

From: Edward Greenwood [REDACTED]
Sent: 09 August 2019 21:47
To: A585 Windy Harbour to Skippool <A585WindyHarbourtoSkippool@planninginspectorate.gov.uk>
Subject: A585 Windy Harbour to Skippool Improvement Scheme

Your reference TR010035

Our reference (as an interested party) 20021754

Dear Sir

At our meeting in Manchester on 23 November 2018 with David Hopkins, Layla Beckett, Sucha Panesar and Helen Batey, we raised several items that we were told were outside the Remit for the bypass. Although it was not minuted Dr Powell and I were advised to submit these matters as a Representation to the Planning Inspectorate as an Interested Party. This we did but were later advised that Norcross Junction etc were not part of the examination and we did not submit the above as a Representation in Deadline 4. To cover the wider issues please would you include the following as our Deadline 5 Representation?

Norcross and Skippool Junctions

Highways England's preference for traffic lights causes delays whilst larger roundabouts can keep traffic flowing even at peak periods. This can be seen at numerous traffic islands and Junctions 3 and 4 on the M55 Motorway are good examples. Junction 4 takes heavy traffic to and from Blackpool with minimal delays throughout the year. At peak periods after traffic has entered the A585 from Junction 3 congestion arises as a consequence of traffic lights at Windy Harbour; beyond this point the slow moving queue is further impaired by Little Singleton junctions traffic lights.

The size of a roundabout relative to the volume of vehicles is a critical factor in optimising traffic flow at junctions. If Amounderness Way is clear of standing traffic the delays that occur between Windy Harbour and Little Singleton are not repeated at Skippool traffic island. Traffic flows freely round this junction even though more vehicles have joined the A585 from Shard Road than leave it at Little Singleton.

Is it possible that if Highways England's analysis had included the cost of more land for a larger roundabout their programme would have confirmed the generally accepted view that traffic islands improve traffic flow?

The analysis of the proposed Skippool Junctions on Sketch No 2 that I gave to David Hopkins based on a 190 cycle period is disruptive to traffic flow and will cause a tailback beyond Norcross. Highways England's cycle period of 125 seconds creates a worst case scenario and will result in tailbacks to Victoria Road. On the other hand the traffic island in Sketch No 5 will improve traffic flow for all roads to and from Skippool Junction and avoid a complex "U" turn shown on the attached Arcadis drawing modified in December 2018.

Our sketches are drawn on Google maps and therefore can be scaled using the Programme Ruler. Sketch No 10 shows an alternative Norcross Junction. With this arrangement over 90% of the work can be completed whilst vehicles on the existing roads continue to flow as normal enabling the work to be done more efficiently. **The major disruption anticipated by Highways England for the modified traffic island would not occur.**

Norcross Vets land used for the new road could be compensated with land acquired surplus to requirements north of the existing carpark.

If manually operated traffic lights are installed at road crossings for the small number of non-motorised users; unnecessary 24/7 stoppages of motorised traffic can be avoided.

The smallest road radius shown on our sketch is significantly greater than that on the attached Arcadis drawing of Skippool Junction. The extra cost of land and property to achieve this would be money well spent in preventing delays at this junction.

Given the location of Walkies Thornton on Sketch N0 10 it would appear that the business will not be affected by a larger traffic island. If the larger traffic island is on the field used for exercising dogs the worst case is that an alternative nearby field may have to be used. This is a minor inconvenience if improving Norcross Junction reduces journey times for almost 50% of the commuters in Wyre Borough.

Turning to the proposed bypass there is an argument that the A585 beyond Skippool should have been included in the Improvement Scheme.

Unfortunately the bypass and improvements beyond Skippool are considered as separate items defeating the goal of reducing gridlock and boosting the economy which was the aim of the Masterplan.

It is 8 months since we submitted the attached Sketch Nos 6 and 7 which clearly shows that Amounderness Way can be made into a 4 lane road with land to spare for a cycle way. To date there has not been a rational argument why this improvement cannot be made.

A new Norcross roundabout can be made as shown on Sketch No 10 that would improve traffic flow to all roads at this junction and Amounderness Way made into 4 lanes as set out above. As this work is not included in the Remit for the bypass; Highways England are unable to coordinate the work to improve road network across the whole area.

The Fleetwood and Thornton Area Action Plan (AAP) included minor alterations to several junctions to handle increased traffic from housing developments. If the work had been completed as planned in 2008 this would not have significantly reduced A585 congestion.

The attached documents listed below are based on existing junction traffic light cycle times and the pros and cons of the different arrangements.

Sketch No 2. The proposed traffic light cycle time of 125 seconds and the complexity of these junctions will make delays greater than the Shard Road Junction creates with a tailback from Skippool to beyond Norcross Junction every day of the week.

Sketch No 5. A large traffic island similar to this arrangement with traffic light control at peak periods would improve flow rates 24/7.

Sketch Nos 6 & 7. These views from Google maps are to scale and show that the designers of the road over 50 years ago had the foresight to arrange that the land for a future road was wide enough for a 4 lane highway.

Sketch No 10. Norcross junction can be arranged to cope with additional traffic to and from the coast at Fleetwood, Cleveleys and Bispham.

U Turn Modifications. This arrangement will cause gridlock when a number of large vehicles arrive from the east to make a "U" turn.

A Shard Road extension to the bypass would avoid the inevitable delays that will arise due to the complex Skippool Bridge Junction.

Garstang Road can be modified to cope with all the traffic movements without the expense and environmental disturbance of the bypass under Lodge Lane.

There is an argument that in considering the options for road improvements the wider aspects of the areas problems and opportunities should be taken into consideration.

Objections to Regeneration by improving the A585

We were unable to hear [REDACTED] response at the Oral Hearing on 5 July 2019 that the bypass did not meet the aims of the Fylde Coast Highways and Transport Masterplan (FCHTMasterplan).

Having listened to the recording, [REDACTED] referred to the ten objectives listed by Highways England in their 4.1 Statement of Reasons for the bypass Scheme. This interpretation has resulted in a different view of the priorities to those envisaged by Lancashire County Council and the South Pennines Route Strategy document.

The aims of the FCHTMasterplan are set out in the link and attached below <https://www.lancashire.gov.uk/council/strategies-policies-plans/roads-parking-and-travel/highways-and-transport-masterplans/fylde-coast-highways-and-transport-masterplan>. The first paragraph states: "**Lancashire County Council and Blackpool Council have unveiled a Masterplan which outlines plans to transform the road, rail, tram and cycle networks on the Fylde Coast. The proposals aim to boost the economy, reduce gridlock on the roads and support healthy lifestyles over the coming decades in Blackpool, Wyre and Fylde**".

The FCHTMasterplan is set out in this link and attached below <https://www.lancashire.gov.uk/media/768230/Appendix-A-Fylde-Coast-Highways-and-Transport-Masterplan.pdf>. The bypass will result in gridlock increasing from Skippool to beyond Norcross Junction and contribute to Fleetwood being the only town across the Fylde in decline. Can it be that the A585 improvements are based on misconceptions set out in the Masterplan Priority Analysis? This is contrary to the aims set out on page 20 of the Masterplan which envisages sustainable economic growth for the whole of Lancashire.

The submission by Wyre Council on page 9 of the FCHTMasterplan gives a false impression of prosperity in Fleetwood. As a result the need for improvement was ignored in preparing the Remit for the bypass.

The plan devised by Wyre Council and Highways England for the 2009 A585 improvement scheme was to alter 12 junctions. The Windy Harbour Junction alteration was one of the 3 junctions that were modified and in its present form it is widely thought to be a death trap. At the above Hearing John Ditchfield clearly expressed the hazards at this junction.

A holistic view of the A585 should include the road beyond Skippool and Norcross Junction if a realistic view is to be taken of economic development of the coast.

Throughout the Country it is widely agreed that large traffic islands including those adjacent to motorways controlled with traffic lights at peak periods work better 24/7 than crossroads

with traffic lights. Highways England published articles to this effect but the A585 is to be encumbered with crossroads. Can it be that the A585 junctions were designed before Highways England realized that crossroads cause delays? Having spent so much money on the consultant's fees to produce plans is there a reluctance to modify and improve the Scheme?

The bypass is intended to reduce gridlock between Windy Harbour and Skippool. If, after spending £150 million plus and ruining large areas of our countryside; a longer traffic queue between Skippool and Victoria Road is formed; the project will be a failure for most of Wyre's residents.

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Flood Risk Assessment Report

Item 2.4.1 on Page 5 of the Arcadis Flood Risk Assessment states: "The report has been informed by a number of data sources which Arcadis believe to be trustworthy. Arcadis is unable to guarantee the accuracy of information provided by others. The report is based on information available at the time of writing. Further details regarding the modelling assumptions and limitations are included in Section 7.7."

In Table 8 of Tidal Flood Levels, the road east of Skippool Junction shows water level during a 1 in 200 year storm as 100 mm deep and reaching a height of 6.5 metres Above Ordnance Datum. This includes an allowance for climate change but Arcadis or their advisers have not allowed for a tidal surge.

The National Oceanographic Centre Model shows that there can be a tidal surge of 2.5 metres along this coast. In 1977 there was a tidal surge of 1.7 metres and if this is added to an estimated spring tide in 100 years the road would be flooded to a considerable depth. A severe storm now could flood the road by over a metre.

Sketch No SSA 2100C shows that with global warming and a tidal surge at Skippool Junction the bypass will be flooded to a depth of over 2 metres.

Can this be one reason that Arcadis are not confident about the information provided by their "trustworthy" advisers but whose advice appears to us to be founded on incomplete information?

We have repeatedly requested the names and contact details of the sources on whose information Arcadis relied but this information has not been provided. We repeat this request.

Fleetwood Dockside is over a metre higher than the road at Skippool Junction but it has been flooded in the past. When sea levels rise new houses on the Dock will be flooded as indicated on Sketch No SSA 2102A.

With rising sea levels several points along the River Wyre embankments will not be high enough to prevent flooding during a 1 in 200 year storm. The Environment Agency has said that they could not prevent Pilling flooding without a barrier across the river at Fleetwood.

The Intergovernmental Panel on Climate Change (IPCC) 30 years ago through its chairman Sir John Houghton predicted the heavy rainfall that we are now experiencing. It is inevitable there will be heavy rainfall during a high tide will result in a tidal lock flooding vast areas. The 2 to 3 metres of flood water shown on Sketch No 2100C should be considered the minimum levels in assessing sea defences along the River Wyre.

To deal with this risk Wyre Council have produced a Multi-Agency Flood Plan so that where possible people and property at risk will be protected. This procedure is included in the FRA but experience has shown that predicting tidal flooding along our coast is almost impossible.

High tides occur at or near weekends with biggest tides usually about midnight when hundreds of people are not on hand to carry out rescues. Clearly the flood plan is an expensive and unreliable arrangement.

The best and most effective method to avoid this risk is to ensure that the river banks are not over topped. This can be achieved with a flood barrier at Fleetwood which will be self-funding and create a reliable method of saving lives and property.

Regeneration and Climate Change

The IPCC strongly advocated the use of the tides to reduce global warming and Fleetwood is known to be the best location in Europe for a pilot plant to test the latest low head turbine technology.

Regrettably Wyre Council is opposed to this concept and relies on anecdotal evidence to support their opposition to a flood barrier which they see as environmentally problematic.

Had they accepted the invitation in June 2009 to attend the site inspection and conference hosted by EDF at La Rance; Wyre Officials would have learned that a tidal power plant is not a hazard to wild life. The Local Authority environmental experts gave lectures on their monitoring of the river and the plant and spoke of fish a metre long passing through the turbines unharmed. They also reported that control of water flow through the turbines did not disturb sediment and river water was clear which improved photosynthesis increasing river plant life and hence other wild life.

As a consequence EDF's La Rance Tidal Power Plant now supports a greater amount and variety of wild life than any other river in Brittany or Normandy and this could be replicated on the River Wyre.

A Wyre Tidal Power Plant could have been built and operated now for at least the last 6 years. It would be producing enough electricity to power 100,000 cars a day and have the ability to prevent flooding from Pilling to Blackpool as sea levels rise, for hundreds of years or more.

Apart from flooding from the River Wyre, Cleveleys seawall revetment is over 2 metres lower than the new Rossall seawall making it vulnerable to over topping during storms. If the weather conditions had been slightly worse during the December 2013 storms the seawall was not high enough to prevent Cleveleys being more extensively flooded.

Whether it is this year, next year or in 100 years the River Wyre sea defences will not be adequate to prevent flooding.

Item 9.1.8 of the Arcadis Flood Risk Assessment predicts that vast areas of Thornton, Cleveleys and Fleetwood will be flooded and we are being led to believe that it will be too expensive to prevent these floods. But this conclusion does not take into account the cost of flood prevention against the value of the assets protected.

Wyre Council's policy of a sea defences retreat set out on page 31 of the Wyre Flood and Coastal defense Strategy Plan should be reviewed. It seems that officials and politicians are prepared to accept and implement this advice with no consideration to the potential losses of their rate payers. .

This situation can be avoided if only a small portion of the value of the tens of billions of pounds-worth of assets that can be lost is invested now by the Government before these monumental losses takes place.

Unless this flood disaster is averted it will have serious consequences for residents, officials and politicians.

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Conclusions

The A585 bypass scheme has numerous defects some going back to its inception and it should be rejected.

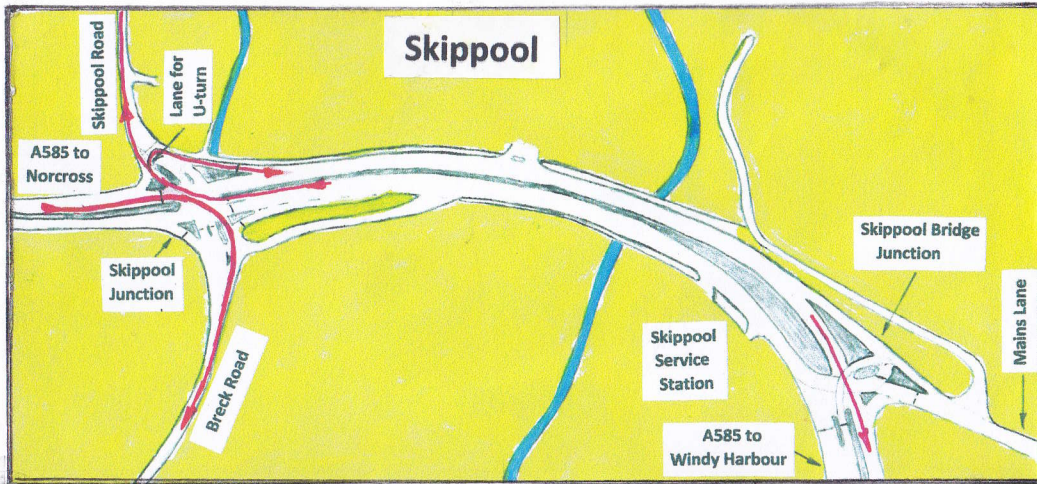
The Scheme does not meet the criteria of the of the Masterplan on which it was to be based

An alternative road off the peninsula has to be planned.

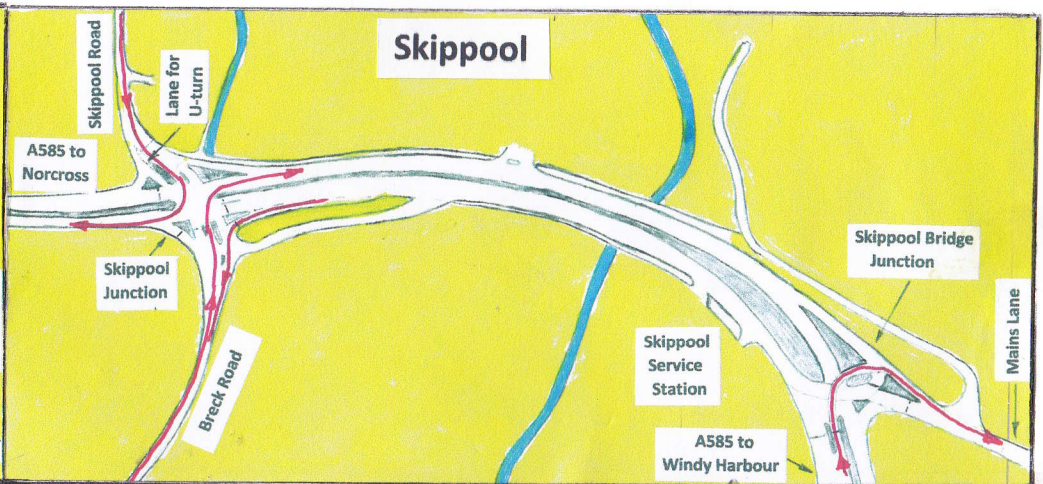
The power of the tides has to be harnessed to contribute to reducing global warming for the benefit of the whole Country

Edward Greenwood

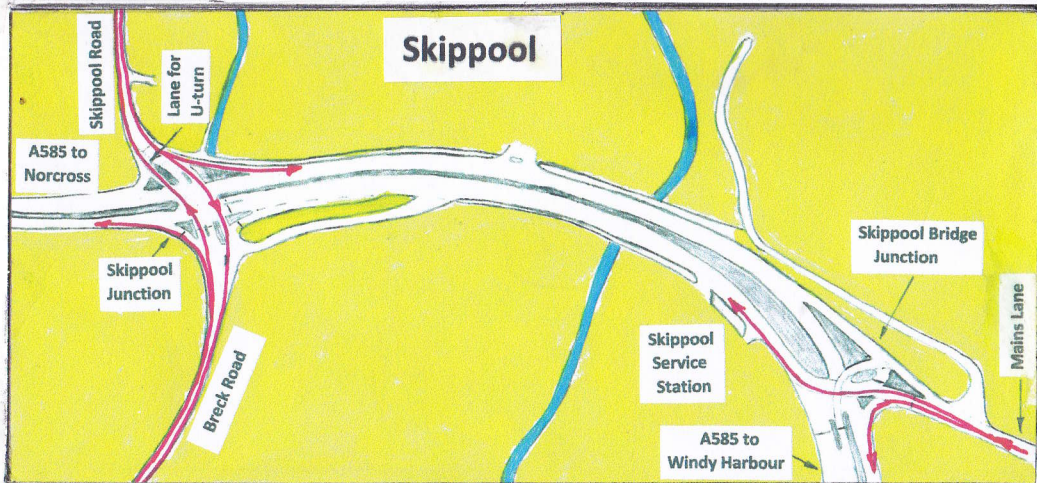
Fleetwood Renewable Energy Enterprise 2007



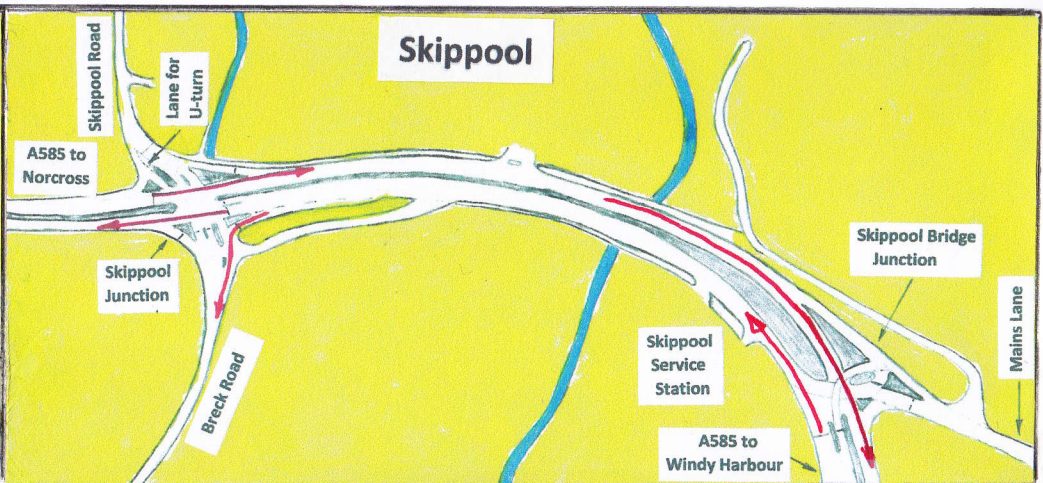
Skippool Junction. Phase 1
 Turns right from A585 to Skippool and Breck Road.
 "U" turn from A585 at Skippool
 20 Seconds



Skippool Bridge. Phase 1
 South on bypass to Windy Harbour.
 20 Seconds



Skippool Junction Phase 3
 Breck Road to and from Skippool Road. Turn left to A585
 45 Seconds

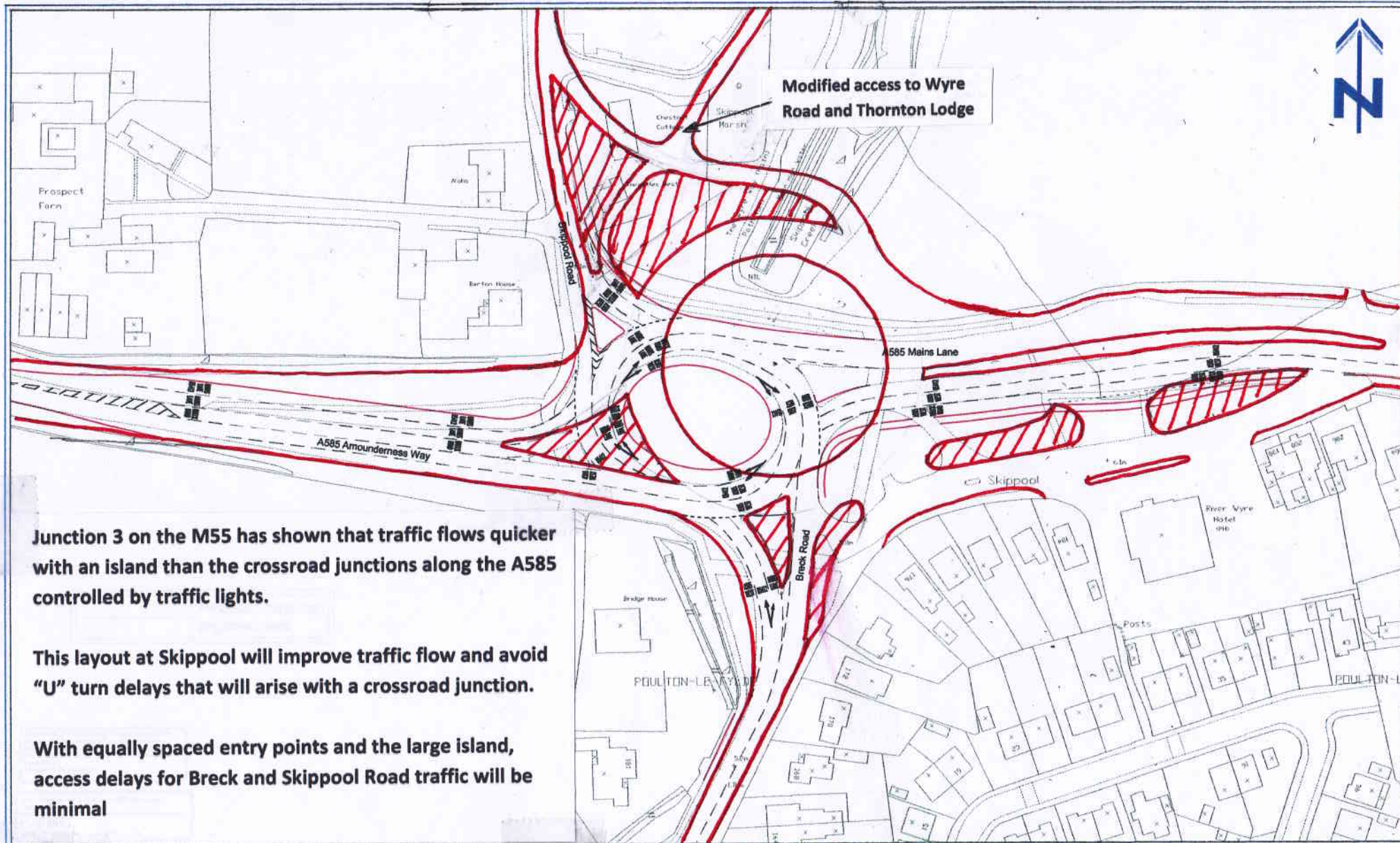


Skippool Bridge Phase 3
 Mains Lane to Skippool and Windy Harbour.
 25 Seconds

Skippool Junction Phase 4
 North and south on bypass.
 Bypass to Breck Road
 90 Seconds

Skippool Bridge Phase 4
 North on A585. 90 seconds.
 South on A585 100 seconds

South bound traffic on A585 at Skippool Junction stopped for 100 seconds and north bound traffic at Skippool Bridge stopped for 100 seconds
 With A585 bypass traffic movement through Skippool Junction limited to 90 seconds the total cycle time will be 190 seconds



Junction 3 on the M55 has shown that traffic flows quicker with an island than the crossroad junctions along the A585 controlled by traffic lights.

This layout at Skippool will improve traffic flow and avoid "U" turn delays that will arise with a crossroad junction.

With equally spaced entry points and the large island, access delays for Breck and Skippool Road traffic will be minimal

Revised Skippool Junction

Sketch No 5

Amounderness Way was widened at this Junction to create a dual carriageway

7m wide carriageways plus a 1m cycleway on each carriageway, a 6m centre reservation and a 2m verge between the highway and the garden fence

24 m

There is sufficient land on the west side of Amounderness Way to make a traffic free pedestrian/cycleway

Bourne Way & Amounderness Way

Bourne Way

Barnfield Close

A588

Sketch No 6

Amounderness Way Norcross Junction

By reference to Sketch No 6 showing the existing Amounderness Way & Bourne Way Junction, there is sufficient land to create a dual carriageway from Norcross to Skippool with a traffic free pedestrian/cycleway.

24 m

Sketch No 7

Local and National opinions are that large traffic islands improve traffic flow

Most of the work could be completed whilst traffic continues to use the existing roads

Walkies
Thornton

Amounderness Way is the same width
at this point as at Bourne Way where it
was made into to 4 lanes with land to
spare for a cycleway
See attached Sketch Nos 6 & 7

Traffic lights at all crossing
points operated by
pedestrians and cyclists

Alternative route from
traffic island to
Fleetwood Road

Access to Bispham and the current
Norcross developments will have to
be improved. It will be less
disruptive and cheaper to modify
Norcross Lane whilst Amounderness
Way is being modified than carry
out the work later

Sketch No 10





Fylde Coast

Highways and Transport Masterplan



July 2015

Blackpool Council



Foreword

Blackpool Council is delighted to work in cooperation with our neighbouring local authorities to put forward a long term strategy of achievable transport schemes to benefit the Fylde Coast. Efficient transport networks are vital to our local economy's growth, enabling job creating investment that will replace deprivation with prosperity and improve the visitor experience.

Road and public transport investment in Blackpool will accommodate increasing travel demand as regeneration accelerates and improved connectivity to the national economy via the M55 and rail network will be crucial. Further investment in the Fylde Coast's rail access, following the North Fylde line's electrification, could allow new routes to be established including further direct services to London. Supporting a growing market for coach travel could ease congestion on inter-urban routes. New technology offers opportunities to further improve the resort's visitor routes, whilst minimising the impact on our local population.

Local people require access to job opportunities as these are created. The state-of-the-art tramway, successfully re-opened in April 2012, demonstrates the potential that investment in local mass transit systems has. A high-quality bus network needs to adapt as new employment sites, including those that are cross-border, are developed. Local walking and cycling routes can be developed further to facilitate these cost-effective and sustainable travel modes, accessing employment and services whilst reducing congestion.

The council is keen to grasp all funding opportunities to enhance local economic performance, create prosperity and combat deprivation, while preserving environmental quality on which the Fylde Coast depends. The Government's Growth Deal initiative is especially welcome and I will ensure Blackpool works effectively to secure the transport network improvements that are needed.

Lastly, I would like to thank all our residents and stakeholders who gave us their views and who have helped us shape this highways and transport masterplan for the Fylde Coast



Councillor Gillian Campbell,
Deputy Leader of Blackpool Council (Tourism, Economic Growth and Jobs)
Blackpool Council

"Blackpool" is one of the most recognisable place names in the country, with a long history as the nation's favourite resort. The number of visitors is staggering with the busiest weeks seeing a total footfall of almost half a million in Blackpool alone.

And it's not just Blackpool that draws the crowds. From the coast in the west, with destinations such as the 'classic' resort of St Annes, to the rural heartlands of the east and market towns such as Kirkham and Wesham and Garstang (the world's first Fairtrade town), the Fylde Coast area offers visitors an unrivalled breadth of opportunity. Add to that stunning scenery and internationally recognised wildlife havens and it is easy to see why so many people flock to the area.

But the Fylde Coast is about much more than tourism. What may surprise those outside Lancashire is that world class manufacturing is also at the core of the Fylde Coast's success.

BAE Systems at Warton help make Lancashire the UK's most significant centre for aerospace manufacturing, part of a wider world class regional cluster making a contribution of over £850 million to the economy. With the Lancashire Advanced Engineering and Manufacturing Enterprise Zone at the BAE Systems site, advanced chemical and polymer manufacturing in Wyre and a strong energy and environmental technology presence, including that of the nuclear industry at Westinghouse Springfields at Salwick, the Fylde Coast is actually an industrial powerhouse.

But such success hides the area's issues. Even more than in other areas of Lancashire, the population is ageing. Parts of the urban area, especially in Blackpool, have significant health and social challenges. Rural areas potentially face increasing social isolation as we move forward.

The future development of our highways and transport networks is therefore critical. We must support a growing visitor economy and a world class industrial base. We must ensure that all the Fylde Coast's residents can benefit from economic growth and reach the opportunities that they need to thrive. We must also take account of future residents too and ensure that new housing can be accommodated without overwhelming existing communities with the extra traffic.



My thanks go to all those who took the trouble to send in their views and to talk through the draft masterplan with my officers. Those responses have led to changes to the masterplan and I firmly believe we have a stronger plan to take forward to allow the Fylde coast to grow and prosper.

County Councillor John Fillis
Cabinet Member for Highways and Transport
Lancashire County Council

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Executive Summary

This document presents the Highways and Transport Masterplan for the Fylde Coast.

Both Lancashire County Council and Blackpool Council, as highways and transport authorities, have a Local Transport Plan (LTP3) that sets out their transport priorities. These strategies establish a commitment to support the economy and to tackle deep-seated inequalities in its people's life chances, revitalising communities and providing safe, high-quality neighbourhoods.

We are therefore producing five Highways and Transport Masterplans that reflect the county's economic areas:

- Central Lancashire, covering Preston, South Ribble and Chorley
- East Lancashire, produced in cooperation with Blackburn with Darwen Council and covering Blackburn with Darwen, Burnley, Hyndburn, Pendle, Rossendale and Ribble Valley
- West Lancashire
- Fylde Coast, produced in cooperation with Blackpool Council and covering Blackpool, Fylde and Wyre and
- Lancaster

The Fylde Coast Highways and Transport Masterplan has been produced jointly by the County Council and by Blackpool Council.

Once completed, the masterplans will set out a cohesive highways and transport strategy for the whole county, linking economic development, spatial planning and public health priorities to the wider policy objectives of the County Council, Blackburn with Darwen Council and Blackpool Council.

Three of these masterplans have been approved and are now being delivered. The Central Lancashire Highways and Transport Masterplan was approved in March 2013, the East Lancashire Highways and Transport Masterplan in February 2014 and the West Lancashire Highways and Transport Masterplan in October 2014.

The masterplan presented here sets out our vision for travel and transport in the Fylde Coast.

The Fylde Coast Now

The Fylde Coast is an area of significant contrasts and is made up of three authorities:

Fylde is one of the most affluent areas in Lancashire, containing towns and rural areas popular with commuters which do not have the levels of deprivation seen in some other areas. The advanced engineering and manufacturing sector provides high paid jobs that underpin local economies, centring on Warton, home to both BAE Systems and one of the two Lancashire Enterprise Zone sites. Fylde is also home to Blackpool Airport, which was given 'in principal' Enterprise Zone designation in March 2015.

Wyre is split by the river it takes its name from and has two distinct areas with different economic and social needs. The urban areas of Poulton-le-Fylde, Thornton Cleveleys and Fleetwood, to the west, contrast with the largely rural part of the district that centres on Garstang to the east.

Blackpool is England's largest and most popular seaside resort, attracting more than 13 million visitors a year. Shifts in tastes, combined with opportunities for Britons to travel overseas, affected Blackpool's status as a leading resort during the late 20th century, but there are now positive signs that the visitor economy is revitalising, with recent substantial investment that has supported this.

The Fylde Coast area is relatively self-contained in terms of housing, economy and travel but also has ties to both Central Lancashire and to Lancaster. However, with the visitor economy so important to the area, particularly to Blackpool and the resorts of Lytham and St Annes, it is no surprise that the study area for the masterplan looks to regional and national links as well.

Current highways and transport issues across the area include:

- The A585(T) presents a significant bottleneck at Singleton crossroads, with other local problems on it between the M55 and Fleetwood.
- Emerging development plans could put a significant strain on the local highways network.
- Rail connectivity is limited on the South Fylde line and there are opportunities to capitalise on rail improvements elsewhere, not least HS2.

- Public transport provision for employment and in the rural area needs to be better.
- Cycle facilities don't necessarily work for all users.
- There is limited interchange/connectivity between public transport and cycling
- Neighbourhoods and the links between them need to be of a good enough standard to make travel easy for everyone.
- Travel choice still favours the private car and
- Road safety needs to be improved still further, particularly in Blackpool and for vulnerable road users

Looking to the future

A key driver of the Fylde Coast's economic development is the Lancashire Enterprise Partnership (LEP), of which both Blackpool Council and Lancashire County Council are members. The Partnership's Strategic Economic Plan (SEP) sets out how strong and sustainable economic growth can be achieved in the county, with the Fylde Coast making a significant contribution. One specific strand is the regeneration of Blackpool.

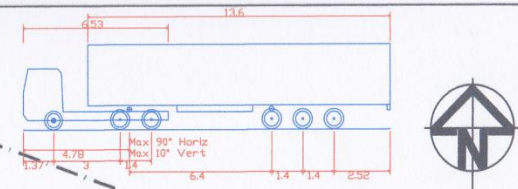
There are other more local economic and development plans which form part of the spatial background to the development of our highways and public transport networks.

Also, in April 2013, both Blackpool Council and the County Council took responsibility for some work that was previously carried out by the NHS. The two authorities will now work with the NHS to tackle some of the key issues that affect people's health and wellbeing, helping people to stay healthy and prevent illness. The changes will make sure that public health experts have a greater input to many of the different council services that impact on people's health including education, housing, transport and the local environment.

Funding

The cost of delivering the package of measures identified in the masterplan, and those that will come out of the work we propose to do, cannot be borne entirely by public sector funding. We have shown that, in areas where we can come to rely on the development industry to contribute funding to new infrastructure, we can increase investor confidence and our ability to attract other sources

Additional land for the extra lane to make the "U" turn to be obtained from Throtles Nest. See Plot Refs 1/04, 1/04A & 1/04B. 01 December 2018



Max Legal Length (UK) Articulated Vehicle (16.5m)
 Overall Length 16.500m
 Overall Width 2.550m
 Overall Body Height 3.681m
 Min Body Ground Clearance 0.411m
 Max Track Width 2.500m
 Lock to lock time 6.00s
 Kerb to Kerb Turning Radius 6.530m



Standing traffic will block vehicles from making a "U" turn. See Skippool Junction Flow Sketch 2 Phases 2 & 3

Junction amended following meeting with Highways England 23 November 2018

Rev	Status	Rev. Date	Purpose of revision	Drawn	Checked	Approved

	Project A885 WINDY HARBOUR TO SKIPPOOL IMPROVEMENT SCHEME	Status FOR INFORMATION	Revision P1
	Drawing Title SKIPPOOL JUNCTION ARTICULATED VEHICLE SWEEP PATH	Drawn By T.CHALDRHY	Original Size A3
		Checked By S.PANESAR	Project No UA009921
Registered office: Arcadis House, 34 York Way, London, N1 9AB	Coordinating office: 13 Monnow Road, The Surrey Research Park, Guildford, Surrey GU1 1SA	Approved By N.HENDERSON	Drawing number: 1 sheet 1 of 1
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of funding, and in turn improve the prospects of delivery, and delivering to earlier timescales.

Moving forward, investment in major new infrastructure will, increasingly, need to demonstrate an economic justification. In practice, this means a clear strategy that brings forward integrated development proposals for new development and economic growth alongside the infrastructure to support it.

New procedures have been put in place for collecting and investing developer contributions. The Community Infrastructure Levy or other developer contributions through planning obligations will be key mechanism to delivering major new infrastructure to stimulate and support major house building and business development. The speed and certainty with which we will be able to implement new infrastructure will be directly linked to developer contributions.

Our Vision

Transport and travel allow our residents and businesses not only to go about their everyday lives and also to grow and prosper. Our vision for travel and transport in the Fylde Coast therefore reflects the aspirations that have already been put forward for Blackpool and Lancashire as a whole:

By 2032, we want the Fylde Coast to have highways and transport networks that support:

Prosperity - because the success of the area's economy will determine the availability of good jobs that allow people to fulfil their aspirations and enjoy independent, productive lives; and because a strong, diverse commercial base will be central to sustaining investment in the area and in turn securing long term economic success.

Health - because it is central to everybody's happiness and ability to achieve what they want from life and

Wellbeing - because we aim to move from intervention to prevention as much as we can, giving people the opportunities that allow them to stay well and thrive on their own or as part of their family

Greater prosperity, health and wellbeing will make the Fylde Coast a good place to live, work or visit, a place where all people can live long, happy and healthy lives regardless of their background.

Taking our vision forward - What we're already doing

Having set out what we need our networks to do in the future, we need to consider what is already being done or is programmed as we, and our partners, already have schemes and proposals in place to tackle many of the problems including:

- Yeadon Way refurbishment (completed)
- Poulton-le-Fylde Town Centre
- M6 Junction 32 Northbound Widening
- A585(T) Windy Harbour Junction Improvement
- A585(T) Bourne Way to West Drive Widening and Improvement (completed)
- Preston – Blackpool rail electrification

And through the Growth Deal negotiated by the Lancashire Enterprise Partnership:

- Blackpool Integrated Traffic Management
- Blackpool Bridges Major Maintenance Scheme
- M55 to Heyhouses Link Road
- Blackpool Green Corridors
- Blackpool Tramway Extension

The City Deal for Preston, South Ribble and Lancashire also has schemes that directly affect the Fylde Coast:

- M55 Junction 2 and the Preston Western Distributor
- Broughton Bypass and
- Preston Railway Station improvements

Taking our Vision Further

Despite the work underway now or programmed, there will still be issues to be addressed in the Fylde Coast area if we are to reach our vision. We believe there are 5 key requirements that our highways and transport networks must meet and we can use to set out our programme:

We need our highway network to operate more efficiently, not just for cars, but also for buses, coaches and for freight.

What we will do:

To **enable growth**, we will work with our partners to ensure that demands placed on our highways and transport networks by new housing and development are accommodated as sustainably as

possible. We will also make sure that our main business locations, such as the Enterprise Zone at Warton, Blackpool Airport, Hillhouse International and other strategic locations, are well served by both roads and other means of travel. We will also work to make the most of opportunities provided by other development schemes as they come forward where benefits to Lancashire's residents and businesses exist.

We want to ensure that the **A585(T)** operates as effectively as possible by carrying forward a programme of viable improvements. We therefore propose to build on the work that the HE are starting now and to work together to design and take forward the recently announced **A585(T) Windy Harbour to Skippool Improvements** and then any further scheme or schemes needed to remove any final pinch-points on the corridor.

Highways England is also currently working to resolve capacity issues at Windy Harbour and at Junction 3 on the M55 and have committed to monitoring the southern section of the A585(T) from Windy Harbour to M55 Junction 3, bringing forward improvements where appropriate and beneficial, for instance potential improvements at the Thistleton crossroads.

By dealing with the congestion at these significant junctions, the numbers of vehicles using inappropriate roads to avoid congestion should be greatly reduced.

However, in the light of further evidence received during the consultation, we do not propose to rescind protection on the alignment of the M55 to Norcross Link until the full impacts of changes to the highways network both along the A585(T) and around Preston have been reviewed.

We will therefore undertake a specific **North Fylde Coast Connectivity Study**. The work will gather together the findings of our existing traffic modelling work and also the work being done by Highways England. It will also quantify the extent of rat-running and road safety problems in the wider corridor of concern that is influenced by the A585(T)..

Only when the study has been completed will a final decision on the 'Blue Route' be taken. However, the County Council's position remains that the route will be difficult to fund and that we must urgently seek more readily deliverable alternatives if possible.

We will also pursue an **Ultra Low Emission Vehicles Strategy** across the Fylde Coast area.

Fylde Coast highways and transport masterplan

Lancashire County Council and Blackpool Council have unveiled a masterplan which outlines plans to transform the road, rail, tram and cycle networks on the Fylde Coast. The proposals aim to boost the economy, reduce gridlock on the roads and support healthy lifestyles over the coming decades in Blackpool, Wyre and Fylde.

The Fylde Coast is a very diverse area and the transport network needs to support a vibrant tourism industry as well as the UK's most significant centre for aerospace manufacturing and large firms specialising in energy and environmental technology, chemicals and polymers.

As well as making sure the visitor economy and industries can continue to grow we must ensure that everyone who lives on the Fylde Coast can reach the opportunities they need to thrive. We must also take account of future residents and ensure that new housing can be accommodated without overwhelming existing communities.

The proposals

The proposals for the near future include:

- The extension of the Blackpool Tramway from the promenade at North Pier to Blackpool North railway station which will improve access to the UK national rail network from Blackpool, Fleetwood and Cleveleys.
- A new junction 2 on the M55 near Preston and Preston Western Distributor road which will improve links to the Fylde via a direct dual carriageway connection from the motorway to the A583/A584 – this is being funded through the Preston, South Ribble and Lancashire City Deal and the Highways Agency.

- The commitment recently announced by central government to A585 Windy Harbour to Skippool improvements. This Highways Agency scheme proposes a new bypass of the village of Little Singleton. This scheme would remove the current bottleneck at Five Lane Ends and give the opportunity to improve the A585 Mains Lane/A588 Shard Road junction. It could also remove rat-running traffic from Singleton.

The masterplan also puts forward proposals for the future to:

- Consult on proposals for a Blackpool North (Talbot Gateway) Interchange to improve links between rail and tram services and provide a terminus to the tramway extension. A bid could be made for Local Growth Funding through the Lancashire Enterprise Partnership.
- Carry out a study of the South Fylde railway line to explore its potential for investment. Improved rolling stock and more frequent and reliable services could make it a much better option for commuters, and there may be further benefits to linking the line to the Blackpool Tramway.
- Carry out a study into the potential for improving facilities at stations on the North Fylde railway line. Electrification of the Blackpool North line will see changes to a number of stations to accommodate Pendolino trains, and the study will look into the potential to improve features such as accessibility and parking.
- Establish design and location options for coach facilities in Blackpool.
- Develop a Fylde Coast long term public transport strategy to find the most cost effective ways to provide access to services in rural and remote areas, and market improved facilities to encourage visitors to consider alternatives to the car.
- Take opportunities to make cycling a better option for shorter journeys, and develop a Fylde Coast cycle network which builds on existing routes and initiatives already underway to create better routes for commuters and family-friendly routes for tourists.

Consultation

A six-week consultation took place from Monday 12 January to Friday 20 February 2015. A number of events across the county were held to allow members of the public to have their say on the plans.

Supporting documents

[Appendix A Fylde Coast Highways And Transport Masterplan \(PDF 2.09 MB\)](#)

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We need our rail network and services to make commuting convenient and to be an outstanding gateway to the Fylde Coast for businesses and visitors.

What we will do:

We will work with our partners to design and then consult on proposals for a **Blackpool North (Talbot Gateway) Interchange** that will facilitate interchange between rail and tram and provide the terminus to the tramway extension. Once we have a final scheme, we will work with the LEP to secure funding.

In order to establish just what potential the of the North Fylde Line stations is, we will include them in the **North Fylde Coast Connectivity Study** which will also specifically consider whether a rail solution is the best answer to Fleetwood's longer term connectivity needs.

We are carrying out a **South Fylde Line Study** to look at the future role of the South Fylde Line, the best way to enhance the role of the line in providing a southern gateway to Blackpool and to establish what the most viable and cost effective way of linking the South Fylde line and the Blackpool Tramway would be and what benefits such a link would bring.

We need public transport to serve all our communities so that people can get to the jobs and services they need.

What we will do:

In Blackpool, we propose to continue to work with our partners to establish design and location options for **coach facilities** within the Leisure Quarter on New Bonny Street and for layover facilities at an appropriate location. Once a scheme for coach facilities has been finalised, we will work with the LEP to secure funding if needed.

To ensure that urban public transport is fully integrated with other sustainable modes, we will work with our partners in the bus industry to put together a **Fylde Coast Long Term Public Transport Strategy**.

In order to **maintain rural connections**, work is already proposed in the county to find the most cost effective methods of providing access to services in rural or remote areas. We will extend this work to the Fylde Coast.

To help ensure effective **visitor travel choices**, we will work with our partners to provide effective marketing to publicise these

improvements and reduce the dependence on the car for leisure travel to and from the Fylde Coast. We will also put in place a monitoring programme to make sure that we know how travel patterns are changing.

We need cycling and walking to become the convenient travel choice for shorter distances and for it to be easy for people to change between modes:

What we will do next:

The **Fylde Coast Cycle Network** will build on work already undertaken between Fleetwood and Starr Gate and in St Annes, as well as the Blackpool Explorer routes and initiatives that are underway such as Blackpool Green Corridors. Key to the network will be the completion of the **Fylde Coastal Way**, the towpaths of the **Lancaster Canal** and the creation of **Explorer Mini-wheels**, family friendly, multi user circular routes aimed at the leisure and tourist market and **Green Spokes** that will allow safe access by cycle to key employment destinations

We need our streets and public spaces to feel safe and attractive

We will work to make **Local Links** play a vital role in improving prosperity, health and wellbeing for all age groups. A safe and attractive street makes people more likely to walk and cycle, however far or fast, and increasing levels of physical exercise will not only help tackle obesity, but will help to reduce heart disease, strokes and type 2 diabetes as well as improving mental wellbeing.

Next Steps

This masterplan represents the beginning of a programme of highways and transport infrastructure delivery to serve the Fylde Coast over the next 16 years and beyond.

There is much to do and it will need the commitment and efforts of a variety of service providers to see it through – County, Unitary and District Councils, Lancashire's Local Enterprise Partnership, Highways England, Network Rail - and the support of private business and house builders as well.

To stand the best chance of delivering these improvements, we must make sure they are 'ready to roll' as soon as we can, so that we can make use of all opportunities to get funding for schemes that are ready to be delivered. That will mean committing time and funding now to working out detailed plans for these ideas and preparing the economic case for them.

Introduction - Lancashire's Highways and Transport Masterplans

Both Lancashire County Council and Blackpool Council, as highways and transport authorities, have a Local Transport Plan (LTP3) that sets out their transport priorities. These strategies establish a commitment to support the economy and to tackle deep-seated inequalities in its people's life chances, revitalising communities and providing safe, high-quality neighbourhoods. The plans include commitments to:

- Improve access into areas of economic growth and regeneration
- Improve the efficiency and management of parking to support the local economy, especially for shoppers and visitors.
- Provide better access to healthcare, education and employment
- Improve people's quality of life and wellbeing
- Improve the safety of our streets
- Manage congestion levels
- Provide safe, reliable, convenient and affordable transport alternatives to the car
- Maintain our assets
- Reduce carbon emissions and their effects

To work towards these aims, Lancashire County Council is leading in the production of a set of Highways and Transport Masterplans that will cover the entire county.

Rather than produce a masterplan for each district, five masterplans are being created that reflect the travel areas identified in the County Council's Local Transport Plan:

- Central Lancashire, covering Preston, South Ribble and Chorley
- East Lancashire, covering Blackburn with Darwen, Burnley, Hyndburn, Pendle, Rossendale and Ribble Valley
- West Lancashire
- Fylde Coast, covering Blackpool, Fylde and Wyre and
- Lancaster

The Fylde Coast Highways and Transport Masterplan is being produced jointly by the County Council and Blackpool Council.

Once completed, these masterplans will set out a cohesive highways and transport strategy for the whole county, linking economic development, spatial planning and public health priorities to the wider policy objectives of the County Council, Blackburn with Darwen Council and Blackpool Council. Each masterplan will:

- Outline current issues affecting our highways and transport networks
- Look at the impact of plans and policies in future years, including the Lancashire Enterprise Partnership's Strategic Economic Plan and approved Local Plans
- Put forward the measures that we consider are needed to support future growth and development and improve our communities
- Outline funding mechanisms and delivery programmes and associated risks.

