Figure 2-13 and Figure 2-14 show that, even without the 5,000+ dwellings proposed for North West Preston, the situation has deteriorated from 2014 with longer delays present in 2034. Delay increases on the approaches to all the junctions on the M55 and M6 and in the morning peak period delay also increases on the motorway exit slips in 2034.

Delay also increases on the arterial roads into and out of Preston, including the A6, Lightfoot Lane and Eastway, Tom Benson Way, the A583, A5085, A59 and A582. Several increases in delay on the A6, A583 and A582 are greater than 30 seconds; each of which is in addition to the existing delay on previous plots.

Pinch points at the Ribble bridges on the A6 and A59 along with the A583 south of Kirkham are all forecast to experience further increases in delays in the morning and evening peak periods.

The reductions in delay through Broughton and on local roads in Lostock (near Bamber Bridge) are due to the inclusion of Broughton Bypass and the A582 dualling respectively, onto which traffic transfers. These schemes are present in the future but are not in the base year.

Even without the impact of growth from large scale developments, Preston is further congested. Given that these arterial road corridors and strategic road network access points are all under pressure in 2014, the worsening scenario to 2034 means that the additional growth will be unsustainable without a significant transport intervention.

The figures below show the potential impact of the North West Preston housing development in 2034 (without intervention). Figure 2-15 shows the change in flows with the additional 5000+ houses in the morning peak period, again, without intervention.

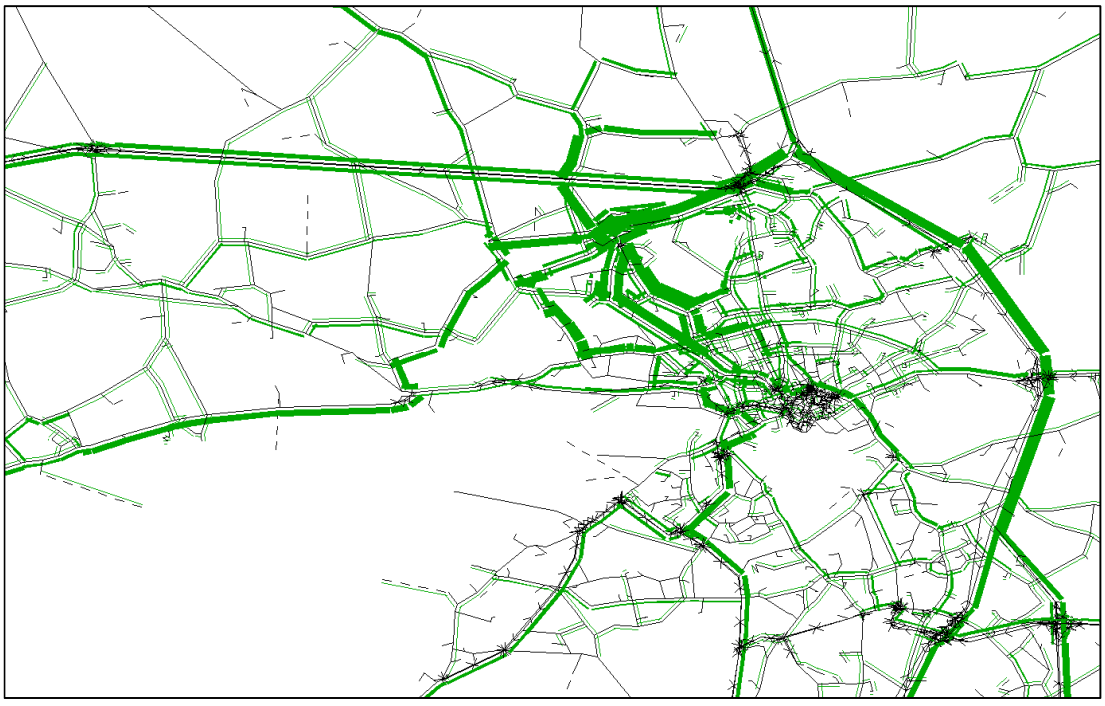

Figure 2-15: AM Peak Flow change with Housing in 2034- without intervention

Figure 2-15 shows that additional trips generated from the housing sites concentrate on the local road network in North West Preston. The largest flow increases into Preston would be on Tom Benson Way, the B5411 and to/from M55 J1, which would add to delays on these routes, particularly at the southern junctions around the A5085 which are already congested in 2014. The additional vehicles on the M6 gain access via Lightfoot Lane / Eastway and then the M55 J1, therefore placing more pressure on this critical junction.

The rural road network would also otherwise be forecast to experience large increases in trips concentrated on Lea Road, Lea Lane, Rosemary Lane and Sandy Lane, without intervention. These routes are unsuitable for carrying significant volumes of traffic and in addition to congestion issues, also create road safety concerns as rural roads have higher ratios of KSI (Killed and Seriously Injured) incidents.

Figure 2-16 shows the change in delay (greater than 30 seconds) with the addition of the North West Preston housing development.

Figure 2-16: Change in AM Delay per Vehicle (>30 secs) with NW Preston Housing- without intervention

Figure 2-16 shows that delay is forecast to increase along the Tom Benson Way / Lightfoot Lane and Eastway routes into Preston and towards the A6. The A6 itself and the southern approaches to the M55 J1 are also forecast increased delay with the addition of housing in NW Preston without further intervention.

