highest amount of emissions compared to other methods discussed.

Table 11 <Diesel BRT>

Criteria	
Flexibility of the system How easy is it to react to changes	
Implementation cost	
Operating Cost	
Branding & Legibility How recognisable is it and how easy is it to use	
Capacity	
Environmental Impact	
Deliverability How acceptable is this system, amount of physical required and constraints	

10.2.1 Guidance Systems

Driven

Driven vehicles are the most common types of BRT system. These requires large numbers of drivers to be on a rotation and the system is therefore prone to human error. Driven vehicles could cost more than autonomous vehicles as there must be sufficient drivers and cover staff available.

Semi-Autonomous

Figure 12: Mercedes Semi-Autonomous Future Bus

Source: Caradvise & Mashable

Semi-autonomous vehicles are capable of letting the driver take their hands of the wheel and feet of the pedals by using a range of sensors and mapping systems. They still require a driver to be present and paying full attention however. An infrared camera is mounted onto the

steering column to keep a track of where the driver is looking, if the driver looks away for too long a light in the steering bar will flash red and the driver's seat will vibrate.

Fully Autonomous

There are 8 main sensors that are required for a fully autonomous vehicle to operate safely. This includes Lidar: a camera that uses lasers to measure the distance to objects to build up a 3D letting the vehicle know if there is a hazard. The second is a standard camera that points through the windscreen, this is used to spot hazards like pedestrians and reads road signs and traffic light signals. There are also radar sensors dotted around the bus to monitor the position of vehicles and a rear-mounted aerial that receives information from GPS and an ultrasonic sensor that monitors the vehicles movements. The others include altimeters, gyroscopes and a tachometer to provide more accurate measurements on the cars location.

Kerb Guidance

Figure 13: Kerb Guidance

Source: Flickr and Londonguidedbusway.co.uk

Kerb-guided buses (KGB) have got small guide wheels attached to the bus to engage vertical kerbs on either side of the guideway. These guide wheels push the steering mechanism of the bus, keeping it centralised on the track. When the bus is not on a designated guideway, the bus is steered like an ordinary bus. The start of the guideway is funnelled from a wide track to guideway width. This system permits high-speed operation on a narrow guideway and precise positioning at boarding platforms, facilitating access for the elderly and disabled. Guide wheels can be attached and removed from almost any bus and this therefore is an adaptable system that can be easily changed.

Optical Guidance

Figure 14: Optical Guidance

Source: Wikimedia

A system of lines is applied to the roadway to guide vehicles, this is done by the use of modern cameras and image processing systems that detect the lines and keep the vehicle safe by precisely following the specified route. Other sensors would be used alongside this system to ensure that the vehicle is safe in respect to its surroundings such as in relation to other vehicles or hazards such as pedestrians. The latest technology offers the ability to recognize coded tracks or optical markers.

B: Economic and Social Impact Summary Table

MOTT MACDONALD

Technical Note

Project:	Wirral Regeneration Scheme – Wirral Waters		
Our reference:	392767		
Prepared by:	Ashley Bennett/Sarah Marshall	**Date:**	10/09/18
Approved by:	Stephen Cox/James Beard	**Checked by:**	Stephen Cox
Subject:	Wirral Waters – Wider Benefits		

1 Wirral Waters Summary Table

The table below summarises the potential benefits identified for the 33 shortlisted schemes that have been divided into three different packages based on the estimated time period of delivery from the publication of the final strategy.