Future funding allocations from central government are being devolved to the Lancashire Enterprise Partnership (LEP), which covers the local authority areas of Lancashire, Blackburn with Darwen and Blackpool. It is therefore vital that there is a coherent highways and transport strategy for the whole county, rooted in approved and adopted strategies and plans.

Three of these masterplans have been approved and are now being delivered. The Central Lancashire Highways and Transport Masterplan was approved in March 2013, the East Lancashire Highways and Transport Masterplan in February 2014 and the West Lancashire Highways and Transport Masterplan in October 2014.

Figure 1 LTP Masterplan Areas



Introduction – The Fylde Coast Masterplan

This document introduces the Highways and Transport Masterplan for the Fylde Coast. Produced jointly by Lancashire County Council and Blackpool Council, it sets out the options for a future Highways and Transportation Strategy for the Fylde, Wyre and Blackpool area to 2032 and beyond, to inform the area's emerging Local Plans (the planning policies that set out how an area will develop).

The fundamental purpose of transport is to enable economic and social activity. It allows people to get to work, to access services and to see friends, family and visit places. It also allows businesses to move goods and allows suppliers and customers to come together. However, transport also has other impacts on people, on places, and on our environment: Traffic congestion brings delay and disrupts communities; road accidents cause injury and suffering; vehicle emissions affect local people's health and contribute to global environmental problems and so on.

Balancing the positive and negative impacts of transport is vital in providing sustainable highways and transportation networks for the future. We can only do this if we consider the consequences that changing these networks will have not just on the users, but on the people, environment and economy of Fylde, Wyre and Blackpool both now and in the future.

All the masterplans require similar evidence, which must be up-to-date and accurate. Local Plans set out the details of future land use and there must be a sound economic strategy in place. Existing travel and transport must be understood and there must be evidence as to the impact of future development on the highways and transport networks. The health and social needs of the population must also be known.

Economic and public health evidence is robust. The Lancashire Enterprise Partnership has agreed its Strategic Economic Plan and the individual authorities also have established development priorities. There is a wealth of information about health and well being in the area.

However, not all Local Plans are at the same stage of development across the area. The 3 authorities are at different stages of the plan making process but are cooperating to ensure that development is coordinated across the Fylde Coast area.

Blackpool Council consulted on the Pre-Submission Core Strategy in summer 2014 with adoption expected in 2015. Fylde's new Local Plan is currently under preparation and is expected to be adopted in Spring 2017. Wyre Council's Local Plan next consultation stage will be held in 2015, and it is anticipated that the Local Plan will be adopted in 2017. The masterplan takes into account the emerging content of the three local plans to set out a strategy for highways and transport for the Fylde Coast to 2032.

This consultation masterplan therefore:

- Describes the Fylde Coast's people and places as they are now
- Outlines what we know of current transport patterns and identifies issues with the current highways and transport networks that support the Fylde Coast
- Sets out the plans and policies, both adopted and emerging, that will impact on the area in the future.
- Uses the evidence to establish what challenges our transport networks face
- States our vision for what our highways and transport networks should be able to do by 2032
- Shows what work is already underway to achieve that vision and
- Lastly, sets out how we intend to implement the masterplan.

How consultation shaped this Masterplan

The consultation on the draft Fylde Coast Highways and Transport Masterplan drew responses from a wide range of organisations and individuals. Our partners, both local and national, the business community and many private individuals took the opportunity to help us shape the Fylde Coast's highways and transport networks.

This masterplan will ultimately affect us all, so having support from our stakeholders is very important to us. We are very grateful for all the comments that have been made on our proposals and now feel that we are better informed and have a stronger basis on which to develop the projects and strategies in this masterplan, as well as influence our partners.

Many comments have offered detailed concerns and suggestions. Whilst these may not appear in this 'high-level' plan, this feedback will inform more detailed work to come, and there will be many more opportunities to comment on and influence the studies as we go forward.

Therefore most of the changes made to the masterplan are in the detail of the proposals and add to the strength of the masterplan rather than altering it.

However, whilst across all groups of respondents, there was significant support for almost all the proposals in the masterplan, our proposal to no longer pursue the M55 to Norcross scheme was not well received and there was also a strong feeling that we had ignored a potentially vital link in the Fylde Coast network that the old Fleetwood to Poulton railway line could offer.

The M55 to Norcross scheme is a very long standing proposal. Whilst we still believe that the scheme is not deliverable in the foreseeable future and that we must urgently seek other solutions, the consultation has made it very clear that, almost without exception, respondents do not believe that any other long term solution to problems on the A585(T) corridor exist.

Many of those respondents produced compelling qualitative evidence of the geographical extent of problems caused by drivers seeking to avoid the A585.

In many ways linked to the issue of the future of the M55 to Norcross Link road were the many respondents who complained that we had not taken proper notice of Fleetwood's lack of mainline rail connectivity.

Whilst neither a mainline rail connection nor a tram link may be achievable in the lifetime of this masterplan, we had originally intended to investigate what could be done to improve Fleetwood's connectivity as part of the Urban Public Transport Strategy.

We will now, however, carry out a **North Fylde Coast Connectivity Study** that will use all available evidence held by ourselves and our partners and stakeholders to set out what is achievable across all modes of transport within the wider corridor that has the A585(T) at its heart.

Therefore at this stage we will not remove any protection from the current alignment of the 'Blue Route', but will take a final decision about the scheme's future on completion of this study as set out later in this masterplan.

The third major change to the masterplan has come about both through consultation responses and through changing circumstances. We now feel the time is right to pursue an Ultra Low Emissions Vehicles Strategy for the Fylde Coast given that funding is becoming more available to do so.

By taking on board many of the views and ideas we have received, this masterplan is now a stronger document and we are very grateful to all those who took the trouble to respond and to come out to our exhibitions and talk with officers.

As projects and strategies start to come to fruition, there will be much more public consultation in the coming years to debate and discuss each project and to make sure that the actions that result from the work presented here are as effective as we can collectively make them.

The Fylde Coast Now

The Fylde Coast is an area of significant contrasts and is made up of the three authorities of Blackpool, Fylde and Wyre. The area had a population of over 325,000 in 2013. This is expected to increase by over 15,500 people between now and 2037, with 90% of that growth predicted to be in Fylde and Wyre.

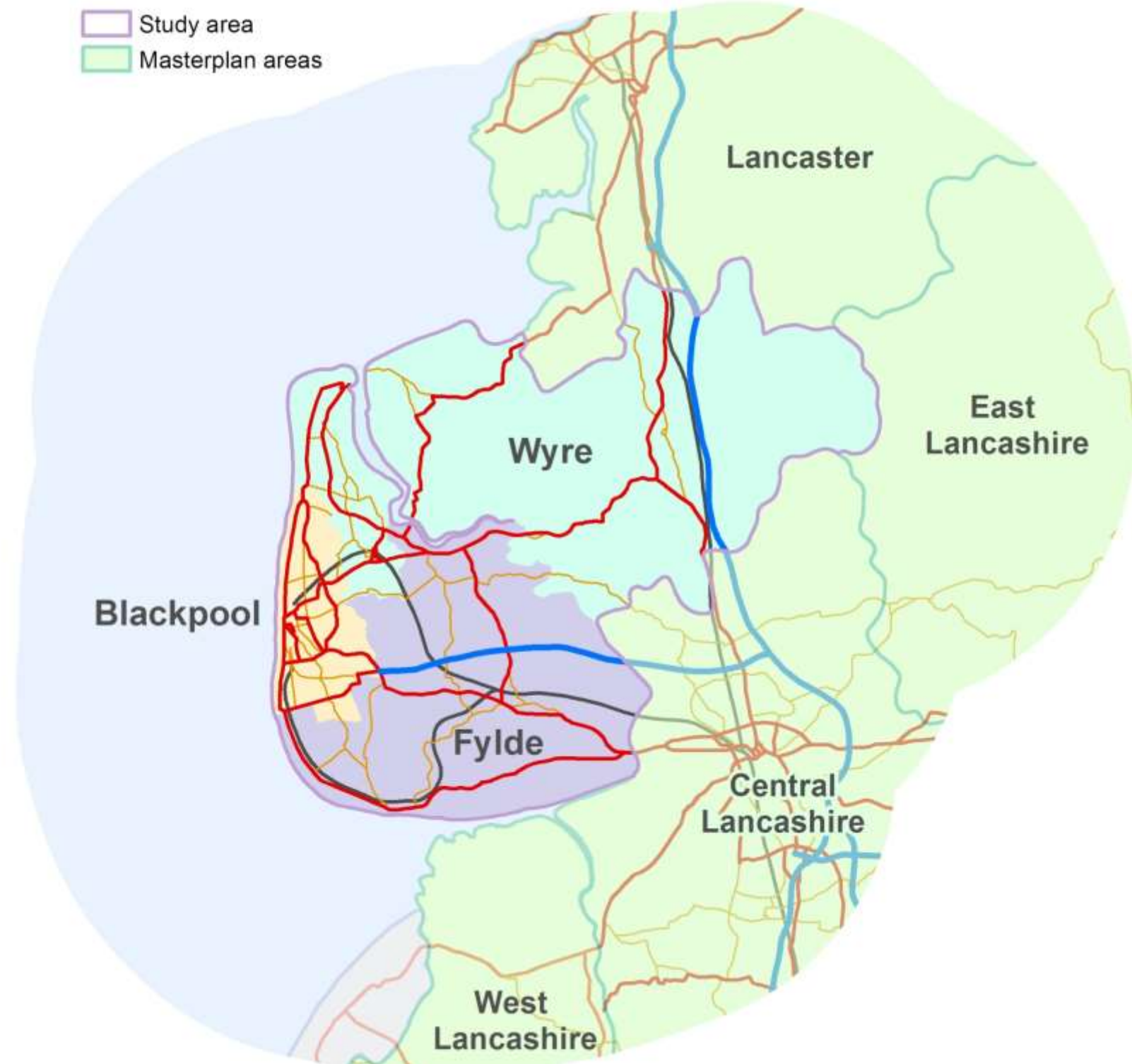
Fylde is one of the most affluent areas in Lancashire, containing towns and rural areas popular with commuters which do not have the levels of deprivation seen in some other areas. The advanced engineering and manufacturing sector provides high paid jobs that underpin local economies. This centres on Warton, where BAE Systems has a major centre and which is also home to one of the two existing Lancashire Enterprise Zone sites. Fylde also has a vibrant tourist economy based on the resorts of Lytham and St Annes.

Wyre is split by the river it takes its name from and has two distinct areas with different economic and social needs. The urban areas of Thornton Cleveleys, Fleetwood and Poulton-le-Fylde to the west contrast with the largely rural area to the east that centres on Garstang. Only in Fleetwood are there any urban areas that suffer from significant deprivation, although rural isolation is an issue in some areas to the east of the Wyre.

Blackpool is England's largest and most popular seaside resort, attracting more than 13 million visitors a year. Shifts in tastes, combined with opportunities for Britons to travel overseas, affected Blackpool's status as a leading resort during the late 20th century, but there are now positive signs that the visitor economy is revitalising, with recent substantial investment that has supported this. Blackpool is also the most densely populated borough in the North West. The combination of seasonal work, poor quality housing, low skills and high unemployment has led to significant economic decline which has resulted in a number of health and social challenges.

The Fylde Coast area is relatively self-contained in terms of housing, economy and travel but also has ties to both Central Lancashire and to Lancaster. However, with the visitor economy so important to the area, particularly to Blackpool and the resorts of Lytham and St Annes, it is no surprise that the study area for the masterplan looks to regional and national links as well.

Figure 2: The Fylde Coast



Blackpool

Blackpool Council, as a Unitary Authority, is the highways and transport authority for the borough.

Blackpool (population 142,000 in 2012) includes some of the most deprived areas in England which face numerous social and economic challenges.

The 'Golden Mile' is the central hub for Blackpool's tourism industry. Blackpool remains the most popular seaside resort in the UK, receiving over 13 million visitors per year to attractions such as the Tower, Pleasure Beach and Winter Gardens as it adapts to the changing visitor market and reinvents itself as a modern destination resort.

Blackpool has always had a lower than average proportion of jobs in the manufacturing sector, with a higher rate of employment in the service sector. The visitor economy and accommodation and food services significantly dominate the service sector in Blackpool. The manufacturing employment that does exist includes Burton's biscuits and Tangerine Confectionery.

Blackpool and the Fylde College has around 30,000 students and has been designated a National Beacon of Excellence by the government. The main campus is at Bispham but there is also a new multi millionpound University Centre close to Blackpool Town Centre.

Blackpool Victoria Hospital, which serves the Fylde Coast area, is only one of four hospitals in the North West providing specialist cardiac services.

Average house prices in Blackpool are below the county and national average. Economic problems have resulted in low property prices in some areas and the cheap, poor quality housing available has attracted a vulnerable population including economically inactive people seeking cheap accommodation, including migrant workers, ex-offenders and vulnerable families.

Fylde

Fylde (population 76,000 in 2012) includes Lytham and St Annes, Kirkham, Freckleton and Warton.

Lytham and St Annes are the principal towns and have grown together to form an attractive and popular seaside resort with a vibrant tourist economy. Indeed, Fylde's coastline attracts over 3m visitors each year. The area has a strong golfing tradition, with four championship courses located within a 5 miles radius. Situated south of Blackpool at the point where the coastline turns east to form the Ribble estuary, Lytham and St Annes is considered to be a wealthy area with residents' earnings among the highest in Lancashire. It is popular with engineers and scientists from BAE Systems in Warton.

Blackpool Airport is located in Fylde, on the coast between St Annes and Blackpool. In March 2015, the site was given an 'in principal' designation as Lancashire's second Enterprise Zone.

Kirkham and Wesham, which lies between Blackpool and Preston is a small market town which is at the heart of the surrounding rural area. The town attracts visitors from a wide area and has a notable built heritage. Freckleton, one of the Fylde's oldest villages, and Warton lie to the south of the district along the Ribble estuary and are dominated by the presence of BAE Systems and the Lancashire Advanced Engineering and Manufacturing Enterprise Zone.

Manufacturing jobs are heavily influenced by BAE Systems and Westinghouse Springfields at Salwick. In October 2011, the government announced the creation of a single Enterprise Zone that covers the two BAE Systems sites at Samlesbury and Warton. Enterprise Zones are areas where financial incentives and a simplified planning structure are designed to encourage business growth and investment and to create employment. The Enterprise Zone is a key strategic site for both the regional and national economy. Public administration also provides jobs in the wider Fylde area.

Unemployment is not an issue in the area and the basic skills of the working population in Fylde is estimated to be higher than the county and national averages. Not surprisingly, given the affluence of much of the district, Fylde has a high proportion of quality housing and has better health than the England average, although small pockets of moderate deprivation do exist.

Wyre

Wyre (population 107,900 in 2012) includes Poulton-le-Fylde, Thornton Cleveleys, Fleetwood and Garstang. Even during the economic downturn, the unemployment rate is well below the regional and national averages.

Poulton-le-Fylde is a market town and the administrative centre of the borough. Approximately 4 miles from Blackpool town centre, there are rail links to Blackpool and Preston and bus routes to the larger towns and villages of the Fylde.

Garstang has become known as the World's First Fairtrade Town and has a wide variety of independent retailers and a popular weekly market, whilst the seaside town of Cleveleys lies on the coast to the north of Blackpool, with Thornton just inland adjacent to it.

Many local employers have a heritage that is linked to the Fleetwood fishing industry and have adapted since the port closed. The Port of Fleetwood comprises two underutilised docks and a ferry terminal which has potential for future development.

Myerscough College is built on the site of the old Myerscough Hall, approximately six miles north of Preston in Bilsborrow, near Garstang. It attracts over 6,000 students and specialises in education for land-based and sports industries.

Wyre has strengths in a number of areas including advanced manufacturing / engineering with emerging opportunities in ICT and creative media sectors; the Hillhouse International site at Thornton is of particular significance being home to a cluster of international advanced chemicals and materials businesses. Other areas expected to enjoy continued growth within Wyre, include education, retail and other business activities. Jobs in the manufacturing sector have reduced whilst the service sector is a greater source of jobs.

Like Blackpool, the visitor economy is important and people visit the area both for leisure and shopping - attractions include Fleetwood Freeport, Wyreside Visitors Centre, Marsh Mill and Farmer Parrs animal world.

The Fylde Coast Now – People and Places

People

Like much of the county, the Fylde Coast area has an ageing population. In 2012, people aged 65 and over made up just over a quarter of the population in Fylde and Wyre and almost a fifth of the population in Blackpool.

Life expectancy is slightly below the England average in Fylde and Wyre and more significantly so for deprived areas of Wyre and for Blackpool. Blackpool has the lowest life expectancy age for males in England at 74 years and the second lowest age for females at 80.

The health of people in Fylde and Wyre is generally better than the average for Lancashire. However, some areas of Fleetwood have very poor health outcomes, which are linked to the relatively high levels of socio-economic deprivation in some communities. The health of people in Blackpool is generally worse than the England average. The rate of chronic liver disease in Blackpool is the highest in England and it also has one of the highest rates of lung cancer incidence. The number of people suffering from coronary heart disease is one of the highest rates in England when compared with areas experiencing similar levels of deprivation.

Obesity levels for adults and children are better than the England average (apart from the rate for adults in Wyre, which is slightly higher). However, projections for obesity in Blackpool's older population (65 and over) indicate that considerable increases are to be expected over the next ten to twenty years.

There are wide social inequalities within the Fylde Coast area. Fleetwood has already been mentioned, but there are significant issues in parts of Blackpool. These social inequalities stem from some of the most significant deprivation in the country. This deprivation is the result of a combination of factors including low income levels, unemployment, low education levels and poor housing, coupled with community factors such as a lack of community cohesion and higher crime levels.

In the Fylde Coast area:

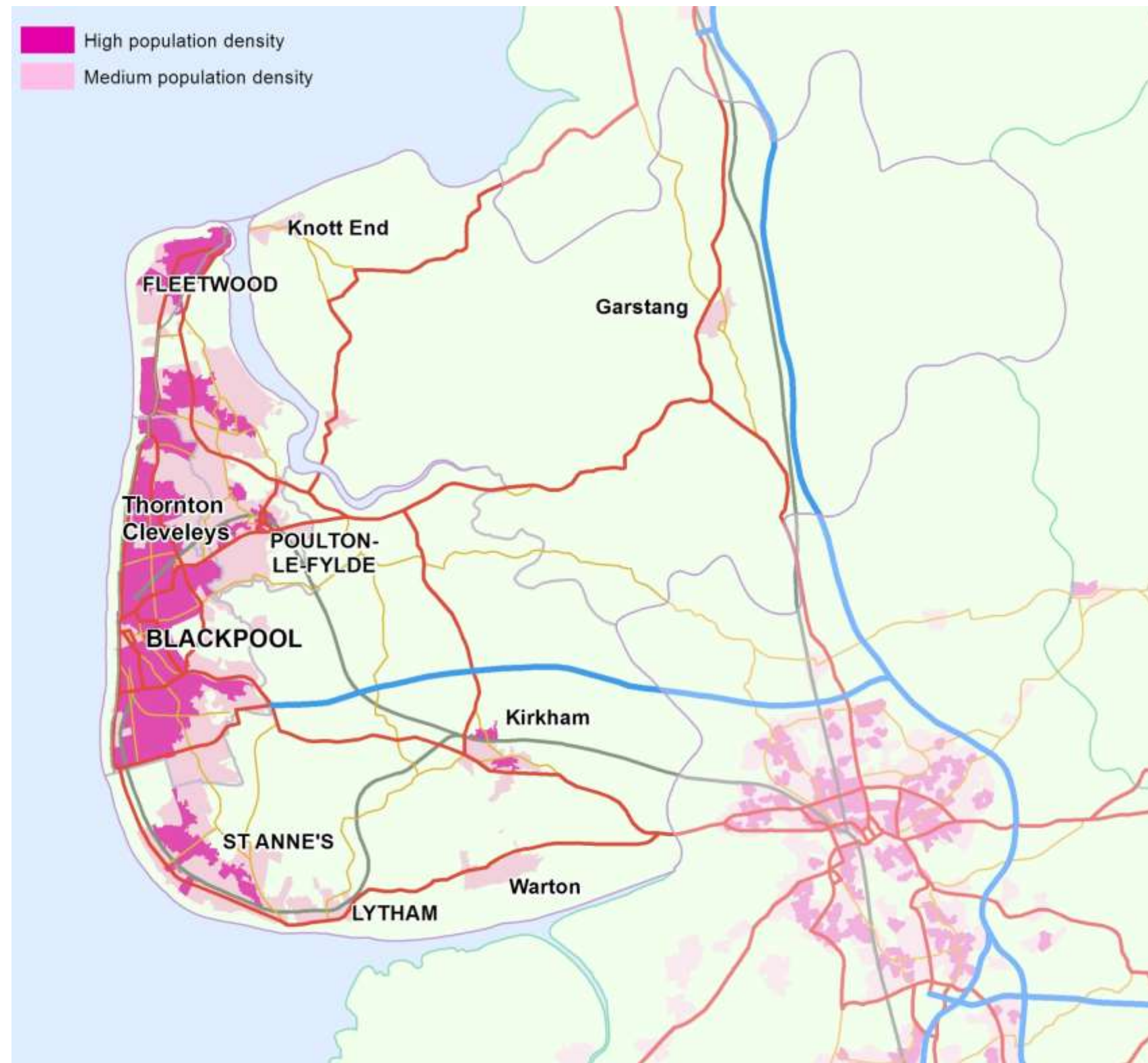
- The decline in overnight visitors to Blackpool has resulted in guest house owners seeking alternative income through converting and sub-dividing their properties to permanent residential use. This has resulted in oversupply of small, poor quality bedsits and flats or Houses in Multiple Occupation (HMO) and Blackpool has become a destination for low income and vulnerable households.
- Although the service sector in Blackpool has grown due to tourism, the seasonal nature of this work currently leads to high rates of unemployment in the winter months. Even during the tourism season, the unemployment rate in Blackpool is usually well above the county and national averages.
- In 2013, both Fylde and Wyre had more than the England average (70%) of people aged 16-64 with qualifications to at least NVQ2, whilst in Blackpool this rate was 65%. Fylde had a remarkable 40% qualified to level4 and above.
- In the academic year 2012/13, Blackpool saw just under 50% of pupils achieve five or more GCSEs (including English and Maths), compared to around 65% in Fylde and Wyre (England average 61%)
- At the end of 2013, the proportion of young people Not in Employment, Education or Training (NEETs) was 5.3% across Lancashire, with 5.2% in Fylde and 6.1% in Wyre. In Blackpool, however, the proportion is 6.8%.
- Average earnings in Blackpool are very low when measured by both place of residence and by place of work, as opposed to earnings in Fylde and Wyre. Not surprisingly, given its employment base, Fylde in particular has average earnings well above the national average.

Where people live determines where many journeys start and end, so the more people in an area, the greater the demand on the network. This is particularly true of commuting, which currently places by far the biggest strain on our transport systems as many workers try to travel in a relatively short period of a few hours in the morning and early evening.

Figure 3 shows how the population of the Fylde Coast is spread across the area, as recorded in the 2011 Census. The largest settlements follow the line of the coast, from Fleetwood in the north of the peninsula, down through Blackpool and Poulton-le-Fylde, to St Annes and Lytham in the south. The very linear nature of this main urban area is clear from the map.

What are not shown on the map are the small settlements that are scattered across the rural areas. These communities have only a very limited impact on overall travel patterns because, individually, the numbers of journeys are small. However, their needs are still an essential consideration for this masterplan.

Figure 3: The Fylde Coast's People



Places

The next major influence on our transport systems is the places that people want to travel to.

Certain destinations attract a lot of people, whether through choice, such as for leisure and shopping or through necessity, such as for health or education. As well as acting as destinations for visitors, these locations often have large numbers of workers and therefore have a major impact on commuting. Major retail developments attract large numbers of shoppers and superstores also provide a focus for trips and are present across most of the major urban areas. These are obvious places that people travel to: however other places specific to local areas can also be identified.

Whilst town centres have traditionally been a focus for employment and shopping, out of town locations are now also major destinations for both people and goods.

The Visitor Economy is crucial in the demand placed on the Fylde Coast's highways and transport networks, particularly in and around Blackpool.

Blackpool is one of the UK's most visited tourist destinations, with its many attractions, most notably Blackpool Tower, now owned by Blackpool Council, the Illuminations and the Pleasure Beach. There has been an upturn in visitor numbers to 13.2million people in 2010/11, of which 2.6million were staying visitors.

Blackpool's seafront continues to attract many visitors every year and other major attractions and landmarks include Blackpool Zoo, the Winter Gardens, the new state of the art tramway which also runs a 'heritage' service from Pleasure Beach to Little Bispham on weekends and holidays. There is also a peak of visitors who travel to Blackpool to see the illuminations.

Blackpool Airport, although no longer offering international flights, is likely to remain a significant destination and focus of economic development.

Visitor numbers and spending in Wyre has risen, as have job numbers in the tourism sector.

The coastal towns of Cleveleys and Fleetwood are popular for high street shopping with offers from a range of independent retailers and markets. Thornton is home to the award winning Wyre Estuary Country Park and Marsh Mill is a restored Grade II* listed tower













mill. It is the tallest in Europe, standing at over seventy feet and is set in Marsh Mill Village and shopping centre. Garstang, a fairtrade town, has a strong cultural calendar and traditional weekly market.

Fylde's coastline is popular with the older generation and the resort of St Annes on Sea is popular with families. Lytham has a mix of shops, bars and restaurants. The Royal Lytham Golf club course is one of the premier links courses in the world and was the venue for the 2012 Open.

Large numbers of journeys are also made to the hospitals in the Fylde Coast, particularly the cardiac specialist unit at Blackpool Victoria Hospital as well as to the education facilities provided by Blackpool and the Fylde College, which is spread across 4 main campus' including Fleetwood Nautical College.

Figure 4 shows the places that are visited by large numbers of people. Together, people and places shape the demand for travel in, to and from the Fylde Coast.

Figure 4: The Fylde Coast's Places

-  Visitor attraction
-  Hospital
-  University centre
-  College
-  Retail park
-  Major supermarket
-  Supermarket
-  Proposed superstore
-  Enterprise Zone
-  Existing employment location
-  Area of Outstanding Natural Beauty
-  Urban area



Fylde Coast Now – Transport and Travel

Travel patterns - Longer distances

As a peninsular, transport connections to the Fylde Coast are dependant to a large extent on the quality of the highways and transport infrastructure in and around Central Lancashire. With a high demand for travel as a result of the Fylde Coast's visitor economy, these links are particularly important.

The M55 links Blackpool and the Fylde Coast to the M6 at Junction 32 north of Preston. It also provides access to Blackpool Airport via the A5230 Squires Gate Link Road from Junction 4 at Peel Hill.

The A585(T) stretches from the M55 to Fleetwood and is an important route linking the urban areas of the Fleetwood peninsula (Fleetwood, Cleveleys, Thornton and Poulton-le-Fylde), with the motorway network.

To the south of the area, the A583 and A584 connect the towns of Kirkham, Wesham and Lytham and St Annes to Preston and Blackpool. In the east of the area the A6 provides connectivity between Garstang and the rural areas with the M6 and Preston, with the A6 corridor connected to the A585(T) by the A586.

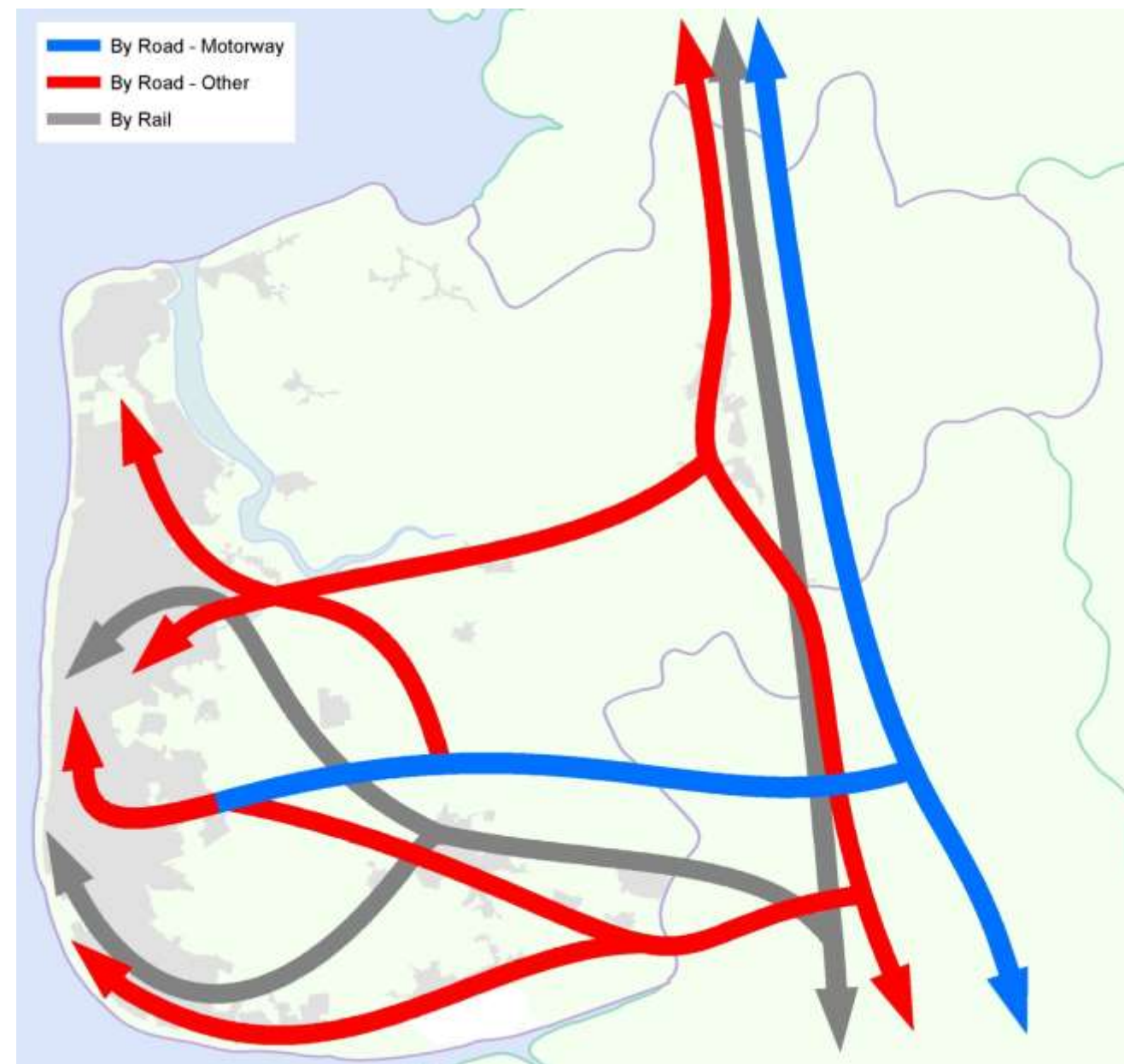
There are two terminus railway stations serving Blackpool, Blackpool North in the town centre and Blackpool South at the southern end of the resort core. Both lines connect Blackpool, Fylde and Wyre, with the national rail network via Preston, providing services to London, Birmingham and Scotland.

The Blackpool North line has direct rail services to London, York, Liverpool, Manchester and Manchester Airport, whilst the Blackpool South line has direct services to East Lancashire.

Blackpool Airport is located to the south of Blackpool in Fylde. Until October 2014, regular scheduled and charter flights throughout the UK and to a number of European destinations, were operated from the airport. In April 2015, daily flights to Belfast and to the Isle of Man resumed. The airport has easy access to the motorway network.

The Port of Fleetwood currently provides marine services for the offshore energy sector.

Figure 5: Longer distance journeys



Travel within the Fylde Coast

Information on where people live and need to travel to across the Fylde Coast, together with an understanding of the longer distance journeys in the area, provides a basis to understanding the main journey patterns in the area.

Journeys are made for many purposes, but the purpose that dominates the busiest times of the working week is the journey from home to work. This is also the journey type about which most information exists.

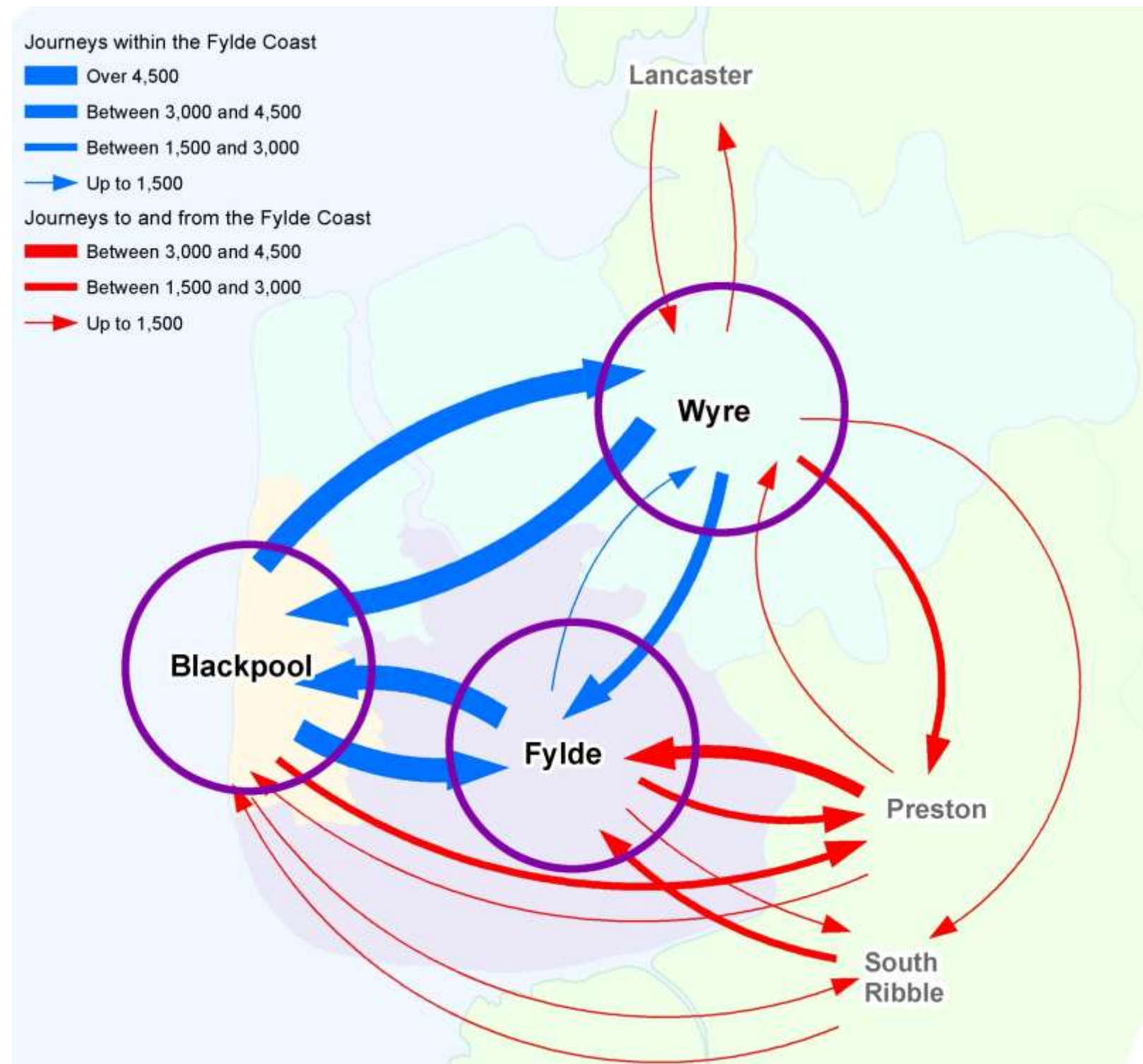
Questions about travel to work were asked in the 2011 National Census. The major journey to work movements into and out of the Fylde Coast are shown in figure 6.

The Fylde Coast has a remarkably high proportion of residents living and working in the area although there are large inflows from other parts of the county, particularly Preston, primarily due to the presence of BAE and Westinghouse Springfields.

These commuter movements take place in the context of a highway network that has reached or is reaching capacity in a number of places but where sustainable modes are becoming a viable option for some journeys.

However, in the Fylde Coast, overlain on this pattern are the movements of visitors. More than in any other part of the county, tourists change the pattern of congestion and also when the worst congestion occurs. Unlike most commuting, these visitor movements are weather dependent and therefore unpredictable.

Figure 6: Typical Weekday Commuting in The Fylde Coast



The car is the dominant travel choice for most people for most journeys. There are many reasons for this, but the most obvious impact on our roads is the amount of traffic they carry, not just in the peak hours but through the whole day.

Figure 7a shows the number of motor vehicles that use our major roads during a typical day.

However, more than any other area of the county, the Fylde Coast, and Blackpool in particular, sees very high traffic volumes at certain times of the year, particularly in summer school holidays and during the Blackpool Illuminations. This seasonal variation in traffic is considerable, as Figure 7b below shows.

Showing data from 2013, the lines show how traffic on different modes of transport changes through the year relative to a neutral month, which would be represented by a value of 1.

Travel on the tram increases dramatically in the tourist season and, of course, during the Illuminations. Rail travel shows an earlier peak in the summer holiday period, with this peak being more pronounced on the North Fylde Line. Road travel shows a very long peak through both the summer holidays and the Illuminations, but far less seasonal variation overall. This reflects the dominance of the car as the travel choice for all types of journey at all times of the year.

Figure 7a: Daily traffic today

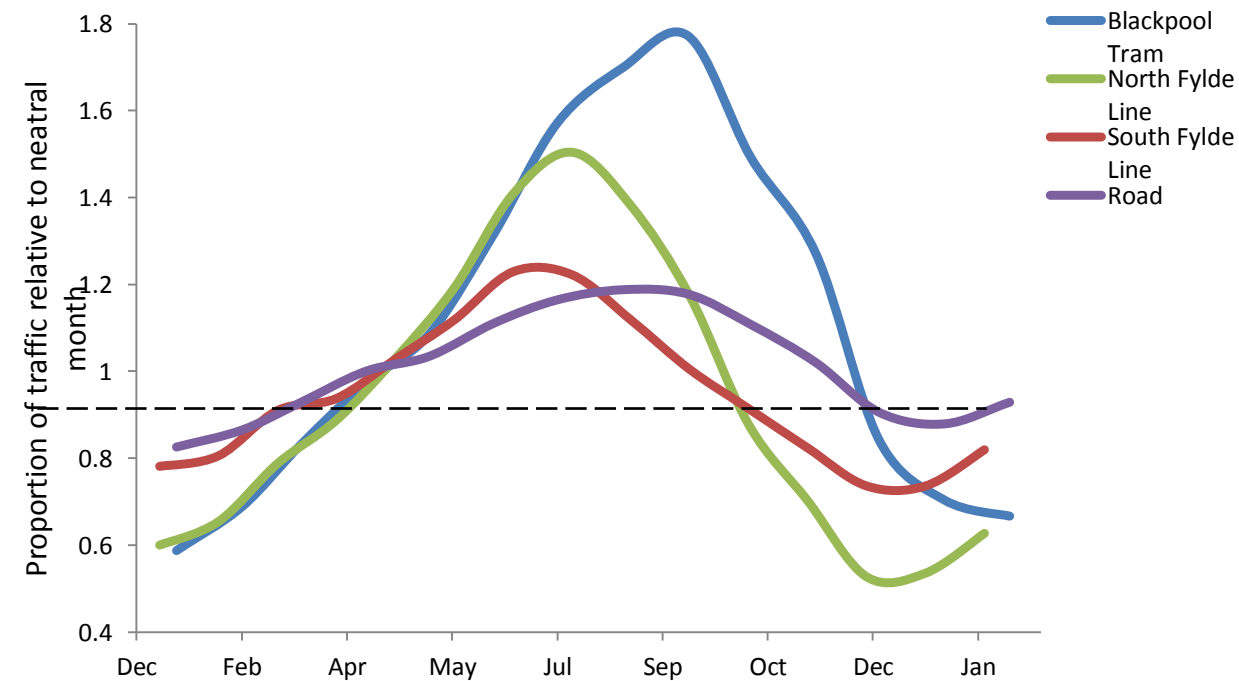


Figure 7b: Seasonal variation in travel demand

The previous map shows the volume of traffic on our major roads. This traffic of course includes buses, which suffer the same delays as other road users unless there are dedicated bus lanes etc. Bicycles may not be counted in the traffic totals, but cyclists also have to share this road space unless they have dedicated cycle provision.

Figure 8 shows the main sustainable transport provision across the Fylde coast.

There are twelve railway stations, most of which are situated on the South Fylde Line, which has services operated by Northern Rail. As well as providing a connection into Blackpool South and the Pleasure Beach, the line serves the towns of Lytham and St Annes with an hourly service to Preston.

The North Fylde Line serves Poulton-le-Fylde and Blackpool and has frequent and fast services to Preston. This line has recently been electrified and it is possible that through services to London using Pendolino trains will be a reality by 2017.

Coach travel is important in the Fylde Coast, particularly in Blackpool, where up to 20% of visitors (over 2 million visitors) arrive by coach. Current estimates show that several hundred coaches arrive in the resort on a typical day and these numbers increase dramatically during the Illuminations.

Blackpool Tramway runs from Starr Gate in Blackpool to Fleetwood and is the only surviving first-generation tramway in the United Kingdom. It is owned by Blackpool Council and operated by Blackpool Transport. The tramway runs for 11 miles and carried 4,297,472 passengers in the last year ending October 2013.

The tramway has been refurbished with new vehicles, although at visitor peaks such as during the Illuminations, heritage vehicles are also used to enhance the tourist experience. The tramway provides an important service linking residents of Fleetwood, Cleveleys and Bispham into central Blackpool and to Blackpool North and South stations.

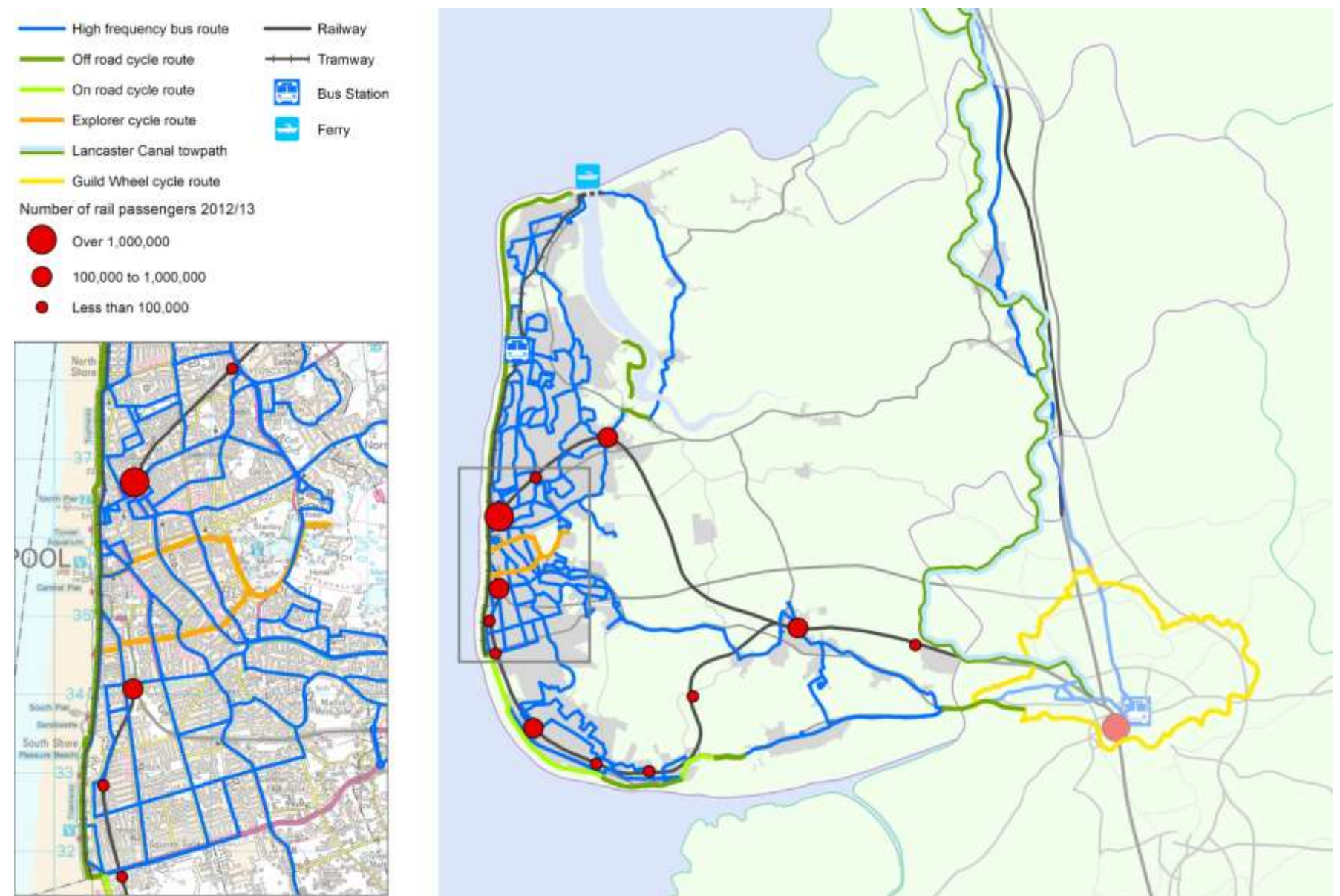
The Knott End to Fleetwood ferry provides a regular daily passenger service across the Wyre estuary connecting Knott End and Preesall with Fleetwood. It is operated by a private company and subsidised by Lancashire County Council and Wyre Council.

The main cycle route in the area is the promenade running continuously between Starr Gate and Fleetwood. At 12 miles long, this is the longest sea front promenade route in the country.

Although not traffic free, new Explorer routes run west to east across Blackpool to provide safe routes to the Stanley Park area. Other key routes are the Wyre Way and the Lancashire Coastal Way.

However, the reality is that the majority of commuters still choose to use cars. Across the Fylde, around 48% of commuter journeys are made by car, even in areas of low car ownership where car sharing is more common. For some, it is a choice, often due to perceptions and lack of knowledge of alternatives. For some though, particularly in rural areas, it is a matter of necessity as there are currently only limited viable alternatives.

Figure 8: Sustainable travel today



Travel problems today

So far we have looked at the demands on the network from where people live, where they want to travel to and how they choose to travel. We now want to look at the impact these journeys have on the economy and on us as we travel about in our daily lives.

Locally, one of the biggest issues is congestion. Some congestion is inevitable; better economic conditions tend to produce more traffic. However, too much congestion hampers business and makes travel difficult for everyone.

Usually, the worst congestion is at peak commuting times. In Blackpool, however, low car ownership means that peak hour congestion is far less of an issue than accommodating visitor traffic. It is estimated that in one year, roughly 9.1 million visitors arrive by car, 2.6 million by coach and 1.3 million by train. The large numbers already arriving by both road and rail make it all the more important that demand for all modes is treated equally.

Congestion here is a problem at weekends and during holiday periods, whilst events such as the Blackpool Illuminations draw in traffic at levels way above what the highways network would normally be expected to cope with. Tourist traffic can also be unpredictable, as other factors, particularly the weather, influence journeys. This can make it very difficult to manage congestion that can occur very quickly and with limited warning.

Although traffic flows on the M55 are within capacity, significant congestion can occur during the peak holiday season at Junction 4 (Peel Hill). Congestion is also apparent at Junction 1 (A6 Preston North) during the traditional peak periods and is occurring increasingly at Junction 3 (Kirkham).

The A585(T) (T) links Fleetwood, North Blackpool, Thornton-Cleveleys and Poulton-le-Fylde with the M55 at Junction 3, north of Kirkham. There are significant traffic volumes travelling to and from the Fleetwood peninsula via the A585(T), which at times already struggles to cope with current traffic levels, with particular problems at Windy Harbour and Singleton crossroads.

The A6 corridor in Central Lancashire, especially in the Broughton area and at M55 Junction 1, is also currently a bottleneck that has significant implications for travel into Preston and for access to the strategic road network.

Congestion is only part of the problem though. Increasing traffic has a wide range of unwelcome side effects.

Impacts on road safety and on local air quality are the most obvious.

Road safety is a particular issue in Blackpool, where recent analysis shows that the authority has a significantly higher rate of accidents than the national average and although casualties are reducing, more needs to be done. The same research shows that Lancashire, on the other hand, has an accident rate similar to the national average and that safety is improving, although road safety still remains a key issue in the county.

Parking is a significant issue, particularly in Blackpool, where visitors searching for parking spaces add to congestion. These problems spread along the Fylde coast however whenever there are major events and at other peak visitor times. Parking at rail stations is also limited and therefore both limits rail use and can cause problems for those living and working nearby.