The increasing delays to 2034 show that there is no spare capacity to access the strategic road network without intervention. Capacity is also required to be created or freed up on the A6 / Tom Benson Way, and better access to Warton promoted to best mitigate and support the impacts of growth in NW Preston, and key growth at this location.

As part of the URS January 2014 work, a series of junction assessments were conducted as part of the North West Preston Masterplan Transport Assessment. The junctions of the existing network along Lightfoot Lane between Tabley Lane and the A6 and the M55 J1 were assessed in an interim scenario for 2023 traffic levels with a proportion of the NW Preston developments committed. The results of the interim scenario show that:

- The Lightfoot Lane / Wychnor junction is forecast to operate over capacity in 2023 and requires improvement;
- The M55 J1 / A6 junction will operate close to capacity in 2023; and
- The Tom Benson Way / Tanterton Hall Road / Tag Lane roundabout will operate close to capacity in 2023.

The Transport Assessment only considers a subset of the junctions in North West Preston but shows that junctions on the Lightfoot Lane corridor between Tag Lane and the A6 / M55 J1 are expected to operate at or

close to capacity in 2023. This corridor and its continuation south via Tom Benson Way or the A6 is also shown to have increasing levels of delay beyond 2019 in the CLHTM model.

The current and future situations show that there is limited capacity at present, with high, widespread levels of congestion, limited ability to access key growth locations by suitable roads, and limited access to the strategic road network creating significant delay at M55 J1 and J3.

This situation is forecast to deteriorate further to 2019 and beyond, at which point growth cannot be accommodated without significantly worsening delays and congestion and therefore increasing travel times and detrimentally affecting on air quality across the Preston District, making Preston a less attractive location for business to locate or invest.

Problem 6: Future housing and business growth constraints

Large scale housing developments are planned in North-West Preston in line with Central Lancashire Core Strategy, but are only being granted planning consent with requirements for associated highway improvements, including a PWD scheme as proposed in the Central Lancashire Masterplan.

The expansion of technology-based businesses with a high value output including the Lancashire Enterprise Zone is constrained by traffic congestion and difficulty in attracting skilled labour due to problems of commuting on congested network.

From each of the above sources of evidence, and future issues associated with continued growth on the Preston and wider Central Lancashire networks, the following problems have therefore been identified that need to be addressed by a transport intervention:

1. **Congestion** in the morning and evening peak periods cause poor journey time reliability and lengthy travel times for strategic east-west and north-south traffic through Preston. It is causing delays and frustration for motorists and increased CO2 emissions.
2. **Poor access to Warton Enterprise Zone** is a major constraint and issue to accessing the strategic road network from one of the fastest growing Enterprise zones in the country.
3. **Unreliable bus journey times**. Bus journeys have long journey times and poor reliability, notably on the A6 corridor, due to lack of capacity on the existing road network.
4. **Accidents**. There are parts of the road network in and around Preston with accident rates higher than national average. High accident rates is a heavy burden to local economy as accidents have a high cost of prevention and result in unreliable journey times to all travellers.
5. **Air pollution** in central Preston is exacerbated by congestion and slow traffic. Levels of nitrous oxide have exceeded thresholds. Four Air Quality Management Areas are now in place in central Preston and forecast increases in traffic and development will further increase emissions within the AQMAs.
6. **Future housing and business growth constraints**. Large-scale housing developments are planned in North-West Preston in line with Central Lancashire Core Strategy, but cannot be granted planning consent until the capacity of the highway network has been improved. The expansion of technology-based businesses with a high value output including the Lancashire Enterprise zone is constrained by traffic congestion and difficulty in attracting skilled labour due to the problems of commuting.

2.4 The Need for Intervention

As previously demonstrated, the transport network in and around Preston is already reaching a critical point in terms of the level of both the level and comprehensiveness of congestion- being present on all key arterial and radial routes to and from the City as well as key employment locations on its edges- which leads to poor private and public transport journey time reliability, accidents, and excessive concentrations of air pollution.

The level of new development proposed in the adopted Central Lancashire Core Strategy would add high volumes of additional traffic onto already extremely busy roads around the north and west of Preston- evidenced from both future forecasts of traffic patterns, and Transport Assessment of core development proposals.

The Central Lancashire Highways and Transport Masterplan (CLTM) adopted in 2013 represents the County Council's priorities for future investment in highways and transport across Central Lancashire. The CLTM proposed a package of multi-modal transport interventions to address the needs and priorities of the local area identified in the Central Lancashire Core Strategy.

Creating extra capacity has been recognised as key to accommodating new development, improving the most important bus corridors and enhancing 'public realm' to encourage sustainable travel and economic growth.

One of the key public transport interventions identified in the CLTM is Cottam Parkway rail station that will likely be situated to the south of Cottam between the existing Salwick and Preston rail stations on the soon to be electrified Preston-Blackpool line.

The Cottam Parkway Station is dependent on the provision of improved highways access to the most likely site south of Cottam. However, the provision of Cottam Parkway is not a pre-requisite of a highways scheme in North West Preston.

A key feature of the Masterplan is that **highway and public transport interventions shall be implemented alongside each other to enable planned new development to go ahead**, achieve marked improvements for local communities and their environment and allow significant complimentary improvements to sustainable travel provisions.