Table 1: Wirral Waters transport scheme wider benefits summary

Transport scheme number	Transport scheme	Economic benefits	Social mobility, inclusion and accessibility benefits	Community health and well being benefits
Package 1				
1	A5139 Dock Road / A5088 Wallasey Bridge Road junction: Component 3	• Improvements in public realm surrounding the site will support the attractiveness of the site to business investment.		• Improvements to the public realm can positively impact upon travel safety and comfort for women, ethnic minority groups, and Lesbian, Gay, Bisexual and Transgender people, as research shows that these groups often fear for their safety and well-being in public spaces and on pedestrian journeys. • Promotion of sustainable modes of transportation can help to improve local air quality. Research has shown that there is a link between both long and short-term exposure to particulate matter emissions, respiratory health, and long-term health outcomes.
2	Duke Street / Dock Road / Gorsey Lane junction: Component 1	• Improved connectivity, especially for pedestrians, will support labour market accessibility and business investment.	• Improved opportunities to access employment and education can serve to address issues of inequality and improve social mobility. • Improved connectivity between neighbourhoods may also provide better access to social infrastructure including facilities for health, early years provision, education, community, worship, play and recreation. • In Wirral, there is a higher proportion of older people and people with a limiting long-term illness or disability than the national average, who might benefit from schemes that improve accessibility of pedestrian infrastructure. • Children and young people could also benefit from improved pedestrian and cycle facilities, as approximately half of children in	• Promotion of sustainable modes of transportation can help to improve local air quality. Research has shown that there is a link between both long and short-term exposure to particulate matter emissions, respiratory health, and long-term health outcomes. • Improvements in walking and cycling facilities may help to reduce local road traffic. Reduced road traffic can have indirect positive health benefits due to decreased levels of noise. • Promoting exercise through active travel, while simultaneously improving local air quality by reducing motor vehicle use can contribute positively to improving cardiovascular health and child obesity in Wirral. • Improvements to walking and cycling facilities and minimisation of conflicts between transportation modes can also result in positive health outcomes for Wirral, which has a higher rate of people killed and injured on roads (41.7) than both the North West and England (39.8 and 39.7, respectively).

Transport scheme number	Transport scheme	Economic benefits	Social mobility, inclusion and accessibility benefits	Community health and well being benefits
			England walk or cycle to school, and young people are more likely to be users of non-motorised forms of transport.	
3	Duke Street / Dock Road / Gorsey Lane junction: Component 2	• Improvements in public realm surrounding the site will support the attractiveness of the site to business investment and those seeking residential opportunities.		• Improvements to the public realm can positively impact upon travel safety and comfort for women, ethnic minority groups, and Lesbian, Gay, Bisexual and Transgender people, as research shows that these groups often fear for their safety and well-being in public spaces and on pedestrian journeys. • Promotion of sustainable modes of transportation can help to improve local air quality. Research has shown that there is a link between both long and short-term exposure to particulate matter emissions, respiratory health, and long-term health outcomes.
4	A5027 Dock Road / A554 Tower Road / A554 Birkenhead Road junction: Component 2	• Improvements in public realm surrounding the site will support the attractiveness of the site to business investment and those seeking residential opportunities.		• Improvements to the public realm can positively impact upon travel safety and comfort for women, ethnic minority groups, and Lesbian, Gay, Bisexual and Transgender people, as research shows that these groups often fear for their safety and well-being in public spaces and on pedestrian journeys. • Promotion of sustainable modes of transportation can help to improve local air quality. Research has shown that there is a link between both long and short-term exposure to particulate matter emissions, respiratory health, and long-term health outcomes.
5	Duke St / Corporation Road junction: Component 4	• Improvements in public realm surrounding the site will support the attractiveness of the site to business investment and those seeking residential opportunities.		• Improvements to the public realm can positively impact upon travel safety and comfort for women, ethnic minority groups, and Lesbian, Gay, Bisexual and Transgender people, as research shows that these groups often fear for their safety and well-being in public spaces and on pedestrian journeys. • Promotion of sustainable modes of transportation can help to improve local air quality. Research has shown that there