Roads that are busy with motor traffic can also become barriers to local movement, a significant problem in many of the area's villages, particularly within the wider A585(T) corridor and along the A586. Busy roads can make people worry about safety or about how difficult walking and cycling will be. For instance:

- people are far less likely to want to cycle or walk any distance due to fears about safety and pollution
- communities suffer if the roads that run through them are busy and difficult to cross other than at limited places
- local centres cannot become sustainable if busy roads make the area unattractive and potential visitors therefore go elsewhere.

And as well as these local impacts, there are the wider environmental and social impacts that affect our ability to meet our commitments to:

- reduce carbon emissions
- improve personal health and wellbeing in Lancashire
- support economic development
- increase community cohesion and
- provide affordable travel options in the future

Unfortunately, the alternatives to the car are not without problems in the Fylde Coast area.

Blackpool is relatively well served by train and tram services, although interchange between the two is poor, making switching between them difficult. These interchange problems are also a problem for residents in the coastal areas of Wyre. Fleetwood in particular has no rail connection and those wishing to travel by train must either take the tram to Blackpool or travel to Poulton-le-Fylde. Rural areas of the district to the east of the Wyre estuary have even more limited access to the rail network, with Preston, Kirkham and Lancaster providing the main gateways. At Preston, interchange between services is made more difficult by poor platform access arrangements between the main platforms and those generally used by services to and from the Fylde Coast.

In the Fylde, the South Fylde line does not provide an effective commuter service and is underutilised when compared to rail lines serving similar populations. However, this is unsurprising when the service on the line is infrequent and the rolling stock poor.

Up to 20% of visitors to Blackpool arrive by coach. As well as somewhere to drop off and pick up passengers, many of these coaches also need somewhere to park during the day, or 'layover', with facilities for the drivers. Temporary coach facilities are currently available on the Central Station site, but this is being redeveloped, so a permanent solution is needed in the longer term.

Local bus services have limitations. As well as problems with access to out of town, remote and rural locations, which are shared with many other areas of Lancashire, bus journey times in the urban area can be relatively long eg. Lytham to Blackpool town centre takes over 45 minutes. This is due in large part to the linear urban form in the Fylde Coast area which results in longer routes and slower journey speeds. These issues are particularly significant for those who do not have access to a car.

The flat landscape of the Fylde Coast should make cycling attractive, enabling people of all fitness levels to cycle. However, cycle use is only around average for Lancashire. Blackpool was awarded cycling town status in 2008 and implemented new routes to benefit residents and tourists alike.

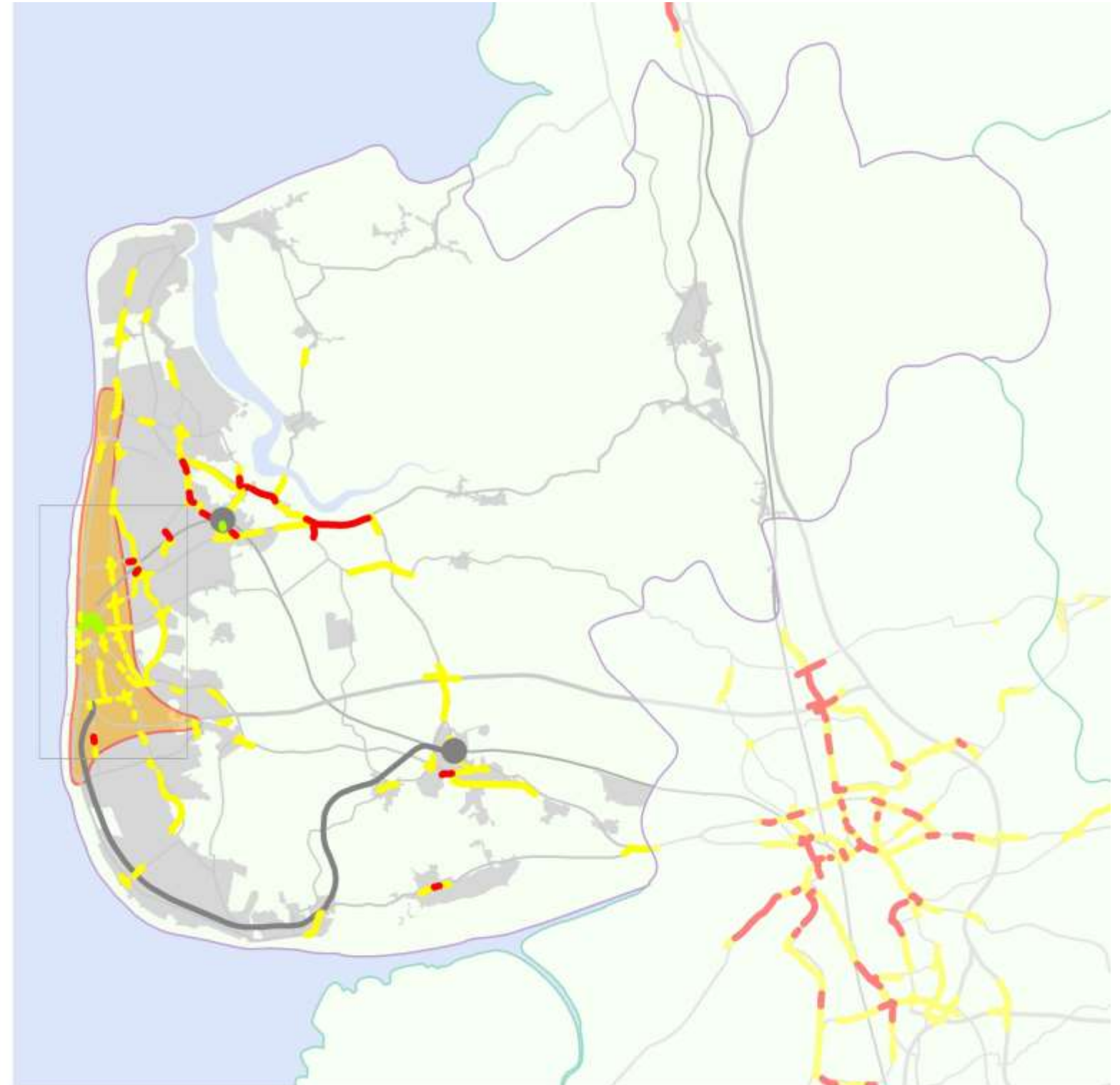
Add to this that neither rail nor bus connections are all that they could be, with interchange between these modes and with cycling limited, and it is clear that there are challenges to be overcome.

Until more people have more sustainable choices that they are confident will meet their needs, the number of cars will continue to grow, at least as long as people can afford to run them. The cost of motoring is already a significant burden to many lower income households and this burden becomes even greater as the distance needed to be travelled increases, as happens from more rural areas.

Figure 9 shows where the most significant issues on the Fylde Coast's highways and transport networks are today.

Figure 9: Travel problems today

- Severe congestion
- Congestion (see glossary)
- Rail network issues
- Visitor parking and congestion issues
- Air Quality Management Area



Looking to the Future – Our priorities

We have looked at what we know of our current transport problems and at the wider issues that impact on transport. We now need to look at the Fylde Coast area in the longer term as both the people and the places of the area change over the next 15 to 20 years.

The future development of the Fylde Coast is being shaped by policies and strategies being put in place now. These plans allow us to understand how economic development will be promoted and how public health will be improved. Whilst there are also changes that are harder to predict, such as how our weather and climate will alter and how technology will advance, we know that we need to do all we can to make sure that what we do now is sustainable for future generations.

Economic Growth

A key driver of the Fylde Coast's economic development is the **Lancashire Enterprise Partnership (LEP)**, of which both Lancashire County Council and Blackpool Council are members.

The LEP's Strategic Economic Plan (SEP) sets out the county's growth ambitions for the next 10 years, with a clear focus on realising the potential of the whole of Lancashire by improving the capability and capacity of our local economy, seizing new market opportunities and overcoming the barriers that constrain growth to help re-establish Lancashire as a national economic leader.

The LEP's ambitions for the Fylde Coast are significant.

The Partnership is the driving force behind the **Lancashire Advanced Engineering and Manufacturing Enterprise Zone (EZ)** that covers the two BAE Systems sites at Samlesbury and Warton. The Zone has the potential to create between 4,000 and 6,000 high value jobs in the long term. The Enterprise Zone is of strategic significance at a national as well as local level. The EZ builds on the existing expertise in the advanced engineering and manufacturing sector provided by BAE Systems. The Warton site covers approximately 75 hectares and support is given, through the LEP, to new and growing businesses.

Blackpool's renewal is a key priority of the SEP. The LEP believe that this requires growing Blackpool's visitor economy and establishing

the development of key new sectors, in Blackpool's case the Energy sector. Key programmes and projects include:

- A major visitor attraction;
- A major casino licence
- The Leisure Quarter Site
- Skills infrastructure and provision, including the Energy Skills HQ and
- Housing Renewal

In 2010 the public sector invested significant resources to secure the town's iconic leisure assets including Blackpool Tower and the **Winter Gardens**. Building on this investment, the SEP proposes a £21m Heritage Based Visitor Attraction (HBVA) for the Winter Gardens. Analysis done for the scheme suggests that this could create 80 jobs, an additional 400,000+ visitors and £14.9m annual benefit to the local economy.

The **Leisure Quarter** lies on Blackpool's former Central Station site and is a prime 7.15ha area of land in the middle of Blackpool town centre. The site is largely in public ownership and has for many years represented the ultimate development opportunity for the resort; it is also a BIS "Growth Demonstrator". Support is needed to release the site for major leisure/retail activity. Typical leisure development could incorporate a mix of a major visitor attraction, hotels and retail.

Research in 2013 by UCLan highlighted the future skills requirements for the Advanced Manufacturing and Energy Sectors on the Fylde Coast. To deliver this Blackpool & Fylde College's intention is to create an **Energy Skills HQ**, strategically located to deliver these essential training requirements. The Skills HQ will provide training and qualifications from areas such as specialist groundwork and maintenance through to Advanced Engineering including up-skilling in areas such as blade preparation and maintenance for wind farms. The courses and qualifications offered can be from entry level through to full honours degree level.

Working alongside the LEP, the Blackpool, Fylde and Wyre Economic Development Company is a partnership of Local Authorities and the Private Sector and has the specific aim of driving growth in Blackpool, Fylde and Wyre. The company is developing a **Local**

Growth Accelerator Strategy which is expected to be ready in Autumn 2015 and will potentially shape the work recommended in this masterplan.

Blackpool's **Talbot Gateway Central Business District** is a £175 million project being delivered by Blackpool Borough Council in partnership with Muse Developments, which is regenerating the area around Blackpool North railway station and Talbot Road.

The first phase of the development has seen new offices for Blackpool Council, a new flagship Sainsbury's store and the refurbishment of a 650 space multi-storey car park, with 20,000 sq ft of retail space on the ground floor of the car park and a further 10,000 sq ft on the ground floor of the Council office building.

A comprehensive set of highway works - including new roundabouts, signalised junctions and a public square - was also delivered, prior to the opening of the first phase, providing serviced plots and open public space around which the various phases of development are fitted.

The second phase of development will deliver a new town centre hotel on the site of the former St John's Market.

Commercial passenger flights stopped using **Blackpool Airport** in 2014, due to the impact of a range of regional, national and global conditions affecting the industry.

In March 2015, the Government announced, subject to further business case development, an 'in principal' designation as an Enterprise Zone for part of the Blackpool Airport site. If this designation is confirmed the Blackpool Enterprise Zone will be Lancashire's second Enterprise Zone governed by the Lancashire Enterprise Partnership.

The local partners, Fylde Borough Council, Blackpool Council, Lancashire County Council, and private land owners are continuing to work together to maximise the potential of the site in a way which creates employment and sustainable economic development opportunities for Blackpool, the Fylde Coast and Lancashire.

The two Highway Authorities will continue to play their part in this development of proposals for Blackpool Airport. This will include the preparation of a Masterplan for the site.

However, it would be premature to be specific about what highways and transport measures may be needed to support the development of the Blackpool Airport site. As more definitive economic growth and regeneration plans for Blackpool Airport evolve it will become possible to consider how accessibility via a range of transport modes can be assured, building on the proposals in this masterplan.

Hillhouse International is a large, fully secure and serviced strategic industrial and employment site situated on the Wyre estuary, close to Fleetwood. It is already occupied by Victrex PLC, Vinnolit and AGC CE (Asahi Glass Corporation, Chemicals Europe), successful multi-national chemical and polymer companies. However, there are also substantial opportunities for growth around the secure site, including residential, commercial and industrial uses, with almost 500 homes currently planned in the area.

The **Whitehills** business area located at Junction 4 of the M55 spans the boundaries of Blackpool and Fylde and represents key strategic employment locations for both local authorities. Whitehills is already home to some 100 companies, including major facilities for the Department for Work and Pensions; National Savings & Investments; NST Travel Group – the UK's largest educational travel company and modular buildings and street furniture manufacturer, Glasdon. Whitehills has a significant amount of land available for further development for business or housing.

How land is used is a vital factor in how an area's economy and people develop. New housing and development locations must create and support economic growth but must also ensure that public health considerations are taken into account and that future plans are sustainable. How this is to be achieved in an area is set out in its **Local Plan**.

The three authorities are at different stages of the plan making process but are in continuous dialogue to ensure that they complement each other and development is coordinated across the Fylde Coast area.

Perhaps the biggest impact of the local plans on our highways and transport networks comes from the location of planned **housing**, particularly where larger developments are planned.

For instance, the **Queensway** site, on the north side of St Annes, for over 1,000 houses, has already been granted planning permission. The associated Heyhouses link road will provide a new primary route between the M55 and St Annes. 1,500 dwellings are also proposed at **Whyndyke Farm** on the boundary with Blackpool.

In Blackpool, there is expected to be some limited housing growth at South Blackpool but the majority of sites will be located within the existing urban area.

Housing plans in Fylde and Wyre are still emerging however, with a number of scenarios that present possible solutions to the conundrum of providing sufficient housing stock to meet future development need without overwhelming existing communities or damaging the areas attractive coasts and rural areas.

Lastly, **shale gas extraction** could also impact on the Fylde Coast area if such extraction were to go ahead. As well as economic and social impacts, the sites would generate traffic, much of it in the initial drilling phase. Whilst this would present traffic management issues wherever it occurred, there could also be damage by the heavy vehicles required in the drilling and operation of the site. The road maintenance implications of this are something that the County Council will bear in mind if shale gas extraction develops in the county.

Health and Wellbeing

In April 2013, Lancashire County Council and Blackpool Council took responsibility for some work that was previously carried out by the NHS.

The two authorities will now work with the NHS to tackle some of the key issues that affect people's health and wellbeing, helping people to stay healthy and prevent illness. The changes will make sure that public health experts have a greater input to many of the different council services that impact on people's health including education, housing, transport and the local environment.

We already know there are health and social issues of real significance in the Fylde Coast that our transport networks could help to address. Among the work that the two councils will take responsibility for are a number of strands that have a bearing on the masterplan:

- tackling obesity
- increasing levels of physical activity;

- public mental health;
- cancer and long-term conditions prevention through behavioural and lifestyle campaigns;
- accidental injury prevention;
- community safety promotion, violence prevention and response(public health aspects);
- tackling social exclusion through local initiatives (public health aspects);
- public health services for children and young people aged 5-19.

Public Health Profiles for 2013, produced by Public Health England, show that there is significant work to do in some areas. Indicators that have a bearing on how we shape future transport strategy include a number that are categorised as 'significantly worse than the national average' in different areas of the Fylde Coast:

- Physically active adults (Blackpool, Fylde, Wyre)
- Life expectancy – male (Blackpool)
- Life expectancy – female (Blackpool, Wyre)
- Road injuries and deaths (Blackpool, Fylde, Wyre)

Based on these issues, both councils have public health strategies which set out immediate priorities.

The Blackpool Joint Health and Wellbeing Strategy 2013 – 2014 sets out a number of priorities which are of direct relevance to this masterplan:

- Healthy Lifestyles
 - Obesity and Healthy Weight
 - Physical Activity
- Health and Social Care
 - Disease Prevention and Early Detection
 - Long Term Conditions and Disabilities
- Wider Determinants of Health
 - Economy, Employment and Workforce
 - Education and Aspirations
 - Environment
 - Transport

The Lancashire Health and Wellbeing Strategy sets out:

- 3 goals
- 6 changes to the way public health works and
- 3 programmes of interventions to be delivered by April 2016 to start to achieve our outcomes

Of these, a number are of potential relevance to this masterplan:

- Goals:
 - Better health – we will improve healthy life expectancy, and narrow the health gap and
 - Better value – we will reduce the cost of health and social care
- Changes:
 - Shift resources towards interventions that prevent ill health and reduce demand for hospital and residential services
 - Promote and support greater individual self-care and responsibility for health; making better use of information technology and advice
 - Commit to delivering accessible services within communities; improving the experience of moving between primary, hospital and social care
 - Work to narrow the gap in health & wellbeing and its determinants
- Programmes

Starting well	To reduce childhood obesity
Living Well	To promote healthy settings, healthy workforce and economic development To promote mental wellbeing and healthy lifestyles To reduce avoidable deaths
Ageing Well	To promote independence To reduce social isolation To manage long term conditions and dementia

These priorities have clear links to travel and transport. Reducing road injuries and deaths and improving access to transport are clear and specific transport issues. Active travel is key to tackling obesity and encouraging healthy choices for all ages. But our streets and public spaces are also deeply influenced by transport. A lower life expectancy is closely related to deprivation; addressing deprivation requires addressing the social determinants of deprivation and that includes access to employment and to education among other factors.

The LEP also have a key role to play in the health and wellbeing of the Fylde Coast. The renewal of Blackpool's economy should help to significantly reduce the levels of deprivation found in some parts of the Fylde Coast, reducing health inequalities as it does so.

The borough councils have also identified health needs that they can impact on:

- Wyre Borough Council has identified key projects in its health plan that will help to provide quality and accessible leisure and cultural services, encourage physical activity for all residents and maintain and manage high quality green spaces including parks, open spaces and coastline.
- Fylde Borough Council's current Corporate Plan details its priorities in specific areas in the short medium and long term. One of the four priorities is 'To encourage cohesive communities' and one of the long term outcomes it wishes to achieve is to improve public health and reduce health inequalities in the Borough.

Sustainability

From the National Planning Policy Framework to the Local Sustainable Transport Fund, sustainability has become a key factor in all plans and policies. For a highways and transport masterplan, it presents several key challenges that must be considered.

- Lancashire and Blackpool's transport infrastructure assets are the most valuable publicly owned assets managed by the two councils, with a combined estimated gross replacement cost of about £10 billion.

Without this infrastructure, Blackpool and Lancashire would not be able to function as places to live, work or visit. Given the importance that this transport infrastructure plays in our everyday lives and in our economic future, it is vital that we maintain and manage our asset as sustainably as possible, maximising benefits and opportunities and reducing negative impacts as far as possible, to provide best value for the people of Lancashire.

Lancashire County Council has therefore produced a Transport Asset Management Plans (TAMP) that identifies key strategic priorities during the period 2015/16 to 2029/30 and sets out how we intend to change the way we manage our transport assets in future. This new strategy is based on managing our assets on a holistic basis recognising the relative importance that each asset group contributes towards our goal of delivering an effective transport system, which is crucial if we are to help the businesses of Lancashire and achieve our broader economic,

social and environmental goals. The TAMP links closely with the area Highways and Transport Masterplans.

The extensive network of moss roads presents a particular maintenance challenge in the Fylde Coast area.

- As Highways Authorities, both Blackpool Council and the County Council have had a duty to manage roads to ensure that flooding does not represent a nuisance to road users. However, under The Flood and Water Management Act 2010 (FWMA) both authorities have now also been designated as a Lead Local Flood Authority (LLFA). The FWMA places a range of new powers, duties and responsibilities on the LLFA and its partner Flood Risk Management Authorities (RMAs). Each LLFA has to produce a Local Flood Risk Management Strategy (a 'Local Strategy'), and Lancashire County Council has produced a joint Local Strategy in partnership with Blackpool Council.

The predominant flood risks are very different across the area:

- Blackpool and parts of Wyre are protected from coastal erosion and flooding by concrete coastal defences. Most of the watercourses that drain the area run into the public sewer network, however, meaning that the main cause of flooding is lack of capacity or failure of sewer systems. Some low lying land to the south east relies on pumped drainage which can be overwhelmed or fail, leading to flooding.

In Wyre, key areas of the district are at high risk of tidal or fluvial flooding, when high water levels in the sea or rivers slows the discharge of smaller watercourses and drainage systems and causes them to overflow. Flash flooding, which can be a problem in the eastern parts of Wyre, occurs suddenly with little or no warning and tends to happen when heavy rainfall runs off land and quickly swells rivers and streams. It can also occur where drainage systems are overwhelmed by intense rainfall.

- The primary sources of flooding in the lowland agricultural areas of Fylde are the rivers and surface water runoff after high rainfall. The coastal area has only a low risk of tidal flooding, but shallow gradients in the drainage system can cause problems.

As LLFAs, we are therefore working with our RMA partners to develop options for water management in rural areas, with a view to balancing the needs of agricultural productivity, flood risk management and sustainable drainage practices. We will

therefore make sure that proposals put forward under this masterplan fit with our local strategies and that issues of flooding and drainage that could affect a proposal are taken into account in the development of schemes and business cases.

- There is now little argument that we need lifestyles that generate a smaller carbon footprint. 'Low carbon' transport has the potential to allow individuals to make a genuine difference to the world around them. However, the evidence of travel choices made at the moment shows that what is on offer now is not what people are prepared to switch to. This suggests that we need to do more to provide low carbon options that more people want to use.
- There are some areas of the Fylde Coast that are remote from employment and services. Many of these are in the rural areas but it would be wrong to assume that all our towns and villages have good connections. These areas have come to rely on the car, making it very difficult for those without their own transport. However, increasing car use is unlikely to be sustainable in the future. Providing alternatives both for residents and for visitors will therefore be vital for economic development.
- The roll out of superfast broadband across the area will have a fundamental impact on how many of us do business on a day to day basis. It will allow many people to reduce the amount they have to travel – we can shop from home, download films and games and, of course, work from home. For businesses, it will offer far greater access to customers and digital media, also with less need to travel.

We need to maximise the benefits of reduced car traffic for our highways and transport networks while also taking account of the negative impacts, such as greater delivery traffic. We also need to ensure that those who cannot or do not adopt superfast broadband are not forgotten.

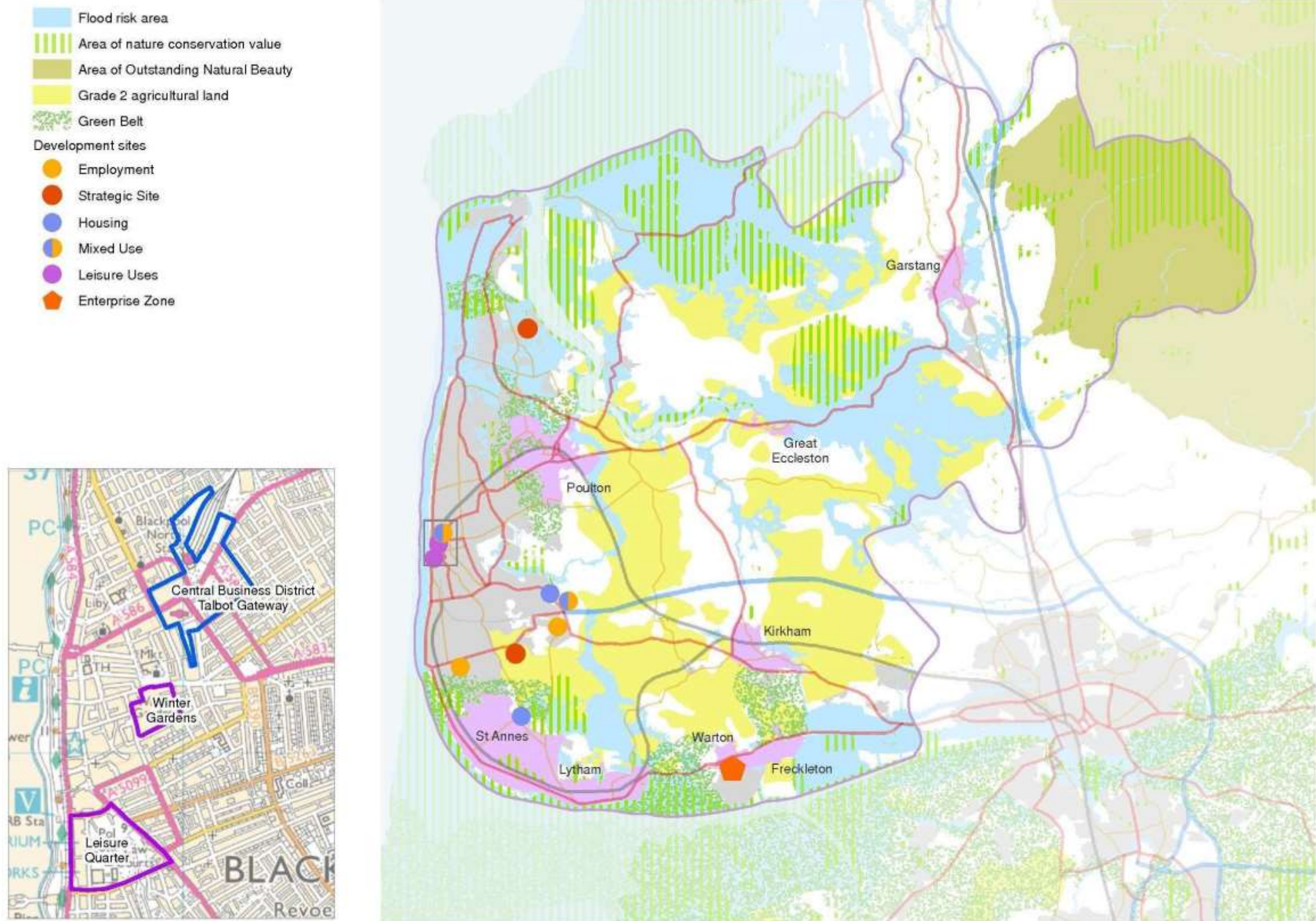
- The landscape of Fylde and Wyre is particularly diverse, ranging from sand dunes and reclaimed mossland, through the river valleys of the Wyre and Calder and rising up to the western boundary of the Forest of Bowland AONB. As well as having an important agricultural sector, the landscape provides an important recreational resource supporting the visitor economy which already exists across the Fylde Coast. Providing good transport links that do not damage that environment will therefore be crucial to the masterplan.

- 'Green' tourism could be a vital component of the Fylde Coast's future visitor offer. By actively seeking ways to reduce the negative impact of business operations on the environment, green tourism aims to ensure that economic development as a result of tourism is a positive experience for everyone; local community, tourism businesses and visitors. Businesses benefit by conserving resources, reducing waste, reducing costs through efficiencies and staff awareness, attracting new customers and improve their public image. The wider benefits are the positive impact on the local community, support for the local economy and reduction of congestion and pollution.

As well as future development, Figure 10 also shows how the environment of the Fylde Coast impacts on development:

- the areas of outstanding natural beauty.
- the green belt, put in place to prevent the merging of neighbouring towns and to direct investment to the older parts of the urban areas.
- the high quality agricultural land.
- the areas at risk of flooding .
- the areas of nature conservation value and
- Ramsar sites

Figure 10: Development and constraints



Looking to the Future – Funding

Funding for transport infrastructure is changing. These changes are already happening, as the Preston, South Ribble and Lancashire City Deal shows. The City Deal's £334m Infrastructure Delivery Programme includes four major highway schemes and local community infrastructure, such as schools and health facilities. The Delivery Programme is funded through pooling local and national resources, including funds from the DfT (including the Local Major Scheme Programme), from local government and from private sector investment through the Community Infrastructure Levy (CIL).

We now need to be ready to take advantage of these changes, set out below, for the benefit of the rest of Lancashire.

Government funding

The changes to the way transport infrastructure is funded will come into effect from 2015/16. From that time, the Lancashire Enterprise Partnership (LEP) will be responsible for a multi-million pound budget devolved from the Department for Transport. This creates for the first time the opportunity to integrate key economic and transport priorities and plans. The LEP will be responsible for the review and approval of individual major scheme business cases and ensuring effective delivery of the programme.

Transport for Lancashire (TfL) is a committee of the LEP. As such, TfL is able to give robust advice to the LEP on issues that transcend complex local economic relationships, transport patterns and local government administrative boundaries.

Through the Preston, South Ribble and Lancashire City Deal, TfL has secured a ten year local major transport scheme allocation from the Department for Transport, something only achieved by four other local transport bodies nationally (Greater Manchester, West Yorkshire and York, the Sheffield City region and South Yorkshire and the West of England).

In June 2013, the Chief Secretary to the Treasury confirmed the establishment of the single Local Growth Fund (LGF). The LGF amounts to over £2bn in 2015/16 and includes a significant amount of local transport funding. In addition to funding for local major transport schemes, from 2015/16 the LGF includes over 40% of the Integrated Transport Block (IT Block) funding currently received directly from the Department for Transport by local transport authorities. The Government has committed to maintain

the LGF at a total of at least £2bn each year in the next Parliament. The LGF is a single pot with no internal ring fencing.

IT Block funding is capital funding used by local transport authorities for small transport improvement schemes costing less than £5 million. Schemes include – small road projects, road safety schemes, bus priority schemes, walking and cycling schemes and transport information schemes. The reduction in the amount of IT Block from 2015/16 will mean that the County Council and Blackpool Council will have less direct guaranteed funding for local transport schemes going forward.

Access to the LGF is through a 'Growth Deal'.

The Lancashire Growth Deal, as agreed in July 2014, aims to realise the growth potential of the whole of Lancashire, building on key local economic assets including the universities and colleges, the Lancashire Advanced Engineering & Manufacturing Enterprise Zone, the Preston, South Ribble and Lancashire City Deal, and the high value business clusters in Central and East Lancashire.

Improving transport connectivity to release economic activity and housing potential particularly in the Fylde Coast area is a key component of the Deal. There is a strong focus on Blackpool, with a combination of transport and housing interventions designed to support and sustain the visitor economy and address local housing market challenges. The specific schemes are discussed later.

This first Growth Deal includes over £85million of investment from both the private and public sector to support economic growth in the Fylde Coast area. Future growth deals will likewise need funding to be both local and national, with support from across local and central government.

Strategic partners

Our strategic partners are also seeing changes that will impact on what we can achieve through this masterplan.

The rail industry is complex, with operation of the infrastructure separate to the operation of passenger and freight train services. Network Rail is the private sector monopoly owner and operator of the national rail network, including track, signalling, bridges and tunnels. It operates in 5 year 'Control Periods' (CP), for which

delivery plans are produced. CP5 will start in April 2014, with CP6 starting in April 2019.

However, the Government's High Level Output Specification (HLOS) and Statement of Funds Available (SoFA) determine what is delivered in these control periods. These set out what the Government wants achieved by the rail industry during that control period and the amount of money available.

The HLOS and SoFA for CP5 have been published. In order to achieve infrastructure improvements in Lancashire in the next CP, we therefore need to be in a position to influence the development of the HLOS that will determine activity in CP6.

Many rail services in the country carry people making relatively short journeys and are a key part of an area's local public transport network. They have seen substantial growth in demand in recent years, a trend that is expected to continue.

At the moment the franchise contracts underlying these services are specified, funded and managed centrally by the DfT. 'Rail Devolution' would see decisions relating to local rail services made closer to the communities they serve.

Rail North, a consortium of 30 local authorities across the north of England, is now working in partnership with the DfT to take forward the re-franchising of the Northern and TransPennine services, with the Secretary of State responsible for final decisions and letting the contracts and the subsequent development and implementation of a formal integrated partnership structure to manage the new franchises, on which decisions will be made jointly.

Away from the rail industry, Highways England (HE) is an Executive Agency of the DfT and is responsible for operating, maintaining and improving the strategic road network in England, which includes major trunk roads and most motorways.

Route based strategies are currently being taken forward by the HE, including one covering Lancashire. The strategy initially will identify performance issues on routes and also future challenges, taking account of local growth challenges and priorities. The HE, working with the DfT, will use this evidence to identify and prioritise possible solutions to inform investment plans for the next full government spending review in 2015 and beyond.

Throughout the process, we will work with the HE both to understand the issues on Lancashire's strategic roads now and in the future and to ensure that the resultant investment plan meets our needs.

Developer contributions

When a development is proposed, Section 106 agreements can be put in place to make it possible to approve a planning proposal that might not otherwise be acceptable in planning terms. For example, a section 106 agreement might require a developer to fund improving the access road to a site, to ensure that access will be safe once the development is completed. They are specific to the site that is proposed for development.

Since April 2010, local authorities have been able to charge a 'Community Infrastructure Levy' (CIL) on any new development above a certain size. Where introduced, CIL is a general levy on qualifying development, designed to raise funds for infrastructure needed to support the development proposals. We are now in a transitional period where both CIL and section 106 agreements can apply. As yet, none of the Fylde Coast authorities has a CIL in place, but that may change as their Local Plans develop.

In introducing CIL, local planning authorities need to prepare a 'charging schedule'. The schedule sets out what, if anything, the charge will be per dwelling for residential development, or per square metre for all other development. In setting the charges, planning authorities need to balance the level of charge with the potential impact on the economic viability of development.

Across Lancashire, this need for balance between developer contributions and development viability is a key issue. Securing developer contributions through planning obligations as private sector investment will be crucial to taking all Lancashire's masterplans forward.

Looking to the Future– What are the challenges?

We have already looked at current problems on the highways and transport networks. We now need to look at what extra effect the plans and priorities we have outlined will have.

Ensuring that the Fylde Coast has the connections to the rest of Lancashire and to other economic opportunities further afield will be essential; as well as providing markets for business and job opportunities for residents, access to the Fylde Coast for visitors is vital.

Travel options within the Fylde Coast will also be necessary, both for residents and for visitors.

In Fylde, development plans will see significant housing at Queensway and potentially around existing settlements such as Lytham and St Annes, Kirkham and Wesham and Warton, as well as around Junction 4 of the M55. In Wyre existing settlements could see many more new residents. In Blackpool, new development will largely be accommodated within the existing urban area.

Accommodating all this development will require changes to the highway network to make sure that it can cope, but convenient alternatives to the car must also be available to help meet future demand for travel. Increasingly, this will not only be for those who don't own a car, but for those who want to travel more cheaply and/or sustainably.

Rail, public transport and cycling all have the potential to offer alternatives to the car, particularly if it is made easier to interchange between these modes and the car. Improving how our streets and public spaces feel and look will also make it easier for people to travel without a car, whether as a resident of an area or as a visitor.

The rural parts of the Fylde Coast face their own challenges, particularly at a time when the costs of car ownership are rising and the availability of conventional public transport is reducing. Supporting access to jobs, education and services for our rural residents is vital and again, what is good for residents and local businesses will be good for the visitors.

Finally, the local links that support all travel need to be better in many parts of the area. The best road, rail, bus and cycle networks are no use if people do not feel able, or do not know, how to use them. High quality local links are vital for those who need to get to work as cheaply as possible and for whom car ownership is not an option. These links also provide the opportunity to add to our 'green tourism' offer, giving visitors real alternatives to the car. And such links are also crucial for neighbourhood businesses and for individual health.

Whilst these are distinct challenges for the future, the Fylde Coast has many advantages working in its favour.

These positive and negative influences are summarised here to show the strengths and opportunities in the area and also the potential weaknesses and threats. Appreciating these provides us with the understanding of what will influence and shape our highways and transport network in the future.

STRENGTHS

- A strong LEP working in partnership with the private sector, Lancashire County Council and Blackpool Council.
- Established tourist economy with leading tourist destinations, especially Blackpool, the UK's most visited resort and the classic resort at St Annes.
- Lancashire is the most significant centre in the UK for civil and military aerospace manufacturing, part of a wider world class regional cluster making a contribution of over £850 million to the economy.
- Lancashire Advanced Engineering and Manufacturing Enterprise Zone (BAE Systems Warton and Samlesbury sites)
- Advanced chemical and polymer presence including Asahi Glass, Victrex, Vinnolit and Glasdon UK
- Strong energy and environmental technology centre, including nuclear industry presence of Westinghouse Springfields at Salwick.
- Strategic site at Hillhouse International, Thornton.
- Well established food production companies including Burtens Foods, Fox's Biscuits and Tangerine Confectionery.
- Outstanding leisure and recreational opportunities
- Strong built heritage
- Outstanding natural landscapes
- Rising educational standards in higher, tertiary and vocational education
- Further education at the 4 four campuses at Blackpool and the Fylde College, including the specialist nautical campus in Fleetwood
- Centre of excellence for land-based courses such as agriculture and horticulture at Myerscough College
- Good transport links to wider area
- Committed programmes for new transport investment

OPPORTUNITIES

- Emerging Local Plans
- Comprehensive development plans include strategic sites as a focus for investment
- Scope for further development of an Advanced Engineering and Manufacturing Technology Exploitation Centre (AEMTEC) , a key feature of the Lancashire Enterprise Zone.
- Energy economy/energy sector growth deal boost
- 'In principal' designation of Blackpool Airport Enterprise Zone
- Proximity to Central Lancashire and Lancaster
- Further growth of already established visitor economy
- Substantial committed public transport investment
- Superfast broadband
- Universities enabling access to quality education
- Development of the Skills Sector

WEAKNESSES

- Low confidence and aspiration in some communities
- Poor educational attainment and lack of higher level skills in parts of the community – particularly Blackpool
- High levels of worklessness in Blackpool
- Poor life expectancy and ill health in some areas
- Long public transport journeys between some coastal communities.
- Lack of rural access to services in places
- Ageing population
- Rail trips to the north and south of the UK require interchange at Preston
- Infrequent rail service on the South Fylde Line
- Lack of sustainable transport integration
- Poor motorway connectivity in some parts of the area.
- Blackpool's road safety currently worse than the national average

THREATS

- Growing car ownership and use, with limited alternatives.
- Decline of public transport affecting non car owners in particular
- Bottlenecks on the highway network could adversely impact economic development
- Poor quality rail services limit connectivity on some lines
- Financial threats and uncertainty - Comprehensive Spending Review
- Uncertainty amongst private investors
- Reluctance to change travel behaviour
- Poor air quality in some places
- Congestion from tourist traffic adversely affecting the visitor experience
- Visitor numbers can make parking difficult in some areas.
- Unpredictable congestion has an adverse effect on reliability and punctuality of public transport

Our Vision

Transport and travel allow our residents and businesses not only to go about their everyday lives but also to grow and prosper. Our vision for travel and transport in the Fylde Coast therefore reflects the aspirations that have already been put forward for Blackpool and Lancashire as a whole:

By 2031, we want the Fylde Coast to have highways and transport networks that support:

Prosperity - because the success of the area's economy will determine the availability of good jobs that allow people to fulfil their aspirations and enjoy independent, productive lives; and because a strong, diverse commercial base will be central to sustaining investment in the area and in turn securing long term economic success.

Health - because it is central to everybody's happiness and ability to achieve what they want from life and

Wellbeing - because we aim to move from intervention to prevention as much as we can, giving people the opportunities that allow them to stay well and thrive on their own or as part of their family

Greater prosperity, health and wellbeing will make the Fylde Coast a good place to live, work or visit, a place where all people can live long, happy and healthy lives regardless of their background.

To achieve this vision across the Fylde Coast we need our highways and transport networks to do more than they do now. The evidence shows that there are 5 key requirements for the future:

- We need our highway network to operate more efficiently, not just for cars, but also for buses, coaches and for freight. Over the life of this masterplan, there will always be a need for roads; not all car journeys can be made by other modes, buses and coaches need roads to travel on and the majority of freight movements will still be by HGV. We need to make sure that congestion doesn't limit the Fylde Coast's opportunities.
- We need our rail network and services to make commuting convenient and easy and to be an outstanding gateway to the Fylde Coast for businesses and visitors. Making the most of the opportunities that the network offers, particularly of the South Fylde Line, could take a significant pressure off our roads and make the area more attractive for residents, visitors and investors.
- We need public transport to serve all our communities so that people can get to the jobs and services they need. People who don't have access to a car need to be assured they will not become isolated from society; people who do have a car, resident or visitor, need to be able to leave it behind if congestion isn't to make road travel impossible.
- We need cycling and walking to become the convenient travel choice for shorter distances and for it to be easy for people to change between modes, so that cycling and walking can become part of longer journeys too. We need to make sure that both residents and visitors can have these choices.
- We need our streets and public spaces to feel safe and attractive so that local communities and their economies can develop and so that everyone can enjoy being out and about and being active, with all the health benefits that brings.

The remainder of this masterplan sets out how we propose to work towards this vision.

Taking Our Vision Forward – What we're already doing

Having set out what we need our networks to do in the future, we need to consider what is already being done or is programmed.

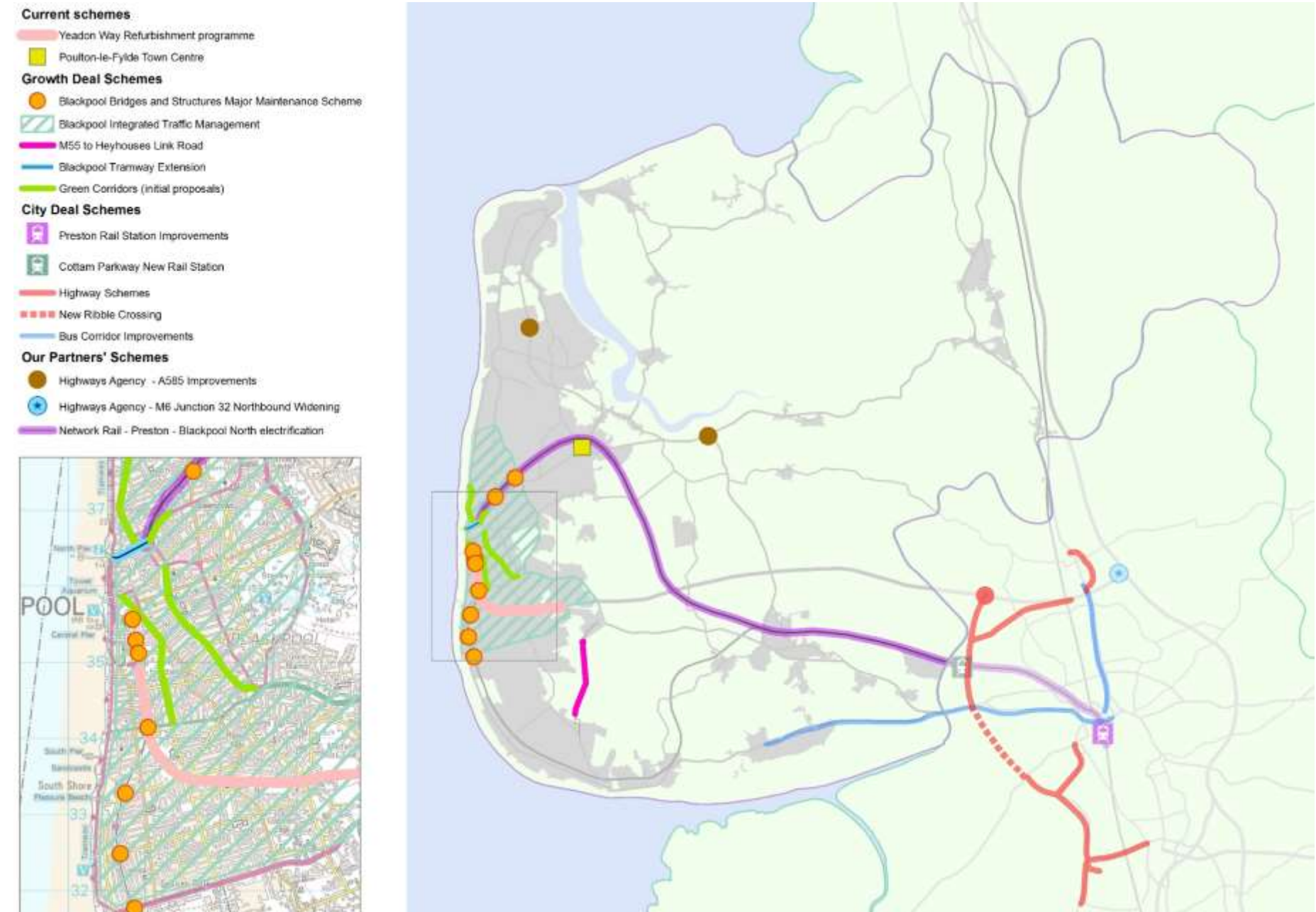
The area's Local Transport Plans have already been mentioned. They set out a broad strategy for how transport and the way we travel in Lancashire will change moving forward to 2021 (2016 in the case of Blackpool). The Local Transport Plans' objectives for both authorities are set out in the introduction to this masterplan.

Through the Growth Deal, the LEP has secured £233.9m from the LGF to support economic growth in the area - with, across Lancashire, £39.4m of new funding confirmed for 2015/16 and £48.6m for 2016/17 to 2021. In the Fylde Coast, three schemes are currently profiled in 2015/16 subject to demonstrating that they represent high value for money. A further two schemes are being further developed for funding in 2016/17 and 2017/18, again subject to demonstrating that they represent high value for money.

Our partners are also improving their networks, with both Highways England and Network Rail investing in the Fylde Coast.

There are also private sector proposals currently being progressed that are of relevance to this masterplan.

Figure 11: What we're already doing



Yeadon Way refurbishment programme (completed 2015)

Yeadon Way connects the M55 motorway with the extensive car parking areas in Blackpool town centre and is of critical importance to the resort's economy and to redevelopment of the Central Station site within the Leisure Quarter.

Constructed on a former railway embankment, the road had significant maintenance issues including embankment slippage, bridge failure and drainage dereliction. Whilst the existing maintenance regime had prevented the road's failure, this one-off refurbishment, funded through the government's Local Pinch Point programme has given the road another 25 years of life before major work is likely to be required again and simplified ongoing maintenance.

Poulton-le-Fylde Town Centre

Poulton-le-Fylde town centre suffers from significant congestion problems and as a result Chapel Street has been declared an Air Quality Management Area.

The redevelopment of the Teanlowe Centre has provided an opportunity to address some of these congestion issues and therefore improve the environment of the town centre.

Lancashire County Council is working closely with Wyre Borough Council and the developer to deliver the Hardhorn Link Road. This is a short length of road which will run from Blackpool Old Road to Hardhorn Road through what is currently the Hardhorn Road car park. The scheme also includes other supporting changes on town centre approach roads. The full scheme will provide an alternative route to Chapel Street and facilitate movement to and around the town, including to the redeveloped Teanlowe Centre.

Growth Deal schemes

The Lancashire Growth Deal, secured by the LEP, prioritises a range of transport schemes across the Fylde Coast to be implemented by 2021. As with all Growth Deal schemes, the final funding of the projects is subject to the LEP's approval, following independent scrutiny of the project business case.

Blackpool Integrated Traffic Management - 2015/16

Whilst the Promenade is very much a focus for visitors, it is by no means the iconic public space it could be as pedestrians still face conflicts with traffic.

Away from the sea front, parking can be an issue for many visitors. Whilst the car parks are the natural arrival point for cars coming from the M55, many drivers still end up searching for parking in the town centre and on the Promenade. These extra vehicles cause congestion and add to the pedestrian/traffic conflicts that lessen the attractiveness of the new Promenade.

Enhancements to the resort's existing Urban Traffic Management Control (UTMC) system, will provide an Intelligent Transport System (ITS) that will reduce pedestrian / vehicle conflict on the Promenade by offering alternative routes and improving public transport performance, whilst supporting the Illuminations and other event management. Variable Message Signage will minimise parking search trips which will increase visitor dwell time. Since the new system will offer an enhanced real time response to what can be unpredictable traffic conditions, congestion will be reduced, which in its turn will improve public transport performance and support event management, particularly for the Illuminations.

It has been estimated that improved traffic control could lead to a total increase in the number of day visits of 2% over a three year period. Whilst this may not sound much, it represents an additional 1.24m visits over a period of 10 years.

Blackpool Bridges and Structures Major Maintenance Scheme - 2015/16

Detailed survey work has identified 10 defective structures requiring urgent remedial attention across the resort area. These are:

- Priority 1: Plymouth Road, Squires Gate Lane, Devonshire Road (Railway), Harrowside and Waterloo Road

Priority 2: Princess Street, Watson Road, Chapel Street and Rigby Road and Gas Works Subway.

Of these, four carry road over rail, one carries rail over road, four carry a main visitor route into the resort core and one is a gateway to the town which accommodates access to Blackpool South Station.

These structures are vital to the Blackpool economy and their loss would inflict considerable damage, disrupting the road and rail networks considerably.