Based on the current evidence and approved future year plans, any proposed option needs to capable of supporting the delivery of the following outputs and benefits:

- 5,000+ new dwellings in the North West Preston strategic housing location;
- Significantly improved access to the Enterprise Zone at Warton, and to support future growth;
- Reduced congestion on radial and arterial routes to and from Preston;
- Facilitate the provision of a new 'parkway' railway station at Cottam on the soon to be electrified Preston to Blackpool North railway line to serve the North West Preston strategic housing location and enhance local rail connectivity; and
- Facilitate the provision of bus priority and public realm improvements on routes into Preston from the north and west.

2.5 The Requirement for a Strategic Intervention

In accordance with DfT guidance, a range of different modes have been considered when identifying potential options that could resolve the problems identified in Section 2.3.

However, as the section will demonstrate there are significant challenges in the uptake of standalone non-highways solutions. This does not, however, imply that the public transport interventions are not viable as complimentary measures in tackling the identified problems.

As discussed in the previous sections key issue is the scale and extent of congestion on the existing highways network. This primarily affects access to and from the strategic road network at junctions 1 and 3 of the M55 and arterial routes to Preston (the A6, A5085, A583, A582, A59, Eastway and Tom Benson Way). In addition, the Central Lancashire Core Strategy identifies North West Preston as a strategic housing location which will accommodate 5,000+ new homes. An option must address the significant increase in demand for travel generated by residents of the new housing in addition to the congestion caused by the existing level of demand.

The Transport Assessment (URS, January 2014) of the North West Preston Masterplan states the number of additional trips on the highway network in the AM and PM peak hours resulting from the new housing. The additional two-way flow in the AM Peak hour is stated as 2,315 vehicles per hour and in the PM Peak hour this is 2,822 vehicles per hour. Figure 2-17 shows the TA travel to work trip distribution from North West Preston.

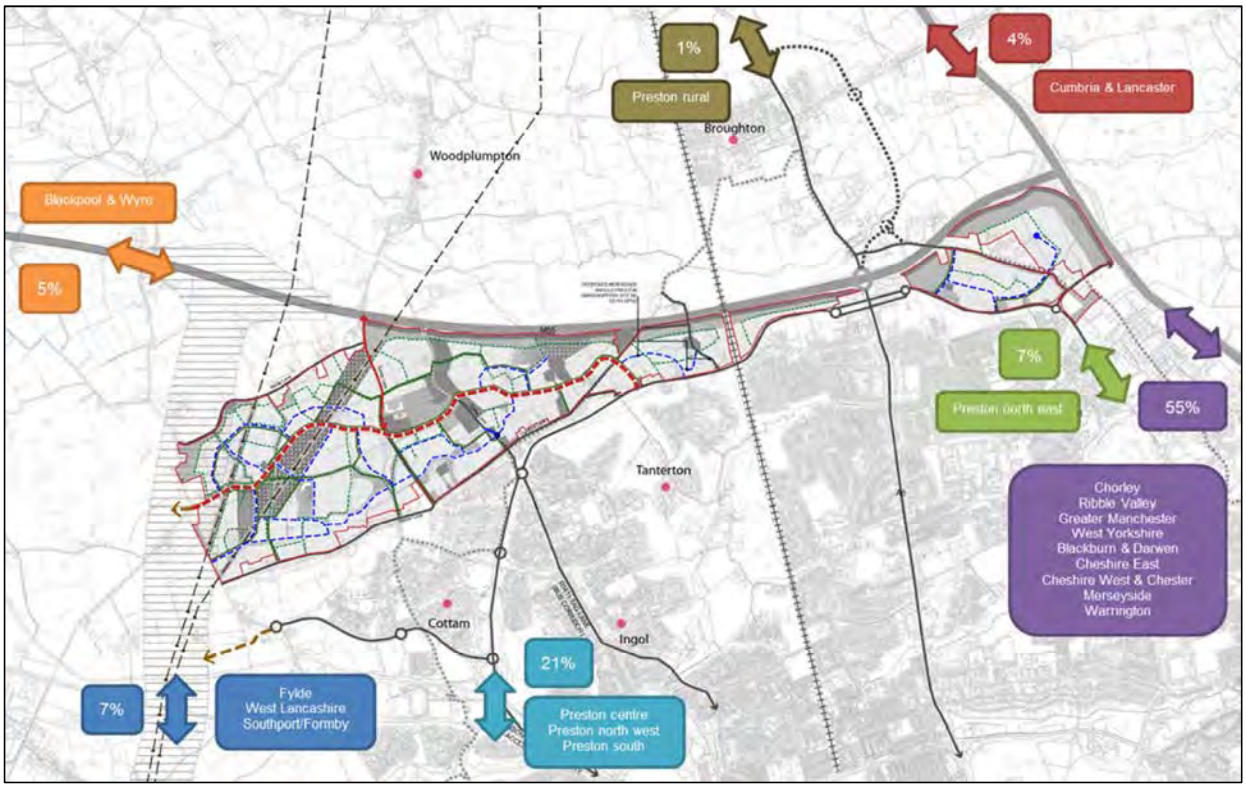

Figure 2-17: North West Preston Transport Assessment - Travel to Work Trip Distribution

In total, 55 % of workplace trips are estimated to use the M6 south of the M55, thereby placing additional strain on the strategic road access at M55 J1.