Transport scheme number	Transport scheme	Economic benefits	Social mobility, inclusion and accessibility benefits	Community health and well being benefits
				is a link between both long and short-term exposure to particulate matter emissions, respiratory health, and long-term health outcomes.
6	Wallasey Bridge Road Improvements: Component 1	• Improved connectivity and capacity for pedestrians and cyclists will support labour market accessibility and business investment. • Directly support access to current and future development in the MEA Park.	• Improved opportunities to access employment and education can serve to address issues of inequality and improve social mobility. • Improved connectivity between neighbourhoods may also provide better access to social infrastructure including facilities for health, early years provision, education, community, worship, play and recreation. • In Wirral, there is a higher proportion of older people and people with a limiting long-term illness or disability than the national average, who might benefit from schemes that improve accessibility of pedestrian infrastructure. • Children and young people could also benefit from improved pedestrian and cycle facilities, as approximately half of children in England walk or cycle to school, and young people are more likely to be users of non-motorised forms of transport.	• Promotion of sustainable modes of transportation can help to improve local air quality. Research has shown that there is a link between both long and short-term exposure to particulate matter emissions, respiratory health, and long-term health outcomes. • Improvements in walking and cycling facilities may help to reduce local road traffic. Reduced road traffic can have indirect positive health benefits due to decreased levels of noise. • Promoting exercise through active travel, while simultaneously improving local air quality by reducing motor vehicle use can contribute positively to improving cardiovascular health and child obesity in Wirral. • Improvements to walking and cycling facilities and minimisation of conflicts between transportation modes can also result in positive health outcomes for Wirral, which has a higher rate of people killed and injured on roads (41.7) than both the North West and England (39.8 and 39.7, respectively).
7	Tower Road / Birkenhead Road ped / cycle link	• Improved connectivity and capacity for pedestrians and cyclists will support labour market accessibility and business investment.	• Improved opportunities to access employment and education can serve to address issues of inequality and improve social mobility. • Improved connectivity between neighbourhoods may also provide better access to social infrastructure including facilities for health, early years provision,	• Promotion of sustainable modes of transportation can help to improve local air quality. Research has shown that there is a link between both long and short-term exposure to particulate matter emissions, respiratory health, and long-term health outcomes. • Improvements in walking and cycling facilities may help to reduce local road traffic. Reduced road traffic can have

Transport scheme number	Transport scheme	Economic benefits	Social mobility, inclusion and accessibility benefits	Community health and well being benefits
			education, community, worship, play and recreation. • In Wirral, there is a higher proportion of older people and people with a limiting long-term illness or disability than the national average, who might benefit from schemes that improve accessibility of pedestrian infrastructure. • Children and young people could also benefit from improved pedestrian and cycle facilities, as approximately half of children in England walk or cycle to school, and young people are more likely to be users of non-motorised forms of transport.	indirect positive health benefits due to decreased levels of noise. • Promoting exercise through active travel, while simultaneously improving local air quality by reducing motor vehicle use can contribute positively to improving cardiovascular health and child obesity in Wirral. • Improvements to walking and cycling facilities and minimisation of conflicts between transportation modes can also result in positive health outcomes for Wirral, which has a higher rate of people killed and injured on roads (41.7) than both the North West and England (39.8 and 39.7, respectively).
8	Pedestrian crossings on Tower Road	• Improved connectivity and reduction of severance for pedestrians will support labour market accessibility and business investment.	• Improved opportunities to access employment and education can serve to address issues of inequality and improve social mobility. • Improved connectivity between neighbourhoods may also provide better access to social infrastructure including facilities for health, early years provision, education, community, worship, play and recreation. • In Wirral, there is a higher proportion of older people and people with a limiting long-term illness or disability than the national average, who might benefit from schemes that improve accessibility of pedestrian infrastructure. • Children and young people could also benefit from improved pedestrian and cycle facilities, as approximately half of children in England walk or cycle to school, and young	• Promotion of sustainable modes of transportation can help to improve local air quality. Research has shown that there is a link between both long and short-term exposure to particulate matter emissions, respiratory health, and long-term health outcomes. • Improvements in walking and cycling facilities may help to reduce local road traffic. Reduced road traffic can have indirect positive health benefits due to decreased levels of noise. • Promoting exercise through active travel, while simultaneously improving local air quality by reducing motor vehicle use can contribute positively to improving cardiovascular health and child obesity in Wirral. • Improvements to walking and cycling facilities and minimisation of conflicts between transportation modes can also result in positive health outcomes for Wirral, which has a higher rate of people killed and injured on roads (41.7) than both the North West and England (39.8 and 39.7, respectively).