The remedial work on these structures will ensure that the road network will remain operable on a sustainable basis and will enable Blackpool as a whole, and site-based employment generation opportunities in particular, to be promoted – particularly Leisure Quarter (Central Station Site), Central Business District (Talbot Gateway) and South Blackpool Employment Growth.

In addition to supporting a sustainable maintenance programme, preventing transport network breakdown and under-pinning inward investment, the scheme also offers the opportunity to improving the structures' visual appearance, particularly important on main visitor routes to the resort.

The M55 to Heyhouses Link Road - 2015/16

There is currently no direct, high standard link between the M55 motorway and St. Annes. Access by way of the Squires Gate Link road is circuitous, as is the main alternative route via Queensway, School Road and Whitehill Road. The more direct route via Wild Lane/North Houses Lane is a narrow moss road with limited passing places which makes it a poor environment for more vulnerable road users in particular and has been closed on safety grounds since 2013. Moss roads also tend to require more maintenance than other roads as there is often ground movement beneath them.

The new link, funded with LGF support, will provide a direct route fit for all users between the M55 at junction 4 and A583 Preston New Road to the B5261 Blackpool Road in St. Annes, using an initial section of link road that was completed a number of years ago. It will give better access to development sites, including Whitehills and Blackpool International Airport, to new housing at Heyhouses and for tourism, including future hosting of the R&A Open Golf Championships.

The scheme will also provide some congestion relief and allow Wild Lane to be used as a sustainable transport link by pedestrians, cyclist and equestrians.

Blackpool's Green Corridors – proposed start 2016/17

'Green Corridors' is a town centre focused green infrastructure programme that will benefit local residents, visitors and inward investors. The scheme builds on Blackpool's sustainable transport successes such as Better Bus Area Fund (BBAF) scheme and its cycling towns programme which has already provided a number of cycling routes, including those improving town centre access.

The Green Corridors will supplement this. As options to provide further off-road cycle routes are limited, the 'cycle proofing' roads concept will be explored to make what are also key vehicle routes into cycle and pedestrian friendly spaces.

The green routes will be 20 mph zones. As well as the obvious benefits to cyclist and pedestrians, buses will also benefit from 20mph speed control, providing easier pull in and out together with reduced congestion thanks to smoother flowing traffic.

The proposed routes pass through some of Blackpool's most deprived communities and their recovery through infrastructure improvements and community development initiatives is essential to Blackpool's future as a viable resort.

Primary routes have currently been identified as:

- Dickson Road
- Central Drive
- Talbot Road and Church Street

A number of the proposed routes have existing road safety issues which have made them substantial barriers to travel. The Green Corridors will allow this situation to be rectified.

Indicative funding has been allocated to this scheme within the Growth Deal which will allow work to commence in 2016/17 subject to value for money being demonstrated to Transport for Lancashire.

Blackpool Tramway Extension – proposed start 2017/18

The current lack of direct interchange between the tramway and the railway has already been mentioned as one of the more significant problems on the Fylde Coast.

The extension of the upgraded tramway from the Promenade at North Pier to Blackpool North railway station will improve access to the UK rail network from Blackpool, Fleetwood and Cleveleys.

The extension will see trams leave the promenade at North Pier, using the points which were installed a few years ago as part of the tramway upgrade, and run along Talbot Road to interchange with Blackpool North railway station.

Indicative funding has been allocated to this scheme within the Growth Deal which will allow work to commence in 2017/18 subject to value for money being demonstrated to Transport for Lancashire.

The City Deal and the Fylde Coast

Being able to quickly and easily access the rest of the country is always important for any area, both for its residents and its businesses. For the Fylde Coast, however, tourism adds another dimension to this as it is vital that the visitor experience isn't marred by a difficult journey to or from the area.

The Fylde Coast relies on both road and rail for this strategic connectivity. Rail connectivity is by way of the North and South Fylde lines. Road connectivity is provided by the M55 corridor, which links both Blackpool and A585(T) to the M6, the A584/A583 corridor in Fylde and the A6 corridor in Wyre.

What all these corridors have in common is that they cross Central Lancashire, making proposals in the Central Lancashire Highways and Transport Masterplan vital for the Fylde Coast as well. A number of schemes and proposals are discussed in the masterplan, brought forward both by the County Council and by our partners:

M55 Junction 2 and the Preston Western Distributor (The A584/A583 corridor)

A new junction on the M55 near Preston will be built, funded through the Local Pinch Point programme (Tranche 4) to support the Preston, South Ribble and Lancashire City Deal.

Estimated to cost between £25 to 30 million, the junction will be the northern end of the new Preston Western Distributor, which is being brought forward under the city deal and which will provide a

direct dual carriageway connection from the motorway to the A583/A584 at Clifton.

The new connection will provide relief for the M55 J1 at Broughton and improve access to the Warton Enterprise Zone, as well as helping to unlock delivery of the North West Preston strategic location for housing, which will see more than 4,000 homes built in the area.

Its importance to the Fylde Coast lies in the way it will improve access to the Strategic Road Network from the Fylde, and in particular, the Enterprise Zone site at Warton.



Broughton Bypass and M55 junction 1 (The A6 corridor)

The A6 is part of the main route between much of Wyre and Central Lancashire. It also provides key connectivity to the M6 at J33 (Forton) and at Junction 1 M55.

Major improvements to the Broughton roundabout, (Junction 1 of the M55) were completed in December 2013. The £2.6m scheme saw the junction with the A6 reconfigured, with additional signals and feeder lanes to improve traffic flow. The roundabout is now also safer to use for pedestrians and cyclists thanks to new crossing points and shared-use paths.

The work was carried out by Lancashire County Council but was part-funded by Highways England through the 'pinch-point' programme.

Work is now underway on a bypass to relieve congestion in Broughton. The bypass will greatly reduce traffic in the centre of Broughton and improve journey times for motorists by creating a new route from the Broughton roundabout at Junction 1 of the M55 to the A6 north of the village.

The bypass would be approximately 2km long. The northern section from the A6 Garstang Road to the B5269 Whittingham Lane would have one lane in each direction. The southern section, from the B5269 Whittingham Lane to Broughton roundabout (M55 junction 1), would have two lanes either way. Reduced traffic on Garstang Road through the centre of Broughton is predicted to lead to improvements in safety and the creation of a better environment for residents, shoppers, pedestrians and cyclists.

For those areas of Wyre that rely on the A6 for southbound travel, reducing congestion at these two major bottlenecks will make travel times shorter and more reliable. This will be a real benefit for public transport, offering much more reliable timetabling especially in the peak hours.

New Ribble Crossing

The Central Lancashire Highways and Transport Masterplan included a longer term (post 2026) proposal to construct a new crossing of the River Ribble to link together the Preston Western Distributor and the South Ribble Western Distributor via a completed Penwortham Bypass to provide a continuous dual carriageway route between Cuerden and the M55 to the west of Preston. Delivery of these schemes has been accelerated through

the Preston, South Ribble and Lancashire City Deal; therefore, the County Council and partners have begun to investigate whether a new crossing could progress more quickly and how such a project might be funded.

A new crossing of the Ribble would provide a quick and reliable link to and from the Fylde Coast, particularly for Fylde.

Preston Railway Station Improvements

Although there are a number of through services, many travellers to the Fylde Coast change trains at Preston, making the railway station as much a key gateway to the Fylde as it is to Preston.

The development of Preston railway station as a fit-for-purpose strategic gateway to Lancashire, as well as for Preston itself, is therefore vital. The redevelopment will allow the issue of poor connections between platforms and the general poor ambience of the station to be addressed. By improving the station and taking full advantage of the electrification of the Blackpool North to Manchester line, we will be maximising the opportunities for rail commuting as well as longer distance travel.

The station's future development is all the more important to the Fylde Coast once phase 2 of HS2 is in operation. The journey time from Preston to London will be cut to 84 minutes, with trains from a new fleet capable of running on both 'classic' and high speed lines (so called 'classic compatible') running to and from Preston. Preston will therefore be the Fylde Coast's main gateway to HS2.

Cottam Parkway

The final proposal that could have a significant impact on travel to and from the Fylde Coast is Cottam Parkway.

The new Parkway rail station, which will be accessed off the Preston Western Distributor, is planned to be complete in 2022/23. Its primary function will be to serve the North West Preston strategic housing locations, providing rail based park and ride facilities for travel to both Preston/Manchester/Liverpool and Blackpool.

However, its proximity to the motorway also offers the potential for the station to capture longer distance journeys and offer a parkway service for the Fylde Coast, particularly at those times when Blackpool is particularly congested. The potential for through services via the South Fylde Line could make the parkway even more attractive to visitors.

Highways England schemes

Several schemes will be funded through the Highways Authority Pinch Point programme. The Pinch Point Programme forms part of the UK Government's growth initiative, outlined during the Chancellor's Autumn Statement in November 2011.

M6 Junction 32 Northbound Widening (completed 2015)

The northbound M6 suffered from safety problems and congestion related to vehicles changing lanes to either continue along the M6 (in two lanes) or turn onto the M55 to head towards the Fylde Coast. This junction is of critical importance and will become even more important with the advent of M55 Junction 2 and the Preston Western Distributor Road.

The M6 has been widened to provide three lanes northbound through the junction. The existing two lane exit to the M55 has been retained in a realigned layout and the northbound entry slip from the M55 onto the M6 has been amended north of the junction.

A585(T) Windy Harbour Junction Improvement

The junction suffers from congestion and has a poor safety record. The works will involve realignment and widening of the existing crossroads to create extra lanes through the junction. Included in the works are improvements to pedestrian routes, the addition of cycle facilities and upgrading of the traffic signal controllers.

A585(T) Bourne Way to West Drive Widening and Improvement (completed 2015)

The scheme has improved access from the trunk road network to the Hillhouses International strategic site, easing traffic flows on residential roads whilst improving safety and providing additional capacity on the A585(T).

The West Drive crossroads has been remodelled with improved traffic islands and pedestrian crossing facilities and traffic signal control introduced at the Bourne Way T-junction. In addition the A585(T) link between the junctions has been widened to provide two lanes in both directions.

Network Rail programmes

Preston – Blackpool rail electrification

Electrification of the railway lines between Blackpool North and Preston and between Preston and Manchester / Liverpool, together with an associated increase in rolling stock capacity and quality, will allow electric multiple units to operate all services between Manchester (Piccadilly and Victoria), Liverpool, Preston and Blackpool North, including the Manchester Airport to Scotland services. These trains will have more seats and deliver journey time savings and improved reliability due to their superior performance. This is a rail industry committed scheme due for completion by May 2017.

The investment will complement the Northern Hub project (a programme of targeted upgrades to the railway in the North of England, scheduled to complete in 2019, which will allow up to 700 more trains to run each day and provide space for 44 million more passengers a year) and electrification of the main Trans-Pennine route between Manchester and Leeds / York which the Government committed funding to in July 2012. Together, these projects will deliver a significant improvement in connectivity between the Fylde Coast and major growth centres across the North of England, in particular, to Manchester city centre.

Private sector proposals

Whilst previous masterplans have not included private sector proposals for infrastructure or service development as none were sufficiently advanced, there are a number of such proposals which could impact on travel and transport around the Fylde Coast and as such they are included here, although they are neither funded nor promoted by either Blackpool Council or Lancashire County Council.

A potential Wyre Barrage

A barrage across the Wyre, usually to link Fleetwood and Knott End, has been suggested on many occasions over the years. Harnessing tidal power has also been proposed and two companies are currently proposing schemes.

Natural Energy Wyre Ltd is currently proposing a **Tidal Energy Barrage**, between Fleetwood and Knott End, with provision for boats to transit through the Barrage. Energy output, based on both ebb and flow generation, is anticipated to be in excess of 100MW.

This means that the Project would qualify as a Nationally Significant Infrastructure Project.

As well as generating power, the barrage could offer wider economic benefits both during and after construction and could increase connectivity across the river.

Fleetwood Barrage Ltd is also looking at a similar project.

A potential North West Coastal Hovercraft Service

The Blackpool, Fylde and Wyre Economic Development Company are currently looking at the possibility of a regular hovercraft service that would run between Southport and Barrow, with intermediate stops at both Blackpool and Morecambe and the service operating from Fleetwood.

The service would be primarily intended to provide faster access between sites for organisations with sites spread along the coast, such as BAE Systems and the NHS. These commercial contracts would underpin the service, but there would be additional capacity for leisure trips during the holiday season.

At time of writing, two operators have expressed an interest in operating the service.

Taking Our Vision Further

Despite the work underway now or programmed, there will still be a number of issues to be addressed in the Fylde Coast area if we are to reach our vision. In terms of the 5 key requirements set out earlier these issues are:

We need our highway network to operate more efficiently, not just for cars, but also for buses, coaches and for freight.

- The A585(T) will still present a significant bottleneck at Singleton crossroads.
- Emerging development plans could put a significant strain on the local highways network.

We need our rail network and services to make commuting convenient and to be an outstanding gateway to the Fylde Coast for businesses and visitors.

- Rail connectivity will still be limited on the South Fylde Line and there are opportunities to capitalise on rail improvements elsewhere, not least HS2.

We need public transport to serve all our communities so that people can get to the jobs and services they need.

- Public transport provision for employment and in the rural area needs to be better.

We need cycling and walking to become the convenient travel choice for shorter distances and for it to be easy for people to change between modes:

- Cycle networks won't necessarily work for all users.
- There will still be limited interchange between public transport and cycling.

We need our streets and public spaces to feel safe and attractive.

- Neighbourhoods and the links between them will still need to be good enough standard to make travel easy for everyone.
- Travel choice may still favour the private car and
- Road safety needs to be improved still further, particularly in Blackpool and for vulnerable road users.

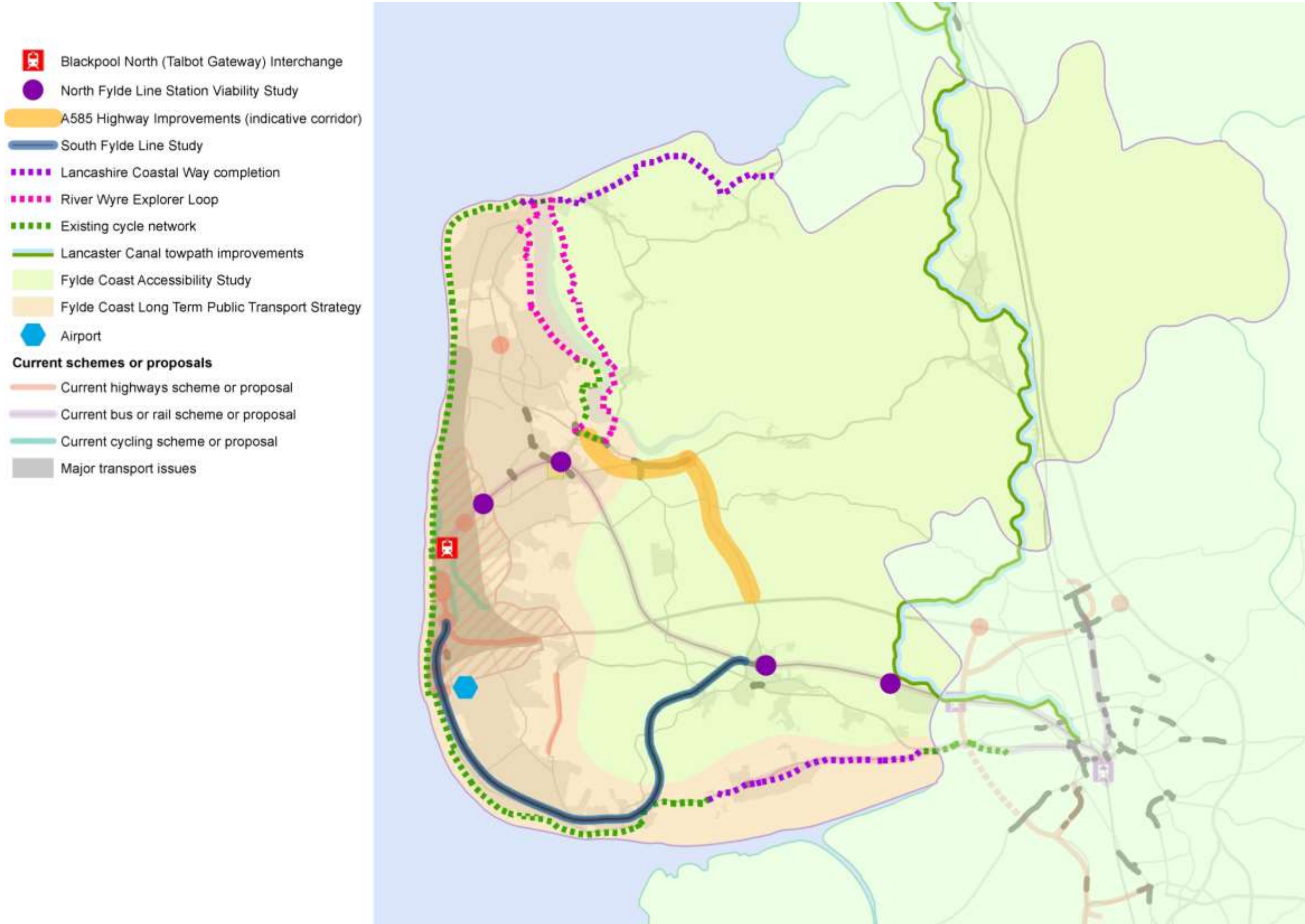
These requirements are not independent of each other. Easy local travel, by walking and cycling, needs to feed into the bus and rail networks for longer journeys. The bus and rail networks themselves need to interlink properly both for journeys in the Fylde Coast and to the wider area. And no matter how far from the area people and goods are going, the connections to strategic road and rail networks must work to facilitate national and international travel.

Part of this is making sure that we look after the highways and transport assets we have already – the roads and footways, the lights and signs and all the other things that help our networks function. We also need to do all we can to make sure that we make our roads as safe as we can for all users.

However the best road, rail, bus and cycle networks serve no purpose if people can't, don't want to or don't know how to access them. We need to make it easy for people to understand their travel opportunities and have the ability to change between modes of travel, so that whether travelling short or long distances, we can reduce reliance on the private car as much as possible for everyone.

The interventions and further work proposed by this masterplan are shown in Figure 12 below.

Figure 12: The Fylde Coast Highways and Transport Masterplan



Efficient highways

To fully realise our vision for the Fylde Coast's highways network, we need to understand, and therefore be able to plan for, all aspects of future economic development, particularly housing and major employment sites.

Some of these locations we know about. The Enterprise Zone is becoming established, Blackpool Airport is designated 'in principle' as a second Enterprise Zone, there are further strategic sites at Hillhouse International and at Whitehills as well as long standing plans for significant development in Blackpool's Central Leisure Quarter and in the Talbot Gateway Central Business District. Significant housing is planned for Queensway and at Whyndyke Farm in Fylde.

In the next few years the emerging Local Plans in both Fylde and Wyre will set out more details of where much needed new housing will be developed and where land will be allocated for employment.

A number of scenarios are possible, ranging from dispersing the new homes needed across a district, to allowing some development around most existing settlements or, at the other extreme, ensuring that most of the development is accommodated only around the major towns and villages.

Clearly, exactly where housing and employment are developed has major implications for our networks, particularly for our highways. If only travel issues are considered, then it is obviously better if new development can use existing or programmed infrastructure and service improvements. New housing that allows residents to commute other than by car places less strain on our highways network than developments that are remote from public transport. No highways authority wants to see development that will make existing highway issues worse.

However, locating new development is in reality a very complex decision in which transport is only one consideration, although a major one.

This masterplan therefore provides a basis from which we can work with all our partners to ensure that each borough's housing and employment needs can be accommodated wherever and however that growth occurs and that the emerging Local Plans are synergistic with this masterplan. The larger the growth in any one area, the more likely it is that impacts will be felt further away, an

important consideration when assessing what work will be needed to accommodate development.

We will also work to make the most of opportunities provided by other development schemes as they come forward, such as the proposed Tidal Energy Barrage, which could offer significant regeneration benefits to Fleetwood and enable better access across the Wyre.

Enabling housing growth whilst keeping our highways operating efficiently will be a challenge. Whilst some new road capacity may be needed, road building projects can be contentious and so we will do all we can to ensure that developments have sustainable travel options readily available, which will mean that we need to make the most of alternatives to the car including rail, public transport, cycling and walking and make sure that where possible, new development occurs where all these options are available to new residents and businesses.

We won't, though, rule out major infrastructure improvements if these are required and the funding can be found, although such funding could require a substantial contribution from developers.

Like most areas, the Fylde Coast highways network is made up of a number of main corridors linked by other 'A' and 'B' roads. Again like other areas, particularly rural ones, these corridors and links are supplemented by the routes that local drivers know and use to save time.

Whilst problems specific to the main corridors are dealt with in subsequent sections, there are a number of issues affect the entire network:

Many of the routes that drivers currently use take them away from the main roads, either because a local route is shorter or because it allows the driver to avoid congestion. However, this 'rat running' means that traffic is on inappropriate roads running through the Fylde Coast's villages, leading to serious traffic problems in many communities, particularly to the west of the area.

To resolve these problems we need to make sure that the main corridors work effectively, that, where possible, convenient alternatives to the car are available and that we work with the communities to discourage rat-running.

Anecdotally, one of the major causes of rat running is commuting, particularly at the moment to the Enterprise Zone at Warton, a problem which could become far worse as the Zone develops.

We therefore need to engage with developers working across the Fylde Coast to ensure that their proposals acknowledge rat running issues and provide for sustainable travel options. We also need to work with existing large employers to make sure that we work with them to reduce car dependency for commuting.

However, promoting sustainable travel can have unintended impacts on the highway network, especially when cars are used for only part of a journey. Limited parking at rail stations causes problems for nearby residents and can cause further congestion, so improving the efficiency of the highways network will also require improving aspects of rail connectivity and potentially providing dedicated 'park and share' spaces for onward travel by road.

Our highways are also critical to the movement of freight. Whilst rail freight may become viable in the future, with potential for operational freight sidings both at Salwick and close to Kirkham, for now businesses logistics need reliable road journey times and the ability to load and unload efficiently. This latter need can be difficult to meet in shopping areas where loading and delivery restrictions are intended to benefit pedestrians but can have unintended consequences for business, a key consideration for future interventions on our urban network.

And of course the Fylde Coast's highways networks do not operate in isolation, so major changes elsewhere will impact on the area.

To the north, the potential relocation of M6 Junction 33 has been raised. Whilst the impact on northbound trips would be limited, if it is not possible to keep the current south facing slip roads open, there could be more traffic wanting to travel south via Broughton.

Changes are already underway in Central Lancashire. The City Deal schemes have been touched upon already. Traffic modelling work is currently being carried out to support the development of the business case for the Preston Western Distributor and the associated new M55 Junction 2. Early indications from this work are that there will be substantial changes to traffic flows that will affect a wide area of the Fylde Coast.

The new M55 Junction2 will give reliable access to the Enterprise Zone from the motorway and therefore traffic is expected to reroute to use it. This could mean substantial reductions in rat running both in the A585(T) corridor and south of the M55.

The A6 Corridor

The A6 is the vital artery serving the east of the Fylde Coast area, running through Wyre as it heads north from Preston towards Lancaster. However, there is no direct access to the M6 from the A6 within the Fylde Coast area so strategic access to and from the area is dependent on what happens to the north and south of the area which currently constrains growth in the corridor.

New infrastructure in Central Lancashire through the Preston, South Ribble and Lancashire City Deal will make fundamental changes to traffic patterns in Preston and although work is at an early stage, indications are that current capacity problems at Broughton and at M55 Junction 1 will be to at least some extent resolved, even with the development likely under the City Deal.

To the north, potential changes to M6 Junction 33 (in Lancaster) could increase pressure on Broughton.

The emerging Wyre Local Plan could see aspirations for further development in the A6 corridor, not least because there is a real need for employment in the east of the borough. Making that employment sustainable is likely to require housing on the corridor as well.

However, connectivity that doesn't impact on the highway network to north and south is difficult. Whilst there is potential for better public transport (see later), there is no possibility of providing enhanced rail connectivity due to the capacity limitations of the West Coast main Line.

The only other way to provide another travel option would be a further junction on the M6, a long held aspiration of many in the area. Such a junction would, in engineering terms, be just about feasible, but the presence of the railway limits where and how such a junction could be implemented. The junction and its links to the A6 would also be very expensive and would require a significant local contribution to funding.

However, the biggest difficulty would be that Highways England may not support the creation of new motorway junctions unless associated with nationally significant proposals such as housing

developments of over 5,000 houses. Whilst development of this scale would undoubtedly fund a new junction, the acceptability of such schemes is debatable.

We will therefore work with Wyre Borough Council to bring forward the emerging Wyre Local Plan as sustainably as possible, accepting that options in the A6 corridor may be limited and that it does not lend itself to a fully multi-modal solution.

The A583/4 Corridor

The A583 and A584 provide east west connectivity to the south of the M55. The corridor is not only a vital link to the Enterprise Zone but is also a key link for visitor traffic to and from Blackpool and the Fylde.

The changes in the corridor brought about by new infrastructure in Central Lancashire have been mentioned and as traffic work continues to support these schemes, so extent of changes, both positive and negative, will be confirmed. Where problems do become evident, then mitigation will be needed, but there could also be significant benefits, particularly to the villages of the south Fylde.

The development of the Enterprise Zone and Fylde Borough Council's emerging local plan will have a critical influence on the corridor. However, unlike the A6 corridor, there are alternatives to the highway in the corridor, with the potential for heavy rail and light rail to play a more important part in local and longer distance journeys, with a greater role for Park and Ride in the future.

We will therefore work with Fylde Borough Council to bring forward a sustainable Fylde Local Plan that takes full advantage of sustainable travel options. Were new highways infrastructure to be required in the corridor, we would expect it to be developer funded to facilitate specific projects rather than to be a Lancashire County Council led scheme.

The A585 corridor

The A585(T) between Fleetwood and the M55 is currently part of the national Strategic Road Network and therefore managed and maintained by the Highways England. Its strategic role as part of an inter-regional route between Great Britain and Northern Ireland stopped with the withdrawal of the Ro-Ro ferry service from the Port of Fleetwood to Larne in December 2010. It is, however, still a key route within the Fylde Coast network and is vital to the regeneration of Fleetwood and the success of Hillhouse International.

The A585(T) is single carriageway and although it bypasses all of the main towns along its route, it still passes through a number of smaller settlements. Most of the junctions with other main roads are roundabouts or have traffic signals, but there are still a significant number of priority junctions with side roads and other minor accesses, particularly on the unimproved section between the M55 and Skippool. Beyond Skippool, the A585(T) is a modern standard single carriageway. The Dock Street Link in Fleetwood, completed in January 1993, provided improved access to the ferry terminal.

Traffic flows are consistently above 20,000 vehicles per day along the southerly length of the route, peaking at 28,000 on Mains Lane east of Skippool.

Use of the route by HGVs has changed over the last 10 years, however. The decline and subsequent closure of the port has seen HGV numbers to the south of Fleetwood drop to typically around 550 per day in 2013, from a peak of 1,000 per day 10 years before. Further south around Skippool, numbers have stayed fairly consistent, at just around 1,000 HGVs on a typical day. However, between the Singleton and Windy Harbour junctions, the number rises to almost 1,600 HGVs per day, with 1,300 HGVs to the north of the M55.

Congestion remains an issue on the route between the M55 and Thornton-Cleveleys, mainly due to insufficient junction capacity and the high traffic flows, with low average speeds between the Norcross and Windy Harbour junctions during both morning and evening peak hours. However, congestion is now an increasing problem during off-peak periods and at weekends. This makes journey times unreliable for local residents, businesses and visitors. The high volume of traffic combined with the numerous and varied access points between the M55 and Skippool results in road safety issues and problems for users. For example, a lack of right-turning

facilities through the settlements of Greenhalgh and Esprick causes congestion. Traffic diverting onto less suitable local roads to avoid congestion at junctions remains an issue, with local communities away from the route suffering in terms of poorer road safety, noise, air quality and severance.

De-trunking

De-trunking is the legal process whereby responsibility for a particular length of road transfers from the Secretary of State for Transport to the local highway authority, in this case Lancashire County Council.

Closure of the Ro-Ro ferry operation at Fleetwood has focused attention on the future of the route as part of the Strategic Road Network. The Department for Transport's position is that unless there is a clear need to keep a road as part of the Strategic Road Network, it would prefer the road to be under local control. However, the DfT currently has no plans to start a further round of de-trunking, although it is prepared to look at the case for de-trunking specific roads individually.

The County Council does not believe there is currently any material advantage in seeking de-trunking. Other things being equal, the additional costs arising from de-trunking will outweigh any benefits or likely increased funding, and would increase its liabilities and exposure to risk, for example, in relation to winter service provision.

As part of its Pinch Point programme, Highways England are undertaking improvements to the A585(T)/A586 'Windy Harbour' junction near Singleton. Together with the recently completed improvements to the A585(T) junctions at Bourne Way and West Drive between Thornton and Cleveleys, this represents an investment of over £3m in the route. The Roads Investment Strategy, announced by central government in March 2015, includes a commitment to A585(T) Windy Harbour to Skippool Improvements, will see a further substantial investment in the route.

The M55 to Norcross Link

There is a long-standing proposal to build a dual carriageway road to connect a new junction on the M55 east of Peel Hill to the Victoria Road roundabout on the A585(T) between Thornton and Cleveleys. This scheme is known as the M55 to Norcross Link, although it is often referred to as 'the Blue route'. The then Department of Transport withdrew its support for a similar scheme in 1994, but the County Council has continued to protect a route since then, a decision last reviewed in 2006.

The scheme was originally identified to ease congestion on the A585(T) caused in part by the operation of the Port of Fleetwood. The ferry operation from the port also meant that there were high volumes of HGVs on the road. With the withdrawal of the ferry service, that rationale no longer exists, although Fleetwood is still officially classified as a port and still has commercial sailings linked to the offshore energy sector.

The 'Blue route' effectively breaks down into 3 sections:

- **The northern section – B5412 Victoria Road to A588 Breck Road.**

This section of the scheme proposed to widen the existing A585(T) to dual carriageway.

Whilst the A585(T) is still busy, congestion in this section is principally related to the capacity of the three roundabouts along the route. The County Council do not therefore believe that constructing a dual carriageway would deliver sufficient benefits to offset the likely cost and that local improvements such as those already being undertaken by Highways England provide better value for money.

- **The Poulton-le-Fylde section - A588 Breck Road to A586 Garstang Road East**

The section of the route around Poulton-le-Fylde would see Mains Lane widened to dual carriageway for approximately 450 metres from its junction with Breck Road. At that point, a new roundabout would take the A585(T) on a new section of dual carriageway down to join the A586 approximately 850 metres to the west of the Five Lane Ends junction at Little Singleton.

The existing A585(T) Mains Lane passes through Little Singleton and is very busy. The Five Lane Ends junction is arguably the

worst 'pinch point' on the A585(T) and it would be very difficult to make a significant improvement to the junction as it stands.

- **The southern section – A586 Garstang Road East to M55 between Junctions 3 and 4**

Comprising a new junction on the M55 to the east of Junction 4 at Peel Hill and a new 7.5km dual carriageway link to the A586 Garstang Road East to the west of Little Singleton, this is by far the most significant section in terms of new road construction, with an indicative cost of around £125m. It would pass through open countryside, much of which is Grade 2 (very good quality) agricultural land, and would have a significant environmental impact.

In line with current funding regimes, it would also require a significant direct contribution to the cost of the scheme from Fylde Borough Council.



At the moment, there are a number of significant issues on the existing A585(T) which have been outlined:

- Queuing at Five Lane Ends junction, Singleton
- Queuing at Windy Harbour junction
- Queuing at M55 Junction 3
- Traffic turning at priority junctions
- Traffic on minor roads avoiding the A585(T)

All of these issues relate to this southern section of the route and all would be solved by the 'Blue' route. However, the County Council believe that it would be difficult to put forward a strong enough case for change based on the traffic impacts of the scheme alone given the environmental impacts of the scheme and current public policy objectives with regard to economic growth and job creation.

The County Council therefore do not believe that the scheme is deliverable in the foreseeable future, so we and our partners need to look for alternative solutions to what are very real day to day problems in the corridor and its nearby roads.

What we will do:

We will work with Highways England to carry forward a programme of cost effective, viable improvements to remove the last remaining pinch-points on the route.

A major step towards this aim is the Roads Investment Strategy announced by central government in March 2015, which includes a commitment to **A585(T) Windy Harbour to Skippool Improvements**. This Highways England scheme proposes a new offline bypass of the village of Little Singleton. This scheme would remove the current bottleneck at Five Lane Ends and give the opportunity to improve the A585(T) Mains Lane/A588 Shard Road junction. It could also remove rat-running traffic from Singleton.

Highways England is also currently working to resolve capacity issues at Windy Harbour and at Junction 3 on the M55 and have committed to monitoring the southern section of the A585(T) from Windy Harbour to M55 Junction 3, bringing forward improvements where appropriate and beneficial, for instance potential improvements at the Thistleton crossroads.

By dealing with the congestion at these significant junctions, the numbers of vehicles using inappropriate roads to avoid congestion should be greatly reduced.

However, in the light of further evidence received during the consultation, we do not propose to rescind protection on the alignment of the M55 to Norcross Link until the full impacts of changes to the highways network both along the A585(T) and around Preston have been reviewed.

We will therefore build on the traffic modelling work for the Preston Western Distributor and the associated new M55 Junction 2 described earlier to undertake a specific **North Fylde Coast Connectivity Study**. The work will gather together the findings of our existing traffic modelling work and also the work being done by Highways England to support the A585(T) Windy Harbour to Skippool Improvements. It will also quantify the extent of rat-running and road safety problems in the wider corridor of concern that is influenced by the A585(T), providing Highways England with an evidence base to assist their monitoring of the trunk road and the issues that are caused by congestion along it.

However, the study will also look at wider issues that are intrinsically linked to the operation of the A585(T) including:

- Access to the Enterprise Zone from across the area and associated rat-running south of the M55
- How Fleetwood's wider connectivity needs can best be served, which will also require further analysis of alternatives to the highway such as heavy rail (see next section) and
- To what extent traffic seeking to travel between the north and south of Blackpool impacts on the wider A585(T) corridor.

Only when the study has been completed will a final decision on the 'Blue Route' be taken. However, the County Council's position remains that the route will be difficult to fund and that we must urgently seek more readily deliverable alternatives if possible.

Ultra Low Emission Vehicles (ULEV)

There are now few people who would argue that our society's current dependence on the car is sustainable. However, there will always be people who need to use a car and for who it would be difficult if not impossible to provide other transport that was as cost effective and functional, particularly those with mobility issues and those who live in very rural areas.

The car is therefore a crucial part of any sustainable highways and transport network, whether for private or business use. Likewise, vans and HGVs will be irreplaceable forms of transport for the foreseeable future and we are encouraging bus use.

All these vehicles have the same issues though; they cause congestion, they are resource hungry in their construction and they cause significant pollution. We therefore need to view all motor vehicles, regardless of how they are powered, in the same way we regard other undesirable but inescapable aspects of society and establish a hierarchy of use minimisation.

The hierarchy that has driven transport strategy in Lancashire for many years is:

- 1) Minimise use – walk or cycle where possible
- 2) Use public transport where possible
- 3) Use motor vehicles only when there is no choice.

However, at least as far as local pollution is concerned, not all vehicles are created equal. ULEVs may be no better than their more traditional cousins in most regards, but they do at least have few or no tail pipe emissions.

The other major benefit of ULEVs are that, although they are currently more expensive to buy, they are much, much cheaper to run; pure electric vehicles in particular cost a fraction of what it costs to keep a conventional car on the road and fuelled. In the longer term electric vehicles could keep car ownership affordable for those who need them if the relatively expensive purchase cost reduces and oil prices increase again.

The existing hierarchy therefore needs to be modified:

- 1) Don't use a motor vehicle unless you need to
- 2) Use ULEV public transport (buses then taxis) if you can
- 3) Use any other public transport (buses then taxis)
- 4) Use a ULEV
- 5) Use conventional vehicles only if there is no choice.

ULEVs are a new technology and as with anything new and a bit different, it takes time and patience to make adopting the new a routine choice. Getting to the point at which ULEVs are normal on our roads will not happen quickly without help.

However, by making ULEV vehicles a) more common and b) giving them preferential treatment, we want to dramatically increase their uptake.

There are a number of potential strands to this:

- Taxis – ULEV taxis supporting access to the centre of Blackpool, with local policies favouring them
- Vans and fleet vehicles – ULEVs working in the area centre for maximum visibility.
- Car clubs in rural centres, to make commuting as sustainable as possible.
- Infrastructure - Charging points are key to establishing the market and are needed at car parks, rail stations and key visitor and business locations, but also at key locations in the rural areas.
- Infrastructure – the district's residents and businesses don't just travel in the district; key areas of influence including Central Lancashire and Lancaster (for tourism and the domestic market) will need to have infrastructure in place as well.
- Infrastructure – households need to be able to charge vehicles at home
- Education – we can't rely on just making ULEVs more common, we need to actively make the case for change and make it easy for people to switch, via dedicated media and events

Like all public sector initiatives, implementation of much of the strategy will be dependent on what funding we can source, but of all the proposals in the masterplan, this strategy probably has the widest range of partners who can bring resource to the projects. We want to work with our partners in local government, in health and with central government. We also want to work with private sector partners in the automotive industry, in public transport and with taxi operators and fleet managers.

The County Council has until now watched the developing ULEV market in order to ensure that our limited resources were not spent on infrastructure that was underutilised and, potentially, out of date when the ULEV did finally take off.

However, that tipping point has now been reached, with record sales of electric cars now being recorded quarter by quarter. We therefore feel that the time and place are right to develop a strategy that will eventually help to guide the take up of ULEVs across the county and our own take up of electric fleet vehicles.

Improved rail connectivity

Rail connectivity in the Fylde Coast is provided by both 'heavy' (train) and 'light' (tram) operations and significant investment in both has either happened recently or is ongoing.

The Blackpool-Fleetwood Tramway, which is owned by Blackpool Council, runs from Starr Gate along the coast into Wyre, serving Cleveleys and Fleetwood. The line is a critical transport asset to the Fylde Coast, carrying millions of passengers every year and forming a key local tourist attraction.

To ensure the line's future, it has recently undergone a four year £100m upgrade ~ £68.3m from the Department for Transport; £17.7m from Blackpool Council; £15.2m from Lancashire County Council and £0.4m from INTERREG North West Europe Programme.

This upgrade, which opened in April 2012, has turned the network into a state of the art light rapid transport system fit for the 21st Century and beyond. The new fleet of 16 low floor easy access trams has been supplemented by a purpose built maintenance depot at Starr Gate, along with the replacement of 11km of track and redundant and outdated infrastructure along the route. Integrated public transport links have also been strengthened by the creation of the Broadwater and Bold Street interchanges, the latter providing the unusual opportunity of integrating bus, tram and ferry facilities.

With such significant improvements to the tram system and Network Rail's ongoing electrification of the line from Blackpool to Preston and work wider afield, excellent connections between train and tram have become vital. These connections will be provided in part by the extension of the tramway to Blackpool North Rail Station.

This will mean that all areas served by the tram service will have convenient access to the rail network. This will be of particular significance to Fleetwood, which currently has no rail station and should benefit greatly from faster journey times direct to Blackpool North.

Cottam Parkway will also offer opportunities for the Fylde Coast. For some, it will provide a convenient way to access the rail network for onward commuting, but it also offers the potential to be an

attractive visitor park and ride facility if connectivity into the Fylde Coast is improved.

We also need to make sure that all stations on the Blackpool North to Preston line benefit as much as possible from the service improvements that electrification will bring, including Kirkham, where the North and South Fylde Lines meet.

The South Fylde Line, on the other hand, is not currently scheduled to see any major improvements to either its infrastructure or services.

At present trains only run hourly Monday to Saturday between Blackpool South and Colne, with hourly services on some Sundays. This low frequency is a particularly issue given that the journey between the Fylde Coast and Preston is a short one. The trains are slow and the rolling stock is of poor quality. The branch between Kirkham and Blackpool South is a single line and this, combined with the single line branch from Gannow Junction at Rose Grove to Colne, reduces timetable reliability and flexibility for the Blackpool South to Colne service. The performance of the service continues to be an issue.

Not surprisingly the South Fylde Line is currently under used, particular given the population in its catchment area, who would be expected to make more use of the line for commuting, and the popularity of Blackpool, Lytham and St Annes for visitors.

Commuting, whether for work or education, currently only makes up around 35% of traffic on the line, which contrasts to other lines in the county where the percentage is around 65%. This low commuting usage makes journey numbers on the line more vulnerable to weather and seasonal fluctuations.

The South Fylde Line Community Rail Partnership covers the route from Blackpool South to Preston. The line has been formally designated by the DfT as a community rail line and service.

Designation covers lines, services and stations and is a formal process which results in an agreed 'Route Prospectus' for the line which is ultimately signed off at Ministerial level. Parliament considers designation to be a permanent arrangement although it

recognises that changing circumstances may require a review of the route prospectus. Designation allows CRPs and the railway industry greater freedom to implement innovative solutions that stand outside normal industry processes.

Given the development likely in the Fylde area, and the parking/traffic management issues experienced, particularly in Blackpool, more needs to be made of the South Fylde Line.

There has also been a long held aspiration for the Poulton and Wyre Railway Society (a railway heritage society currently working towards operating trains along part of the former Fleetwood to Poulton line) to run into the station, but changes at the station due to electrification could make this impossible. However, the railway society is exploring options for a station in Poulton-le-Fylde. This site, close to the existing station, would allow easy transfer between the two. In the longer term, there are aspirations to open more of the line and ultimately run commuter services from Fleetwood.

Three future strands of work therefore emerge under this masterplan:

Blackpool North (Talbot Gateway) Interchange

The first impressions made by any place are crucial, whatever the method of arrival. If the journey goes smoothly and you then arrive somewhere that is welcoming and easy to navigate, you are more likely to enjoy your stay and return. Particularly for any large tourist resort, the place where the visitor arrives, the 'gateway', is key to success. Nowhere in the Fylde Coast is this more the case than Blackpool.

A number of stations serve Blackpool, but the key gateway for longer distance travellers is Blackpool North. The station lies to the north east of the town centre, in the Talbot Gateway Central Business District, a key development location and a catalyst for improvements to support economic growth in the town centre.

Talbot Gateway has improved car parking and most bus services stop on Talbot Road, a few minutes walk away. Only one service, from Poulton, currently stops at the station itself however. A successful 'Better Bus Areas Fund' bid has led to the creation of a

bus interchange area in the town centre, close to the Promenade. However, this is a significant distance to walk for many people, including those with young children and /or luggage.

For what should be such a major arrival point, the actual experience offered to the traveller is not good. Some older buildings are not as attractive as they could be and the existing transport infrastructure is poorly integrated.

The station is now due to become an interchange with the tramway. Current proposals provide for this connectivity, with a new length of track from the Promenade, along Talbot Road to High Street next to the station. However, the station could become a far more significant focus for travel; ambitions for a re-modelled station already form part of the Blackpool Local Plan.

There is a clear need for the Fylde Coast to have a central interchange that presents an outstanding welcome to travellers and facilitates onward travel through the Fylde Coast as a whole. A direct interchange between tram and rail would also have significant benefits for residents and businesses to the north of Blackpool by providing effective access via the tramway to mainline rail.

Such a gateway would have a vibrant modern rail station at its core with an integral tram interchange and bus and coach stops immediately outside. The station would need dedicated facilities for cyclists as well as the usual pick up/drop off parking and taxi facilities that any big station needs.

The interchange would allow total flexibility to change between different modes of travel. It would sit in an area of first class public spaces and will have clear, high quality pedestrian and cycle links to the town centre and the sea front.

The North Fylde Line

Electrification of the Blackpool North line will see changes to a number of stations, not least to Blackpool North where there are plans to lengthen two platforms to allow Pendolino trains to terminate at the station.

The layouts of both Poulton-le-Fylde and Kirkham stations may also change. Whilst the alterations are primarily to allow through trains to be able to travel faster past the stations, these changes to the station layout are important as both stations have the potential to serve greater markets than they do at the moment and both could potentially be developed to allow for Park and Ride, which would help to resolve the significant issues that on street parking causes near the stations at the moment.

At Kirkham, an Access for All scheme could provide compliant disabled access at the station, if an option for a new platform is progressed as part of the electrification scheme. There is also the potential to increase car parking capacity at the station, giving it a far greater potential to attract users among residents and businesses in the surrounding area. At Poulton-le-Fylde, there is also the potential to offer more parking near the station in conjunction with other changes underway in the town centre.

The smaller stations on the Fylde Coast also have the potential to serve greater markets than they do.

There is also the long-standing question of whether reconnecting Fleetwood to the national rail network via the North Fylde Line is achievable in the longer term.

The South Fylde Line

The most immediate need for the South Fylde Line is to improve the frequency and reliability of the service on the line, which would make it much more attractive, particularly to commuters, although all users would benefit.

The need to improve the service on the line is not only down to the likely demand, given the demographics of the current population, for rail-based commuting, but also to the developments proposed in the Fylde, both for housing and for employment (including the Enterprise Zone at Warton). Commuter movements into and out of the area are likely to increase and a viable rail service could do much to reduce car traffic.

Blackpool Airport has received an 'in principal' designation as Lancashire's second Enterprise Zone and a plan for its regeneration is currently being produced which will set out how the airport can best be developed now that it is no longer operating as an international airport. However the site develops, effective sustainable transport links will be a key consideration, as travel to the site other than by car is currently difficult. In particular, access from rail or tram is very limited. However, the South Fylde Line has the potential to make access very much easier.

The South Fylde Line has far greater potential if its possible connections to the Blackpool-Fleetwood Tramway are considered. The two lines lie only 300m apart in places, but if they were to be connected, then the Fylde Coast would have a through rail service from end to end, making rail travel easy for both commuters and tourists.

Providing a through service requires more than a simple length of track however, as the tramway is electrified whilst the South Fylde line currently runs diesel units. There are therefore a number of possibilities for line integration, most of which would need an interchange between tram and train at some point on the line, probably in the Lytham area.

Initial work to explore the feasibility of a genuinely through service was undertaken over the last 5 years through the SINTROPER project, in which the Fylde Coast was the UK study area.

SINTROPER was a five-year European cooperation project with the aim of enhancing local and regional transport provision to, from and within five peripheral regions in North-West Europe, areas that

are beyond the 'economic core' and suffer from a lack of accessibility. Even within a zone of economic prosperity, those areas located a short distance away from the attractive rail and air interchange hubs become relatively harder to reach. The central challenge for the project, therefore, is to address this increasing marginalisation.

The project has a particular focus on tram-train systems which allow local trams to run on to national rail networks. Such a system could be far more beneficial to the Fylde Coast than a more traditional approach that required an interchange between systems.

What we will do:

We will work with our partners to design and then consult on proposals for a **Blackpool North (Talbot Gateway) Interchange** that meets as many of our aspirations as possible. Once we have a final scheme, we will work with the LEP to secure funding.

In order to establish just what potential the of the North Fylde Line stations is, we will include them in the **North Fylde Coast Connectivity Study** (see previous section), which will complement the work being done elsewhere in the county and proposed for the Fylde Coast.

The study will look both at potential users and also how we can work with our partners to improve the attractiveness of the stations, particularly as part of an integrated, door-to-door sustainable travel network. The study will also specifically consider whether a rail solution is the best answer to Fleetwood's longer term connectivity needs.

Through an extension to the original SINTROPHER project, we have been able to secure further funding to carry out a specific **South Fylde Line Study** to look both at the future role of the South Fylde Line, the best way to enhance the role of the line in providing a southern gateway to Blackpool and to establish what the most viable and cost effective way of linking the South Fylde Line and the Blackpool Tramway would be and what benefits such a link would bring.

Once the study has reported, we will work through the LEP and through other partners to bring about improvement to the South Fylde Line as quickly as possible. This may require a phased approach to the project that would see initial improvements to the existing heavy rail offer (including a passing loop to allow increased service frequency), with subsequent measures to integrate the tram with the improved rail service.

Outside the Fylde Coast area, the development of **Preston railway station** as a fit-for-purpose strategic gateway to Lancashire and a public transport hub for Central Lancashire is vital. Not only does the City need the station to be a state-of-the-art gateway, Lancashire as a whole will also benefit in having a modern, attractive facility as its key hub.

Key to this for the Fylde Coast will be ensuring that interchange at the station is easy, with good signing around the station, attractive waiting areas and facilities and with movement between platforms straightforward for all users.

By improving the station and taking full advantage of the electrification of the Blackpool North to Manchester line, we will be maximising the opportunities for rail commuting as well as longer distance travel

Integrated public transport

Facilitating coach travel

An estimated two million visitors arrive in Blackpool by coach each year. Of these, roughly 1.5 million are on day trips, whilst over 500,000 come to stay in the resort. Coach passengers are therefore very important to Blackpool's economy and also to the resorts of Lytham and St Annes.