Combined trips to Preston and Leyland are forecast at 21% and a further 7% to Fylde and West Lancashire. Travel to these locations from the NW Preston housing site will primarily mean travelling towards Preston city centre and then onwards into Preston itself or continue southwards across the Ribble for Leyland and West Lancashire destinations.

The Central Lancashire Core Strategy also identifies the locations of employment growth within Central Lancashire. Key to Preston is the development of the Warton and Samlesbury Enterprise Zones, East Preston and Preston city centre. The spread of employment centres over a wide area causes a wide distribution of trips which limits the impact that bus and smarter choice options can achieve, particularly to Warton due to its relative isolation from the rail network and large residential areas.

The spread of employment centres over a wide catchment area causes a wide distribution of trips which limits the impact that bus and smarter choice options can achieve, particularly to Warton due to its relative isolation from the rail network and large residential areas.

Additional Warton bus services to the current Number 68 bus (Preston-Blackpool) would need to cover long routes with lower population densities which may be difficult to support commercially at an enhanced level of frequency.

The North West Preston strategic housing location is predominantly located on green field sites which are currently accessed by a traditional rural road network unsuitable for a large increase in demand. A developer-funded East-West Link Road is to be built between Lightfoot Lane and Lea Lane to the west of Cottam to provide direct access to the housing sites. Any option should complement this East-West Link Road by providing a viable access route from the housing sites to employment and leisure facilities that relieves pressure on the rural road network and the Lightfoot Lane corridor, particularly the Eastway / A6 / M55 J1 junctions. A highways based option is considered to offer the optimum solution to the unsuitability of the traditional road network in North West Preston and will unlock access to the housing development sites and complement the planned East West Link Road scheme.

Given the scale and location of proposed housing and employment development sites and the subsequent wide distribution of trips across Preston and Central Lancashire stated above, the likely modal shift from car to sustainable transport alternatives is unlikely to be sufficiently large enough to have a significant impact on congestion.

As was demonstrated in section 2.3 above if all the demand from the proposed housing sites is removed from the network, delay is still expected to worsen and be at critical levels by 2034 on all major arterial routes to and from Preston, Warton and the strategic road network north of Preston. Therefore, even if all the demand from the proposed housing sites could ever even be taken up by sustainable transport modes, the performance of the current road network will continue to deteriorate, meaning longer journey times and reducing the willingness of businesses to locate in and around Preston.

In terms of alternative options of a significant enough scale, the DfT commissioned a study into the effects of smarter choice travel measures between 2004 and 2008. The effect of the measures in the 3 designated Sustainable Travel Towns (Darlington, Peterborough and Worcester) was an overall reduction in all vehicle traffic at a city scale of broadly 2%, whilst within the inner areas of the towns, the reductions were in the order of 6% - 8%. During the period population or employment growth was in the order of 1.1% - 9.6%.[1]

[1] The effects of Smarter Choice programmes in the Sustainable Travel Towns: full report (DfT, March 2010), Chapter 17: Traffic

The Central Lancashire Highways and Transport Masterplan concluded that a major programme of sustainable transport improvements could potentially reduce car trips by 5% at a city scale by 2026. This is a greater reduction than that seen in the Sustainable Transport Towns, however the 5% reduction in car trips does not compensate for National Trip End Model (NTEM) forecast car traffic growth of 19% - 22%[2] in Preston over 12 years to 2026, thus defining the need for a strategic highways option based on accommodating not just the current levels of traffic but critically the planned levels of future traffic growth.

The potential 5% reduction in car trips due to sustainable transport improvements does not compensate for forecast car traffic growth of 19% - 22% in Preston over 12 years to 2026 (based on DfT NTEM data), thus defining the need for a strategic highways option to accommodate the planned levels of future traffic growth, supported by sustainable alternatives.

In addition, the implementation of a highways based option has the potential not just to create capacity for private vehicles but for enhanced public transport and walking and cycling measures too.

This is because reducing congestion enables existing bus users to benefit from reduced journey times and better reliability and potentially new bus and cycling routes to be established, including cycle tracks alongside new roads. Proposals for a new rail station (Cottam Parkway) with a strong focus on Park and Ride will also benefit from a strategic highways intervention. Therefore, public transport measures should be viewed as a given component of future strategic highways based intervention.

Table 2-5 provides a list of potential public transport and smarter travel options, derived through discussion with officers, together with a commentary on their fit with the need for intervention and consideration of their compatibility with a strategic highways intervention.

Table 2-5: Sustainable Transport Options - Fit with the Need for Intervention

Public Transport and Smarter Travel Options	Fit with the Need for Intervention
Increased frequency of existing bus services	Bus services currently experience long journey times and poor journey time reliability due to congestion, making bus travel unattractive and unlikely to generate a significant modal shift from car users.
Additional bus services linking more locations	
Park and Ride bus sites servicing A-road corridors	This option does not address the access needs of new housing in NW Preston or job growth at Warton.
Bus priority measures	The road network experiences congestion and road space is at a premium. Bus priority measures would reduce capacity for other road users and modelled results show the modal shift to bus is not high enough to compensate.
Provide real time passenger information	This option is unlikely to attract sufficient car users to address the growth in demand.
Improved parking at rail stations	Preston railway station on Fishergate in the centre of Preston already has 1000 car parking spaces and is used primarily for trips outside of Preston. Salwick station in Fylde is the first station on the Preston-Blackpool line but is a remote rural station with a limited service frequency unsuitable for the development of park and ride facilities.