Transport scheme number	Transport scheme	Economic benefits	Social mobility, inclusion and accessibility benefits	Community health and well being benefits
			people are more likely to be users of non-motorised forms of transport.	
9	Cycle Route along Canning Street	• Improved connectivity and capacity for cyclists will support labour market accessibility and business investment.		
Not mapped	Wirral Waters Pedestrian wayfinding strategy	• Improved accessibility for pedestrians around Wirral Waters will support labour market accessibility and business investment.	• Improved opportunities to access employment and education can serve to address issues of inequality and improve social mobility. • Improved connectivity between neighbourhoods may also provide better access to social infrastructure including facilities for health, early years provision, education, community, worship, play and recreation. • In Wirral, there is a higher proportion of older people and people with a limiting long-term illness or disability than the national average, who might benefit from schemes that improve accessibility of pedestrian infrastructure. • Children and young people could also benefit from improved pedestrian and cycle facilities, as approximately half of children in England walk or cycle to school, and young people are more likely to be users of non-motorised forms of transport.	• Promotion of sustainable modes of transportation can help to improve local air quality. Research has shown that there is a link between both long and short-term exposure to particulate matter emissions, respiratory health, and long-term health outcomes. • Improvements in walking and cycling facilities may help to reduce local road traffic. Reduced road traffic can have indirect positive health benefits due to decreased levels of noise. • Promoting exercise through active travel, while simultaneously improving local air quality by reducing motor vehicle use can contribute positively to improving cardiovascular health and child obesity in Wirral. • Improvements to walking and cycling facilities and minimisation of conflicts between transportation modes can also result in positive health outcomes for Wirral, which has a higher rate of people killed and injured on roads (41.7) than both the North West and England (39.8 and 39.7, respectively).
Package 2				
1	City Boulevard (green transport corridor) Corporation Road and Beaufort Road)	• Improvements in public realm surrounding the site will support the attractiveness of the site to	• Improved opportunities to access employment and education can serve to	• Promotion of sustainable modes of transportation can help to improve local air quality. Research has shown that there is a link between both long and short-term exposure to

Transport scheme number	Transport scheme	Economic benefits	Social mobility, inclusion and accessibility benefits	Community health and well being benefits
		business investment and those seeking residential opportunities. • Improved connectivity and capacity for pedestrians and cyclists will support labour market accessibility and business investment.	address issues of inequality and improve social mobility. • Improved connectivity between neighbourhoods may also provide better access to social infrastructure including facilities for health, early years provision, education, community, worship, play and recreation. • In Wirral, there is a higher proportion of older people and people with a limiting long-term illness or disability than the national average, who might benefit from schemes that improve accessibility of pedestrian infrastructure. • Children and young people could also benefit from improved pedestrian and cycle facilities, as approximately half of children in England walk or cycle to school, and young people are more likely to be users of non-motorised forms of transport.	particulate matter emissions, respiratory health, and long-term health outcomes. • Improvements in walking and cycling facilities may help to reduce local road traffic. Reduced road traffic can have indirect positive health benefits due to decreased levels of noise. • Promoting exercise through active travel, while simultaneously improving local air quality by reducing motor vehicle use can contribute positively to improving cardiovascular health and child obesity in Wirral. • Improvements to walking and cycling facilities and minimisation of conflicts between transportation modes can also result in positive health outcomes for Wirral, which has a higher rate of people killed and injured on roads (41.7) than both the North West and England (39.8 and 39.7, respectively).
2	Footbridge on Dockside Route	• Improved connectivity and capacity will support labour market accessibility and business investment. • Directly supports development in the East Float area of Wirral Waters.	• Improved opportunities to access employment and education can serve to address issues of inequality and improve social mobility. • Improved connectivity between neighbourhoods may also provide better access to social infrastructure including facilities for health, early years provision, education, community, worship, play and recreation. • In Wirral, there is a higher proportion of older people and people with a limiting long-term illness or disability than the national average, who might benefit from schemes that	• Promotion of sustainable modes of transportation can help to improve local air quality. Research has shown that there is a link between both long and short-term exposure to particulate matter emissions, respiratory health, and long-term health outcomes. • Improvements in walking and cycling facilities may help to reduce local road traffic. Reduced road traffic can have indirect positive health benefits due to decreased levels of noise. • Promoting exercise through active travel, while simultaneously improving local air quality by reducing motor vehicle use can contribute positively to improving cardiovascular health and child obesity in Wirral.