With the ever improving visitor experience that Blackpool now offers, visitor numbers are increasing again after years of decline. Making coach travel an attractive option for visiting the resort therefore has the potential to not only reduce congestion on the main routes in and out of the area but reduces the space needed for car parking, another important consideration.

However, without facilities, coaches can cause significant short term traffic problems, as can happen in St Annes where coaches currently have to stop in inappropriate on street locations to embark and disembark their passengers.

Buses and coaches are often thought of in similar terms, but the facilities the services need are very different. Both need depots, but coaches also need layover facilities where the coach can be parked to await its passengers, for instance, between dropping off visitors in the morning and picking them up at night or between dropping one set of passengers off and picking up another group for the next journey. Coaches may also need more space to board and alight passengers, as luggage holds are accessed from both sides and the rear of vehicles.

At the moment, temporary coach facilities in Blackpool are provided on part of Central car park. However, the facilities are basic and, whilst the location is an appropriate drop off or pick up for many day visitors, it is not as effective for those who wish to interchange with other modes of travel.

The Central Station site, together with the adjacent promenade area, forms the Leisure Quarter, one of Blackpool's most strategically important development sites. With a direct connection to the M55, the development will include parking and will have modern facilities for coach passengers. However, the issues of interchange and of layover will remain.

For coach passengers, the gateway also includes the Central Corridor (including Seaside Way and Yeadon Way) which provides direct access from the M55 motorway. The Corridor is flanked by the main visitor car and coach parks, Blackpool South Railway Station, Blackpool Football Club and the Festival Leisure Park (accessed from Rigby Road).

Major projects between Blackpool Football Club and Waterloo Road bridge (completed in phases between 2006 and 2009) have greatly improved the arrival experience. However, the remaining sections of the Corridor provide a visually poor and bland environment and similar treatment north of Sands Way roundabout and South of Waterloo Road bridge would create the quality of 'arrival experience' needed to confirm Blackpool's growing status as a high quality resort.

What we will do:

Work to improve facilities for coach travel is already underway. In the short term, Blackpool Council are looking to make improvements to the basic facilities on the Central Station site, including better shelters. An approach is also being made to Blackpool Transport to see if coach drivers can use their facilities.

However, this is only a short term solution. High quality passenger facilities are required, both in the central location that the Leisure Quarter will provide and potentially at the Blackpool North interchange. A permanent layover facility, that has adequate space for coaches and good facilities for drivers, is also required.

Facilities at Blackpool North will be pursued as part of the work on that Gateway. We therefore propose to continue to work with our partners to establish design and location options for coach facilities within the Leisure Quarter on New Bonny Street and for layover facilities at an appropriate location. Once a scheme for coach facilities has been finalised, we will work with the LEP to secure funding.

We will also work to provide dedicated on-street parking elsewhere on the Fylde Coast, such as in St Annes, where coaches currently cause traffic problems.

Integrating Urban Public Transport

As the maps in this masterplan show, the Fylde Coast has two distinct characters, one urban, one rural.

The principal urban area runs down the coast from Fleetwood in the north, through Blackpool and on to Lytham, with Warton and Freckleton linked to it by sporadic ribbon development along the A584. This often densely populated urban strip contains a wide variety of needs and uses:

- There are areas of very low car ownership but also areas of affluence where car ownership is the norm.
- In many areas employment is in a highly seasonal service sector.
- An older and ageing population for whom car ownership may not be an option.

The tramway serves the needs of residents all year round and, particularly since its upgrade, provides superb links along the western side of the area. Blackpool's successful bid to the 'Better Bus Area Fund' has resulted in a new contra flow bus lane, improved town centre interchange and innovative bus priority.

However, travelling around the area away from the coast is more of a problem, with public transport journey times often extended, particularly when travelling along the length of the urban area. This is a particular concern for those wishing to access the employment opportunities to the south of the area, such as are becoming available in the Lancashire Enterprise Zone. These journey times are made longer by tourist traffic through a large part of the year, with unreliability caused by congestion a real issue during events and high summer.

Another significant issue is that, in common with other parts of the county, public transport does not tend to run to out of town employment locations. This is a particular issue for people who don't own a car; this group often includes those on low wages in low skill jobs and those seeking work, of which Blackpool has a high number.

Improving urban public transport is not straight forward however. Much of the bus industry is private sector and so is currently not subject to direct local authority control. Whilst getting more car

owners to use the bus would clearly help reduce congestion and improve journey time reliability, journeys need to be reliable and convenient before drivers will even think about switching. And out of town locations are difficult to serve with a commercially viable service.

A solution that is sustainable in the long term without local government funding support is therefore more likely to be found if buses are fully integrated with rail travel, walking and cycling.

What we will do:

At a time when, across the country, public funds to support bus services are reducing, it is vital that public, private and third sector organisations work together to make the most of what funding is available and to increase passenger numbers to make more services commercially viable where possible.

To do this, we will need to establish what the longer term needs of the Fylde Coast's urban areas are in the wider context of development and transport changes and then establish a financially sustainable way of ensuring that public transport can address those needs.

Among the possible solutions could be:

- Quality Bus services (provided by the private sector)
- Quality Bus infrastructure
- Better Bus/Tram/Train coordination both in the urban area and for travel beyond it.
- Better signing to and from stations to facilitate interchange.
- Better interchange between rail and bus services.
- Cross Fylde ticketing
- Better cycling facilities in key places to make it easy to change to bus and train
- Facilities for cycles to be carried on buses/trams

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We will therefore work with our partners in the bus industry to put together a **Fylde Coast Long Term Public Transport Strategy** that will address the issues highlighted in this masterplan.

Maintaining rural connections

Away from the urban coastal strip, much of Fylde and Wyre is rural in nature and served by traditional market towns.

The challenges presented here are very different to those of the urban area, but again both residents and visitors must be accommodated.

By their nature, the rural areas of the Fylde Coast tend to be very dependent on the car, which can not only lead to local problems on the highways network, but makes life very difficult for those who, for whatever reason, do not have their own transport:

- Rural isolation and an ageing population both present health and wellbeing issues for the health sector, so there is a real opportunity to work together to maximise the benefits of reducing social isolation for organisations as well as individuals.
- Car dependence is unlikely to be sustainable in the longer term, both on cost grounds and through the need for carbon reduction. Car ownership in rural areas is likely to become increasingly unsustainable, so alternatives need to be in place sooner rather than later.
- Visitors to the area also need to be able to travel without needing a car and there is a definite need to support a sustainable visitor economy to ensure that the natural environment is protected while its economic benefit is maximised.

However, funding for conventional subsidised bus services is difficult in the current economic climate, so we need to find innovative ways to reduce rural isolation for non car owners, particularly with an ageing population. We need to investigate our options now to find the most cost effective solutions to ensure access to services.

What we will do:

Work is already proposed in the county to find the most cost effective methods of providing access to services in rural and remote areas. We will extend this work to include a **Fylde Coast Accessibility Study**.

In line with likely future funding requirements, the study will focus on where the greatest benefits can be achieved by using public money to maintain access to services.

Particular questions to be answered by the study include:

- How can public transport and cycling integrate to best connect towns and villages in rural areas?
- Are there alternatives to traditional public transport for rural areas?
- How can Community Transport best evolve to meet the diverse transport needs of the Fylde Coast?
- What is the best way for public transport to support the rural economy and the residents of and visitors to our rural areas?
- How can cycling be made more attractive in rural areas, given that distances are longer?
- How can we best support and develop rural transport hubs in places such as Garstang, Kirkham and Poulton-le-Fylde?
- Are there opportunities to create direct 'trunk' services between key centres with easy interchange with more local provision?

Decisions about the priority that different journeys and needs are given will be difficult and so one of the aims of the study will be to provide methods of comparing competing demands and the costs and benefits of responding to them.

Changing travel choices

Whilst managing car traffic is vital, particularly in Blackpool, there is no doubt that, in the longer term, if we do nothing to reduce car use, we will reach the point at which traffic can no longer be effectively managed, even by the latest traffic management systems.

With low car ownership in many parts of Blackpool, visitors make up a significant proportion of car traffic for much of the year; the more visitors that can be encouraged to arrive on the Fylde Coast by other means, therefore, the better.

However, the decision to leave the car behind will only be taken if visitors to the Fylde Coast are confident that they can get to

everywhere they want to, when they want and that there are real alternatives to the car readily available.

Improvements planned to the rail network in the area have been outlined which will make rail travel more attractive:

- Electrification of the North Fylde Line
- Enhancing Preston station
- Creating a modern interchange at Blackpool North
- A new Cottam Parkway
- The potential development of the South Fylde Line (including its possible connection to the new tramway) and
- HS2 phase 2

All these schemes have the potential to make a real difference to travel to Blackpool and the surrounding area if properly marketed as they near completion.

In Blackpool, a high quality arrival experience for coach passengers will also make it more attractive to leave the car behind and again these changes must be marketed if they are to be fully effective.

However, if visitors arrive without a car, we must make sure that they can still enjoy their holiday and are not restricted to one small area of the Fylde Coast. Public transport and cycling provision are therefore as important to visitors as they are to local travellers.

What we will do:

We will work with our partners to provide effective marketing to publicise transport improvements and show that the car isn't needed to travel on the Fylde Coast. We will also monitor travel so that we know what marketing tools are working and where we need to try harder.

One potential marketing solution that has been proposed is the use of multi-skilled transport-focused ambassadors at key arrival locations across the Fylde Coast. Acting as 'welcomers' who would promote the sustainable transport message, they would be able to suggest transport options and provide information about them, as well as being able to answer other questions tourists may have.

During off-peak periods these same staff would champion sustainable travel, including new facilities such as the Green Corridors to residents living along the corridors, with a particular focus on assisting job seekers with their travel-to-work needs.

The ambassadors would also present a friendly face to potential inward investors.

Better cycling

Local travel and short journeys are a vital component of any transport network, as the DfT acknowledged in March 2013 when 'Door to Door - A strategy for improving sustainable transport integration' was published.

Cycling in particular has the potential to offer options not just for short journeys but also for longer journeys to work and education and for leisure, particularly when combined with bus and rail travel.

Short journeys in the local community, to school, to the shops or just to enjoy being out and about, are key to local economies and to health and wellbeing.

For longer journeys, ensuring cycle facilities at train and bus stations are easily accessible and secure will encourage more people to use a mixture of bike, bus and train to complete their journeys. However, this will not happen unless cycle storage is secure, buses and trains connect well and cyclists and their cycles are catered for on trains and buses.

Cycling is cheap and convenient. In general, cycling is a good option for journey times of less than 30 minutes and in relatively flat areas such as the Fylde Coast, should be an obvious choice

However, for cycling to really become established, we need to make sure that there is a good cycle network across the Fylde Coast area. Just what a 'good' cycle network is, though, depends on who the user is. Different cyclists have very different needs - confident commuters want the most direct route, whilst families out for a leisure ride want a scenic and, above all, safe route away from traffic.

This wide range of users means that, initially at least, we will focus on two types of user, the commuter and the leisure rider. These are the groups that can make the most significant contribution to economic development in the area.

What we will do next:

The **Fylde Coast Cycle Network** will build on work already undertaken between Fleetwood and Starr Gate and in St Annes, as well as the Blackpool Explorer routes and initiatives that are underway such as Blackpool Green Corridor initiatives. We will also learn from our work on the East Lancashire Strategic Cycle Network

to help set out what standards and maintenance the Fylde Coast network will need where we need to create new off road routes.

Key to the network will be the completion of the **Fylde Coastal Way**, which will ultimately be part of a high standard multiuser route linking the Guild Wheel to the Bay Cycle Way. Whilst much of this route is already off road, we will work towards ensuring that the whole length of the Way is a family-friendly, long distance off road route, suitable for all users.

Because of its position near the coast, the Coastal Way will also give high quality access to the Enterprise Zone, providing a very large number of commuters from both east and west of the site with a safe and convenient alternative to the car.

We will also work to improve the towpaths of the **Lancaster Canal** to provide a long distance circular route that links Lancaster, Preston and the Fylde Coast.

The Coastal Way will form the spine of the wider network. Links in this network will provide one of two types of cycle route:

- **Explorer Mini-wheels**, as the name suggests, will build on our experiences in delivering the Guild Wheel and the Explorer routes; the routes will be family friendly, multi user circular routes aimed at the leisure and tourist market. They will be designed to bring the maximum economic return to the area and will generally link to the Coastal Way or to the Lancaster Canal.
- **Green Spokes** will build on the Green Corridors; we will seek to ensure that key employment and housing destinations, such as the Lancashire Enterprise Zone and housing developments such as Heyhouses, are accessible by cycle on safe routes that cyclists feel comfortable using throughout the year. These routes will generally be

- linked to the Coastal Way, but may also radiate off Explorer Wheels.

There is a lot of local knowledge that can inform the development of these routes and there has already been substantial investment from a number of sources. Taking forward our ambition to have a coherent Fylde Coast Cycle Network that can be used by all will therefore involve working with partners from both the public and private sectors.

The network will also provide some of the enhanced links to public transport that will be needed in the future. The Fylde Coast Accessibility Study has already been mentioned. Interchange between cycling and public transport will form part of that study and so the output will inform the future development of the cycle network.



Easy local travel

Our vision for the Fylde Coast focuses on the key priorities of shared prosperity, health and wellbeing. Greater prosperity, health and wellbeing will make the Fylde Coast a good place to live, work or visit, a place where all people can live long, happy and healthy lives regardless of their background.

Short journeys in the local community, to school, to the shops or just to enjoy being out and about, are key to local economies and active travel and will be absolutely fundamental to achieving this vision. But beyond that, any journey involving public transport will involve local travel, even if that local travel is simply walking to the bus stop.

Easy local travel is also vital for the visitor economy to flourish. Tourists need to feel that the area they are staying in or visiting is safe and welcoming. It also needs to be easy to navigate without local knowledge, particularly in the urban areas where there are more visitors.

This need to create a unique, high quality destination is recognised by Fylde Borough Council's Coastal Strategy, which sets out a similar vision of improved local links with a specific aim of enhancing and protecting both the heritage and environmental assets of the district.

Since public transport is likely to become ever more important in the future, linking to it will be a key consideration in both urban and rural areas. Local travel will increasingly include getting to public transport hubs and that will mean providing facilities for cyclists to store a bike or take it with them for later in the journey.

Active travel, including cycling can bring a wealth of health benefits and there is evidence to demonstrate that an inactive lifestyle has a significant negative effect on health. Even small increases in physical activity can have a significant impact on reducing early deaths, controlling long term conditions and promoting health improvement and quality of life.

Physical activity levels amongst the adult population across the Fylde Coast are currently low and significantly worse than the England average. Just less than 50% of the population are active in Blackpool and Wyre, with only just over 50% active in Fylde. Some of this, particularly in Fylde may be due to the age profile of the population.

However, since most interventions to boost local travel involve improvements to the appearance and functionality of our streets and public spaces for people on foot, local travel can also have a big impact on road safety and on how a town's gateways appear.

Local economies – greater prosperity

Not surprisingly, the local economy of an area is very dependent on the number of people who have money to spend and who are out and about.

We therefore need to make local centres attractive so that local business can flourish. The evidence shows that footfall increases in local shopping centres when people use sustainable modes and that these modes become more popular as the public realm improves.

Making it more viable to do business in the local area can also support job creation. SMEs are more likely to start and flourish in areas that are improving.

Improving our streets and public spaces to make it more attractive to walk and cycle is therefore key to reinvigorating local economies as well as to ensuring that there are good, safe links in and out of communities that will mean that anyone can commute without the need to own a car.

Better health and wellbeing

Mental and physical health is worse in parts of Blackpool than almost anywhere else in the country. There are a number of causes of this, but many are linked to deprivation and isolation.

The Fylde Coast also has an ageing population for whom health and wellbeing are key to independence in later life.

Road accidents are an issue in some parts of Blackpool, as is air quality. Where crime or fear of crime is higher, the streets will be perceived as an unsafe place to be, particularly for the old and young. With an ageing population, this presents an ever more important issue.

If the public realm was a safer, nicer place to be, with less car traffic and more people out and about, then active travel modes (walking and cycling) would become more popular, giving more people the opportunity to enjoy their living environment.

There are more direct health benefits too. Getting people more to walk and cycle benefits the local economy and increasing levels of physical exercise will not only help tackle obesity, but will help to reduce heart disease, strokes and type 2 diabetes.

Exercise is also good for mental wellbeing, as is green space. Access to the natural environment is a problem for some parts of Blackpool.

Making it sustainable

All plans, policies and schemes need to balance economic growth with the needs of the Fylde Coast's people and the needs of its environment.

Perhaps the biggest challenge for the sustainability of travel and transport is to reduce our reliance on the car. This is not just an environmental issue though. For some, owning a car puts an enormous strain on the household budgets and not having a car can be a very real problem in rural areas and for those who need to travel longer distances from some urban areas. And as the population ages, there will be more people who will not be able to drive even if they can afford to.

Creating sustainable travel and transport will also bring economic benefits. By making the Fylde Coast a place where it is easy to get around without a car, the visitor economy will benefit. Good local links are needed that are easy to navigate by residents and visitors alike. Not only is 'green tourism' becoming more popular, local attractions that are easy to reach will be used more by local people. And having fewer cars makes town and country more pleasant.

What we will do next:

We will work with our partners and our communities to establish a programme to identify and where necessary, improve our **Local Links**.

Although we know in general terms what we need to do, much of the work of identifying where we need to enhance local links will fall out of other work streams in this masterplan and from the day to day contacts we have with our partners and our communities.

Some problems we can identify; we know where road safety and air quality are local issues. In other areas, we can only identify where problems may be occurring. For example, the accessibility study will highlight where communities may not have adequate access to the wider public transport networks.

Other research can show where residents may be 'transport poor'. However, only the communities themselves can really know where new infrastructure or our doing things differently will provide the most benefit.

Work is already going on that will provide the starting point for providing high quality local links. Blackpool's Green Corridors will provide significant enhancement of local links and will set a template that can be used elsewhere in the county. The Fylde Coastal Strategy will also provide a base from which to work. We and our partners are already working to:

- Maintain our roads and footways
- Improve safety for all road users
- Improve air quality
- Improve public transport

The Local Links programme will look to build on partner working, involving the public and private sector, charities and communities in improving our county's neighbourhoods

Next Steps

This consultation masterplan represents the beginning of a programme of highways and transport infrastructure delivery to serve the Fylde Coast over the next 17 years and beyond.

There is much to do and it will need the commitment and efforts of a variety of providers to see it through – County, Unitary and District Councils, Lancashire’s Local Enterprise Partnership, Highways England, Network Rail - and the support of private business and house builders as well.

We now have widespread agreement for the highway and transport improvements that are taken forward and delivered. To stand the best chance of delivery, we must now get these improvements ‘ready to roll’ as soon as we can, so that we can take all opportunities to get funding for schemes that are ready to deliver.

Over the next 2 years we will need to:

- Progress with the studies and other evidence gathering, working with our partners to ensure that we can make the business case for the programme.
- Once we have that evidence, consult on and then programme the resulting actions.
- For currently funded schemes, finalise designs, begin to assemble land, and start works.
- For schemes less far advanced, carry out the detailed study work needed to progress to public consultation.
- Consult and work with communities, stakeholders and infrastructure providers to reach agreement on scheme specifics and secure funding for those proposals.
- Begin the preparation of major scheme business cases where appropriate.

These improvements will affect us all. They will support and safeguard the area’s economic ambitions, relieve the worst congestion, offer real choice in the way we travel, improve our health and enrich our experience in our town centres. That makes it all the more important that we listen to your ideas, incorporate the best, and achieve a broad consensus to deliver this masterplan.

Delivery and funding of the masterplan will rely on a number of infrastructure providers and a variety of funding sources, and we will be working closely with these partners to make sure there is the guarantee of their support and assistance, with funding to follow.

Crucial to all this will be the support of residents and businesses. Too often attempts to deliver growth and new development have failed without the buy in and full support of the communities affected. We have the opportunity to make significant and long-term improvements, backed by substantial investment, to the Fylde Coast’s highways and transport system.

Securing Developer Contributions

The cost of delivering the package of measures identified in this masterplan, and those that will come out of the work we propose to do, cannot be borne entirely by public sector funding. We have shown that, in areas where we can come to rely on the development industry to contribute funding to new infrastructure, we can increase investor confidence and our ability to attract other sources of funding, and in turn improve the prospects of delivery, and delivering to earlier timescales.

Moving forward, investment in major new infrastructure will, increasingly, need to demonstrate an economic justification. In practice, this means a clear strategy towards bringing forward integrated development proposals for new development and economic growth alongside the infrastructure to support it. In order to deliver on our proposals, it is vital that local authorities take every opportunity to coordinate their development planning strategies with future infrastructure investment, and pursue and pool together contributions from the development industry.

The speed and certainty with which we will be able to implement new infrastructure will be directly linked to developer contributions.

Milestones

Project	Delivery Agency	Current Status	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22
Poulton-le-Fylde Town Centre	LCC	Committed		Start of Works	Scheme complete					
Blackpool Integrated Traffic Management	Blackpool Council	Committed		Start of works	Project completed					
Blackpool Bridges and Structures Major Maintenance Scheme	Blackpool Council	Committed		Start of works			Project completed			
M55 to Heyhouses Link	LCC	Committed			Start of works		Project completed			
Blackpool Town Centre Green Corridors	Blackpool Council	Programmed			Start of works			Project completed		
Blackpool Tramway Extension North Pier to North Station	Blackpool Council	Programmed	Scheme business case development and statutory processes			Start of works	Project completed			
Preston to Blackpool North Electrification	Network Rail	Under construction			Project completed					
A585(T) Windy Harbour Junction Improvement	Highways England	Committed	Start of works	Project completed						
A585(T) Windy Harbour to Skippool Improvements	Highways England /LCC	Programmed	Start of study	Study completed				Project Completed		
North Fylde Connectivity Coast Study	LCC	Pre-programme			Study Completed					
South Fylde Line Study: SINTROPER Project	LCC	Committed	Start of study	Study completed						
Blackpool North (Talbot Gateway) Interchange	Blackpool Council /Network Rail	Pre-programme					Start of works Project completed			
Fylde Coast Long Term Public Transport Strategy	LCC/ Blackpool Council	Pre-programme			Study completed					
Fylde Coast Accessibility Study	LCC	Pre-programme		Study completed						
Fylde Coast Cycle Network	LCC/ Blackpool Council	Pre-programme		Scheme Identification Study	Start of works	Ongoing				

Preston, South Ribble and Lancashire City Deal Projects	Delivery Agency	Current Status	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22
Preston Western Distributor and M55 Junction 2	LCC	Programmed	Scheme business case development and statutory processes			Start of works		Project completed		
Broughton Bypass	LCC	Programmed	Complete scheme business case and statutory processes	Start of works	Project completed					
Preston Railway Station/HS2 Interchange	Network Rail	Pre-programme								
Cottam Parkway Station	Network Rail/LCC	Programmed						Start of works		Project completed
M6 Junction 32 Northbound Widening	Highways England	Under construction	Project completed							

Funding

All figures £m and indicative

Project	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	Total	Comments	
Poulton-le-Fylde Town Centre		0.300										0.300	LCC Commitment, full cost TBC	
Blackpool Integrated Traffic Management		2.100	0.300									2.400		
Blackpool Bridges and Structures Major Maintenance Scheme		2.614	4.240	3.011	1.500							11.365		
M55 to Heyhouses Link												15.000	Specific details of funding to be confirmed	
Blackpool Town Centre Green Corridors			2.200	2.200	1.500	1.400						7.300		
Blackpool Tramway Extension North Pier to North Station				12.100	6.100							18.200		
A585(T) Windy Harbour Junction Improvement	1.300											1.300		
A585(T) Windy Harbour to Skippool Improvements	Revenue Commitment (HE)	Road Investment Strategy Commitment											0	
North Fylde Coast Connectivity Study			0.100									0.100	Revenue Commitment (LCC)	
South Fylde Line Study: SINTROPER Project	0.170											0.170		
Blackpool North (Talbot Gateway) Interchange					8.000							8.000		
Fylde Coast Long Term Public Transport Strategy			0.100									0.100	Revenue Commitment(LCC)	
Fylde Coast Accessibility Study		0.050										0.050	Revenue Commitment(LCC)	
Fylde Coast Cycle Network							0.500	0.500	0.500	0.500	0.500	2.500	LCC contribution for match funding	
Total	1.470	5.064	20.540	18.711	17.100	1.400	0.500	0.500	0.500	0.500	0.500	66.785		

	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	Total	Comments	
Highways England	1.300											1.300		
Single Local Growth Fund			5.400	15.100	8.300	1.300						30.100		
Local Highways Maintenance Challenge Fund		2.114	2.855	0.596								5.565		
Blackpool Council		0.600	1.085	3.015	0.800	0.100						5.600		
European	0.085											0.085		
Borough Council		tbc										tbc	Exact funding commitment to be confirmed.	
Developer			tbc		8.000							8.000 + tbc		
Lancashire County Council	0.085	0.350	0.200				0.500	0.500	0.500	0.500	0.500	3.135		
Total	1.470	5.064	20.540	18.711	17.100	1.400	0.500	0.500	0.500	0.500	0.500	66.785		
Preston, South Ribble and Lancashire City Deal Projects														
Preston Western Distributor and M55 Junction 2				21.300	47.200	22.700	0.800						92.000	
Broughton Bypass	1.200	4.000	19.100										24.300	
Preston Railway Station/HS2 Interchange														TBC
Cottam Parkway Station						1.500	8.000	5.500					15.000	
M6 Junction 32 Northbound Widening	6.600												6.600	







Appendix 1: District Maps

Blackpool

Masterplan Schemes


-  North Fylde Line Station Viability Study
-  Blackpool North Rail Gateway
-  South Fylde Line Study
-  Fylde Coast Accessibility Study
-  Fylde Coast Long Term Public Transport Strategy


Current Schemes

-  Rail electrification
-  Blackpool Bridges and Structures Major Maintenance Scheme
-  Blackpool Integrated Traffic Management
-  Tramway extension
-  Green Corridors (initial proposals)
-  Yeadon Way refurbishment


Development Sites

-  Strategic Site
-  Housing
-  Mixed Use
-  Leisure Uses
-  Airport

 Severe congestion (see glossary)

 Congestion (see glossary)

 University Centre

 College


 Retail park


 Major supermarket


 Supermarket

 Visitor attraction


 Hospital

 Existing cycle network

 Air Quality Management Area

 Existing employment area

 Tramway

 Bus Station






Fylde

Masterplan Schemes

-  North Fylde Line Station Viability Study
-  South Fylde Line Study
-  A585 Highway Improvements (indicative corridor)
-  Fylde Coast Accessibility Study
-  Fylde Coast Long Term Public Transport Strategy
-  Lancaster Canal towpath improvements
-  Lancashire Coastal Way completion
-  River Wyre Explorer Loop




Current Schemes


-  M55 to Heyhouses Link Road
-  Rail electrification
-  Highways Agency - A585 improvements


Development Sites


-  Strategic Site
-  Employment
-  Housing
-  Mixed Use
-  Enterprise Zone
-  Airport

City Deal Schemes


-  City Deal highway improvements
-  Bus corridor improvements
-  Cottam Parkway Rail Station


 Severe congestion (See glossary)


 Congestion (See glossary)

 College

 Retail park


 Major supermarket


 Supermarket

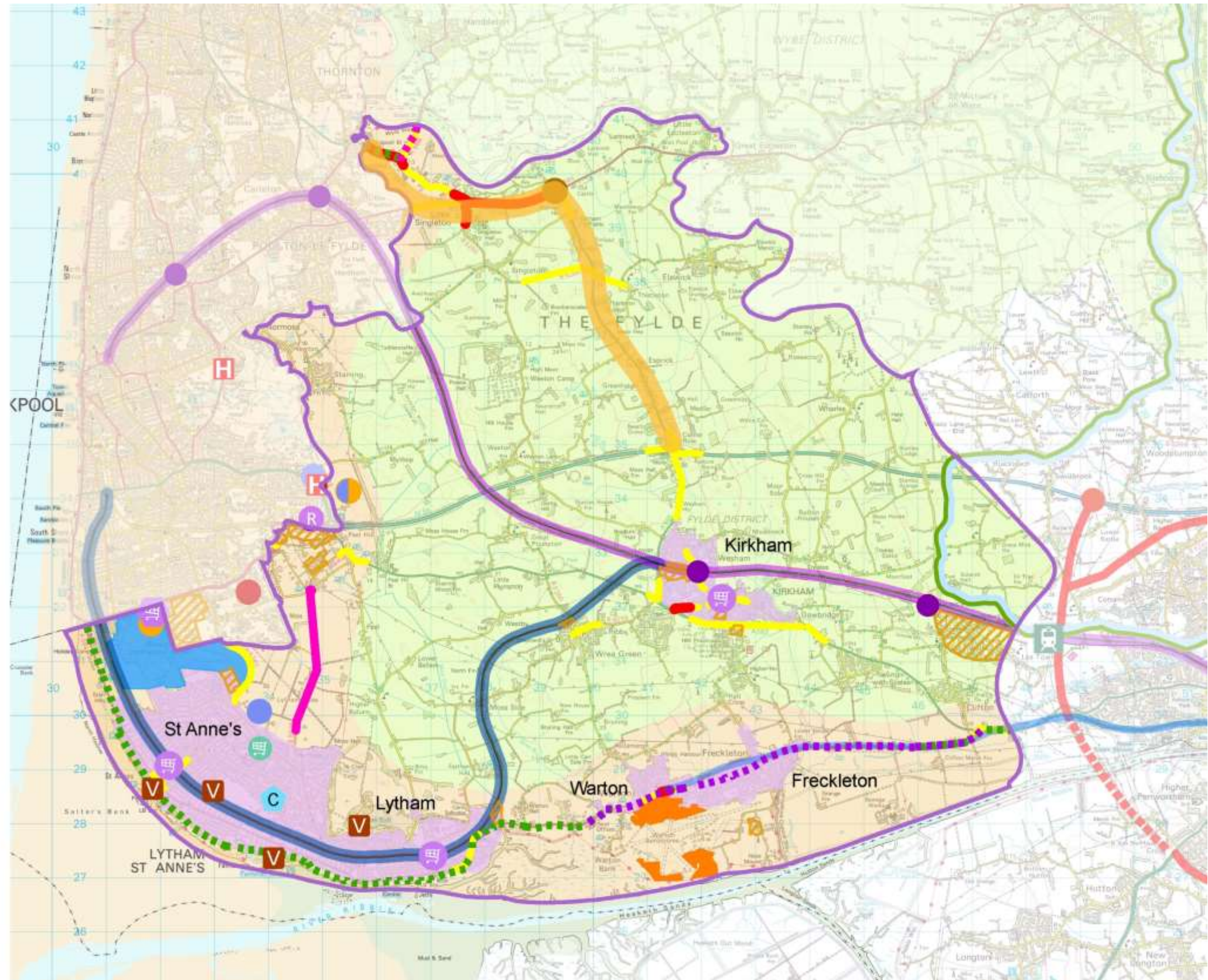
 Proposed supermarket

 Visitor attraction

 Hospital

 Existing cycle network

 Existing employment site







Wyre

Masterplan Schemes

-  North Fylde Line Station Viability Study
-  A585 Highway Improvements (indicative corridor)
-  Fylde Coast Accessibility Study
-  Fylde Coast Long Term Public Transport Strategy
-  Lancaster Canal towpath improvements
-  Lancashire Coastal Way completion
-  River Wyre Explorer Loop



Current schemes


-  Rail electrification
-  Highways Agency - A585 improvements
-  Highways Agency - M6 Junction 32 Northbound Widening
-  Poulton Town Centre


Development sites

-  Strategic Site
-  Employment
-  Housing
-  Mixed Use

City Deal Schemes


-  City Deal highway improvements
-  Bus corridor improvements


 Severe congestion (See glossary)


 Congestion (See glossary)


 University Centre

 College


 Retail park


 Major supermarket

 Supermarket

 Visitor attraction

 Hospital

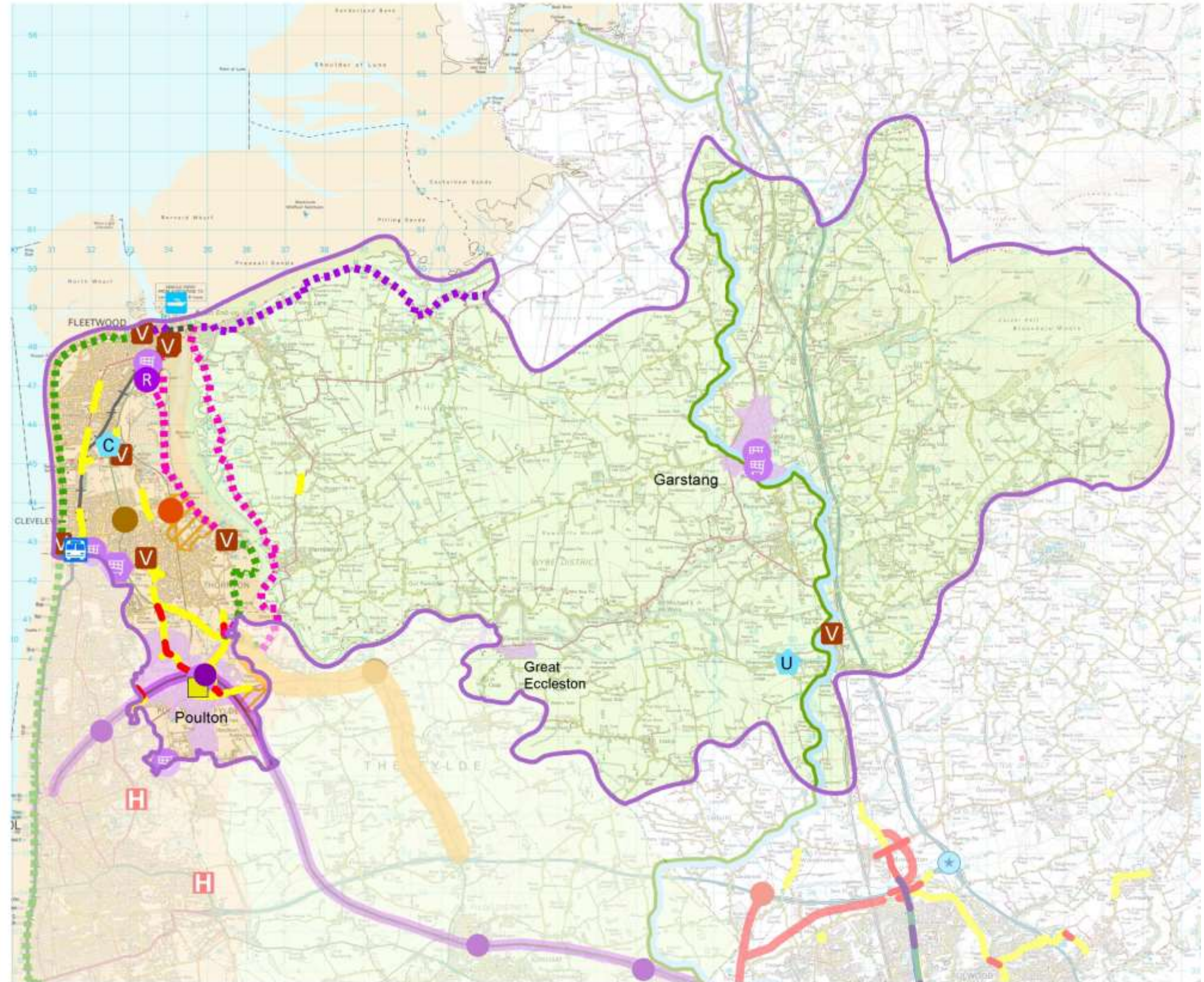
 Existing cycle network

 Existing employment site

 Tramway

 Bus Station

 Ferry



Appendix 2: Glossary

Air Quality ~ the condition of the air around us. Pollution is often a cause of poor air quality. **Carbon Emissions** ~ carbon dioxide (CO₂) and carbon monoxide (CO) produced by vehicles and industrial processes.

Central Business District (CBD) ~ the commercial centre of a city or large town, with the main concentration of offices and shops.

CIL/S106 Developer Funding ~ when new developments are planned, the developer may be required to make a payment towards facilities including transport schemes, flood defences, schools, health and social care facilities, green spaces and leisure centres. This was formerly through 'Section 106' agreements but is now through the Community Infrastructure Levy (CIL).

Core Strategy ~ the key compulsory local development document specified in United Kingdom planning law. It sets out the vision, objectives, strategy and policies that will manage development and use of land in an area. Every other local development document is built on the principles set out in the core strategy, regarding the development and use of land in a local planning authority's area.

Compulsory Purchase Orders (CPO) ~ compulsory purchase orders allow certain bodies to buy land or property even where a land owner does not want to sell it. A CPO is a last resort and only used where taking the land is necessary and it is in the public interest.

Congestion

Road type/Speed limit	Severe congestion	Congestion
Urban 30mph & 40 mph	< 10mph	10 - 20 mph
50mph & 60 mph	< 20 mph	20 - 30 mph
Dual carriageway and motorway 70 mph	< 40 mph	40-50 mph

Economic Development ~ long term actions to improve the standard of living and economic health of an area. Actions can involve many

areas including education, infrastructure, competitiveness, environmental sustainability, social inclusion and health.

Green Belt ~ an area of open countryside or farmland between urban areas, where development is restricted to limit urban growth and prevent separate urban areas joining together over time.

High Speed Rail ~ High Speed 2 (HS2) will be the UK's new high speed rail network, built initially between London and Birmingham. Phase 2 of HS2 will extend the route to Manchester and Leeds.

Highway Authority ~ an organisation legally responsible for looking after the highway network (roads, footways and cycle ways) in an area and which has certain legal powers as a result.

Infrastructure ~ the basic facilities needed for society to function, such as roads, railways, communications systems, electricity, gas and water supplies, and public buildings including schools.

Integrated Transport (IT) Block ~ Government capital funding provided to County and Unitary Councils for support for small-scale transport improvement schemes.

Lancashire Advanced Engineering and Manufacturing Enterprise Zone ~ the Enterprise Zone is made up of the two BAE Systems sites at Samlesbury and Warton. The Lancashire Enterprise Partnership (LEP) worked with BAE Systems to launch the Zone in April 2012, and it is intended to become a world class location for advanced engineering and manufacturing.

Lancashire Enterprise Partnership (LEP) ~ a public/private sector partnership which provides leadership for the county's economy and therefore has an important role in directing local economic development activity for job creation and growth.

Local Plan ~ a set of documents setting out the policies and plans which will shape how an area develops and which make up the local plan for a local planning authority's area.

Local Sustainable Travel Fund ~ a government fund to support measures to encourage economic growth and reduce carbon emissions by supporting walking, cycling and public transport.

Local Transport Plan ~ a statutory document that sets out how a highway authority will provide sustainable and accessible transport

capable of supporting the county's economic growth over the next few years and beyond.

Sustainable ~ in this masterplan, sustainable means something that "meets the needs of the present without compromising the ability of future generations to meet their own needs". Making plans, policies and schemes sustainable means balancing environmental, social and economic issues.

Nature Conservation Value ~ areas of the natural environment with valuable habitats or plant or animal species to be protected and enhanced that need to be considered by a planning authority when they are preparing their local plan and making decisions on planning applications.

Park and Ride ~ a system for reducing urban traffic congestion in which drivers leave their cars in parking areas on the outskirts of a town or city and travel to the city centre on public transport. Most park and ride is bus based; rail based sites are usually called 'Parkways'.

Pinch Point Programme Funding ~ part of the Government's growth initiative providing funding to tackle specific places on the national main road network where traffic congestion is at its worst.

Rolling Stock ~ the carriages and wagons that make up a train. The quality and capacity (the number of people or quantity of goods that can be carried) of rolling stock affects the level of service on a route.

Spatial Planning ~ how the public sector influences the distribution of people and activities in an area. It includes land use planning, urban planning, transport planning and environmental planning. Other related areas are also important, including economic development and community development. Spatial planning takes place on local, regional, national and international levels.

Strategic Location ~ a general location in a spatial plan where land has been allocated for major development, such as for housing or employment, but where there is as yet no detail of that development.

VPD ~ vehicles per day

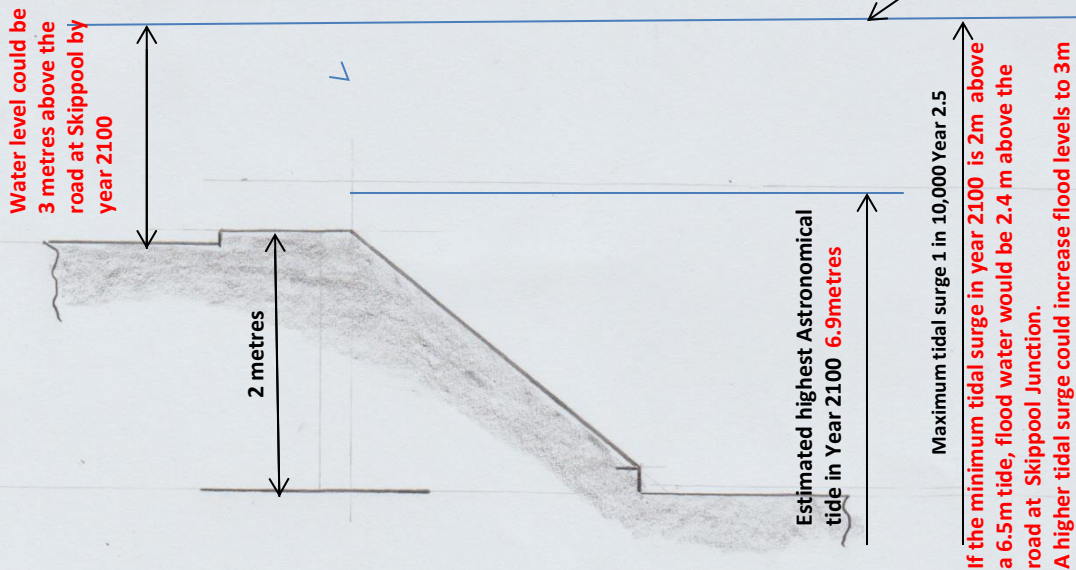
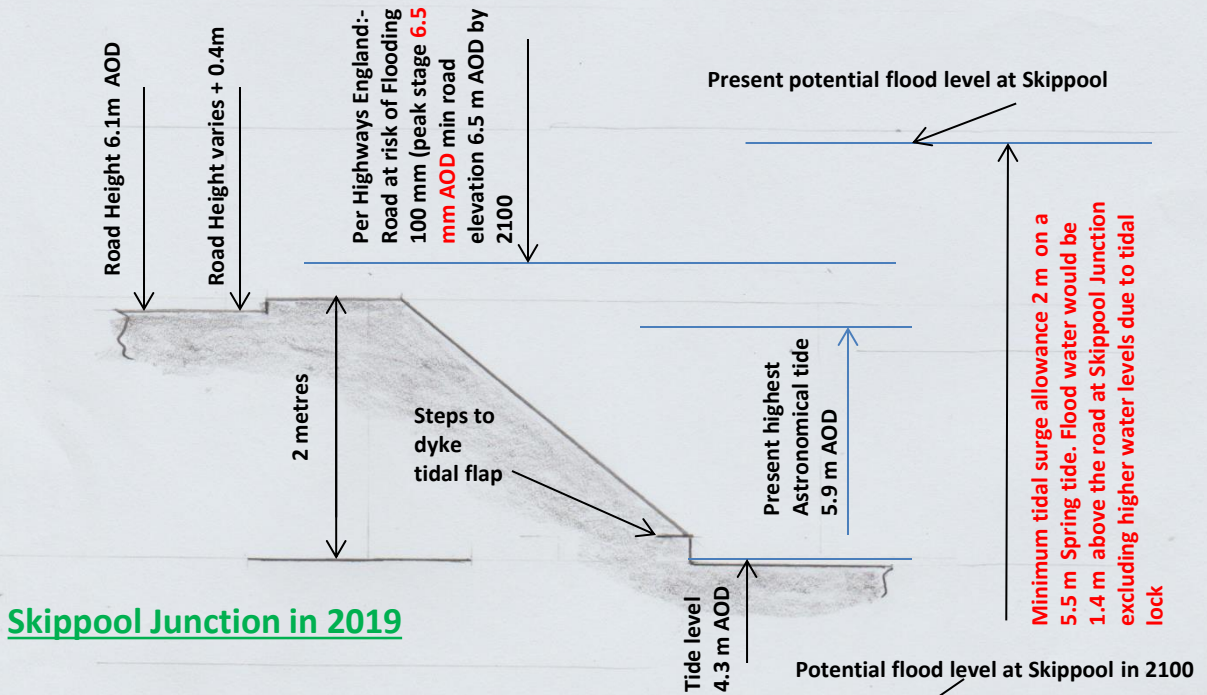
FLOOD RISK FROM HORSEBRIDGE DYKE AT SKIPPOOL JUNCTION

Tide height 9.2m ACD or 4.3, AOD at 2.15pm on 6 June 2019

The National Oceanographic Centre model shows that a tidal surge along the Coast could be 2.5 metres high and during the 1977 flood the tidal surge was 1.7 metres. Therefore in making a realistic judgement on the present flood risk it is prudent to allow for a 2 metre surge above a moderate spring tide.

The present Highest Astronomical Tide for Fleetwood is 5.9 Above Ordnance Datum (AOD) with an average rate of sea level rise of 2mm per year. This rate is expected to increase and cause a sea level rise of at least 800mm over the next 100 years although it is acknowledged the increase could be double this figure.

Allowing only 25% factor of safety above the minimum 800mm raises the estimated Highest Astronomical Tide to 6.9 metres AOD in 100 years. These figures have been included in the flood risk assessments set out below.



FLEETWOOD DOCK HOUSING DEVELOPMENT FLOOD RISK



Before these houses were built the land was raised by pumping material from the River Wyre and it is now 1.5 metres above the road level at Skippool Junction. This will protect the houses during a storm similar to the 1977 flood but the Affinity Retail Centre and Fleetwood Town Centre will be at risk.



As sea levels rise the houses will be flooded to approximately the level indicated. Much of Fleetwood, Thornton and Cleveleys will also be flooded as predicted by Highways England in their Flood Risk Assessment. A flood barrier at the mouth of the River Wyre and other measures would avoid the potential loss of life, land and property for hundreds of years or more.

The cost of these measures will be only a small percentage of the assets at risk.

WYRE BOROUGH COUNCIL



Wyre Flood and Coastal Defence Strategy Plan

March 2004

Robert Posner, BEng, CEng, MICE, DMS
Wyre Borough Council,
Wyre Civic Centre,
Breck Road,
Poulton-le-Fylde,
Lancs FY6 7PU

Wyre Flood and Coastal Defence Strategy Plan

March 2004

Produced By Wyre Borough Council

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Wyre Borough Council

Wyre Flood and Coastal Defence Strategy Plan

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1 FOREWORD

This document has been prepared in accordance with the Department for Environment Food and Rural Affairs (formerly the Ministry of Agriculture Fisheries and Food) Interim Guidance for the Strategic Planning and Appraisal of Flood and Coastal Defence Schemes July 1997 and with Project Appraisal Guidance Series FCDPAG 1 –4 A procedural Guide For Operating Authorities published between December 1999 to May 2001

At the outset a partnership incorporating Wyre Borough Council (WBC), The Environment Agency (EA), the Department for Environment Food and Rural Affairs (DEFRA) and Associated British Ports (ABP) was formed to contribute to the formation of the strategy. In addition representatives from Blackpool Borough Council, Lancaster City Council and English Nature met on a regular basis to review the findings of the strategy investigations. Halcrow Group Ltd, supplemented by local consultant Coastal Engineering Consultancy Services, provided technical guidance and reviewed the strategy at key stages.