[2] NTEM forecast adjusted for fuel and income forecasts.

Public Transport and Smarter Travel Options	Fit with the Need for Intervention
Cottam Parkway new Park and Ride rail station	Access from the existing road network would be from unsuitable rural roads from Lea Road or Sidgreaves Lane. This option is complementary to any highways option that unlocks access to the proposed Cottam Parkway Station site.
Car sharing schemes	The uptake is not forecast to be large enough to compensate for the increased future travel demand as noted from previous testing.
Encouragement of staggered starting hours and flexi-hours	
New / improved cycling routes along arterial routes to Preston	Access to the new housing developments is either on unsuitable rural roads or congested routes which discourages potential cyclists. Similarly, the relatively remote location of Warton discourages cycling trips.
Enhanced walking routes including new pedestrian crossing facilities and traffic separation	Access to Warton and the NW Preston housing developments for employment and other services is likely to involve longer distances for which walking is less suited.

It is concluded that a standalone PT or smarter travel choice option would not be sufficient to meet the need for intervention and the resulting scheme objectives. The preferred option would need to be a highways solution.

However, delivery of 5,000+ new homes could provide an opportunity to encourage sustainable forms of transport. Table 2-6 describes the complimentary sustainable travel options and their potential synergy with a highways solution.

Table 2-6: Sustainable Transport Options – Fit with the Highway Solution

Public Transport and Smarter Travel Options	Fit with a highways solution
Increased frequency of existing bus services	With additional capacity these measures will become a more attractive travel option and will complement a strategic highways option. The East-West link will include bus stops so that the majority of the new housing will lie within 400m of a stop.
Additional bus services linking more locations	
Park and Ride bus sites servicing A-road corridors	Accessible park and ride sites may have the potential to free up capacity on Preston's arterial road corridors in the peak periods.
Bus priority measures	Reduced bus travel time and improved reliability caused by this option will increase the attractiveness of bus travel within Preston.
Provide real time passenger information	Improved facilities and travel information will improve the quality of bus travel in Preston.
Improved parking at rail stations	Improved car and bicycle parking at railway stations increases the capacity for interchange between modes and improves the perceived accessibility of the rail network leading to modal shift onto rail. Stations require suitable highways access.
Cottam Parkway new Park and Ride rail station	A proposed new rail station to the south of Cottam between the existing Salwick and Preston stations on the Preston-Blackpool line. Access to the station could be enhanced by a Cottam link to the Preston Western Distributor, making the station suitable for park and ride.
Car sharing schemes	The promotion of car sharing schemes and flexi-hours working within businesses in Preston has the potential to reduce the number of vehicles on the road network and spread the morning and evening peak demand.
Encouragement of staggered starting hours and flexi-hours	

Public Transport and Smarter Travel Options	Fit with a highways solution
New / improved cycling routes along arterial routes to Preston	An increase in cycling trips is an important national and local objective that promotes health through active travel and reduces the number of car journeys. A newly built highways scheme, including the East-West link will include a walking /cycle lane alongside the carriageway. The East-West link is also expected to contain bus stops and the North West Preston development is planned around a 'garden village' layout, one benefit of which is to encourage more active travel.
Enhanced walking routes including new pedestrian crossing facilities and traffic separation	An increase in walking trips for short distance journeys is an important national and local objective that promotes health through active travel and reduces the number of car journeys. Reduction of local congestion resulting from a highways scheme will reduce the severance impact that major roads have on local communities and so encourage more walking trips.

As demonstrated above the implementation of a highways based option has the potential not just to create capacity for private vehicles but for enhanced public transport and walking and cycling measures too, primarily through the redistribution of vehicles onto the new highways infrastructure.

Reducing congestion enables existing bus users to benefit from reduced journey times and better reliability and potentially new bus and cycling routes to be established, including cycle tracks alongside new roads. Proposals for a new rail station (Cottam Parkway) with a strong focus on Park and Ride will also benefit from a strategic highways intervention. Therefore, public transport measures should be viewed as an outcome of future strategic highways based intervention.

Based on the above it was concluded that the preferred option would need to be a highways based solution to fully meet the outcomes of the CLHTM. This solution will be complimented and indeed provide synergy with a set of public transport and sustainable transport measures, such as the development of Cottam Parkway rail station and bus corridor improvements in Preston.

Table 2-6 shows the long list of highways options generated to address the needs of transport users within Preston taking account of local knowledge, consultation options and ideas

Based on the above analysis it is concluded that a preferred option would need to be a highways based solution which will be complimented by a set of public transport and sustainable travel measures to fully meet the outcomes of the CLTM.

3. Objectives Identification

3.1 Introduction

Following the identification of problems and issues (Chapter 2), a set of objectives was defined to address these issues.

The objectives are designed to be consistent with the DfT's Transport Appraisal Guidance (TAG), national priorities and local objectives of Lancashire County Council and of the Lancashire Enterprise Partnership.

The objectives must take account of the wider objectives and aspirations within the Central Lancashire Highways and Transport Masterplan (CLHTM, March 2013). The CLHTM proposed a package of transport interventions to address these issues. The interventions to be delivered in the period to 2026 are:

- Preston Western Distributor;
- Broughton Bypass;
- A582 South Ribble Western Distributor; and
- Improved rail stations and bus corridors (including a new parkway rail station at Cottam).