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			improve accessibility of pedestrian infrastructure. • Children and young people could also benefit from improved pedestrian and cycle facilities, as approximately half of children in England walk or cycle to school, and young people are more likely to be users of non-motorised forms of transport.	• Improvements to walking and cycling facilities and minimisation of conflicts between transportation modes can also result in positive health outcomes for Wirral, which has a higher rate of people killed and injured on roads (41.7) than both the North West and England (39.8 and 39.7, respectively).
3	A5027 Duke Street public realm	• Improvements in public realm surrounding the site will support the attractiveness of the site to business investment and those seeking residential opportunities.	• Improved opportunities to access employment and education can serve to address issues of inequality and improve social mobility. • Improved connectivity between neighbourhoods may also provide better access to social infrastructure including facilities for health, early years provision, education, community, worship, play and recreation. • In Wirral, there is a higher proportion of older people and people with a limiting long-term illness or disability than the national average, who might benefit from schemes that improve accessibility of pedestrian infrastructure. • Children and young people could also benefit from improved pedestrian and cycle facilities, as approximately half of children in England walk or cycle to school, and young people are more likely to be users of non-motorised forms of transport.	• Promotion of sustainable modes of transportation can help to improve local air quality. Research has shown that there is a link between both long and short-term exposure to particulate matter emissions, respiratory health, and long-term health outcomes. • Improvements in walking and cycling facilities may help to reduce local road traffic. Reduced road traffic can have indirect positive health benefits due to decreased levels of noise. • Promoting exercise through active travel, while simultaneously improving local air quality by reducing motor vehicle use can contribute positively to improving cardiovascular health and child obesity in Wirral. • Improvements to walking and cycling facilities and minimisation of conflicts between transportation modes can also result in positive health outcomes for Wirral, which has a higher rate of people killed and injured on roads (41.7) than both the North West and England (39.8 and 39.7, respectively).
5	Duke Street Active Travel Improvements	• Improved connectivity from both North and South for pedestrians and cyclists will support labour		• Improvements to the public realm can positively impact upon travel safety and comfort for women, ethnic minority groups, and Lesbian, Gay, Bisexual and Transgender

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		market accessibility and business investment.		people, as research shows that these groups often fear for their safety and well-being in public spaces and on pedestrian journeys.
6	Green Link: Wirral Waters to Birkenhead Park	• Improvements in public realm surrounding the site will support the attractiveness of the site to business investment and those seeking residential opportunities. • Improved connectivity between Wirral Waters and Birkenhead will support labour market accessibility and business investment.	• Improved opportunities to access employment and education can serve to address issues of inequality and improve social mobility. • Improved connectivity between neighbourhoods may also provide better access to social infrastructure including facilities for health, early years provision, education, community, worship, play and recreation. • In Wirral, there is a higher proportion of older people and people with a limiting long-term illness or disability than the national average, who might benefit from schemes that improve accessibility of pedestrian infrastructure. • Children and young people could also benefit from improved pedestrian and cycle facilities, as approximately half of children in England walk or cycle to school, and young people are more likely to be users of non-motorised forms of transport.	• Promotion of sustainable modes of transportation can help to improve local air quality. Research has shown that there is a link between both long and short-term exposure to particulate matter emissions, respiratory health, and long-term health outcomes. • Improvements in walking and cycling facilities may help to reduce local road traffic. Reduced road traffic can have indirect positive health benefits due to decreased levels of noise. • Promoting exercise through active travel, while simultaneously improving local air quality by reducing motor vehicle use can contribute positively to improving cardiovascular health and child obesity in Wirral. • Improvements to walking and cycling facilities and minimisation of conflicts between transportation modes can also result in positive health outcomes for Wirral, which has a higher rate of people killed and injured on roads (41.7) than both the North West and England (39.8 and 39.7, respectively).
7	Wirral Dock Active Travel Route: Phase 1	• Improved connectivity for pedestrians and cyclists along the coast from North/South will support labour market accessibility and business investment.	• Improved opportunities to access employment and education can serve to address issues of inequality and improve social mobility. • Improved connectivity between neighbourhoods may also provide better access to social infrastructure including	• Promotion of sustainable modes of transportation can help to improve local air quality. Research has shown that there is a link between both long and short-term exposure to particulate matter emissions, respiratory health, and long-term health outcomes. • Improvements in walking and cycling facilities may help to reduce local road traffic. Reduced road traffic can have