2 EXECUTIVE SUMMARY

- 2.1 This report has been prepared in accordance with the Ministry of Agriculture, Fisheries and Food (now Department for Environment, Food and Rural Affairs) Flood and Coastal Defence Project Appraisal Guidance notes. Approval to undertake a strategic study of the coastal defences protecting the urban core of Wyre was given by the Ministry of Agriculture Fisheries and Food in May 2000.
- 2.2 This strategy report concerns the area covering the Wyre Borough Council frontage between the Blackpool boundary and the Tidal River Wyre and ties into the Blackpool strategy up to Anchorsholme on the southerly side in order to encompass the full management unit. The study also extends to the tidal limits of the River Wyre at Cartford Bridge, Little Eccleston, and includes the defences on the left bank of the River Wyre to ensure that consistent flood defence is afforded to the area at risk reference figure 1.
- 2.3 The total length of frontage is 24.4km with a benefit area for a 1 in 200 year event calculated as **2,750 hectares**. This area includes **28,000 properties**, **1,500 industrial units**, **22.8km of public highway**, and **825 hectares** of agricultural land. The area has high environmental value with the northern facing coastal frontage from Rossall Point and the full length of the estuary being designated as a Special Site of Scientific Interest (SSSI) and candidate Special Area of Conservation (cSAC). The tangible discounted benefit derived from these assets is **£165 million**. Intangible benefits have not been considered numerically due to the potential to relocate tourist activities to neighbouring frontages, the difficulty in valuing environmental assets, and the high value of the tangible assets within the area. However tourism plays a major role within the Borough employing over **3,200 people** with estimated revenues of **£60million per year**.
- 2.4 The coast defences within the strategy area have been constructed in a number of phases dating from the late 19th century, when the natural embankments that suffered severe coastal erosion were protected by placing stone setts on their front face. Further defences were gradually added and substantially reconstructed and improved following inundation of the land behind with major flooding occurring in the periods 1920s, 1950s and 1980s. The current defences are in places reaching the end of their design life and their maintenance is becoming increasingly impracticable. These time-expired structures also provide inadequate protection to the vulnerable properties immediately behind them. The current policy of maintenance is not sustainable for large extents of the coastline and, due to the integral form of the protection offered by the coast defences, failure of any section could lead to flooding to the whole area. Defences in the area are maintained by a number of different bodies including Wyre Borough Council, the Environment Agency, Associated British Ports and NPL Estates. It is therefore appropriate that a strategy study to provide a long term plan for the management of the coastal and estuary defences is provided. This will allow appropriate defences to be developed, based upon physical and economic necessity unconstrained by administrative boundaries.
- 2.5 The aims of this study are to provide appropriate levels of coastal defence, whilst developing the natural environment for the benefit of all.

2.6 The objectives of the strategy are: -

- To provide an appropriate level of coastal and flood defence to prevent coastal erosion and flooding of properties and assets in the low-lying hinterland.
- To provide sustainable defences which utilise natural defence mechanisms wherever possible.
- To enhance the natural environment and to increase the potential for recreation and tourism.
- To provide a blueprint for future monitoring and programming of maintenance works.
- To increase the understanding of the shoreline and to focus consultations in a strategic manner.
- To aid co-ordination and to consolidate information gathered within higher-level plans.

2.7 This strategy has been prepared by a partnership of Wyre Borough Council, the Environment Agency, Associated British Ports and the Department for Environment Food and Rural Affairs. In its preparation an international consultant, Halcrow Group, who have extensive knowledge and expertise in coastal strategies, and a local consultant, Coastal Engineering Consultancy Services, who prepared much of the Shoreline Management Plan for this area, have supplemented the resources of the partnership staff.

2.8 The strategy study has progressed in a logical manner by:

- Considering the physical setting and investigating the movement of sediment within the system, then identifying what is changing and what is driving these changes. The strategy has considered the existing process units identified within the Shoreline Management Plan as the starting point of this process. Process Units are lengths of coastline, which have similar characteristics in terms of physical processes acting upon them and these natural coastal processes can be considered as sufficiently independent of the stretch adjacent to it.
- By studying historical movement it was found that the majority of the shoreline was stable with small losses and gains confined within the area. A headland between Rossall School and Larkholme estate proved to be the most exposed areas of the frontage and this provides shelter to the adjacent areas, which exhibit higher beach levels that protect the defences. Without the defences the historical trend for retreat landwards would continue. On the north-facing coast some protection is afforded by the North Wharf Bank, although net retreat would be likely, particularly under future sea level rise scenarios. The estuary is protected from wave attack by its narrow mouth and sandbars to the East and West this therefore significantly reduces the wave climate for the majority of the river frontage. However the estuary channel has shown signs of historical fluctuation and mapping of the movements over the last 50 years indicates that this may have significant effects on the sustainability of the existing flood embankments. Sea level rise will place increased pressures on the upper estuary through coastal squeeze, and retreat sites may have to be considered to compensate for this.

- Considering the existing environment and determining the main environmental constraints and opportunities. At the outset of the strategy study the significance of the natural and human environment in determining strategic options was recognised. In order to ensure that the appropriate level of consideration was given to environmental factors a Strategic Environmental Assessment (SEA) was commissioned by the Council and undertaken by Halcrow as an integral part of the strategy study. This assessment involved extensive consultation with stakeholders and interested parties.
- Providing an agreed set of objectives from which the preferred technical solution can be identified. The Strategic Environmental Assessment produced key generic objectives and individual objectives for each process unit. These have been used to define the acceptability of the proposed strategic options.
- Undertaking a detailed investigation into the condition and construction of the existing sea and river defences and producing life expectancies for each defined length. A number of structural investigations have been undertaken as part of the strategy including: ground radar surveys to identify voiding, chloride testing of the sea wall, coring and reinforcement testing, structural assessment investigations and topographic surveys of the sea wall and river embankments.
- Considering the existing management policies and boundary definitions within high level plans in the context of the above findings. This strategy fits within a hierarchy of plans, which have been considered in the preparation of this report. The most relevant are Shoreline Management Plan 11b (1999) and the Wyre Estuary Shoreline Management Plan (Draft), which has been prepared in close co-ordination with this strategy. The policies as laid out in the plans have been reviewed and found to be compatible with the findings of this strategy although changes to management and process units have been made where appropriate due to further information at a local level.
- Considering technical solutions to fulfil the management policy for each length against the agreed objectives. A variety of technical solutions have been considered within the Strategic Options report (Appendix A4) in order to provide the overall strategic solutions of:
 - Do Nothing
 - Maintain
 - Sustain
 - Improve.
- Considering costs and benefits for each of the technical options. Costs of options are considered in a separate cost analysis report (Appendix A6). Costs were taken from a wide variety of sources including previous tendered rates, rates from first principles and current costs from other authorities. It was found that the variety of options offered to meet each strategic option varied little in cost between options but varied widely dependent upon location.
- Producing a recommended strategy for each length. The recommended strategy and appropriate costs and benefits are tabulated in Figures 2.0 – 2.2.

Recommended Strategic Options, Costs and Benefits

For each of the proposals the top line represents the SMP policy and the lower line represents the proposed strategic option to achieve this policy.

Sub Cell	No	Length	Zone	Approx. Length (km).	Responsibility	Short Term Proposal	Medium Term Proposal	Anticipated Long Term	Estimated PV Cost of 50 Year Strategy	Estimated Benefit to Cost ratio
E1	1/1	Estuary Mouth to Kneps Farm	Ferry Dock to ABP Dock (Freeport)	1.46	ABP	Hold the Line Maintain	Hold the Line Refurbish	Hold the Line Maintain	£981,000	<1 Dependent on operational viability of port infrastructure.
E1	1/2		ABP Dock to ICI boundary	2.83	LCC, United Utilities	Hold the Line Maintain	Hold the Line Refurbish	Hold the Line Maintain	£335,000	<1 Dependent upon new development.
E1	1/3		ICI Boundary to Stanah	2.09	NPL, Kneps Farm, EA.	Hold the Line Improve	Hold the Line Maintain	Hold the Line Maintain	£1,623,000	> 50 Significant assets protected
E2	2/1		Stanah to Shard Bridge	3.93	EA	Hold the Line Maintain	Refurbish Sluice structure	Consider Setback of Wadderbank /Maintain Skipool	£189,000	1.36 Maintain and refurbish sluice structure.
E2	2/2		Shard Bridge to Bankfield Farm	3.16	EA	Hold the Line Maintain	Hold the Line Maintain	Consider Setback Limited Intervention /	£26,000	3.88 Potential to form intertidal habitat
E2	2/3		Bankfield Farm to Cartford Bridge	4.12	EA	Hold the Line Maintain	Monitor / Limited Intervention	Consider Setback Limited Intervention /	£93,000	1.25 Potential to form intertidal habitat

Figure 2.0

Recommended Strategic Options, Costs and Benefits

Sub Cell	No	Length	Zone	Approx. Length (km).	Responsibility	Short Term Proposal	Medium Term Proposal	Anticipated Long Term	Estimated PV Cost of 50 Year Strategy	Estimated Benefit to Cost ratio
11b	1/1	Fleetwood Ferry to Fleetwood Pier		0.5	WBC	Hold The Line Natural Defence Management /	Hold The Line Natural Defence Management /	Hold The Line Raise/ Sustain Defence	£352,000	1.45
11b	1/2	Fleetwood Pier to Marine Lakes		1.0	WBC	Hold The Line Natural Defence Management	Hold The Line Natural Defence Management	Hold The Line Raise/ Sustain Defence	£505,000	1.41
11b	1/3	Marine Lakes to Rossall Point		1.3	WBC	Hold The Line Natural Defence Management	Hold The Line Natural Defence Management	Hold The Line Consider areas of realignment	£785,000	<1.0 potential for natural management of boating lakes
11b	2/1	Rossall Point to Chatsworth Avenue		1.2	WBC	Hold The Line Maintain	Hold The Line Maintain	Hold The Line Maintain	£1,095,000	<1.0 No value of Golf Course in assessment
11b	2/2	Chatsworth Avenue to Rossall Hospital		1.16	WBC	Hold The Line Maintain	Hold The Line Improve	Hold The Line Maintain	£10,056,000	1.76
11b	2/3	Rossall Hospital to Five Bar Gate		1.23	WBC	Hold The Line Maintain	Hold The Line Maintain	Hold The Line Sustain	£3,100,000	1.02

Figure 2.1

Recommended Strategic Options, Costs and Benefits

Sub Cell	No	Length	Zone	Approx Length (km).	Responsibility	Short Term Proposal	Medium Term Proposal	Anticipated Long Term	Estimated PV Cost of 50 Year Strategy	Estimated Benefit to Cost ratio
11b	2/4	Rossall School to Anchorsholme Park	Jubilee Gardens to G10 Five Bar Gate	0.74	WBC	Hold The Line Maintain	Hold The Line Sustain	Hold The Line Maintain	£1,556,000	1.56
			Boundary to Jubilee Gardens	0.97	WBC	Hold The Line Improve	Hold The Line Maintain	Hold The Line Maintain	£8,243,000	4.74
			Blackpool Zone 24 to 22	0.76	BBC	Hold The Line Refurbish	Hold The Line Maintain	Hold The Line Maintain	£1,500,000	-

Figure 2.2

Notes: Estimated Costs include capital, maintenance and design fees. The costs are expressed as present value (PV) costs with a discount rate of 6%

Short term strategy period - 0 to 5 years, Medium term strategy period - 6 to 15 years, Long term strategy period - 16 to 50 years.

Where B/C ratios of <1 are indicated works under the strategy are justified and necessary to prevent the damages indicated within all breaches being realised. The overall strategy cost ratio is 5.32. It is unlikely that improvement schemes other than those indicated would be acceptable except on the grounds of health and safety or failure of the defences unless other considerations or other forms of funding were taken into account.

- Producing an agreed detailed 5-year implementation plan for the strategy area. The 5-year implementation plan is a detailed proposal for works and studies required as a matter of urgency due to the risks associated with these lengths of defence or the importance of acquiring further information where gaps currently exist. The areas at greatest risk are considered to be:
 - a) Cleveleys frontage due to the life expired sea defences and the risk of flooding to low-lying properties to the rear of the defences and,
 - b) ICI boundary to Stanah due to low areas of the defence and poorly constructed embankments to the Stanah length of defences. These defences protect large areas of low-lying land.
 - A monitoring plan has been prepared in accordance with the proforma developed on a regional basis supplemented by local requirements in order to inform future reviews of this strategy, and to allow effective detailed design and to inform the SMP reviews.
 - Producing a costed outline programme of works for a 50-year period. The anticipated costs of the proposed strategy are presented in the previous tables (Figures 2.0 – 2.2). These costs will be updated at future reviews of this strategy but at this time represent a realistic budget cost for the provision of coastal defences for the strategy area. This will provide estimates of required long-term budgets to inform financial planning.
- 2.9 The outcome of this strategy is a long-term plan to safeguard the area from tidal flooding over a period of fifty years. This strategy plan identifies strategic options and through these informs both financial and development planning. It is intended to review this strategy every five years in order to confirm assumptions made within this strategy and to incorporate findings from studies proposed as part of the first five year action plan and studies undertaken by others.

3 INTRODUCTION

3.1 Problem to be addressed

3.1.1 This study considers the requirement for improved protection against tidal flooding for the Wyre urban core area, which contains the major conurbations of Fleetwood, Thornton-Cleveleys and Poulton-le-Fylde. The area's defences have been split into three distinct lengths namely; the western facing frontage, the northern facing frontage and the eastern river frontage. Each has distinctive characteristics due to the physical conditions associated with its orientation.

3.1.2 The strategy area comprises 5,600ha of which 2750 ha are within the 200-year indicative flood plain as shown in Figure 3.0.

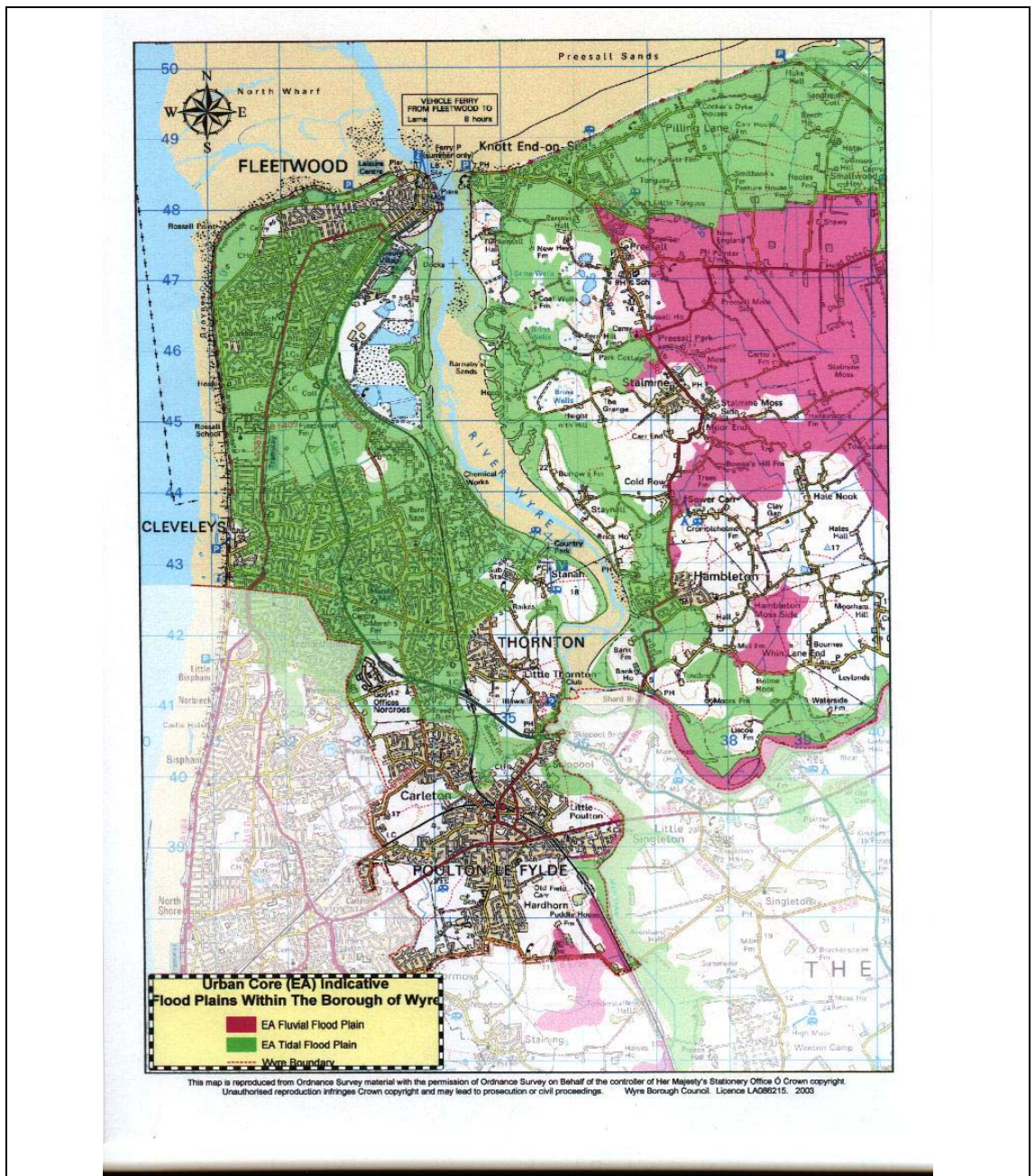


Figure 3.0 - Indicative Flood Map

The area is predominately high density residential an indicative standard of 200 years is appropriate for the area in accordance with PAGN 3. The assets protected within the study area consist of 28,000 residential properties and 1,500 commercial and industrial premises. The ‘do nothing’ damages associated with a 200 year event are £37 million rising to £61 million in fifty years time due to the effects of sea level rise alone.

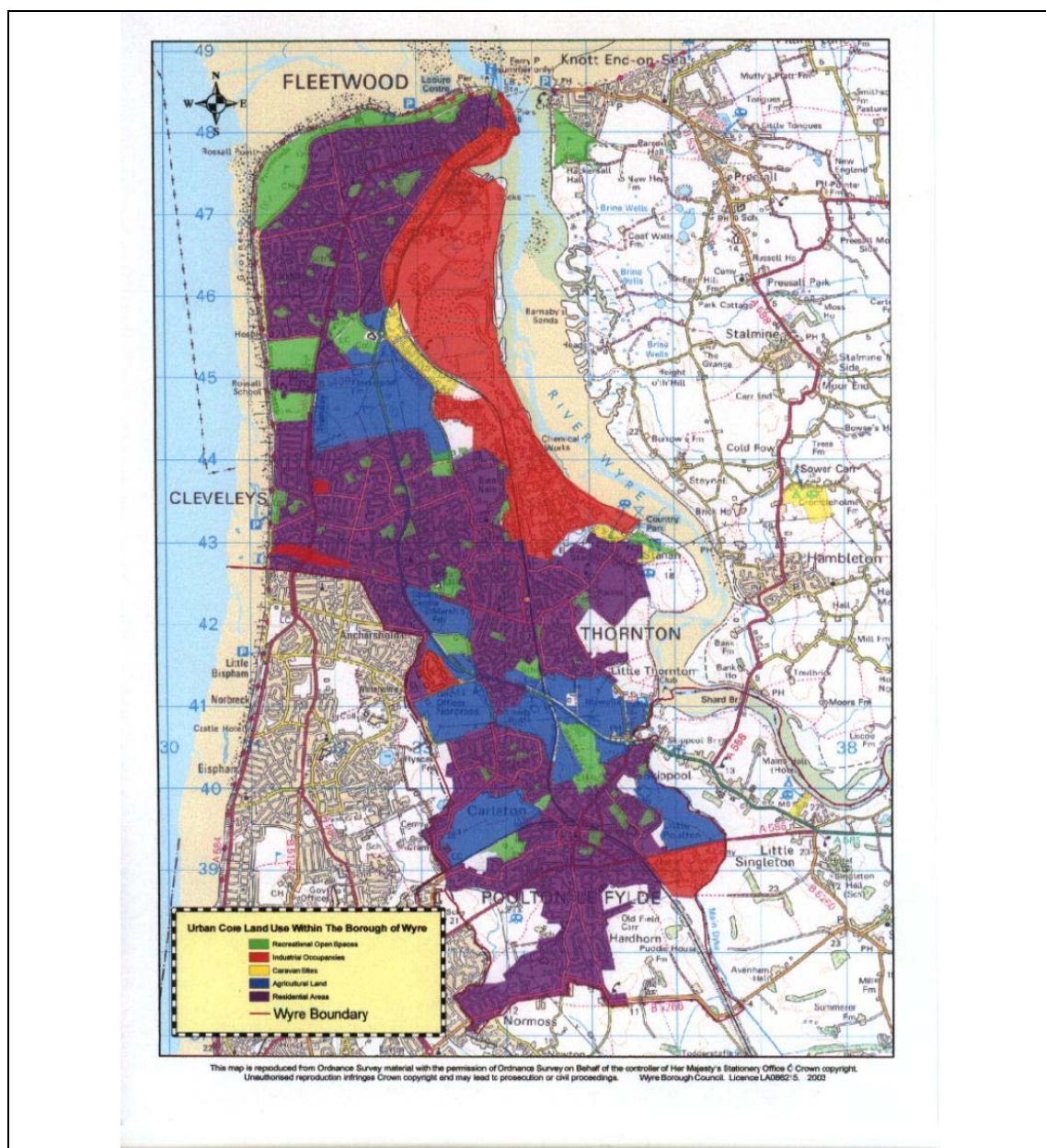


Figure 3.1 – Land Use Map

3.1.3 Western Facing Frontage

The western facing frontage from Cleveleys to Fleetwood has a long history of extremely volatile beach levels and flooding events. Beach levels are known to fluctuate by up to 4 metres on a single tide and major flooding events have been recorded since 1555 when the village of Singleton Thorpe was destroyed. Coastal erosion continued until the construction of coastal defences between the 1920s and 1930s from Cleveleys to Rossall Point and the 1960s around Fleetwood. The existing rear sea wall at the back of the promenade was completed in 1982 following major flooding of over 1,800 properties in 1977.

The coastal defence structures currently protect a thin strip, or embankment, of high ground, which quickly gives way to lower land; the majority of which is below the five-year sea level. It is anticipated that should a breach occur to the defences, erosion of this embankment would quickly follow, allowing rapid flooding of the land at its rear.

The majority of the lower sea defences are over 60 years old and are time expired. This is illustrated by recent failures to these structures and the requirement for increased maintenance attention. It is predicted that failures to these defences will increase in frequency and severity and that the risk of a major breach will quickly grow to unacceptable levels in the absence of intervention.



**Five Bar Gate to
Jubilee Gardens
Unit 2/4/2**



**Jubilee Gardens to
Five Bar Gate
Unit 2/4/1**



**Chatsworth Avenue to
Rossall Hospital
2/2**

3.1.4 Northern Facing Frontage

The northern frontage has shown little drop in beach levels over the past 10 years. In many places along the frontage, beach levels have risen significantly; particularly at the eastern end where photographic evidence indicates beach level rises of up to 2 metres over the last fifty years. The stability of this frontage led to the line being advanced in 1956 with the construction of the Marine Hall complex. However sea level rise will place greater pressures on this natural protective frontage and greater reliance may be placed on the concrete sea defences. It is therefore important that the natural defences are managed both to secure coastal protection and to maintain the environmentally important sand dune habitat.



**Marine Lake to
Rossall Point
Unit 1/3**



**Fleetwood Pier to
Marine Lake
Unit 1/2**



**Fleetwood Ferry to
Fleetwood Pier
Unit 1/1**

3.1.5 Estuary Frontage

The estuary is a busy navigation channel for both commercial and leisure craft. Its narrow approach channel provides protection against the majority of storms. The flood embankments along its length are derived from railway embankments and ad-

hoc earth embankments constructed to prevent flooding to industrial and agricultural land lying immediately behind the defences. The majority of the estuary is surrounded by high outposts of land with flood embankments linking them. The bunded lower areas are reclaimed intertidal land most notably in the upper reaches of the estuary where infill of the saltmarshes behind the route of the railway embankment has occurred since its construction in the 1840s.

The main problems with the estuary defences are their ad hoc nature, lack of maintenance and in some instances the presence of weak and low defences. Other areas exhibit signs of severe undercutting and erosion from the meandering river channel. Future sea level rise will increase coastal squeeze within the estuary leading to loss of protective saltmarsh frontages and direct erosion of the flood embankments.

A failure in the upper estuary defences could lead to flooding to the majority of the urban area, and particularly to the low-lying areas of Thornton Cleveleys.



**River Wyre
Estuary**



**Ferry Dock to
the Coastline**



**Fleetwood
Docks**

3.2 Aims and objectives of this strategy

The aim of this strategy is to provide appropriate levels of coastal and flood defence, whilst developing the natural environment for the benefit of all.

The objectives of the strategy are:

- To provide an appropriate level of coastal and flood defence to prevent coastal erosion and flooding of properties and the low-lying hinterland.
- To provide sustainable defences, which utilise natural defence mechanisms wherever possible.
- To enhance the natural environment and to increase the potential for recreation and tourism.
- To provide a blueprint for future monitoring and programming of maintenance works.
- To increase the understanding of the shoreline and to focus consultations in a strategic manner.
- To aid co-ordination and to consolidate information gathered within higher-level plans.

4 EXISTING SITUATION

4.1 Boundaries

- 4.1.1 The strategy area covers the Wyre Borough Council frontage between the Blackpool boundary and the Tidal River Wyre and ties into the Blackpool strategy up to Anchorsholme on the southerly side in order to encompass the full management unit. The study also includes up to the tidal limits of the River Wyre at Cartford Bridge, Little Eccleston, and includes the defences on the left bank of the River Wyre.
- 4.1.2 The relevant shoreline management plans associated with this strategy report are:
- Formby Point to River Wyre, Shoreline Management Plan 11b (Adopted May 1999)
 - River Wyre Shoreline Management Plan (Draft July 2002)
- 4.1.3 The SMPs have proposed a number of process and management units within the strategy area. These have been reviewed as part of the strategy and minor amendments made in the light of the more detailed analysis carried out. The SMP division of the coastline is tabulated together with the SMP policy in Figures 4.0 – 4.2..

Coastal Frontages SMP divisions and policies.

Figure 4.0

Cell 11b SMP Policies (extended to include MT)					
WEST FACING FRONTAGE					
Process Unit (PU*)	Management Unit (*MU/**)	Zone (Z)	Preferred Policy		
			ST	MT	LT
CPU 2 Rossall Point to Anchorsholme Park	Rossall Point to Chatsworth Avenue	Rossall Point to Chatsworth Avenue	HOLD	HOLD	HOLD
	Chatsworth Avenue to Anchorsholme Park (Blackpool BC)	Chatsworth Avenue to Rossall Hospital	HOLD	HOLD	HOLD
		Rossall Hospital to Five Bar Gate	HOLD	HOLD	HOLD
		Five Bar Gate to Jubilee Gardens	HOLD	HOLD	HOLD
		Jubilee Gardens to Borough Boundary	HOLD	HOLD	HOLD
		Blackpool Zone 24 to Boundary	HOLD	HOLD	HOLD
		Blackpool Zone 23	HOLD	HOLD	HOLD
		Blackpool Zone 22	HOLD	HOLD	HOLD

Figure 4.1

Cell 11b SMP Policies (extended to include MT)					
NORTH FACING FRONTAGE					
Process Unit (PU*)	Management Unit (*MU/**)	Zone (Z)	Preferred Policy		
			ST	MT	LT
CPU 1 Fleetwood ferry to Rossall Point	Fleetwood Ferry to Fleetwood Pier	Fleetwood Ferry to Fleetwood Pier	HOLD	HOLD	HOLD
	Fleetwood Pier to Marine Lake	Fleetwood Pier to Marine Lake	HOLD	HOLD	HOLD
	Marine Lake to Rossall Point	Marine Lake to Rossall Point	HOLD	HOLD	HOLD

Notes:

ST – Short Term
Strategy Years 0 – 5

MT – Medium Term
Strategy Years 5 – 15

LT – Long Term
Strategy Years 15 – 50

Source: Formby Point to River Wyre SMP May 1999

Please note additional zone has been added for Jubilee Gardens to Borough Boundary.

Wyre Estuary SMP Division and Policy

Figure 4.2

Draft Wyre Estuary SMP Policies					
Estuary Process Unit (EPU*)	Management Unit (*MU/**)	Frontage (F)	Preferred Policy		
			ST	MT	LT
EPU 1 Fleetwood/ Knott End to Stanah	Kneps Farm Stanah to Fleetwood.	1 - a Fleetwood to Kneps Farm Stanah.	HOLD	HOLD	HOLD
		1 - b Waderbank	HOLD	HOLD OR RETREAT	HOLD OR RETREAT
EPU 2 Hambleton/ Waderbank to Cartford Bridge	Shard Bridge to Liscoe Farm, Windy Harbour to Little Singleton to Shard Bridge, Shard Bridge to Tatham House, Tathouse to Kneps Farm Stanah.	2 - a Skippool Left & Right Bank	HOLD	HOLD	HOLD
		2 - b Bankfield Farm to Windy Harbour	HOLD	HOLD OR RETREAT	HOLD OR RETREAT
	Liscoe Farm to Waterside Farm, Waterside Farm to Cartford Bridge, Cartford Bridge to Larbreck Hall, Larbreck Hall to Windy Harbour.	2 - c Left Bank: Little Eccleston to Cartford Bridge.	HOLD	HOLD OR RETREAT	RETREAT

Notes:

ST – Short Term
Strategy Years 0 – 5

MT – Medium Term
Strategy Years 5 – 15

LT – Long Term
Strategy Years 15 – 50

Source: Wyre Estuary SMP (Draft July 02)

Please note this strategy considers only two EPUs as being appropriate whereas the Wyre estuary SMP considers 3 with a further division at Liscoe Farm. On consideration of the lengths it is not considered that a discernible process change occurs at this point.

4.2 Physical Setting

- 4.2.1 The physical setting describes the conditions to which the coastal defences are exposed. These comprise elements such as; tides, waves, currents, foreshore levels and movements as active forces for change, together geographical and topographical settings to the rear. The physical setting therefore forms the framework within which historical change can be explained and future changes predicted. A full evaluation of the physical setting is included in a stand-alone report within Appendix A1. The findings are summarised below.
- 4.2.2 The primary criteria for evaluating coastal defence function on the west and north facing coasts are:
- Tide and wave climate
 - Shoreline morphology
 - Hinterland topography
- 4.2.3 The primary function of the existing defences on the west and north coast is to provide protection against tidal flooding. They also protect against coastal erosion along much of the shoreline. The existing defences along the open coast section are largely hard impermeable structures that alone are not conducive to maintaining sustainable beach levels.



Typical Storm Defence

- 4.2.4 Wave exposure is predominantly north of west with 60-70% of waves including the highest, occurring from directions 30° either side of west. Tidal currents are predominantly set in a northerly direction during the flood and a southerly direction on the ebb. The primary losses of sediment are longshore and are wave driven with major movements immediately in front of the structures to 30 – 50 metres offshore during storm events. Promontories exist on the west-facing frontage at Rossall and Larkholme with the adjacent sections exhibiting higher beach levels. Across the promontories, beach levels are lower, the existing defences are more exposed and are generally in need of attention, whereas the defences in the setback sections are protected behind a raised beach.

- 4.2.5 If the shoreline were unconstrained by artificial defences it would set back from its present position. This behaviour would be most marked on the west-facing coast. On the north-facing coast some protection is afforded by the North Wharf Bank, although net retreat would be likely, particularly under future sea level rise scenarios.
- 4.2.6 The primary criteria for evaluating coastal defence function within the Wyre estuary are:
- Tide climate
 - Estuary morphology (channel and bank arrangements, the effect of which reduces upstream)
 - Hinterland topography
 - Hydrology
- 4.2.7 The primary function of the estuary defences is to provide protection against tidal flooding and erosion. Existing defences are earth bunds protected in places with brick rubble where historical erosion has undermined the embankment. Of the frontage length 50% is protected by either earth embankments or dock frontage, the remainder being high land which links the defences. The tidal limits of the estuary are accepted to be at Cartford Bridge approximately 18km from the mouth although tidal influences have been experienced at St Michaels 22km away. The river broadens from a width of 50m at Cartford Bridge to a maximum width of 700m at Skipool, it continues at this width for 4.5km until it reaches Fleetwood where it narrows to 500m before meeting the sea. The low water estuary channel has shown signs of historical fluctuation and this has been mapped over the last 50 years. Whilst the results are not sufficient to determine future trends, they do indicate potential future erosion zones. There is little evidence of losses to the intertidal zone at present with local evidence pointing to accretion. However this is likely to change as the effects of sea level rise cause coastal squeeze particularly in the estuary mouth.
- 4.2.8 The effects of wave action are limited within the estuary with fetches being less than 5km. The maximum wave height anticipated in the channel is 0.5 – 0.75m. Areas of erosion have been noted within the channel particularly around the ICI to Stanah length where brick rubble and masonry revetments have been constructed. The cause of this is likely to be channel fluctuations and high velocity flows at the toe of the banks. Research has shown the River Wyre to have an extremely mobile bed. Maximum daily deposition rates are of the order of 30 to 40kg/m² adjacent to the docks. This has resulted in an extensive and expensive dredging programme undertaken by P&O within the dock turning circle and approach channels. A total quantity of 4.5million cubic metres has been removed over the last ten years. This material varies from a typical grain size of 120 microns to 190 microns in the outer approaches. The in situ bed densities of these materials are in the range of 17 to 19kg/m³, which is consistent with fine sand.

4.2.8 Water level data

Water levels were derived from a strategic assessment undertaken by JBA in 1998 for the Environment Agency

Recommended Extreme Sea Levels from JBA Report (1998)

Return Period (Years)	1	5	10	20	25	50	75	100	150	200	500	1000
Water Level mAOD	4.82	5.86	5.96	6.04	6.06	6.11	6.14	6.16	6.19	6.2	6.24	6.27

Figure 4.3

As water propagates up the estuary a rise in height is seen. The Wyre River Extreme Water Levels study (Posfords 2001) shows a linear relationship between chainage and rise in water level as shown in Figure 4.4.

Wyre River Extreme Water Levels (from Table 3.6, Posford 2001)

Chainage	Location	1:200 Extreme Water Level
0.0 WY	Fleetwood	6.20 mAOD
21.9 WY	St Michael's Farm	7.97 mAOD
24.0 WY	Roe Bridge	8.58 mAOD
25.0 WY	US R Brock	8.63 mAOD

Figure 4.4

Water levels play a key role in the standard of protection offered by the defences. The predicted sea level rise across the strategy frontage varies, with the following recommendations for allowances / estimates of future increases in mean sea level having been made during the past ten years:-

- 4mm per annum (MAFF Circular No. 77/1992)
- 3mm per annum (POL, 1997)
- 1-7mm per annum (UKCIP 02). Range varies dependant on CO₂ emissions scenario.

4.3 Existing Defences

4.3.1 Extensive assessment of the existing defences has been undertaken as part of this strategy report. This has included:

- Visual surveys and photographic records
- Ground radar surveys of the promenades and aprons
- Core samples and strength testing of existing structural elements including reinforcement.
- Collation and recording of structural form.

- 4.3.2 The detailed investigation of the existing defences has allowed a risk assessment to be undertaken and estimations of structural life expectancy for each structure to be prepared.

The methodology for the risk assessment is based upon the multiple of the consequences of failure and the likelihood of failure.

In order to quantify the risk of failure, a scoring system has been developed along the following lines.

The consequence element is based upon the effects on the integrity of the defences to perform at their current level if the element was removed. For example if an apron, which was exposed to wave attack on a daily basis, was removed it would be expected that a rapid collapse of the sea wall would follow. If a groyne was removed the consequences would be a lowering of beach levels over a period of time, which would result in greater wave climate and increased overtopping of the defences. This could eventually lead to collapse of the defences or simply increased maintenance costs dependent on the position and effectiveness of the groyne.

Therefore each potential consequence has been categorised as follows:

- i) instantaneous collapse which is given an element score of 6,
- ii) rapid collapse (element score 5),
- iii) collapse <5 tides(element score 4),
- iv) slow collapse >5 tides(element score 3),
- v) increased maintenance (element score 2),
- vi) removal costs only (element score 1).

The second part of the consequence equation is the land use protected which is split into:

- i) major urban flooding (land use score 6) ,
- ii) minor urban flooding (land use score 5),
- iii) large areas of agriculture/ leisure facilities flooding (land use score 4),
- iv) property erosion<5m (land use score 3),
- v) property erosion>5m (land use score 2)
- vi) erosion of agricultural/leisure areas (land use score 1).

The likelihood is made up of a combination of visual condition based upon the Environment Agency inspection manual criteria, from:

- i) very good (visual condition score 1),
- ii) good (visual condition score 2),
- iii) fair (visual condition score 3),
- iv) poor (visual condition score 4),
- v) very poor/failed (visual condition score 5).

These visual condition scores are then multiplied by deterioration rates:

- i) high (deterioration score 5),
- ii) medium(deterioration score 4)
- iii) low(deterioration score 3),
- iv) none (deterioration score 2),
- v) improving (deterioration score 1).

The maximum score is 900. 600 –900 is classed as high risk, 300 – 599 medium risk and 0 – 299 low risk. However low risk elements will still require maintenance works to prevent sequential failure of the defences.

4.3.3 Coastal Process Unit 2 West Facing Frontage

The existing defences along this frontage are reinforced concrete sea walls of height up to 11.5m AOD fronted by a mix of concrete and cobble aprons. A timber groyne field is in place although it is in poor condition and requires significant rebuilding if it is to be truly effective. There is evidence that the groyne system has reduced long-term beach losses. None of the existing sea defences are conducive to retention of beaches and have poor hydraulic efficiency. The majority of the upper sea defences were constructed during the period 1981 – 1985 following the 1977 floods. The lower walls and aprons date back to the 1920s although the majority were constructed during the period 1950 – 1965. A number of these defences are life expired. The risks and life expectancies for each of the lengths within Process Unit 2 are tabulated below.



Risk and Life Expectancy for Coastal Defences in Process Unit 2

Management Unit (*MU/**)	Zone (Z)	HIGHEST RISK	LIFE EXPECTANCY	GENERAL DESCRIPTION
Rossall Point to Chatsworth Avenue	Rossall Point to Chatsworth Avenue	240	15	RC upper walls constructed in 1980, protected by concrete aprons and groynes constructed 1948
Chatsworth Avenue to Anchorsholme Park (Blackpool BC)	Chatsworth Avenue to Rossall Hospital	450	10	2 level promenade and RC walls constructed in 1980 subject to a extensive maintenance programme. Lower aprons and groynes in poor condition.
	Rossall Hospital to Five Bar Gate	375	15	Concrete defences supplemented by military and school installations. Aprons subject to wear and low beach levels.
	Five Bar Gate to Jubilee Gardens	324	10	High beach levels protect 1930s mass concrete wall showing cracking and general ageing, aprons buried, groyne fields full.
	Jubilee Gardens to Borough Boundary	600	10	1930s mass concrete wall now life expired and vulnerable to failure during extreme events.

Figure 4.5

4.3.4 Coastal Process Unit 1 Northern Facing Frontage



**Fleetwood Boating
Lakes**



**Marine Hall &
Leisure Centre**



Fleetwood Pier

The defences along this frontage are reinforced concrete to height between 7.0 and 7.5m AOD. The defences are fronted by high beach levels of height 6.0 to 7.0 m at the interface with the sea wall. A timber groyne system fronts the defences and it is of proven benefit to retaining and raising beach levels. The defences in this unit were constructed in the period 1950 - 1960 and for much of their length are in advance of the original sea wall line which still remains some 50 metres behind. The defences have suffered little exposure due to the high beach levels although their construction resistance to failure is in doubt should beach levels fall. The central area is a sink for aerial materials, which accumulate, both on the promenade and in the formation of embryonic dunes.

Risk and Life Expectancy for Coastal Defences in Process Unit 1

Management Unit (*MU/**)	Zone (Z)	HIGHEST RISK	LIFE EXPECTANCY	GENERAL DESCRIPTION
Fleetwood Ferry to Fleetwood Pier	Fleetwood Ferry to Fleetwood Pier	135	25	High accreting beach levels and RC wall exposed to water only during extreme events
Fleetwood Pier to Marine Lake	Fleetwood Pier to Marine Lake	108	25	High beach levels expose only upstand of sea wall which protects leisure buildings immediately behind.
Marine Lake to Rossall Point	Marine Lake to Rossall Point	216	20	High beach levels and growing embryonic dune system, greater exposure and lower beach levels as the defence orientation moves westerly.

Figure 4.6

4.3.5 Estuary Process Unit 1 Fleetwood to Shard Bridge



Fleetwood Docks



ICI to Fleetwood Docks

The defences along this frontage are a combination of dock frontage, reclaimed and raised ground behind a railway line and earth embankments. Levels along the estuary vary between 6.4m OD and 11mOD. The defences were constructed in the 1840s and have been raised and strengthened in an ad hoc nature since that time.

Risk and Life Expectancy for Coastal Defences in Estuary Process Unit 1

Management Unit (*MU/**)	Zone (Z)	HIGHEST RISK	LIFE EXPECTANCY	GENERAL DESCRIPTION
Kneps Farm Stanah to Fleetwood.	1 – a Fleetwood Docks	120	25	Fleetwood Docks structures consist of piled dock frontages, cobbled revetment and concrete harbour walls. Although showing signs of distress in locations these are minor in terms of protection against erosion or flooding.
	1 – b Fleetwood Docks to ICI	270	15	Consists of redundant railway embankments protecting industrial low risk land or the high ground of Fleetwood Tip.
	1 - c ICI to Kneps Farm Stanah.	720	5 - 10	Stanah embankments poorly constructed and of unacceptable profile, ICI embankments of greater profile but substantially undermined leaving potential H&S risks.

Figure 4.7

4.3.6 Estuary Process Unit 2 Shard Bridge to Cartford Bridge

The defences along this frontage link high outcrops of land. They consist of earth embankments with no face revetment. Levels along this estuary unit vary from 5.70m AOD to 7.10 mAOD. The defences were constructed in the 1840s and have been raised and strengthened since that time. These areas have been considered separately from the main core area, as there is not a discernible link between their failure and flooding of the core areas.

Risk and Life Expectancy for Coastal Defences in Estuary Process Unit 2

Management Unit (*MU/**)	Zone (Z)	HIGHEST RISK	LIFE EXPECTANCY	GENERAL DESCRIPTION
Liscoe Farm, Windy Harbour to Kneps Farm Stanah.	2 - a Waderbank	180	20	Low-lying embankment protecting farmland and on extreme events 2-3 properties.
	2 - b Skippool Left & Right Bank	180	20	Earth embankments leading to sluice structure that prevent flanking of the sluice and the protection of large areas of farmland propagated through the Main and Horsebridge Dyke systems.
	2 - c Bankfield Farm to Windy Harbour	72	20	Well-maintained embankment protecting farmland and holiday park.
Liscoe Farm to Cartford Bridge,	2 - d Left Bank: Little Eccleston to Cartford Bridge.	72	20	Well-maintained embankment protecting farmland.

Figure 4.8

5 BACKGROUND

5.1 Site Description

- 5.1.1 The site is the low-lying core urban area within the Borough of Wyre in Lancashire. The extent of the site is defined by the area protected by coastal defences to the west and north and the left bank of the Wyre estuary from Fleetwood to the tidal limits at Cartford Bridge, Little Eccleston.
- 5.1.2 The protected area is predominantly low lying with levels ranging from 2.5mOD to 15mOD in the proportions as shown below:

Land Levels	Percentage
<2.5mAOD	2
2.50 – 3.49mAOD	8
3.50 – 4.49mAOD	15
4.50 – 5.49mAOD	40
5.50 – 6.49mAOD	15
>6.5mAOD	20

Figure 4.9

- 5.1.3 The area protected by the coastal and upper estuary defences to Stanah is high density residential with commercial premises located to the estuary side of the area. The area protected by the estuary defences below Stanah is classified as low density rural.
- 5.1.4 The area has significant tourism and recreation interests associated with a coastal resort. Recreational fishing and boating are key activities along the full frontage and together with the Marine Lakes attract international boating, fishing and model boating competitions.
- 5.1.5 Fleetwood Docks continues to handle over 5,000 tonnes of fish a year. However recreation and commercial ferry operations have substantially replaced commercial fishing. The most significant being the thrice daily P&O ferry operation to Larne Northern Ireland and the 6 Ha Freeport shopping development.

5.2 Historical and Coastal Evolution

Halcrow as part of the Future Coast study has undertaken a major study into coastal evolution for DEFRA. The findings of this report for this strategy area are summarised below.

5.3 Geology and Geomorphology

- 5.3.1 The underlying solid geology of the Fylde Peninsula is dominated by rocks of Triassic age, around 240 million years old. The Triassic period was dominated by continental deposits of sands and silts in an arid desert-like climate comprising two types:
- Sherwood sandstone group
 - Mercia sandstone group

- 5.3.2 Within the latter division, the rock falls into a sub-division called Mercia mudstones of which Kirkham mudstone forms the bedrock within the study area. The Triassic sequence underwent extreme denudation during the Quaternary period when the area was glaciated several times by ice sheets advancing southwards down the Irish Sea.
- 5.3.3 The geological strata are overlain by deposits of Quaternary age, laid down within the last 2 million years. These deposits comprise glacial clays (tills or boulder clay) sands and gravels, marine alluvium deposits and isolated pockets of blown sand forming surface deposits at Cleveleys and the north-facing coast of Wyre.

5.4 Geomorphology

- 5.4.1 At Cleveleys and Fleetwood the coast is formed by a large sand / shingle spit with an associated dune feature, which is truncated by the deep channel of the Wyre. North of Wyre there are extensive coastal flats behind a saltmarsh and broad, flat beach (Lancashire Structure Plan, Landscape Character Areas).
- 5.4.2 Land on which the Fylde Peninsula has developed was formed from deposits that were laid down during and following the last ice age. The northern part of Blackpool is founded on boulder clay deposits from the glacial movement, whilst at the northern end of the peninsula post-glacial alluvial deposits have been supplemented with a mixture of river gravels, sands and silts and eroded material from the boulder clay deposits to the south.
- 5.4.3 The number of drumlins occurring in the area is notable, all of which are orientated northeast to southwest. These were probably deposited during the ice melt, possibly during the Younger Dryas between c9000 and 8000 cal BC and consist of a variety of materials including sands, clays and gravels. A number of drumlins occupy the west bank of the River Wyre in the vicinity of Stanah with further larger, drumlins occupying the mouth of the Wyre on the west bank at Knott End/Preesall and at varying intervals further upstream.
- 5.4.4 The current geomorphological process has been modified by the development of artificial defences, constructed since the 1800s, in response to the erosion of glacial till cliffs at Blackpool. These structures have starved the Fylde beaches of a continuing supply of beach material resulting in a continuous reduction in beach volume and increasing exposure of defences to wave attack.

5.5 Recent Flood and Erosion Events

- 5.5.1 Flooding has occurred on the Wyre coast throughout history. The first recorded event as the destruction of Singleton Thorpe in 1555.
- 5.5.2 The most recent major flood events occurred in 1927, which resulted in the deaths of six people, and 1977 when over 1800 properties were subjected to inundation by the sea.
- 5.5.3 **1927 event**

On the evening of 28th/29th October 1927 gale force winds combined with a high tide to cause severe flooding along the Fylde coast. A predicted high tide of 9.3m ACD was whipped up by a strong westerly gale and swamped the defences at Fleetwood bringing floodwater into the town.

The town of Fleetwood was cut off by road and rail, while both the gas and electricity supplies were severed. In addition, heavy rainstorms compounded the pumping out operations.

The floods claimed the lives of six people, including three children, who were caught in the path of the floodwater.

5.5.4 1977 event

The Fylde coast was severely battered again over the evening of 11th/12th November 1977 when westerly winds gusting to 80mph whipped up a high tide of 9.9m to produce a 1.2m surge. The sea defences were swamped with floodwater racing into homes along the coast. In all over 1800 homes were flooded with flood depths in excess of 1m above floor level in many cases.

There was extensive disruption to infrastructure, with many roads impassable, while the telephone exchange at Cleveleys was flooded and the telephone network severely disrupted.



Extensive flooding of 1977

6 DO NOTHING SCENARIO

6.1 Do Nothing Process

6.1.1 The do nothing process provides the baseline against which all do something options can be evaluated. Where defences currently exist the do nothing process would involve stopping all activities and actions on the foreshore including all maintenance activities and repairs of structures, allowing nature to take its course. Within this option minimal essential work on health and safety grounds may be considered to make abandoned structures safe.

6.2 Future Scenario – Defence Structures

6.2.1 Defence structures have been assessed as part of the strategic analysis for future life expectancy should the do nothing option be adopted. This assessment is based on, the existing structural condition, anticipated changes to the geographical setting such as falling beach levels, loss of saltmarsh or changes in channel or current directions, together with the physical conditions acting on the structure now and in the future should the do nothing option be adopted. The minimum life expectancies for each management unit are listed in the existing defence section above.

6.2.2 Failure of structures can occur in a number of ways. Firstly through the undermining of the structure due to falling beach levels or erosion of saltmarsh frontages, secondly from structural failure of elements of the defences such as apron structures and revetments due to wave action, and finally through exceedance of service states through overtopping or wave action.

6.3 Future Scenario – Erosion and Flooding

6.3.1 The majority of structures around the coastline protect a thin strip of high ground. These are often historically protected shingle ridges. Failure of the coastal structures would lead to rapid erosion of these shingle ridges exposing the low-lying hinterland.