Beyond 2026, there are proposals for a new Ribble Bridge and SMART motorway on the M6 between J29 and J32.

In addition to the rail station improvements package, Central Lancashire will benefit from the electrification of two rail lines: the Blackpool North – Preston line (now expected to be delivered by March 2017) and Preston – Manchester via Bolton (due by December 2016). Electric trains first began operating between Preston and Liverpool in October 2015. Electrification will allow faster journey times, improved reliability and more capacity on the train services through Central Lancashire.

As a package, the four interventions identified in the CLHTM up to 2026, including the Preston Western Distributor, will increase capacity on the transport networks in Preston and consequently unlock future housing and employment growth, as well as reduce overall levels of congestion.

3.2 Study Objectives

DfT guidance (Transport Analysis Guidance, The Transport Appraisal Process, January 2014) outlines how a clear set of objectives designed to address the identified problems should be set.

This is critical to ensure objective-led transport planning, and the progression of scheme options that best meet required objectives, and thereby, outcomes.

The guidance indicates that objectives should be consistent with the following criteria:

- Be informed by an appropriate level of stakeholder engagement and by a realistic appreciation of the issues and context;
- Reflect opportunities and constraints;
- Reflect underlying causes identified from the evidence base;
- Avoid indications of preferred solutions;
- Be consistent with wider local, regional and national objectives identified; and
- Enable more specific targets to be developed in due course.

Stakeholders were invited to contribute through public consultation held during May and June 2014. The consultation consisted of four local events held at Lea Town, Ingol, Fulwood and Lea engaging affected communities, landowners and parish councils and a questionnaire to log responses. In addition to the above groups, responses were also received from schools, statutory service providers, developers and nature and heritage groups. The consultation focused on the proposed corridor for a Preston Western Distributor and East West Link Road.

The Consultation Report (October 2014) summarises the issues raised and the responses of the County Council, both of which are taken into account when deriving the study objectives. The most frequently raised issues can be categorised into 4 types:

- Air and noise pollution concerns;
- Design and alignment of the proposals;
- Impacts on the existing local network; and
- Negative impacts on the rural environment.

The study objectives have been derived from the evidence in Chapter 2, workshops and consultation to ensure the deliverability of the Central Lancashire Core Strategy and to address the findings of the current situation and future situation as also presented in Chapter 2. The objectives were independently presented for discussion and agreement at an Option Generation Workshop on 6th August 2015 at County Hall, Preston.

The confirmed study objectives are split into two tiers. The three primary objectives are critical to delivery of the Core Strategy and are identified within the CLHTM. The eight supporting objectives relate to the identified problems from Chapter 2. The full set of objectives is listed below:

A. Primary Objectives

1. Unlock capacity for 5,000+ dwellings and their residents in North West Preston;
2. Improve access to the Warton Enterprise Zone site; and
3. Reduce congestion on arterial and radial routes to/from Preston.

B. Supporting Objectives

1. Facilitate access to the proposed Cottam Parkway rail station;
2. Facilitate the implementation of bus priority measures;
3. Facilitate the provision of enhanced walking and cycling networks;
4. Facilitate enhancement of the public realm and local centres;
5. Improve road safety;
6. Improve air quality and reduce noise pollution;
7. Support further housing and employment growth potential in Central Lancashire; and
8. Support the future delivery of a new Ribble Crossing joining with the A582 and A59 routes west of Penwortham.

The adopted study objectives have been used to inform the option generation and appraisal processes that are discussed in more detail in the following chapters of this report.

National planning policies focus on economic growth, job creation and a critical need for additional housing. The 3 primary objectives of the PWD are aimed at directly unlocking access for new housing and job creation in NW Preston and Warton.

The supporting objectives align closely with many national DfT priorities including tackling congestion, improving road safety and encouraging sustainable local travel.

4. Option Generation

4.1 Introduction

An option generation stage was undertaken to ensure that due consideration was given to a wide range of alternative measures or options that could potentially achieve the objectives or a proportion of the study objectives identified in Chapter 3.

In line with TAG guidance, a wide range of possible measures should be considered which cover all modes and potential combinations of options. Highways options only were considered at the workshop following discussion of the points in Section 2.5.

Discussions at the Option Generation Workshop reinforced the view that unsupported bus, rail, smarter choice, walking and cycling options do not adequately address the current and future transportation needs of the Preston urban area given the scale and location of proposed housing and employment development sites and the subsequent wide distribution of trips across Preston and Lancashire. Also, given the existing congestion on the network, there isn't the space for further sustainable transport priority improvements and meanwhile bus services are subject to increasing delay caused by increasing congestion.

As a result, highways options are the only option type capable of addressing the underlying causes of the issues identified in Chapter 2. However, sustainable transport options, such as the development of Cottam Parkway rail station and bus corridor improvements, will complement a highways scheme when incorporated as part of a package of measures as intended in the strategy set out in the CLHTM.

Following the Option Generation Workshop, options were sifted in an independent, transparent and auditable manner to identify the better performing options for further consideration.

4.2 Option Generation Workshop

The first stage of the Option Generation process was to hold a workshop to identify and discuss potential options. The workshop was held on 6th August 2015 at County Hall in Preston.