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			facilities for health, early years provision, education, community, worship, play and recreation. • In Wirral, there is a higher proportion of older people and people with a limiting long-term illness or disability than the national average, who might benefit from schemes that improve accessibility of pedestrian infrastructure. • Children and young people could also benefit from improved pedestrian and cycle facilities, as approximately half of children in England walk or cycle to school, and young people are more likely to be users of non-motorised forms of transport.	indirect positive health benefits due to decreased levels of noise. • Promoting exercise through active travel, while simultaneously improving local air quality by reducing motor vehicle use can contribute positively to improving cardiovascular health and child obesity in Wirral. • Improvements to walking and cycling facilities and minimisation of conflicts between transportation modes can also result in positive health outcomes for Wirral, which has a higher rate of people killed and injured on roads (41.7) than both the North West and England (39.8 and 39.7, respectively).
Not mapped	Wirral Waters Pedestrian wayfinding strategy	• Improved accessibility for pedestrians around Wirral Waters will support labour market accessibility and business investment.	• Improved opportunities to access employment and education can serve to address issues of inequality and improve social mobility. • Improved connectivity between neighbourhoods may also provide better access to social infrastructure including facilities for health, early years provision, education, community, worship, play and recreation. • In Wirral, there is a higher proportion of older people and people with a limiting long-term illness or disability than the national average, who might benefit from schemes that improve accessibility of pedestrian infrastructure. • Children and young people could also benefit from improved pedestrian and cycle facilities, as approximately half of children in	• Promotion of sustainable modes of transportation can help to improve local air quality. Research has shown that there is a link between both long and short-term exposure to particulate matter emissions, respiratory health, and long-term health outcomes. • Improvements in walking and cycling facilities may help to reduce local road traffic. Reduced road traffic can have indirect positive health benefits due to decreased levels of noise. • Promoting exercise through active travel, while simultaneously improving local air quality by reducing motor vehicle use can contribute positively to improving cardiovascular health and child obesity in Wirral. • Improvements to walking and cycling facilities and minimisation of conflicts between transportation modes can also result in positive health outcomes for Wirral, which has a higher rate of people killed and injured on

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			England walk or cycle to school, and young people are more likely to be users of non-motorised forms of transport.	roads (41.7) than both the North West and England (39.8 and 39.7, respectively).
			Package 3	
1	Wirral Dock Active Travel Route: Phase 2	• Improved connectivity for pedestrians and cyclists along the coast from North/South will support labour market accessibility and business investment.	• Improved opportunities to access employment and education can serve to address issues of inequality and improve social mobility. • Improved connectivity between neighbourhoods may also provide better access to social infrastructure including facilities for health, early years provision, education, community, worship, play and recreation. • In Wirral, there is a higher proportion of older people and people with a limiting long-term illness or disability than the national average, who might benefit from schemes that improve accessibility of pedestrian infrastructure. • Children and young people could also benefit from improved pedestrian and cycle facilities, as approximately half of children in England walk or cycle to school, and young people are more likely to be users of non-motorised forms of transport.	• Promotion of sustainable modes of transportation can help to improve local air quality. Research has shown that there is a link between both long and short-term exposure to particulate matter emissions, respiratory health, and long-term health outcomes. • Improvements in walking and cycling facilities may help to reduce local road traffic. Reduced road traffic can have indirect positive health benefits due to decreased levels of noise. • Promoting exercise through active travel, while simultaneously improving local air quality by reducing motor vehicle use can contribute positively to improving cardiovascular health and child obesity in Wirral. • Improvements to walking and cycling facilities and minimisation of conflicts between transportation modes can also result in positive health outcomes for Wirral, which has a higher rate of people killed and injured on roads (41.7) than both the North West and England (39.8 and 39.7, respectively).

Source: Mott MacDonald