6.3.2 In order to model the extent of flooding a digital terrain model was produced using LIDAIR. This model was then used in a flow analysis software package (ISIS), which split the area into a series of reservoirs with set spillways. Floodwater propagating through breaches could therefore be modelled as it propagated over the hinterland. By linking this model to a property database financial damages could be obtained by linking depth of flood water against property type.

6.4 Chronicle of Future Events

6.4.1 West Facing Coastal Frontage.

Within the do nothing process, maintenance works cease, leading to lowering beach levels and the failure of life expired structures. The weakest structures at present are the front aprons and lower walls. The most vulnerable defences within this section have been identified as the southern boundary to Jubilee gardens frontage that protects Cleveleys. The Rossall to Chatsworth frontage is seen as less vulnerable to failure due to the majority of the aprons being protected by overlaid aprons. However this area is subjected to the greatest physical forces and it is likely that failure of the front elements will occur over a period of five years should maintenance works cease due to the increased pressure under which the aprons and upper walls will be placed. This corresponds with the current maintenance requirements and priorities.

It is anticipated that in a do nothing scenario the most at risk structures will fail within 5 years. For much of the west-facing coastline this would expose the main interceptor sewer causing major pollution to the coastal area. Following failure the shingle embankment, which formed the original defences, will become exposed and quickly erode, causing failure of the upper defences and resulting in the exposure of the low-lying hinterland. It is anticipated that this would occur very rapidly over a series of high tides. Continual flooding of the low-lying areas would occur on Spring tides with the majority of the area flooding on tides below the five-year level. Continual flooding would render much of the area uninhabitable. Connection routes to other areas would over the short to medium term be cut off making access difficult and eventually rendering these areas uninhabitable.

6.4.2 North Facing Frontage

On the Northern frontage under the do nothing process the current practice of groyne reconstruction and the relocation of sand from promenades would cease. The repair of the promenades and beach aprons and walls would also cease. Within this frontage the most vulnerable area is considered to be the western-most end near to Rossall Point due to the lower beach levels. However the risk to people and properties is considered to be low within the entire frontage with only the leisure facilities and the Marine Hall being vulnerable in the short to medium term.

In the do nothing scenario the buildings built on the reclaimed sea front would suffer flooding on a regular basis. In the short term the Northern frontage is anticipated to be protected by high beach levels and the dune systems will form an important part of the defence. It is anticipated that emergency access in the short to medium term may be difficult to sustain due to the growth of the dune system, windblown sand and the area being a sink for aerial sand. This will continue to cause difficulties landward. As sea level rises the front promenade would be lost, frequently exposing these buildings and facilities (Marine Hall, Leisure Centre and Marine and Boating Lakes) to direct wave action. These buildings and facilities would eventually over a period of ten years become unusable. Over this period the sea would gradually reclaim the advanced area and the rear sea wall would become the predominant protection. Although the retreat of the line would allow dune systems to develop in some areas the existing infrastructure and facilities would lead to the loss of the recreation beach due to failing retention structures, damaged outfall structures, pollution and inaccessibility to the foreshore.

6.4.3 Estuary Frontage

The estuary embankments from the mouth to Stanah protect the core urban areas whilst the embankments upstream of this point protect individual properties and farmland. These embankments link outcrops of high ground. The area with the highest risk is the length of flood embankment between the ICI frontage and Stanah. This is due to its relatively low level together with its steep profile and narrow crest making it vulnerable to rapid failure following overtopping. Although other embankments upstream of this point are at relatively lower levels the consequences of breaching at these points are significantly lower.

In the do nothing scenario overtopping of the upstream embankments would occur leading to their eventual failure and flooding of the agricultural land they predominantly protect. The Stanah embankment would overtop and rapidly fail during events in excess of 10 years. This would lead to rapid flooding of the low lying Thornton Cleveleys area. This area is below the annual high tide level and the majority of these properties would quickly become uninhabitable.

7 ENVIRONMENTAL ASSESSMENT

7.1 Baseline SEA

7.1.1 The strategy area encompasses Morecambe Bay at the northern end of the coastal defences and within the river corridor. The bay is classed as internationally important due to its habitats and bird population. The bay is the second largest in the UK, with the largest continual intertidal area in the whole of Britain. As a whole the bay is designated as a Special Area of Conservation (SAC) for its internationally important habitats: (Large shallow inlets and bays, Intertidal mudflats and sandflats, pioneer and established saltmarsh, vegetated shingle and embryonic shifting dunes) and as a Special Protection Area (SPA) for its internationally important bird populations.

7.1.2 Of particular significance to coastal management in relation to cSACs (Candidate Special Area of Conservation) and SPAs are the Conservation (Habitats Regulations) Regulations 1994, which implement the Habitats Directive into UK law. These place a legal obligation on the UK government and its agencies to preserve SPAs and cSACs, and specifically:

- to maintain the *favourable conservation status* of their cited habitats and species;
- to carry out an *Appropriate Assessment* of any plan or project that may have a significant effect on the designated sites;
- not to carry out a plan or project that may *adversely affect the integrity* of the site, except under closely defined circumstances, which must include there being:
 - a) no available alternatives;
 - b) over-riding public interest (which in the case of sites hosting a priority habitat or species, must relate to benefits to human health or the environment);
 - c) provision of compensation.

7.1.3 The Wyre Estuary itself is designated as Nationally Important and is an integral part of the overall Morecambe Bay complex.

7.1.4 One of the main objectives of the Strategy Study is to protect human life and the developed environment. Details of the spatial location of important residential, industrial, commercial and recreational sites together with information on coastal activities that may interfere with natural coastal processes, such as dredging or offshore sand extraction are required in order to act as a framework in which strategic options could be assessed.

7.1.5 At the outset of the Strategy Study the significance of the natural and human environment in determining strategic options was recognised. In order to ensure that the appropriate level of consideration was given to environmental factors a Strategic Environmental Assessment (SEA) was commissioned by the Council and undertaken by Halcrow as an integral part of the Strategy Study.

7.1.6 The Strategic Environmental Assessment comprises:

- A description of the baseline environment, concentrating on aspects of the environment that are relevant to, or may be affected by, coastal protection and flood defence plans.
- Consultation with relevant statutory bodies and other organisations with an interest in the coastal zone.
- Establishing specific environmental objectives that the adopted coastal management strategy should aim to fulfil.
- Appraisal of specific strategy options, to evaluate the types of environmental impacts and benefits that they will generate.
- Recommendation of the most acceptable strategy option(s).
- Conclusions as to the positive and negative environmental implications of the proposed option.
- Identification of environmental issues that need to be addressed (for example, generic mitigation measures) as part of the implementation of the preferred option.

7.1.7 The findings of this study are included in a stand-alone Strategic Environmental Assessment report.

7.2 Consultation

7.2.1 A key part of the strategic environmental assessment process was consultation with statutory bodies and interested parties. This allowed specific concerns to be documented and addressed at an early stage. The methods adopted for consultation involved:

- An initial consultation document explaining the purpose of the strategy, current assumptions and information required. This was sent to over 50 consultees.
- Publication of this document on the Council's web site requesting views and comments.
- The creation of an environmental forum to discuss the issues raised.
- Circulation of reports to consultees at key stages of the process.

7.2.2 The consultation responses are tabulated within the SEA.

The forum included representatives from English Nature, Environment Agency, North West Tourist Board, Lancashire County Council and the Wildlife Trust. Through this forum important issues were raised and approval at each stage of the strategy's development has been reached.

7.3 Agreed Objectives

7.3.1 General Issues

On the basis of the environmental baseline information and the views expressed by consultees, environmental objectives have been defined for the frontage. These provide a basis for the evaluation of strategic options put forward. It should be noted that a number of objectives conflict with each other and therefore inclusion of an objective does not necessarily mean that it will be met by the strategy.

7.3.2 Objectives have been split into:

- General (those applying to all or much of the study area)

- Specific objectives (those applying to individual coastal sections)
- 7.3.3 Some objectives are legal obligations under the Habitats Regulations and have been highlighted within the tables in *bold italics*. Other objectives, including the protection of property and other aspects of the human environment, do not represent legal obligations, but they still represent key objectives. Where there may be a conflict between objectives this has been identified in the Table.
- 7.3.4 The objectives have taken account of the recommended policies in the adopted Shoreline Management Plan (SMP 11b) and the SEA has been used in the production of the Wyre Estuary SMP therefore assuring compatibility with high level plans.
- 7.3.5 The Key Objectives are enclosed in the Strategic Environmental Assessment report.
- 7.3.6 The objectives were used to assess technically feasible options for each Management Unit. A matrix of potential options against objectives was constructed and annotated as follows:
- Y Yes, the option fulfils the objective
 - Y* Yes, the option fulfils the objective subject to mitigation measures during construction period
 - N No, the option is in conflict with the objective
 - P Partially meets the objective
 - * The option will not fulfil the objective alone, another mechanism is needed in addition
 - ? Not certain at this stage whether the objective will be met
 - N/A Objective not applicable
- 7.3.7 Options that conflict with key objectives have not been considered further. Where mitigation is required to meet objectives, these have been forwarded to the decision making process and to financial and risk analysis.
- 7.3.8 Key Environmental Objectives:
- Land Use and Economic Assets: The protection of the public, property, roads, agriculture and infrastructure assets where sustainable, feasible and economically viable.
 - Geomorphology: No aggregate removal from areas having adverse effects, allow free functioning of the sediment process, consideration of coastal squeeze on estuary frontage mudflats, saltmarsh and sand dunes.
 - Nature Conservation: Maintain favourable condition of designated areas in situ where possible.
 - Special areas of conservation: Habitats include cSAC SSSI and RAMSAR in particular the intertidal, shingle and dune areas of the north facing coast and the intertidal and salt marsh of the estuary. Where possible ensure habitats are secured or maintained until recreated elsewhere. Where feasible coastal defences should contribute to Biodiversity Action Plan advancement targets in particular dune systems.
 - Landscape quality should be protected and enhanced by the removal or mitigation of coastal defence elements that detract from landscape quality.

- Tourism and recreation: Protect significant visitor attractions and recreational resources. Conserve Integrity of Coastal Footpaths and incorporate pedestrian and cycle routes where possible.
- Fisheries: Maintain access to the shoreline for anglers and avoid impacts on fishing areas.
- Land Drainage and Water Quality: Ensure coastal defence work does not affect land drainage. Avoid works that affect designated bathing waters or result in re-suspension of material during tourist season.
- Cultural Heritage: Provide assessment and evaluation at scheme stage, design out negative impacts, where necessary provide mitigation. In areas of known or high potential archaeological value provide a watching brief and assessment. Protect listed buildings and avoid interference with recorded shipwrecks or other marine NMR sites

8 STRATEGY OPTIONS

8.1 Review of SMP Policy Option

8.1.1 The relevant Shoreline Management Plans associated with this strategy report are:

- I. Formby Point to River Wyre, Shoreline Management Plan 11b (May 1999)
- II. River Wyre to Walney Island, Shoreline Management Plan 11c (March 1999)
- III. River Wyre Shoreline Management Plan (Draft July 2002)

8.1.2 The SMPs have proposed a number of process and management units within the strategy area. These have been reviewed as part of the strategy and minor amendments made. In accordance with the SMP review document a medium term policy option has been added and greater consideration given to retreat options. The SMP division of the coastline is tabulated together with the SMP policy.

Figure 8.0 - Draft Wyre Estuary SMP Policies

Estuary Process Unit (EPU*)	Management Unit (*MU/**)	Frontage (F)	Preferred Policy		
			ST	MT	LT
EPU 1 (Fleetwood/ Knott End to Stanah/	Kneps Farm Stanah to Fleetwood.	1 – a Fleetwood Docks	HOLD	HOLD	HOLD
		1 – b Fleetwood Docks to ICI	HOLD	HOLD	HOLD
		1 - c ICI to Kneps Farm Stanah.	HOLD	HOLD	HOLD
EPU 2 Hambleton/ Waderbank to Cartford Bridge	Shard Bridge to Liscoe Farm, Windy Harbour to Little Singleton to Shard Bridge, Shard Bridge to Tatham House, Tathouse to Kneps Farm Stanah.	2 - a Waderbank	HOLD	HOLD / RETREAT	HOLD / RETREAT
		2 - b Skippool	HOLD	HOLD	HOLD
		2 - c Bankfield Farm to Windy Harbour	HOLD	HOLD / RETREAT	HOLD/ RETREAT
	Liscoe Farm to Waterside Farm, Waterside Farm to Cartford Bridge, Cartford Bridge to Larbreck Hall, Larbreck Hall to Windy Harbour.	2 - d Left Bank: Little Eccleston to Cartford Bridge.	HOLD	HOLD / RETREAT	RETREAT

Notes: ST – Short Term Years 0 – 5
 MT – Medium Term Years 5 – 15
 LT – Long Term Years 15 – 50

Source Wyre Estuary SMP (Draft July 02)

Please note this strategy considers only two CPUs as being appropriate. The Wyre estuary SMP includes an additional unit between Kneps Farm Stanah and Shard Bridge, which although considered appropriate for the right bank of the estuary, is not considered relevant to this strategy as no discernible process change occurs at this point.

Figure 8.1 - Coastal Frontages SMP divisions and policies.

Cell 11b SMP Policies (extended to include MT)						
Process (PU*)	Unit	Management Unit (*MU/**)	Zone (Z)	Preferred Policy		
				ST	MT	LT
CPU 1 Fleetwood ferry to Rossall Point		Fleetwood Ferry to Fleetwood Pier	Fleetwood Ferry to Fleetwood Pier	HOLD	HOLD	HOLD
		Fleetwood Pier to Marine Lake	Fleetwood Pier to Marine Lake	HOLD	HOLD	HOLD
		Marine Lake to Rossall Point	Marine Lake to Rossall Point	HOLD	HOLD	HOLD
CPU 2 Rossall Point to Anchorsholme Park		Rossall Point to Chatsworth Ave.	Rossall Point to Chatsworth Ave.	HOLD	HOLD	HOLD
	Chatsworth Ave. to Anchorsholme Park (Blackpool BC)		Chatsworth Ave. to Rossall Hospital	HOLD	HOLD	HOLD
			Rossall Hospital to Five Bar Gate	HOLD	HOLD	HOLD
			Five Bar Gate to Jubilee Gardens	HOLD	HOLD	HOLD
			Jubilee Gardens to Borough Boundary	HOLD	HOLD	HOLD
			Blackpool Zone 24 to Boundary	HOLD	HOLD	HOLD
			Blackpool Zone 23	HOLD	HOLD	HOLD
			Blackpool Zone 22	HOLD	HOLD	HOLD

Notes: ST – Short Term Years 0 – 5
 MT – Medium Term Years 5 – 15
 LT – Long Term Years 15 – 50

Source Formby Point to River Wyre, Shoreline Management Plan 11b (Adopted May 1999)

Please note that one additional zone has been added for Jubilee Gardens to Borough Boundary. This is considered appropriate following the flood modelling investigation works, which identified that, this section acts as a unique flooding compartment separated by high ground. In addition the Jubilee Gardens to Rossall school unit is setback from the adjacent alignments therefore increasing beach levels and changing the physical processes acting on the wall.

8.2 Strategic Option Analysis

Appendix A4 Strategic Option Analysis presents the most likely solutions to meet the strategic options of Maintain, Sustain, Improve and where relevant retreat. For each management unit a preferred method of achieving the strategic options has been presented based upon an analysis of risk, cost, technical feasibility and environmental acceptability.

8.2.1 Fleetwood Ferry to Fleetwood Pier

Coastal defence across this unit is provided by a combination of the beach / foreshore and the artificial defences with the latter generally only providing a function during extreme events.

Beach volumes are generally improving, with the majority of groynes buried and dunes developing. The present defences are under little threat at the present time. Primary options for consideration therefore concentrate on maintaining and repairing existing structures rather than significantly reconstructing defences.

Each of the potential options applicable to this length were considered against environmental objectives and the preferred option that represented best value and satisfied technical and environmental criteria were considered further as the most likely option. Environmental acceptability matrix

Strategic Option	Most Likely Alternatives
Maintain	Linear defence maintenance Dune Management
Sustain	Increase Crest Elevation Improved Wave Absorption Dune Management
Improve	Increase Crest Elevation Improved Wave Absorption



8.2.2 Fleetwood Pier to Marine Lake

Coastal defence across this unit is provided by a combination of the beach / foreshore and the artificial defences. Damage to promenade structures has occurred during recent events.

Beach volumes are consistently improving, with the majority of groynes buried and dunes developing at the western end. At present there is little squeeze on the defences and the old sea wall acts as a secondary defence behind the amenity area. Primary options for consideration therefore concentrate on maintaining and repairing existing structures and examination of the need to provide improved crest levels where defences are lowest. Significant reconstruction is unlikely to be applicable. Measures to encourage development of the natural defences through beach management require due consideration.

Strategic Option	Most Likely Alternatives
Maintain	Linear defence maintenance
Sustain	Increase Crest Elevation Improved Wave Absorption
Improve	Increase Crest Elevation Improved Wave Absorption



8.2.3 Marine Lake to Rossall Point

Coastal defence across this unit is provided by a combination of the beach / foreshore and the artificial defences with the latter playing more of a role over the western half of the unit.

Beach volumes are improving and dunes are developing in front of the existing defences at the eastern end of the frontage. The majority of timber groynes are buried at the east end, where the embryo dunes have developed but further west more sections of the groynes are exposed. The present defences although vulnerable to overtopping, are under only minor threat at the present time. Primary options for consideration therefore concentrate on maintaining and repairing existing structures and examination of the need to provide improved crest levels. Significant reconstruction is unlikely to be applicable. Measures to encourage development of the natural defences require due consideration.

Strategic Option	Most Likely Alternatives
Maintain	Linear defence maintenance
Sustain	Increase Crest Elevation Improved Wave Absorption (rock)
Improve	Improved Wave Absorption (rock) Increase Crest Elevation Beach Recharge
Retreat	Allow Dunes to retreat landward over Lakes.



8.2.4 Rossall Point to Chatsworth Avenue

Coastal defence across this unit is provided by a combination of the beach / foreshore and the artificial defences with the latter playing an increasing role the further south in the unit.

Beach volumes are only improving at the northern end of this unit and progressively deteriorate to the south, indicating that the shoreline here is being artificially held in advance of the position it would wish to adopt, were the defences not in place. The lower sections of the present defences are the most vulnerable generally requiring on-going repairs and maintenance, whilst the upper sections, being less exposed, are in better overall condition. Primary options for consideration therefore rest on maintaining, sustaining or improving the existing defences within the economic criteria appertaining.

Each of the potential options applicable to this length were considered against environmental objectives and the preferred option that represented best value and satisfied technical and environmental criteria were considered further as the most likely option. Environmental acceptability matrix

Strategic Option	Most Likely Alternatives
Maintain	Linear defence maintenance Control structure maintenance
Sustain	Refurbish lower defences Refurbish crest defences Refurbish control structures (rock)
Improve	Improved Wave Absorption (rock) Increase Crest Elevation Beach Recharge Offshore structures (unlikely)



8.2.5 Chatsworth Avenue to Rossall Hospital

Coastal defence across this unit is provided by a combination of the beach / foreshore and the artificial defences with the latter playing a significant role across the whole of the unit.

Beach volumes are deteriorating across the whole of the unit, indicating that the shoreline here is being artificially held in advance of the position it would wish to adopt, were the defences not in place. The lower sections of the defences are the most vulnerable to damage, being more exposed, but repairs and maintenance are also routinely required to upper sections. Primary options for consideration therefore rest on maintaining, sustaining or improving the existing defences within the economic criteria appertaining.

Strategic Option	Most Likely Alternatives
Maintain	Linear defence maintenance Control structure maintenance
Sustain	Refurbish lower defences Refurbish crest defences Refurbish control structures (rock)
Improve	Improved Wave Absorption (Seabee, rock or stepped revetment) Increase Crest Elevation Beach Recharge Offshore structures (unlikely)



8.2.6 Rossall Hospital to Five Bar Gate

Coastal defence across this unit is provided by a combination of the beach / foreshore and the existing artificial defences with a number of different defence arrangements in place.

Beach volumes and movement vary across the unit with shoreline position being the primary influence on beach behaviour. The shoreline is clearly in advance of its natural position across much of the unit and particularly so in front of Rossall School. The lower sections of the defences are the most vulnerable to damage, being more exposed but repairs and maintenance are also required to upper sections.

Strategic Option	Most Likely Alternatives
Maintain	Linear defence maintenance Control Structure maintenance
Sustain	Refurbish lower defences Refurbish crest defences
Improve	Improved Wave Absorption (Seabee, rock or stepped revetment) Increase Crest Elevation Beach Recharge.



8.2.7 Five Bar Gate to Jubilee Gardens

Coastal defence across this unit is provided by a combination of the beach / foreshore and the artificial defences with the latter generally playing a secondary role to the natural defence provided by the beach.

With beach volumes trending upwards and beach management and re-cycling already taking place across the unit the shoreline and defences are in reasonable equilibrium. The primary wall structure represents the most vulnerable section of the defence, with the behaviour of the whole defence reliant on its structural integrity being maintained. The beach alone cannot provide the necessary defence due to the low hinterland levels applying to landward and notwithstanding that damages are generally low from storm events, due to the healthy beach, significant damage would occur if the artificial defences were not maintained. Primary options for consideration therefore rest on maintaining, sustaining or improving the existing defences within the economic criteria appertaining.

Strategic Option	Most Likely Alternatives
Maintain	Linear defence maintenance Control Structure maintenance Beach Management
Sustain	Refurbish lower defences Refurbish crest defences Beach Management
Improve	Improved Wave Absorption (Seabee, rock or stepped revetment) Increase Crest Elevation Beach Recharge.



8.2.8 Jubilee Gardens to Borough Boundary

Coastal defence across this unit is provided by a combination of the beach / foreshore and the artificial defences with the latter playing a significant role across the whole of the unit.

The shoreline position varies across the unit becoming more sheltered towards the northern ends as it sweeps gradually landward. Notwithstanding this the shoreline is in advance of its natural equilibrium position, were the defences not in place. The lower sections of the defences are the most vulnerable to damage, being more exposed, but repairs and maintenance are also routinely required to upper sections, particularly following storms. The unit is unique along the frontage in that the options for consideration must take account of and acknowledge the shoreline management measures being proposed by Blackpool BC on their side of the boundary and vice versa.

The Blackpool defences immediately on their side of the boundary, are of a similar form and profile, as those covering the first 250 metres of frontage on the Wyre side (defence lengths 210/8424 and 210/8301 refer). Although they are on a slightly advanced alignment and the stepped profile continues up to the top of the crest wall.

The rear of the Blackpool defences is protected by a further rear wall of height 14.0m which prevents flooding to the rear properties. A hump in the carriageway immediately behind the sea wall prevents flood waters entering from Blackpool to Cleveleys. However a breach in the Wyre defences would result in the outflanking of the rear sea wall. It should be noted that overtopping of the Blackpool length of sea wall is substantially greater than on the Wyre side. This often results in the closure of the road along this length at bi-annual intervals.



The current Blackpool Shoreline Strategy plan has identified maintenance of the existing form of defence across their section and advocates that the complete section of wall should be dealt with as a single structure.

Whilst part of this strategy unit it is proposed that the defences along the southern length of this unit are developed in conjunction with Blackpool BC. This may require deferral of this length such that a joint scheme can be proposed. Primary options for consideration within the unit rest on maintaining, sustaining or improving the existing defences within the economic criteria appertaining.

Strategic Option	Most Likely Alternatives
Maintain	Linear defence refurbishment Control Structure maintenance Beach Management
Sustain	Refurbish lower defences Refurbish crest defences Beach Management
Improve	Improved Wave Absorption (Seabee, or stepped revetment) Increase Crest Elevation Beach Recharge.

8.2.9 Fleetwood Ferry to Fleetwood Docks

Coastal defence across this unit is provided by a variety of artificial defence structures

The present defences are under little threat at the present time. Primary options for consideration therefore concentrate on maintaining and repairing existing structures rather than significantly reconstructing defences.



Strategic Option	Most Likely Alternatives
Maintain	Linear defence maintenance
Sustain	Linear defence maintenance Refurbish linear defences
Improve	To replace life expired elements

8.2.10 Fleetwood Docks to ICI Boundary

The present defences are under threat only from extreme events at the present time. Primary options for consideration therefore concentrate on maintaining and repairing existing structures rather than significantly reconstructing defences. However development of the land for housing will require improvement works to be undertaken.

Strategic Option	Most Likely Alternatives
Maintain	Linear defence maintenance
Sustain	Linear defence maintenance Refurbish Linear Defences
Improve	Renew linear defences Construction of flood storage area.



8.2.11 ICI Boundary to Stanah

The present defences are largely only called into service during extreme events at the present time, although such events can present a significant threat to the integrity of the existing structures. The length in front of Stanah Caravan park (385/01), where the existing embankment is very poor and reconstruction works are necessary in the short term requires urgent attention with improving the integrity of the defence of primary importance. Primary options for consideration therefore concentrate on maintaining and repairing existing structures rather than significantly reconstructing defences, over most of the length

Strategic Option	Most Likely Alternatives
Maintain	Linear defence maintenance
Sustain	Linear defence maintenance Refurbish Linear Defences
Improve	Renew linear defences

8.2.12 Stanah to Shard Bridge

With the majority of this unit undefended the primary policy is Do-nothing. The present defences that exist are largely only called into service during extreme events at the present time.

The economic basis for maintaining defences rests on the value of agricultural and developed land and the flooding damage to property that would ensue in the absence of those defences. Primary options for consideration therefore concentrate on maintaining and repairing existing structures rather than significantly reconstructing defences. In addition examination of removal of defences may be appropriate at Nestleton.

Strategic Option	Most Likely Alternatives
Maintain	Linear defence maintenance
Sustain	Linear defence maintenance Refurbish Linear Defences
Improve	Renew linear defences
Retreat	Retreat defences with suitable flood warning systems.

8.2.13 **Shard Bridge to Bankfield Farm**

With the majority of this unit undefended the primary policy is Do-nothing. The present defences, which provide a standard of service above the indicative standard for the unit, are largely only called into service during extreme events at the present time.

The economic basis for maintaining defences rests on the value of agricultural land, the flooding damage to the holiday park that would ensue in the absence of those defences and future development issues. At present the downstream part of the defence length protects open space land that, it is understood, has been identified for future development, albeit within the flood plain. Should this development not ultimately proceed then there may be no justification for maintaining this section of the defence, in which case removal and/or retreat could be considered.

Primary options for consideration therefore concentrate on maintaining and repairing existing structures rather than significantly reconstructing defences. The option for retreat is also examined.

Strategic Option	Most Likely Alternatives
Maintain	Linear defence maintenance
Sustain	Linear defence maintenance Refurbish Linear Defences
Improve	Renew linear defences
Retreat	Remove defences create intertidal wetland area

8.2.14 **Bankfield Farm to Cartford Bridge**

Earth flood banks defend the majority of the shoreline within this unit. Elsewhere the policy is Do-nothing. The present defences that exist are largely only called into service during extreme events at the present time.

The economic basis for maintaining defences rests on the value of agricultural land and the flooding damage to caravan parks that would ensue in the absence of those defences. Primary options for consideration therefore concentrate on maintaining and repairing existing structures rather than significantly reconstructing defences. In addition examination of removal of defences may be appropriate across much of the length.

Strategic Option	Most Likely Alternatives
Maintain	Linear defence maintenance
Sustain	Linear defence maintenance Refurbish Linear Defences
Improve	Renew linear defences
Retreat	Remove defences create intertidal wetland area

9 ECONOMIC APPRAISAL

9.1 Analysis Principle

9.1.1 Economic appraisal was undertaken by Halcrow who have developed automated techniques using GIS and dynamic flood modelling (ISIS), which are linked to FCDPAG3 spreadsheets for economic appraisal. The results of this flood modelling is presented in appendix A5.

Flood Modelling and Economic Appraisal Report

9.1.2 The methodology adopted for economic appraisal consisted of three main components:

- Breach Flood Modelling
- GIS and Flood Mapping
- Economic Appraisal

9.1.3 Breach Flood Modelling

Modelling of the flood zone was based on the EA Section 105 Report undertaken by Posford Duvivier & Mott MacDonald in 2001 that considered flood risk along the north-west English coastline. The EA study identified four breaches within the Wyre Coastal study area. Within the Halcrow analysis a further two breach locations have been added following the review of existing defences.

For consistency with the EA study, Posford Haskoning were commissioned to produce surge curves for each of the breach locations. This allowed the modelling of flows passing through each breach for different tide levels.

To calibrate the model, records of the 1977 event were used as the initial model run. Following acceptable calibration a range of 6 return periods (1, 5, 20, 50, 200 & 500 years) was used for each of the 6 breach scenarios. In addition runs were undertaken for overtopping only and all breaches occurring at the same time (do nothing scenario).

In order to account for sea level rise (SLR), the models were adjusted to account for 200mm of SLR over the next 50 years (4mm/year for North West England as recommended by DEFRA FCDPAG3 publication).

9.1.4 GIS and Flood Mapping

The basis of the flood model is the creation of a series of flood cells or reservoirs, which are bounded by raised ground, such as tracks, embankments etc. These features control the flow of water between each cell. The main parameters that need to be identified in such a model are the rate of flow moving through the breach and the movement of water passing between each of the flood cells.

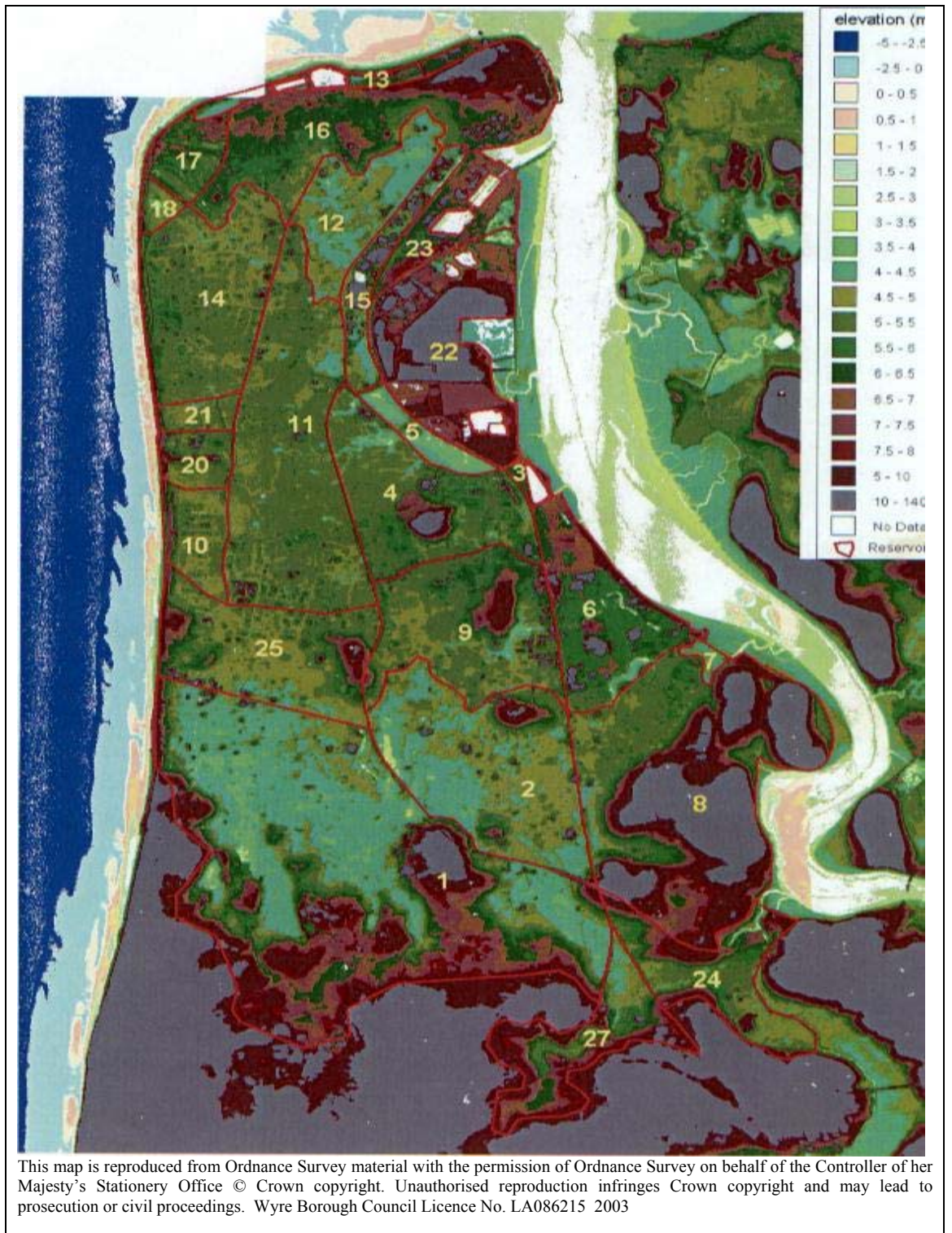


Figure 9.0 - Flood Cells and Reservoirs

A standard Geographical Information System (GIS) was used to set up a digital terrain model (DTM), to represent the topography of the potential flood area. The EA's light detection and ranging (LIDAR) survey data for the Wyre Borough area was used to create a Digital Terrain Model (DTM) of the area from Fleetwood in the north to south of Cleveleys. Using the DTM developed, potential flow boundaries were identified following any main roads, embankments or any other high ground within the area.

The topographical data in the DTM was converted to ISIS software input. The ISIS model determines peak water levels within each flood compartment for the various breach options and return periods tested. This information was then used to map the extent and depth of flooding for each model run.

9.1.5 Economic Appraisal

The Flood Hazard Research Centre (FHRC) at Middlesex University produces standard data on economic damages incurred for different types of property, for different flood depths and duration. By linking the anticipated damages for saltwater flood duration of less than 12 hours from the FHRC 1990 Flood Loss Assessment Information Report (FLAIR) manual to the output from the ISIS model and information on property types it was possible to determine the economic damages within each reservoir cell for each model run. The economic damages were then input to DEFRA FCDPAG3 spreadsheets to determine the annual average damage (AAD) expected for each run scenario.

Figure 9.1 - Average Annual Damages

Breach Location	Year 0 damage (£'000.)	Year 50 damage (£'000.)
No Breach	595	5,280
Breach 1 (Stanah)	6,710	17,820
Breach 2 (ICI Frontage)	595	5,325
Breach 3 (Fleetwood Frontage)	595	5,795
Breach 4 (Rossall School)	870	6,060
Breach 5 (Cleveleys Frontage)	3,240	10,825
Breach 6 (Chatsworth Frontage)	1,875	8,690
All Breach	9,430	26,395

9.2 Option Costs

9.2.1 Cost rates to develop option costs have been derived from a variety of sources. Where possible these have been constructed from similar works bills of quantities updated to present rates using RPI. Where this was not possible rates have been derived from first principles

9.2.2 In order to simplify the process and to make it more traceable for each operation costs have been banded into high, medium and low. A decision into which band the works at any geographical location fall have been determined by the extent of the works required. In turn this will be determined by:

- Most likely option proposed in 8.2
- Beach levels at the geographical location,
- Exposure conditions and
- Environmental considerations.

9.2.3 **Phasing of works**

An important element in determining the overall cost of the strategy is the proposed phasing of the works. Phasing has been determined from the following criteria:

- Condition of existing defences
- Risk apportioned to defences
- Provision of resources
- Required investigation and consultation works.

9.3 Benefits

9.3.1 Benefits are derived from the latest DEFRA FCDPAG3 guidelines using the annual average damages for each breach scenario, from the modelling described previously in section 9.1.3, to propagate the standard spreadsheets.

9.4 Benefit Cost Analysis

9.4.1 The benefit cost review has been carried out in accordance with the latest DEFRA guidance and is presented in tabular format in Figures 9.3 - 9.6. The full analysis and spreadsheets are enclosed within the benefit cost analysis report.

9.5 Application of Results

9.5.1 The Benefit Cost analysis has concluded that:

- The benefit cost ratio for the strategy as a whole for the strategic options of maintain, sustain and improve varies between 4.15 and 5.32. The proposed strategy has a benefit to cost ratio of 5.32 and an incremental benefit above the maintain option BC ratio of 7.92.
- The most vulnerable defences and those offering the greatest benefit to cost ratio for all options are the prevention of breach failure at Stanah (Breach 1). Failure of that defence would cause substantial damages, even at the 1-year return period. The height and construction of this defence is also poor. Benefit Cost ratio for this defence ranges from 50.66 to 111.17. Advanced investigation and design works have been undertaken for this defence in partnership with a potential developer. Details are included in the appendices.
- The second area of concern is the Cleveleys frontage between the boundary and Jubilee Gardens. The benefit to cost ratio for this area ranges from 3.34 to 4.74. A feasibility study for the most vulnerable length of this unit has been submitted to DEFRA for advanced approval.
- Breach 2 (ICI Works), occurs in an area of high elevation and flood waters are anticipated to be retained within a small area where there are few properties or industrial premises.
- Breach 3 (Rossall Golf Course) occurs where there are few properties at risk as the golf course retains the initial flood waters. From the modelling propagation of the flood water into adjacent areas does not occur. However there are limitations to the model and further investigation into the potential for propagation in this area should be investigated.
- Breach 4 (Rossall School) results in significant damages within the Rossall School area itself and some adjacent areas. However the model does not predict further propagation outside of this isolated area and therefore the benefit cost ratio is low for any improvement scheme.
- Breach 6 (Rossall/Larkholme Estate areas) results in high damages, although not as high as Cleveleys because the floodwaters are generally contained in the Rossall area. This area was significantly affected during the 1977 floods and remains vulnerable should breaching occur. The benefit to cost ratio in this area ranges from 1.20 to 1.76 and therefore justifies further investigation into improvement of the defences. The higher costs of implementation in this area are due to the beach levels, which are approximately 2m lower than those found at the Cleveleys frontage.
- As would be expected, the “All-breach” scenario produced very high AAD values, representing the justification for maintaining coastal defence to the risk area. Additionally, the year 50 (SLR) case for All-breach demonstrates that the risk will increase significantly with time due to increasing water levels and a higher frequency of overtopping rates. The benefit to cost ratio for the all breach case against the proposed strategy is demonstrating its robustness.

9.6 RISK AND SENSITIVITY ANALYSIS

9.6.1 A risk and sensitivity analysis is included in Appendix C. The key financial risks associated with the benefit analysis are summarised as follows:

- Cost increases of key items such as rock, concrete and labour
- Rapid beach losses requiring acceleration of the programme of works
- Accelerated failure of the sea wall
- Sensitivity around flood extents
- Increases in damages above FLAIR values and RPI increase
- Changes to the discount rate from 6% to 3.5%
- Unforeseen ground conditions / obstructions
- Stability of the works/seawall during construction
- Availability of construction plant and expertise
- Delays and further damage due to adverse weather

9.6.2 Scenarios have been undertaken for the range of risks identified above and the sensitivity analysis for the overall strategy is shown below.

9.6.3 Original Sensitivity

Values in £'000s	Option 1 Do nothing	Option 2 Maintain	Option 3 Sustain	Option 4 Improve 200	Strategy
Present value costs PVc	-	22,614	28,225	38,666	29,010
Flood damage PVd	164,960	61,340	42,069	6,945	10,708
PV damage avoided		103,620	122,891	158,015	154,252
Net present value NPV		81,007	94,666	119,349	125,242
Average BC ratio		4.58	4.35	4.09	5.32
Incremental Benefit above maintenance option			3.43	3.36	7.92

Figure 9.2

9.6.4 Sensitivity:
Cost Scenarios

Values in £'000s	Option 1 Do nothing	Strategy	Cost Reduction	Cost Increase
PV costs PVc	-	29,431	14,401	48,451
PV damage PVd	164,960	10,716	10,716	10,716
PV damage avoided		154,244	154,244	154,244
PV assets Pva	-	-		
PV asset protection benefits		-		
Total PV benefits PVb		154,244	154,244	154,244
Net Present Value NPV		124,813	139,843	105,792
Average benefit/cost ratio		5.24	10.71	3.18

Figure 9.3

9.6.5 DEFRA have notified coastal protection authorities that the Treasury intends to unbundle the discount rate to 3.5% (from the existing 6%) to reflect the current financial situation in the UK. The damage rates have also been reviewed and there is potential for damages to be increased by a factor of 2 above inflation since the publication of the Middlesex University flood damage manuals. DEFRA therefore recommend testing decisions against a change in discount rate to 3.5% and a doubling of Middlesex FLAIR damage data. The outputs from this sensitivity testing are shown below.

9.6.6 Sensitivity:
Damage and Discount
Rate scenario (3.5%)
Values in £'000s

	Option 1 (do nothing)	Maintain Existing	Sustain	Improve	Strategy
PV costs PVc	-	36,704	39,963	49,943	38,708
PV damage PVd	498,500	65,253	58,569	12,700	51,443
PV damage avoided		433,246	439,931	485,800	447,056
PV assets Pva	-	-	-		
PV asset protection benefits		-	-		
Total PV benefits PVb		433,246	439,931	485,800	447,056
Net Present Value NPV		396,542	399,968	435,857	408,348
Average benefit/cost ratio		11.80	11.01	9.73	11.55
Incremental benefit/cost ratio			2.05	4.60	6.89

Figure 9.4

The final sensitivity analysis identifies the effects of deferring the strategy for a period of five years. The anticipated changes to the cost benefits are shown below.

9.6.7 Sensitivity Defer strategy
by 5 years
Values in £'000s

	Option 1 do nothing	Maintain Existing	Sustain	Improve	Strategy
PV costs PVc	-	16,732	22,357	30,627	22,978
PV damage PVd	164,960	112,697	101,080	20,786	42,122
PV damage avoided		52,263	63,880	144,174	122,838
PV assets Pva	-	-	-		
PV asset protection benefits		-	-		
Total PV benefits PVb		52,263	63,880	144,174	122,838
Net Present Value NPV		35,531	41,523	113,547	99,860
Average benefit/cost ratio		3.12	2.86	4.71	5.35
Incremental benefit/cost ratio			2.07	9.71	11.30

Figure 9.5

10 RECOMMENDED STRATEGY

10.1 Derivation of Preferred Strategy

10.1.1 For each management unit a preferred method of achieving the strategic options has been presented based upon an analysis of risk, cost, technical feasibility and environmental acceptability. The tables overleaf present the preferred strategic options and timings for each strategy length. The proposals represent the best method to provide acceptable standards of protection to all properties within the indicative flood risk area in the most economic and technically advantageous manner. Environmental acceptability has played a major role in the selection of preferred options.

Priority lengths are to be tackled within the first five-year period and are presented in a detailed five year programme of works.

10.2 Coastal Frontages

10.2.1 Fleetwood Ferry to Fleetwood Pier

This frontage has the following characteristics:

- North facing frontage with maximum fetch length of 30km adjacent to the main estuary channel. The frontage is protected by relatively high beach levels that extend for a distance of 2km at low water. These physical characteristics protect the sea wall for all but extreme conditions.

The proposed strategy for this frontage is tabulated below

Timing	Description
Short Term Year 0 - 5	<p>Maintain: The current maintenance practice of repairing elements as they fail is considered to be acceptable in the short term. However benefit is anticipated to be derived from improving the existing groyne field in this area as demonstrated by the successful raising of beach levels following recent improvements. This also has the benefit that less material finds its way out of the system via the river channel. It is proposed that a beach management strategy and monitoring regime as proposed within the monitoring and maintenance plan is undertaken. Within this frontage the following activities are recommended:</p> <ul style="list-style-type: none"> • Bi-annual beach profiles • Bi-annual sediment monitoring • Mapping of embryonic dune systems • Raising of strategic groynes • Investigation into the potential for redistribution of sand from the section of frontage at the River Wyre • Investigation into methods of reducing wind blown sand.
Medium Term Year 5 –15	<p>Sustain: The current maintenance practices should continue. However increased emphasis will be required into beach management and the protection of the natural environment. The proposed method of achieving this is through improvement to the wooden groyne field and the pro-active management of the beach by natural vegetation and stabilisation of beach and foreshore habitats.</p>
Long Term Year 15 -50	<p>Sustain: Management of the beach although anticipated to sustain protection standards in the short to medium term will not sustain the defence standard in the long term due to a number of physical constraints principally the existing height of the sea wall and the proximity of infrastructure and highway to the rear. These constraints will limit the dune and beach development such that standards of protection are anticipated to fall in the long term due to climatic change. It is therefore proposed that structural alterations to the sea wall are undertaken to ensure that protection standards can be maintained. This is likely to involve the raising of the upper wall and the provision of more hydraulically efficient apron structures.</p>

The anticipated cost of these works has been calculated as £1,868,000 consisting of £542,000 of maintenance and £1,325,000 of capital works. The present value of the strategic proposals for this frontage are £395,000. The economic evaluation of these proposals are shown below against other options. For each of the proposed options the implementation of major capital works has been phased to coincide based on existing life of the structure and risk. For example the risks within this frontage are low and the life of the structure is high therefore major capital works are not proposed until years 15 – 50: The DEFRA priority score for this length is 5. However this does not take account of loss of leisure facilities, environmental or tourism assets or loss and disruption to the public highway. These will increase the priority score significantly. These assets should be incorporated into future reviews.

Fleetwood Ferry to Fleetwood Pier Benefit Cost Ratio

	Option 1 (do nothing)	Maintain Existing	Sustain	Improve
PV costs PVc	-	336.03	351.99	1,135.41
PV damage PVd	901.42	508.49	392.54	168.90
PV damage avoided		392.92	508.88	732.52
PV assets Pva	-	-	-	
PV asset protection benefits		-	-	
Total PV benefits PVb		392.92	508.88	732.52
Net Present Value NPV		56.89	156.88	- 402.89
Average benefit/cost ratio		1.17	1.45	0.65
Incremental benefit/cost ratio			7.27	0.29



Fleetwood Ferry to Fleetwood Pier

10.2.2 Fleetwood Pier to Marine Lake

This frontage has the following characteristics:

- North facing frontage with maximum fetch length of 30km within Morecambe Bay. The frontage is protected by relatively high beach levels, which extend for a distance of 2km at low water. These physical characteristics protect the sea wall for all but extreme conditions. The beaches are currently stable and show signs of accretion with high levels of aerial sand and growing embryonic sand dunes.

The proposed strategy for this frontage is tabulated below

Timing	Description
Short Term Year 0 – 5	<p>Maintain: The current maintenance practice of repairing elements as they fail is considered to be acceptable in the short term. However benefit is anticipated to be derived from improving the existing groyne field in this area and measures to stabilise the dune system through planting. This also has the benefit that less material finds its way onto the promenade where it is required to be removed for access purposes. It is proposed that a beach management strategy and monitoring regime as proposed within the monitoring and maintenance plan is undertaken. Within this frontage the following activities are recommended:</p> <ul style="list-style-type: none"> • Bi annual beach profiles • Bi annual sediment monitoring • Mapping of embryonic dune systems • Raising of strategic groynes • Resurfacing of the promenade decking • Improved flood protection measures for the Marine Hall complex • Improved public access and interpretation of the dune systems • Planting of dunes to improve stability
Medium Term Year 5 –15	<p>Maintain: The current maintenance practices should continue. Increased emphasis will be required into dune and beach management and the protection of the natural environment. The proposed method of achieving this is through improvement to the wooden groyne field and the pro-active management of the beach by encouraging the development of dune vegetation, improving public access through the dune system and stabilisation of beach and foreshore habitats.</p>
Long Term Year 15 –50	<p>Sustain: Management of the beach although anticipated to maintain protection standards in the short to medium term will not sustain the defence standard in the long term due to the presence of recreation buildings which prevent the dune systems rolling back as they would naturally wish to. These constraints will limit the dune and beach development such that standards of protection are anticipated to fall in the long term due to climatic change. It is therefore proposed that allowance is made for improving the revetment system and or raising the seawall in this area dependent upon sea level rise and beach levels. This option is recommended over maintain due to the high value of leisure assets protected by the defences, which have not been considered within the benefit analysis.</p>

The anticipated cost of these works has been calculated as £2,740,000 consisting of £661,000 of maintenance and £2,080,000 of capital works. The present value of the strategic proposals for this frontage are £855,000. The economic evaluation of these proposals are shown below against other options. For each of the proposed options the implementation of major capital works has been phased to coincide based on existing life of the structure and risk. For example the risks within this frontage are low and the life of the structure is high therefore major capital works are not proposed until years 15 – 50: The DEFRA priority score for this length is 5. However this does not take account of loss of leisure facilities, environmental or tourism assets, which will increase the priority score. These assets should be incorporated into future reviews.