The workshop began with a review of the identified problems in the Preston District and the primary and supporting study objectives. In line with best practice, this ensured that potential options were driven by the needs of the transport users within the affected area as well as local knowledge, consultation options and ideas to ensure a thorough and comprehensive comparative assessment.

An initial list of 17 potential options to be considered in the study area was generated as shown in Table 4-1 and plotted in Figure 4-1. A broad range of highway options of varying scale were identified.

Reference	Option Description
O-01	Motorway around the south and west of Preston between M6 J28 and M55 J2 (new junction)
O-02	SMART motorway: M6 J28-32 and M55 west of J1 to the M6
O-03	Improvements to increase road capacity between M55 J3 and Warton (A585 and Kirkham Road and/or Bryning Lane)
O-04	Dual carriageway Preston Western Distributor (PWD)
O-05	Northern PWD from M55 J2 (new junction) joining with Cottam Way
O-06	Southern PWD from EWL to A583 / A5085 junction
O-07	Dual carriageway PWD with a new Ribble crossing feeding into the A582 and A59
O-08	Extension of East-West Link eastwards to feed into M55 J1 (J1 to be further upgraded)
O-09	A link between M55 J2 (new junction) and Tom Benson Way (near the Lightfoot Lane roundabout)
O-10	Same as Option O-09 but with a northerly link between M55 J2 and the Broughton bypass junction
O-11	Tom Benson Way dualling and continuation to M55 J1 (J1 to be upgraded)
O-12	Lightfoot Lane and Eastway dualling (west of A6)
O-13	Strategic junctions upgrade package
O-14	Upgrade to local roads from the A5085 to M55 J2 (new junction) (Lea Road route)
O-15	Upgrade to local roads from the A584 to M55 J2 (new junction) (Lea Lane and Rosemary Lane route)
O-16	Single carriageway Preston Weston Distributor
O-17	PWD with a southern junction at A584 (replaces the A5085 / A583 junction)

Table 4-1: Initial Options List

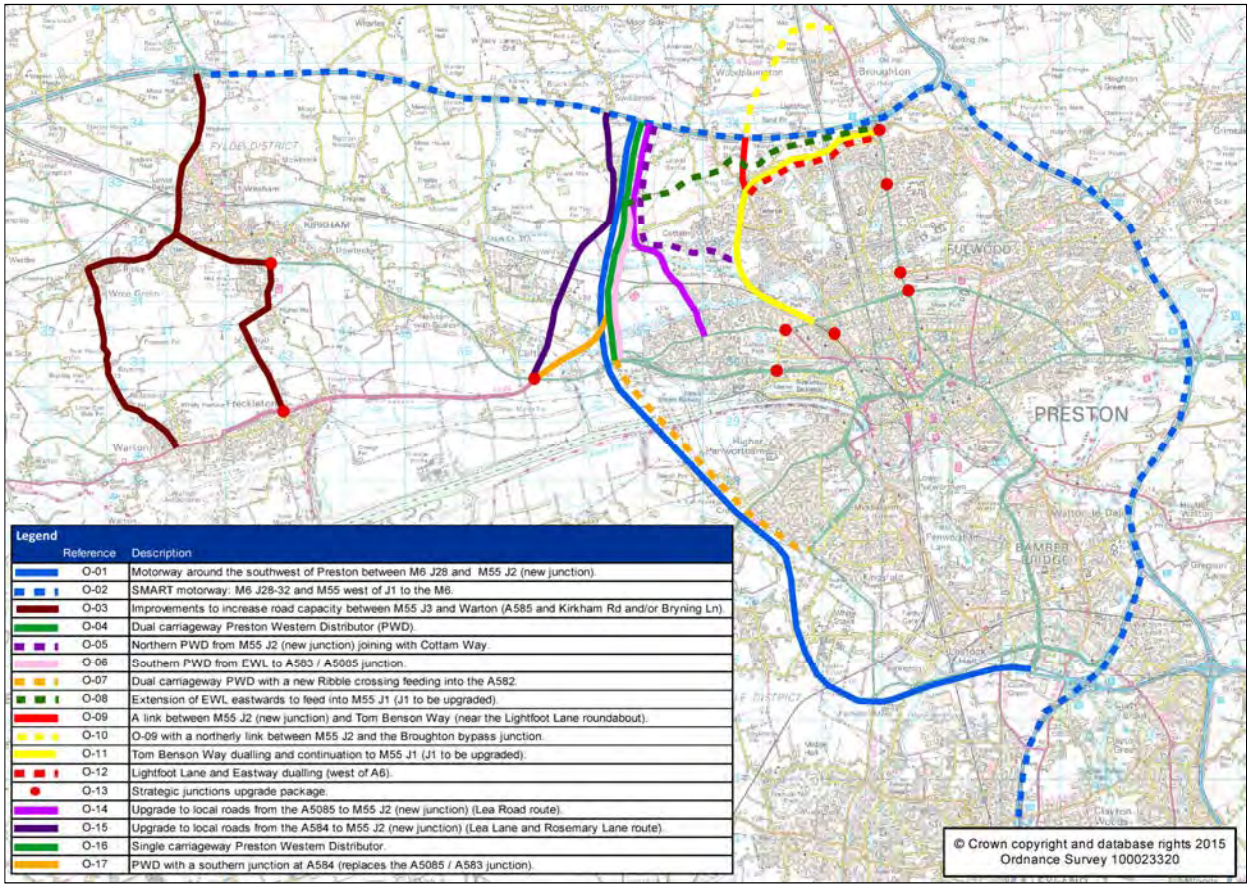

Figure 4-1: Initial Options

Note: The option routes shown are indicative and for display purposes only.
It is assumed that M55 J2 could be moved eastwards to accommodate a shorter West Broughton bypass option (O-09 and O-10).