Fleetwood Pier to Marine Lake

	Option 1 (do nothing)	Maintain Existing	Sustain	Improve
PV costs PVc	-	474.17	504.57	1,082.59
PV damage PVd	855.12	170.91	145.64	116.83
PV damage avoided		684.22	709.49	738.29
PV assets Pva	-	-	-	
PV asset protection benefits		-	-	
Total PV benefits PVb		684.22	709.49	738.29
Net Present Value NPV		210.05	204.91	-344.30
Average benefit/cost ratio		1.44	1.41	0.68
Incremental benefit/cost ratio			0.83	0.05



Fleetwood Pier to Marine Lake

10.2.3 Marine Lake to Rossall Point

This frontage has the following characteristics:

- North facing frontage with maximum fetch length of 30km within Morecambe Bay. The frontage is protected by relatively high beach levels, which extend for a distance of 2km at low water. These physical characteristics protect the sea wall for all but extreme conditions. The beaches are currently stable and show signs of accretion with high levels of aerial sand and growing sand dune systems.

The proposed strategy for this frontage is tabulated below

Timing	Description
Short Term Year 0 - 5	<p>Maintain: The current maintenance practice of repairing elements as they fail is considered to be acceptable in the short term. However benefit is anticipated to be derived from improving the existing groyne field in this area and measures to stabilise the dune system through planting and nourishing blow out areas. This also has the benefit that less material finds its way onto the promenade where it is required to be removed for access purposes. It is proposed that a beach management strategy and monitoring regime as proposed within the monitoring and maintenance plan is undertaken. Within this frontage the following activities are recommended:</p> <ul style="list-style-type: none"> • Bi-annual beach profiles • Bi-annual sediment monitoring • Mapping of dune systems • Raising of strategic groynes • Resurfacing of the promenade decking • Improved flood protection measures for the Marine Hall complex • Improved public access and interpretation of the dune systems • Planting of dunes to improve stability • Investigation into changing the focus of maintaining the Marine Lakes from leisure to a leisure environmental mix.
Medium Term Year 5 –15	<p>Maintain: The current maintenance practices should continue. Increased emphasis will be required into dune and beach management and the protection of the natural environment. The proposed method of achieving this is through improvement to the wooden groyne field and the pro-active management of the beach by encouraging the development of dune vegetation, improving public access through the dune system and stabilisation of beach and foreshore habitats. Dunes should also be improved by filling in blow holes and pro active nourishment by distribution of wind blown sand.</p>
Long Term Year 15 -50	<p>Sustain / Retreat: Management of the beach although anticipated to provide adequate protection standards in the short to medium term will not sustain the defence standard in the long term due to climate change and the Marine Lakes which prevent the dune systems rolling back as they would naturally wish to. In the long term there will therefore be a requirement to provide raised defences and new groyne systems another option would be retreat of the existing front line defences through proactive environmental management of the marine lakes which allows the rolling back of the dune system. However this proposal is dependent upon the outcome of the investigation proposed in the first phase of the strategy and the realignment of the coastal promenade.</p>

The anticipated cost of these works has been calculated as £4.386 million consisting of £931,000 of maintenance and £3,455,000 of capital works. The present value of the strategic proposals for this frontage are £790,000. The economic evaluation of these proposals are shown below against other options. For each of the proposed options the implementation of major capital works has been phased to coincide based on existing life of the structure and risk for example the risks within this frontage are low and the life of the structure is high therefore major capital works are not proposed until years 15 - 50: The DEFRA priority score for this length is 5. However this does not take account of loss of leisure facilities, environmental or tourism assets including Fleetwood Golf club. This will increase the priority score significantly. These assets should be incorporated into future reviews.

Marine Lake to Rossall Point

	Option 1 (do nothing)	Maintain Existing	Sustain	Improve
PV costs PVc	-	708.46	785.39	1,597.50
PV damage PVd	901.42	319.12	192.13	107.30
PV damage avoided		582.30	709.29	794.12
PV assets Pva	-	-	-	
PV asset protection benefits		-	-	
Total PV benefits PVb		582.30	709.29	794.12
Net Present Value NPV		-126.16	-76.10	-803.38
Average benefit/cost ratio		0.82	0.90	0.50
Incremental benefit/cost ratio			1.65	0.10



Marine Lake to Rossall Point

10.2.4 Rossall Point to Chatsworth Avenue

This frontage has the following characteristics:

- This frontage is transitional from North to West. As the frontage becomes westerly the dune systems diminish and are replaced by an upper concrete coastal defence. Increased energy levels and diminishing beach levels also accompany the transition from north to west. Fetch lengths vary from 30km on the North facing frontage to 230km on the West facing frontage. Beach levels on the northern frontage are approximately 4m AOD reducing to 0m AOD at Chatsworth. The extent of the beaches at low water springs are 2km reducing to 280m at Chatsworth. The beaches show signs of erosion on the west facing frontage.

The proposed strategy for this frontage is tabulated below

Timing	Description
Short Term Year 0 - 5	<p>Maintain: The current maintenance practice of repairing elements as they fail is considered to be acceptable in the short term. However benefit is anticipated to be derived from improving the existing groyne field in this area and measures to reduce the losses of beach material particularly as the becomes westerly facing. It is proposed that a beach management strategy and monitoring regime as proposed within the monitoring and maintenance plan is undertaken. Within this frontage the following activities are recommended:</p> <ul style="list-style-type: none"> • Bi-annual beach profiles • Bi-annual sediment monitoring • Resurfacing of the promenade decking • Improved public access and interpretation of the dune systems (north frontage) • Planting of dunes to improve stability (north frontage) • Investigation into replacement of strategic groyne structures with new timber or rock structures.
Medium Term Year 5 –15	<p>Maintain: The current maintenance practices should continue. Increased emphasis will be required into dune and beach management (and retention) and the protection of the natural environment. The proposed method of achieving this is through improvement / replacement of the wooden groyne field and the pro-active management of the beach by encouraging the development of dune vegetation, improving public access and where necessary nourishment of the beaches by distribution of wind blown sand. At the southern end of the site improvements to the aprons hydraulic effectiveness (with the most likely option being rock) are anticipated to be required as part of the refurbishment of the existing defences in order to limit beach losses to acceptable levels.</p>
Long Term Year 15 -50	<p>Maintain: It is anticipated that by adopting the measures identified above to improve the efficiency of the lower apron structures combined with the construction of new groyne structures and the redistribution of beach material that the current beach losses can be limited to acceptable levels. Future works will therefore be limited to refurbishment of existing structures as they become time expired.</p>

The anticipated cost of these works has been calculated as £8.938 million consisting of £1,602,000 of maintenance and £7,336 of capital works. The present value of the strategic proposals for this frontage are £1,465,000. The economic evaluation of these proposals are shown below against other options. For each of the proposed options the implementation of major capital works has been phased to coincide based on existing life of the structure and risk for example the risks within this frontage are low and the life of the structure is high therefore major capital works are not proposed until years 15 – 50: The DEFRA priority score for this length is low. However this does not take account of loss of leisure facilities, environmental or tourism assets including Fleetwood Golf Club, which will increase the priority score significantly. These assets should be incorporated into future reviews.

Rossall Point to Chatsworth Avenue

	Option 1 (do nothing)	Maintain Existing	Sustain	Improve
PV costs Pvc	-	1,464.90	1,591.87	1,717.43
PV damage PVd	963.44	208.70	208.70	183.07
PV damage avoided		754.74	754.74	780.37
PV assets Pva	-	-	-	
PV asset protection benefits		-	-	
Total PV benefits PVb		754.74	754.74	780.37
Net Present Value NPV		-710.17	-837.13	-937.06
Average benefit/cost ratio		0.52	0.47	0.45
Incremental benefit/cost ratio			-	0.20



Rossall Point to Chatsworth Avenue

10.2.5 Chatsworth Avenue to Rossall Hospital

West facing frontage with maximum fetch length of 225km. Beach levels are lower in this section than any other length of the coastal frontage (approximately 0mOD) and extend to 270m at low water springs due to the slightly seaward alignment and the high energy field. These physical characteristics required that a secondary sea wall of height 11.5m OD and a lagoon was constructed behind the sea wall to catch overtopping spray following the 1977 flood event. The beaches are currently stable but show signs of erosion and an increased tendency towards shingle upper beaches due to the high energy. Immediately behind the lagoon are residential properties many of which were flooded in 1977.

The proposed strategy for this frontage is tabulated below

Timing	Description
Short Term Year 0 – 5	<p>Maintain: The current maintenance practice of repairing the wearing aprons and other elements as they deteriorate is considered to be acceptable in the short term as defects can be limited to non structural elements in the short term. The continued reconstruction of the upper and mid section structures should continue through the existing phased sprayed concrete repair schemes. However due to the consequences of breaching being significant and the aggressive climate in which the defences operate it is proposed that an enhanced monitoring regime as proposed within the monitoring and maintenance plan is undertaken. Within this frontage the following activities are recommended:</p> <ul style="list-style-type: none"> • Bi-annual beach profiles • Bi-annual sediment monitoring • Weekly visual inspections of defences • Commencement of a feasibility study and detailed designs for improvements to the defences in this area.
Medium Term Year 5 –15	<p>Improve: It is proposed that significant improvement scheme is undertaken for this length of defence. The likely option is to provide hydraulically efficient aprons and replacement of the front sea wall. The overall solution will be dependent upon the feasibility study and detailed designs undertaken in the first phase of the strategy. It should be noted that any solution will be required to accommodate the highly erosive nature experienced within this area.</p>
Long Term Year 15 –50	<p>Maintain: Following the implementation of the improvement scheme it is anticipated that only minor maintenance works will be required to ensure that adequate protection is provided. Major maintenance has been allowed for within the period for repairs and contingencies against erosion of the beach.</p>

The anticipated cost of these works has been calculated as £17.210 million consisting of £2,452,000 of maintenance and £14,758,000 of capital works. The present value of the strategic proposals for this frontage are £10,056,000. The economic evaluation of these proposals are shown below against other options. For each of the proposed options the implementation of major capital works has been phased to coincide based on existing life of the structure and risk for example the risks within this frontage are high and the life of the structure is moderate/ low >10 years therefore major capital works are not proposed until years 5 – 10: The DEFRA priority score for this length is 12. However this does not take account of disruption to roads and damage to significant infrastructure. This will increase the priority score further. These assets should be incorporated into project appraisal. The present priority score should ensure development of the scheme in years 5 – 10 and certainly warrants further development through appraisal and detailed design phases.

Chatsworth Avenue to Rossall Hospital

	Option 1 (do nothing)	Maintain Existing	Sustain	Improve
PV costs PVc	-	9,032.22	9,806.77	10,056.42
PV damage PVd	18,895.74	8,069.47	4,240.58	1,223.88
PV damage avoided		10,826.28	14,655.17	17,671.87
PV assets PVa	-	-	-	
PV asset protection benefits		-	-	
Total PV benefits PVb		10,826.28	14,655.17	17,671.87
Net Present Value NPV		1,794.06	4,848.40	7,615.44
Average benefit/cost ratio		1.20	1.49	1.76
Incremental benefit/cost ratio			4.94	12.08



Chatsworth Avenue to Rossall Hospital

10.2.6 Rossall Hospital to Five Bar Gate

West facing frontage with maximum fetch length of 225km. Beach levels are low in this section (approximately 0.5mAOD) and extend to 350m at low water springs due to this section forming a promontory and thus a high-energy field. The current defences in this area are supplemented by military installations (tank traps) and a high rifle range wall constructed at Rossall school. The beaches are currently stable but show signs of erosion and an increased tendency towards shingle upper beaches due to the high energy. Energy levels reduce and beach levels rise to the southern end of the length. The central section marks the return to a single rear wall due to the lower overtopping rates.

The proposed strategy for this frontage is tabulated below

Timing	Description
Short Term Year 0 - 5	<p>Maintain: The current maintenance practice of repairing the wearing aprons and other elements as they deteriorate is considered to be acceptable in the short term as defects can be limited to non structural elements. The continued reconstruction of the upper and mid section structures should continue through the existing phased sprayed concrete repair schemes. The risk associated with flooding is less than in the adjacent section as it is limited to the school complex. It is proposed that a beach management strategy and monitoring regime as proposed within the monitoring and maintenance plan is undertaken. Within this frontage the following activities are recommended:</p> <ul style="list-style-type: none"> • Bi-annual beach profiles • Bi-annual sediment monitoring • Resurfacing of the promenade decking
Medium Term Year 5 –15	<p>Maintain: This section acts as a promontory, which acts as a inhibitor to longshore drift. This is demonstrated by the low beach levels at this point compared with the much higher beach levels immediately south of this section. There is potential to realign the defences in this location but this is unlikely to be economical. The favoured option is to build upon this promontory effect by the installation of improved groyne systems</p>
Long Term Year 15 -50	<p>Sustain: Refurbishment of the defences is proposed early in this period. This will involve the refurbishment of lower aprons potentially with more hydraulically efficient structures together with the resurfacing of the promenade and structural works to the front sea wall. An allowance has been made for beach replenishment to the northern beaches should the hydraulic improvements to the aprons and new groyne fields not fulfil their anticipated expectation of beach level stabilisation.</p>

The anticipated cost of these works has been calculated as £11.632 million consisting of £2,181,000 of maintenance and £9,451,000 of capital works. The present value of the strategic proposals for this frontage are £3,100,000. The economic evaluation of these proposals are shown below against other options. For each of the proposed options the implementation of major capital works has been phased to coincide based on existing life of the structure and risk for example the risks within this frontage are moderate and the life of the structure is moderate therefore major capital works are not proposed until years 15 - 20: The DEFRA priority score for this length is 9. However this does not take account of loss of leisure facilities, environmental assets or agricultural land, which will increase the priority score. These assets should be incorporated into future reviews. It is anticipated that the inclusion of these assets will ensure the development of the scheme in future phases and warrants further development through appraisal and detailed design.

Rossall Hospital to Five Bar Gate

	Option 1 (do nothing)	Maintain Existing	Sustain	Improve
PV costs PVc	-	2,916.33	3,100.28	4,553.69
PV damage PVd	3,779.47	893.48	632.47	342.46
PV damage avoided		2,885.99	3,147.00	3,437.01
PV assets Pva	-	-	-	
PV asset protection benefits		-	-	
Total PV benefits PVb		2,885.99	3,147.00	3,437.01
Net Present Value NPV		-30.35	46.71	-1,116.69
Average benefit/cost ratio		0.99	1.02	0.75
Incremental benefit/cost ratio			1.42	0.20



Rossall Hospital to Five Bar Gate

10.2.7 Five Bar Gate to Jubilee Gardens

West facing frontage with maximum fetch length of 225km. The frontage is protected by relatively high beach levels, which extend for a distance of 430m at low water. These beach levels are found due to the promontory at Rossall School, which provides some protection and restricts the longshore drift in this area. These physical characteristics protect the sea wall for all but extreme conditions. The beaches are currently stable and show signs of accretion. However flooding to the road often occurs and the rear wall is utilised during storm events to protect the properties immediately to the rear.

The proposed strategy for this frontage is tabulated below

Timing	Description
Short Term Year 0 - 5	<p>Maintain: The current maintenance practice of repairing elements as they show signs of fatigue is considered to be acceptable in the short term due to the high beach levels and hence the low energy levels experienced in this area. However the front wall was constructed in 1936 to a similar construction to recently failed lengths. Should beach levels fall this wall and supporting apron structures would be at significant risk of failure. Beach levels are therefore of particular importance within this length. It is proposed that a beach management strategy and monitoring regime as proposed within the monitoring and maintenance plan is undertaken. Within this frontage the following activities are recommended:</p> <ul style="list-style-type: none"> • Bi-annual beach profiles • Bi-annual sediment monitoring • Investigation into the structural stability of the existing front wall.
Medium Term Year 5 –15	<p>Sustain: It is proposed that within the medium term period works to sustain the current standards of protection should be investigated, designed and implemented. At this stage the most likely solution would be to replace the front sea wall with a raised structure. An allowance for minor improvements to the aprons should beach levels show signs of fluctuation or long term lowering has been made.</p>
Long Term Year 15 -50	<p>Maintain: Further refurbishment works have been allowed within this period for the apron structures, front and rear wall and for upgrading of groyne systems should beach levels fall. Current evidence indicates that offshore supplies will be limited and that overall beach levels will fall in the medium to long term. However due to the climatic conditions caused by the Rossall school promontory this location is likely to be the least affected.</p>

The anticipated cost of these works has been calculated as £5.558 million consisting of £1,113,000 of maintenance and £4,428,000 of capital works. The present value of the strategic proposals for this frontage are £1,660,000. The economic evaluation of these proposals are shown below against other options. For each of the proposed options the implementation of major capital works has been phased to coincide based on existing life of the structure and risk for example the risks within this frontage are medium to low and the life of the structure is moderate therefore major capital works are not proposed until years 10 – 15. The DEFRA priority score for this length is 12. However this does not take account of loss of environmental, tourism assets or disruption to infrastructure and roads, which will increase the priority score. These assets should be incorporated into future reviews. The current priority score warrants development of the scheme.

Five Bar Gate to Jubilee Gardens

	Option 1 (do nothing)	Maintain Existing	Sustain	Improve
PV costs PVc	-	1,513.18	1,660.06	3,075.27
PV damage PVd	4,114.51	2,546.29	1,530.10	333.95
PV damage avoided		1,568.21	2,584.41	3,780.55
PV assets Pva	-	-	-	
PV asset protection benefits		-	-	
Total PV benefits PVb		1,568.21	2,584.41	3,780.55
Net Present Value NPV		55.03	924.35	705.29
Average benefit/cost ratio		1.04	1.56	1.23
Incremental benefit/cost ratio			6.92	0.85



Five Bar Gate to Jubilee Gardens

10.2.8 Jubilee Gardens to Borough Boundary

West facing frontage with maximum fetch length of 230km. Beach levels within this length are low and the upper clay level is often exposed at a level of 1.3mOD at the toe of the existing structure. A 100m length of the lower apron was refaced in 1991 and the lower sea wall failed and was refurbished in 1997 in the same length. The rear wall was constructed in 1982 following the 1977 event where considerable flooding resulted to the town of Cleveleys, which lies at a low level immediately behind the sea wall. This wall allows water to be stored on the promenade during overtopping events. The beaches particularly in the south of this length are volatile but overall volumes are relatively stable. However the overall trend is anticipated to be an eroding frontage.

The proposed strategy for this frontage is tabulated below

Timing	Description
Short Term Year 0 - 5	Improve: Due to the condition of the existing defences it is not considered that current maintenance practices are acceptable. There is a risk of failure in the short term of the existing life expired defence structures. It is proposed that improvement works are undertaken to the lower defence structures as a matter of urgency. An appraisal report has been prepared in parallel with this strategy. The recommended proposals are to provide more hydraulically efficient lower structures together with suitable beach stabilisation works. These works are to be designed to have a life commensurate with the lifetime of this strategy.
Medium Term Year 5 –15	Maintain: On completion of the improvement works it is anticipated that maintenance works will be reduced compared to existing levels. However beach levels are a concern and monitoring and continued maintenance of the beach retention structures will be required.
Long Term Year 15 - 50	Maintain: Allowances for major maintenance works during this period have been allowed for repairs to the aprons and beach retention structures.

The anticipated cost of these works has been calculated as £11.333 million consisting of £1,722,000 of maintenance and £9,611,000 of capital works. The present value of the strategic proposals for this frontage are £8.243 million. The economic evaluation of these proposals are shown below against other options. For each of the proposed options the implementation of major capital works has been phased to coincide based on existing life of the structure and risk for example the risks within this frontage are high and the life of the structure is low therefore major capital works are proposed in the short term 0 – 5 years: The DEFRA priority score for this length is 18. However this does not take account of loss of tourism assets or disruption to the road system or infrastructure which will increase the priority score further. The current priority score is significantly high for further benefit not to be required to progress the scheme. An appraisal report has been developed for this scheme in parallel with this strategy.

Jubilee Gardens to Borough Boundary

	Option 1 (do nothing)	Maintain Existing	Sustain	Improve
PV costs PVc	-	5,403.44	5,972.49	8,242.66
PV damage PVd	40,304.37	22,276.78	12,877.30	1,242.20
PV damage avoided		18,027.58	27,427.07	39,062.17
PV assets Pva	-	-	-	
PV asset protection benefits		-	-	
Total PV benefits PVb		18,027.58	27,427.07	39,062.17
Net Present Value NPV		12,624.14	21,454.58	
Average benefit/cost ratio		3.34	4.59	4.74
Incremental benefit/cost ratio			16.52	5.13



Jubilee Gardens to Borough Boundary

10.3 Wyre Estuary

10.3.1 Fleetwood Ferry to Fleetwood Docks

East facing frontage with maximum fetch length of 30km. Defences along this frontage consist of a variety of port structures including stone revetment and piled berth frontages. The land levels behind are generally high and comprise the port infrastructure. These areas are affected during extreme events without significant damage being caused. A 100m length of sloping apron was undermined and partially collapsed in 1999 and although some rectification works were undertaken this weakness still exists. At the current time the port authority have no plans to refurbish or improve the dock frontage. The structures making up the frontage vary in construction with the oldest dating from the 1870's. At present the main river channel is showing signs of fluctuating towards the Knott End side of the estuary, which is problematic for navigation but provides security against failure of the structures through undermining.

The proposed strategy for this frontage is tabulated below

Timing	Description
Short Term Year 0 - 5	<p>Maintain: The port authority have no plans for improvement or refurbishment works within the dock area. This is acceptable due to the current short term trends towards stability and historical slow deterioration of the defences. The defences primarily protect dock infrastructure and there is a low risk that failure of the defences would result in flooding to the wider Fleetwood area.</p> <p>The direction of the river channel fluctuations is of key importance to the stability of the defences and to the operations of the port. It is therefore recommended that annual bathymetric studies of the full port frontage are undertaken as an extension to the current monitoring of the dredge areas.</p>
Medium Term Year 5 –15	<p>Maintain: It is anticipated that refurbishment works will be required to life expired structures during this period. An allowance has therefore been made for refurbishment of the most at risk defences. The potential to improve or sustain defences and the dock structure may also be practicable at this point dependent upon future development of the port area.</p>
Long Term Year 15 -50	<p>Maintain / Sustain: Ongoing repairs to life expired structures are anticipated through the long term and a strategy of management and replacement will be required. Dependent upon the port activities envisaged in the future i.e. a move towards commercial development and housing, sustaining the standard of protection may be necessary. This will involve the raising of the port frontage levels or the incorporation of a crest wall.</p>

The anticipated cost of these works has been calculated as £4.904 million consisting of £972,000 of maintenance and £3,932,000 of capital works. The present value of the strategic proposals for this frontage are £981,000. The economic evaluation of these proposals are shown below against other options. For each of the proposed options the implementation of major capital works has been phased to coincide based on existing life of the structure and risk for example the risks within this frontage are low and the life of the structure is good to medium therefore major capital works are not proposed in the short term. The DEFRA priority score for this length is low. However this does not take account of loss of the port facilities and the associated disruption to the port operations, which will increase the priority score. Currently the present regime of maintaining these assets is sustainable as it is key to the operation of the port. Should circumstances change this conclusion should be reviewed.

Fleetwood Ferry to Fleetwood Docks

	Option 1 (do nothing)	Maintain Existing	Sustain	Improve
PV costs PVc	-	981.16	1,028.23	1,433.24
PV damage PVd	79.74	52.93	28.37	0.01
PV damage avoided		26.80	51.37	79.73
PV assets Pva	-	-	-	
PV asset protection benefits		-	-	
Total PV benefits PVb		26.80	51.37	79.73
Net Present Value NPV		-954.36	-976.86	-1,353.51
Average benefit/cost ratio		0.03	0.05	0.06
Incremental benefit/cost ratio			0.52	0.07



Fleetwood Ferry to Fleetwood Docks

10.3.2 Fleetwood Docks to ICI Boundary

East facing frontage with maximum fetch length of 30km. The existing defences are earth embankments protected by saltmarsh. There is no current evidence of erosion of the saltmarsh although records are limited to historical maps and photographs. The wall originally dates from the 1840's and has seen minor improvements since. In the short term the salt marshes are anticipated to be stable. However in the long term the outer estuary in common with similar shaped estuary features is anticipated to lose areas of salt marsh thereby threatening the embankments.

The proposed strategy for this frontage is tabulated below

Timing	Description
Short Term Year 0 - 5	<p>Maintain: The current practice of maintaining the embankments to a minimal level is acceptable in the short term due to the stable saltmarsh frontage and the limited risk of failure of the embankment coupled with the absence of major development or infrastructure at risk of flooding. However the northern area is designated for development and significant improvements to the defences will need to be made to mitigate against the additional risk of such development. The tip to the rear of the sea wall has created an embankment of high ground which largely prevents flooding of the area. However there is a small risk of pollution of the estuary should the embankment fail.</p> <p>Lack of information on the erosion or accretion rates of the saltmarshes is a significant concern as it is fundamental to the stability and standard of protection offered by the defences. The maintenance and monitoring plan identifies the following activities:</p> <ul style="list-style-type: none"> • Bi-annual saltmarsh profiles • Bi-annual vegetation monitoring
Medium Term Year 5 –15	<p>Maintain / Improve: Improvements to the defences in this location are dependent upon development proposed immediately behind the defences. An allowance for revetment of the front face of the embankment together with raising of the embankment to an acceptable level are considered appropriate.</p>
Long Term Year 15 -50	<p>Maintain: Allowances for maintenance works during this period have been allowed for repairs to the embankment and mitigation measures to limit saltmarsh losses through natural stabilisation methods.</p>

The anticipated cost of these works has been calculated as £2.076 million consisting of £972,000 of maintenance and £1,104,000 of capital works. The present value of the strategic proposals for this frontage are £449,000. The economic evaluation of these proposals are shown below against other options. For each of the proposed options the implementation of major capital works has been phased to coincide based on existing life of the structure and risk for example the risks within this frontage are low (at present) and the life of the structure is medium therefore major capital works are not proposed unless required by new development. The DEFRA priority score for this length is low. However this does not take account of disruption to the port or business operations, which will increase the priority score. Should development of the land proceed it will be necessary for the developer to improve the standard of defence provided.

Fleetwood Docks to ICI Boundary

	Option 1 (do nothing)	Maintain Existing	Sustain	Improve
PV costs PVc	-	448.67	467.66	767.43
PV damage PVd	79.74	52.93	28.37	0.19
PV damage avoided		26.80	51.37	79.55
PV assets Pva	-	-	-	
PV asset protection benefits		-	-	
Total PV benefits PVb		26.80	51.37	79.55
Net Present Value NPV		-421.87	-416.29	-687.88
Average benefit/cost ratio		0.06	0.11	0.10
Incremental benefit/cost ratio			1.29	0.09



Fleetwood Docks to ICI Frontage

10.3.3 ICI Boundary to Stanah

East facing frontage with maximum fetch length of 4.5km. The existing defences are earth embankments with limited saltmarsh protection. There is evidence of erosion of the embankments with areas undermined and brick rubble and railway structures used to limit the effects of erosion. The embankments were considerably improved for all but the southerly 200m by ICI approximately twenty years ago. The southerly section (in the ownership of Kneps Farm) remains in its original form, which is not commensurate with the assets, it protects. The wall originally dates from the 1840's and has seen minor improvements since. The embankment in this section has oversteep slopes of less than 1 in 1 with a crest of less than 2m. the existing standard in this area is approximately 25 years falling to less than 5 years in 50 years time. The remainder of the embankment has crest widths of over ten metres and although eroded cause little threat of flooding although health and safety implications of collapsing embankments and footpaths exist.

The proposed strategy for this frontage is tabulated below

Timing	Description
Short Term Year 0 - 5	Improve: The southern embankment needs urgent attention in the first stage of the strategy both in terms of stability and height. There is a considerable risk of failure and flooding to a major area of Thornton Cleveleys. The proposed improvements to this section involve the strengthening and raising of the embankment and face protection to the scoured areas of the remainder of the embankment. A scheme of improvement has been developed with a potential developer.
Medium Term Year 5 –15	Maintain: Following improvements to the weak southern section of the embankment and rectification of the scoured areas will provide sufficient protection. However monitoring of the saltmarsh and further scour of the embankment will be required. The proposed maintenance and monitoring regime is included in the maintenance and monitoring report and includes: <ul style="list-style-type: none"> • Bi-annual saltmarsh profiles • Bi-annual vegetation monitoring • Structural investigations of the embankment
Long Term Year 15 -50	Maintain: Allowances for maintenance works during this period have been allowed for repairs to the embankment and improvements to the revetment should further scour occur.

The anticipated cost of these works has been calculated as £2.429 million consisting of £126,000 of maintenance and £2,303,000 of capital works. The present value of the strategic proposals for this frontage are £1,623,000. The economic evaluation of these proposals are shown below against other options. For each of the proposed options the implementation of major capital works has been phased to coincide based on existing life of the structure and risk for example the risks within this frontage are high and the life of the structure is low therefore major capital works are proposed for years 0 – 5 of the strategy. The DEFRA priority score for this length is 32. This does not take account of the extensive development, which is currently being constructed behind the defences. This will increase the priority score further. The works within this length are an extremely high priority and methods of initialising these works are currently being pursued.

ICI Boundary to Stanah

	Option 1 (do nothing)	Maintain Existing	Sustain	Improve
PV costs PVc	-	578.67	668.22	1,622.54
PV damage PVd	86,977.82	22,644.99	22,581.27	4,777.66
PV damage avoided		64,332.83	64,396.55	82,200.16
PV assets Pva	-	-	-	
PV asset protection benefits		-	-	
Total PV benefits PVb		64,332.83	64,396.55	82,200.16
Net Present Value NPV		63,754.16	63,728.33	
Average benefit/cost ratio		111.17	96.37	50.66
Incremental benefit/cost ratio			0.71	18.66

10.3.4 Stanah to Shard Bridge

South and East facing frontage with maximum fetch length of 0.5km. The majority of the length is unprotected due to outcrops of high ground. The existing defences are earth embankments with limited saltmarsh protect. There is no evidence of erosion of the embankments and limited wave action or scour. The lengths of embankment originally dates from the 1840's and has seen minor improvements since. The embankment in this section overtop but due to their construction and limited energy associated with waves or currents and the distance to property little threat of flooding exist.

The proposed strategy for this frontage is tabulated below

Timing	Description
Short Term Year 0 - 5	<p>Maintain: The existing maintenance regime which consists of grass cutting and repair of slips is considered to be acceptable in the short term due to the limited risk to properties. A monitoring regime is proposed in accordance with the monitoring and maintenance plan. This consists of:</p> <ul style="list-style-type: none"> • Bi-annual saltmarsh profiles • Bi-annual vegetation monitoring • Annual Aerial surveys of the river channel
Medium Term Year 5 –15	<p>Maintain: It is proposed that the maintenance regime is continued throughout the medium term. The embankment defences at Wadderbank at the northern end of this area is a potential for managed retreat although the benefits derived are limited as the ground rises quickly. A study into the potential for managed retreat is proposed during this period. Improvements to the outfall structures at Skipool are anticipated to be required in the medium term to prevent flooding to the hinterland via inland watercourses.</p>
Long Term Year 15 -50	<p>Maintain: Allowances for maintenance works during this period have been allowed for including repairs to the embankments. Should the managed retreat option be feasible it is at this stage that embankments would be realigned to protect the isolated properties in the north of the section.</p>

The anticipated cost of these works has been calculated as £758,000 consisting of £45,000 of maintenance and £713,000 of capital works. The present value of the strategic proposals for this frontage are £190,000. The economic evaluation of these proposals are shown below against other options. For each of the proposed options the implementation of major capital works has been phased to coincide based on existing life of the structure and risk for example the risks within this frontage are low and the life of the structure is medium therefore major capital works are not proposed until years 5 – 10 of the strategy and these are limited to outfall structures. The DEFRA priority score for this length is 8. However this does not take account of loss of tourism assets or disruption to the road system or infrastructure which will increase the priority score further.

Stanah to Shard Bridge

	Option 1 (do nothing)	Maintain Existing	Sustain	Improve	Retreat
PV costs PVc	-	189.47	200.15	249.80	146.62
PV damage PVd	312.79	55.97	49.78	5.95	160.33
PV damage avoided		256.82	263.01	306.85	152.46
PV assets Pva	-	-	-		
PV asset protection benefits		-	-		
Total PV benefits PVb		256.82	263.01	306.85	152.46
Net Present Value NPV		67.36	62.86	57.05	5.84
Average benefit/cost ratio		1.36	1.31	1.23	1.04
Incremental benefit/cost ratio			0.58	0.88	-

10.3.5 Shard Bridge to Bankfield Farm

East facing frontage with maximum fetch length of 30km. The majority of the length is unprotected due to outcrops of high ground. The existing defences are earth embankments with saltmarsh protect. There is no evidence of erosion other than animal scour of the embankments and limited wave action or current scour exist. The lengths of embankment originally dates from the 1840's and has seen minor improvements since. The embankment in this section overtop but due to their construction and limited energy associated with waves or currents and the distance to property little threat of flooding exist.

The proposed strategy for this frontage is tabulated below

Timing	Description
Short Term Year 0 - 5	<p>Maintain: The existing maintenance regime which consists of grass cutting and repair of slips is considered to be acceptable in the short term due to the limited risk to properties. A monitoring regime is proposed in accordance with the monitoring and maintenance plan. This consists of:</p> <ul style="list-style-type: none"> • Bi-annual saltmarsh profiles • Bi-annual vegetation monitoring • Annual Aerial surveys of the river channel
Medium Term Year 5 -15	<p>Maintain: It is proposed that the maintenance regime is continued throughout the medium term. This area is a potential for managed retreat with potential benefits from the gain of intertidal areas derived. However there are major leisure complexes and caravan sites are protected by the embankment, gains are therefore dependent upon future development. A study into the potential for managed retreat is proposed during this period.</p>
Long Term Year 15 -50	<p>Retreat: The Estuary Shoreline Management Plan for this area indicates managed retreat and this is a potential option dependent upon future development and protection of existing assets. Allowances for the managed retreat of the embankment to allow for localised realignment to protect assets has therefore been allowed for within the cost analysis.</p>

The anticipated cost of these works has been calculated as £124,000 consisting of £20,000 of maintenance and £104,000 of capital works to allow for the retreat of the existing embankments and development of an intertidal habitat. The present value of the strategic proposals for this frontage are £26,000. The economic evaluation of these proposals are shown below against other options. For each of the proposed options the implementation of major capital works has been phased to coincide based on existing life of the structure and risk for example the risks within this frontage are low and the life of the structure is medium therefore major capital works are not proposed until year 30 of the strategy with the potential for managed retreat or modification of the embankment to maintain the standard. The DEFRA priority score for this length is 8.

Shard Bridge to Bankfield Farm

	Option 1 (do nothing)	Maintain Existing	Sustain	Improve	Retreat
PV costs PVc	-	25.80	28.67	84.59	25.60
PV damage PVd	185.91	85.58	85.26	2.44	86.59
PV damage avoided		100.34	100.65	183.47	99.32
PV assets Pva	-	-	-		
PV asset protection benefits		-	-		
Total PV benefits PVb		100.34	100.65	183.47	99.32
Net Present Value NPV		74.54	71.99		
Average benefit/cost ratio		3.89	3.51	2.17	3.88
Incremental benefit/cost ratio			0.11	1.41	5.05

10.3.6 Bankfield Farm to Cartford Bridge

East facing frontage with maximum fetch length of 30km. The majority of the length is unprotected due to outcrops of high ground. The existing defences are earth embankments with saltmarsh protect. There is no evidence of erosion other than animal scour of the embankments and limited wave action or current scour exist. The lengths of embankment originally dates from the 1840's and has seen minor improvements since. The embankment in this section overtop but due to their construction and limited energy associated with waves or currents. The main asset protected is grassland and a caravan site although the majority of caravan site lies outside of the flood plain .

The proposed strategy for this frontage is tabulated below

Timing	Description
Short Term Year 0 – 5	<p>Maintain: The existing maintenance regime which consists of grass cutting and repair of slips is considered to be acceptable in the short term due to the limited risk to properties. A monitoring regime is proposed in accordance with the monitoring and maintenance plan. This consists of:</p> <ul style="list-style-type: none"> • Bi-annual saltmarsh profiles • Bi-annual vegetation monitoring • Annual Aerial surveys of the river channel
Medium Term Year 5 –15	<p>Maintain: It is proposed that the maintenance regime is continued throughout the medium term. This area is a potential for managed retreat with potential benefits from the gain of intertidal areas derived. This area is considered to be the most appropriate length within this strategy for managed retreat. A study into the potential for managed retreat is proposed during this period.</p>
Long Term Year 15 –50	<p>Retreat: The Estuary Shoreline Management Plan for this area indicates managed retreat and this is the preferred option. Allowances for the managed retreat of the embankment to allow for localised realignment to protect assets notably the low lying areas of the caravan site has therefore been allowed.</p>

The anticipated cost of these works has been calculated as £333,000 consisting of £125,000 of maintenance and £208,000 of capital works. The present value of the strategic proposals for this frontage are £93,000. The economic evaluation of these proposals are shown below against other options. For each of the proposed options the implementation of major capital works has been phased to coincide based on existing life of the structure and risk for example the risks within this frontage are low and the life of the structure is medium therefore major capital works are not proposed until year 15 of the strategy with managed retreat considered as the preferred option. The DEFRA priority score for this length is 8.

Bankfield Farm to Cartford Bridge

	Option 1 (do nothing)	Maintain Existing	Sustain	Improve	Retreat
PV costs PVc	-	165.11	165.11	541.40	92.58
PV damage PVd	229.39	42.81	31.42	37.61	114.11
PV damage avoided		186.58	197.97	191.78	115.28
PV assets Pva	-	-	-		
PV asset protection benefits		-	-		
Total PV benefits PVb		186.58	197.97	191.78	115.28
Net Present Value NPV		21.47	32.87		
Average benefit/cost ratio		1.13	1.20	0.35	1.25
Incremental benefit/cost ratio			-	0.02	

10.4 Influence of Future Studies

The future studies influencing this strategy and their effects are listed below.

10.4.1 Canatxx Gas Storage Pipeline

The Canatxx proposal for gas storage at Preesall has a number of potential influences on the strategy. The major influence is the potential to pump dredged material from the port area to the west coast. At present the use of this material is limited on economic grounds as vast quantities of material would need to be transported from the dredge area at Fleetwood to the west coast. Economic evaluation of this operation at present indicates that transportation costs would make this option unviable. However delivery by pump via a pipeline directly from the dock to the west coast may have potential. A pipeline is proposed to discharge water from the salt caverns to the west coast and there is potential for this pipeline to be used for the discharge of dredged material at low cost. Should this proposal materialise there is scope for beach recharge using waste material economically and this should be considered during the review of the strategy.

10.4.2 Shoreline Management Plan Review

The current estimate for review of the SMP is 2008. As such the review of this strategy should coincide. Although it is not anticipated that major changes will result in the classification of policy for the coast the studies leading to the review will shape current uncertainties considered within this strategy.

10.4.3 Development of Coastal Habitat Management Plans

English Nature are currently producing the first of the ChaMPs which will determine the management of the countries coastal habitat resources. The intention is to protect and retain designated coastal habitats in favourable status. The outcome of the first plans is not yet determined but they may give clear guidance into the requirements for compensatory setback along the coastline to ensure losses due to coastal squeeze do not affect the overall stock of natural resources.

10.4.4 Climate Change Studies

The latest DEFRA guidance on sea level rise and information on climate change at the writing of this strategy UK CIP 02 was used in considering the likely changes to climate within this strategy. However understanding of the effects of global warming is continuing to be developed and plays an important role in determining structure interaction at the shoreline and standards of protection offered.

10.4.5 Wyre Estuary Study

Within the Environment Agency's SMP for the Wyre Estuary is a proposal for detailed estuarine studies. These are required in order to consider setback schemes in detail to ensure that there is no negative effects. It is anticipated that this study will significantly determine the feasibility of setback along the estuary and is therefore a significant step in determining the long-term management plan for the estuary.

10.5 Strategic Risk Assessment

Risk	Comment and Advice
Pre Construction Phase	
Planning Approvals	EU, environmental, public objections. Allow sufficient time for public consultation and planning process within schemes programme.
Monetary Provisions	Council funding, DEFRA grant aid. Continue consultation process with councillors and DEFRA regional office at all stages of project.
Consultee Agreements	Failure to obtain statutory consultee approval. Consult statutory consultees at an early stage. Continue to involve representatives in decision making process.
Failure of defences prior to implementation of scheme.	Severe storm events, requirement to have contingency plans and flexibility within programme of works. Continue inspection regime at 6 monthly intervals.
Cost Increases at Tender Phase	Through rising material costs or industry over capacity. Requirement to have robust and realistic spending profiles and to update expenditure profiles throughout scheme development. Optimise procurement routes, which reduce risks of price fluctuations such as partnering from an early stage.
Construction Phase	
Cost Increases During Works	Unforeseen conditions, design changes, tender omissions. Minimise unknowns at design stage, clearly define risks at all stages of the project and include in contingencies.
Environmental Damage	Ensure environmental objectives are fully understood and implemented at design stage and passed through to the contractor as part of a risk assessment.
Weather and Sea Conditions	Ensure all staff and visitors are aware of the Councils emergency procedures. Minimise work in winter period subject to other over riding criteria.
Public Safety on promenade/embankment	Ensure all works are adequately fenced and secured. Ensure that well signed acceptable alternative routes are available to members of the public and emergency services.
Traffic Movements	Take measures within design to limit requirements for material movements onto site and optimise the reuse of material.

Risk	Comment and Advice
Completed Works	
Concrete abrasion and robustness	Consider whole life costing when designing and pricing works.
Ability to maintain new works	Consider maintenance access and replacement of elements in design and construction phases.
Public access and safety	Consider in design and construction phases
Emergency Access	Consider in design and construction phases

11 IMPLEMENTATION PLAN

11.1 Wyre Borough Council Frontage

The five year plan for the Wyre Borough Council frontage concentrates on the Cleveleys frontage. This section is considered to be at greatest risk due to the poor condition of the lower defences and the extent of property protected. The DEFRA priority score for this scheme is 18 under the new scoring system (29.3 under existing system) and is therefore considered a high priority.

An appraisal report for the upgrade of these defences has been prepared in parallel with this strategy and the report approved by the Council for forwarding to DEFRA. The appraisal report is summarised below.

The preferred option is a Seabee revetment or a stepped wall revetment with phased construction over the period. An assessment of this length indicates that both a Seabee revetment and a stepped wall are technically viable with similar implementation costs. Physical model testing and public consultation are required to finalise selection of a preferred scheme and this should be undertaken at the start of the period.

An initial refurbishment phase is required to improve a section of wall (Section 1b) in urgent need of repair as there is a risk of failure in the short term. The proposed remedial works will safeguard this length of wall and provide continuity with the recently repaired adjacent section (Section 1a). This proposal will allow time for agreements to be reached with Blackpool BC over the interface at the boundary and design and consultation works to be undertaken for the improvement of the full 968m length. Consideration could be given to providing continuous beach access over the scheme. The most suitable location would be a short section of promenade opposite Jubilee Gardens where beach levels are generally higher. This would improve the beach amenity value and potentially make the scheme more attractive.

- 11.1.1 The first phase of the works will be to undertake refurbishment works to a 204m section in urgent need of improvement, with a capital cost of £0.7 million in 2002. During this phase physical model testing, detailed design, and preparation of tender documents for the preferred long-term improvement option, with an additional capital cost in 2002 of £0.20 million will also be undertaken. The overall 968m scheme cash costs are estimated to be £10.4 million, with a present value cost of £7.65 million.

The recommended phasing of defence works is summarised in Figure 11.0.

Status	Description	Activity	Cost
Funding sought at present	Maintain a 204m section of seawall along Promenade South	Prepare contract documents Construction costs	£30 k £658 k
Funding sought at present	Outline design of new form of hard defence including physical model testing..	Detailed design Physical modelling testing Public Consultation	£150 k
Agreement in principle sought	Detailed design for an initial length of seawall along Promenade North Initial phase of constructing new form of hard defences along Promenade North (2004)	Detailed design and prepare contract documents Construction costs	£150 k £3,776 k
Agreement in principle sought	Second phase of constructing new form of hard defences along Jubilee Gardens (2006)	Detailed design and prepare contract documents Construction costs	£75 k £1,826 k
Agreement in principle sought	Third phase of constructing new form of hard defences along Promenade South (2011)	Detailed design and prepare contract documents Construction costs	£75 k £2,546 k

Figure 11.0 - Proposed funding schedule

11.1.3 Feasibility studies, modelling and detailed design are also recommended for the Rossall to Chatsworth frontage during this period to allow improvement works to proceed early in the period following the first review of the strategy. These preliminary works will build upon the Cleveleys works and take account of the developments with regards the Canatxx pipeline which may influence the feasibility of beach recharge options should this proposal be realised.

11.1.4 Monitoring during this phase will be in accordance with the monitoring plan put forward as an appendix to this strategy report. This includes:

- Bi-annual beach surveys.
- Dune monitoring and mapping
- Access surveys
- Investigation into the joint sea defence, tourism, recreation and promenade management plan.

11.2 Environment Agency Frontage

The Environment Agency has no plans for capital works within its frontage over the first period of the plan. However a major study is to commence into the feasibility of the proposed setback options. The Environment Agency also propose to complete a strategy study for the right bank of the river Wyre within the first five years of this strategy.

11.3 Associated British Ports Frontage

ABP have no specific plans for improvements to the defences in their ownership over the first five year period of this strategy. The failed section of apron adjacent to the Isle of Man Berth requires attention. This work has been deferred until years five to ten as it is not considered to structurally affect the dockside and vessels do not currently use the area.

ABP plan to develop the area between the dock and the old power station with residential units. It is anticipated that this development will be subject to a requirement for improvements to the existing defences. The anticipated works are likely to involve the provision of revetment to the embankment and localised raising of rear land levels to tie into the frontline embankment.

11.4 NPL Frontage

NPL's frontage consists of the ICI frontage and for the purposes of this strategy includes the embankment between ICI and the outfall at Stanah. This length is owned by Kneps farm. The full length is subject to an improvement scheme either through the Environment Agency's capital programme or as a condition of proposed new development on a phased basis. The proposals for this improvement scheme are detailed below:-

- Raising and strengthening of the Kneps Farm embankment to a 1 in 1000 year standard in 2050.
- Revetment and filling to undermined sections of the remaining embankment.
- Provision of a detailed maintenance plan outlining further repairs to the front face.

The recommended phasing of defence works is summarised below.

Status	Description	Activity	Cost
Developers proposal	Improvement to a 248m section of flood embankment in the ownership of Kneps Farm.	Prepare contract documents Construction costs	£70 k £600 k
Developers proposal	Refurbishment to undermined embankments and revetment	Detailed design Construction costs	£350 k
Developers proposal	Raising of low points along ICI/NPL embankment	Detailed design and prepare contract documents Construction costs	£20 k £150k
Developers proposal	Further refurbishment of embankment and provision of revetment in accordance with maintenance and monitoring plan.	Detailed design and prepare contract documents Construction costs	£75 k £450 k
Developers proposal	Monitoring and maintenance to be undertaken by WBC	Monitoring Maintenance	£75 k £200 k

Figure 11.1 - Proposed funding schedule

11.5 Specific Problem Areas

The major problem areas in terms of risk are identified above. The major problem identified within this plan is the high level of risk associated with the Stanah embankment currently in the ownership of Kneps farm. The riparian owner clearly does not have the resources to fund the level of bank improvements required. The works described above are dependent upon incorporation into the Environment Agency's capital programme or as a requirement of future development.

Other problems can largely be dealt with by routine maintenance although recently large areas of lower aprons around the Chatsworth area have shown signs of high chlorination and loss of structural strength. This has led to the emergency

replacement of large volumes of concrete where the lower aprons have been lost exposing the middle aprons supporting piles. If left unchecked this would result in beach losses due to the vertical face and potential undermining of the structure. This area is now subject to increased levels of investigation.

Wind blown sand remains a peripheral problem causing public monies to be spent on removal of sand from the promenade and adjacent streets. The engineering division is currently providing assistance to a Heritage lottery funded investigation into access and interpretation of the coastal frontage. This in part concentrates on retention of sand through the development and management of the dune systems on the Fleetwood frontage and better co-operation with beach users. A beach management working group has been formed bringing together all key stakeholders with responsibility for beach management including litter picking, environmental protection, tourism and recreational use of the coastal frontage.

11.6 Detailed 5 – Year Implementation Plan

A detailed programme of the 5-year implementation plan is shown on the following page. This covers both capital works and monitoring and maintenance plans.

11.7 Outline 50 – Year Programme of Works

A fifty-year programme of works identifying when capital works are proposed within the strategy life is shown on the following page.

12 Appendices

12.1 Physical Setting

12.2 Strategic Environmental Assessment

12.3 Existing Defences Report

12.4 Strategic Option Analysis

12.5 Benefit Analysis

12.6 Cost Analysis

12.7 Strategic Monitoring Plan