Three additional options were created by combining individual options where they appeared to offer a stronger strategic fit with the study objectives when considered together.

These additional packaged options are shown below.

Reference	Option Description
O-18	Northern PWD from M55 J2 (new junction) joining with Cottam Way and M55 J3 to Warton improvements
O-19	SMART motorway: M6 J28-32 and M55 west of J1 to the M6 with junction improvements to M55 J1 and J3
O-20	Local road upgrades (Lea Road / Lane) with the dualling of Lightfoot Lane and Eastway (west of A6)

Table 4-2: Packaged Options

In total, 20 options representing a wide range of alternative highway options were taken forward for assessment at the option sifting stage.

5. Option Sifting

5.1 Introduction

The key principle of TAG is that potential improvements are driven by identified problems and defined objectives. This ensures that the need for investment can be clearly justified and evidenced.

As an outcome of the Option Generation process (Chapter 4) 20 discrete options or packages have been identified as potential solutions to the existing and future problems.

Clearly not all of them will be able to meet all the objectives or can be considered feasible / deliverable.

Therefore the next stage within the option development process is to sift out any potential options that clearly fail to meet the defined primary objectives or fail to meet key deliverability / feasibility criteria using multi-criteria analysis in line with WebTAG guidance.

The shortlist of options that progress through the initial sift are then scored against the supporting objectives and the expected cost in order to rank the options in terms of their best overall strategic fit, impact on the problems identified in Chapter 2 and affordability.

The initial sift is discussed in more detail below, followed by a description of the shortlist ranking exercise.

5.2 Initial Sift

The initial sift spreadsheet includes the following components:

- Assessment against primary objectives;
- Feasibility / deliverability assessment; and

Each element of the initial sift is discussed in more detail followed by a summary of the sifting process. Appendix A contains a full version of the initial sift spreadsheet.

5.2.1 Initial Sift: Assessment against Primary Objectives

Each of the 20 potential options identified for further consideration is included in the initial sifting spreadsheet.

Each option is then assessed against how it may help to achieve the primary objectives necessary to deliver the Central Lancashire Core Strategy as defined in Chapter 3.

The primary objectives are repeated here for ease of reference:

1. Unlock capacity for 5,000+ dwellings and their residents in North West Preston;
2. Improve access to Warton Enterprise Zone; and
3. Reduce congestion arterial and radial routes to/from Preston.

The assessment was undertaken using a five-point scale as illustrated in Figure 5-1.

This approach aligns with the strategic and managerial cases considered in the DfT's Early Assessment and Sifting Tool (EAST) to ensure best practice. However, it offers the scope to score multiple objectives individually compared to the single opportunity to assess objectives in EAST (termed the 'fit with other objectives'). This approach gives greater ability to differentiate between the strategic fit of options.

In accordance with the 3 primary objectives, options are scored against:

1. The mitigation of routes from the housing sites to the M55 and towards Preston and the ability to complement the East West Link road in distributing trips from the sites;
2. The provision of enhanced access to Warton Enterprise Zone to facilitate future growth (removing vehicles from Wrea Green, Kirkham Road and central Preston routes); and
3. The ability to reduce congestion on the M55 J1 and existing arterial routes in the Preston urban area.

Qualitative assessment against identified objectives	
2	Large beneficial impact
1	Beneficial impact
0	Neutral / marginal impact
-1	Adverse impact
-2	Large adverse impact

Reference	Option Description	Primary Objectives			
		1	2	3	Total
O-01	Motorway around the southwest of Preston between M6 J28 and M55 J2 (new junction).	1	2	2	5
O-02	SMART motorway: M6 J28-32 and M55 west of J1 to the M6.	0	0	0	0
O-03	Improvements to increase road capacity between M55 J3 and Warton (A585 and Kirkham Rd and/or Bryning Ln).	0	2	0	2
O-04	Dual carriageway Preston Western Distributor (PWD).	2	2	2	6
O-05	Northern PWD from M55 J2 (new junction) joining with Cottam Way.	2	0	1	3
O-06	Southern PWD from EWL to A583 / A5085 junction.	1	1	1	3
O-07	Dual carriageway PWD with a new Ribble crossing feeding into the A582.	2	2	2	6
O-08	Extension of EWL eastwards to feed into M55 J1 (J1 to be upgraded).	1	0	0	1
O-09	A link between M55 J2 (new junction) and Tom Benson Way (near the Lightfoot Lane roundabout).	1	0	1	2
O-10	O-09 with a northerly link between M55 J2 and the Broughton bypass junction.	1	0	1	2
O-11	Tom Benson Way dualling and continuation to M55 J1 (J1 to be upgraded).	2	0	1	3
O-12	Lightfoot Lane and Eastway dualling (west of A6).	1	0	1	2
O-13	Strategic junctions upgrade package.	1	1	1	3
O-14	Upgrade to local roads from the A5085 to M55 J2 (new junction) (Lea Road route).	1	1	1	3
O-15	Upgrade to local roads from the A584 to M55 J2 (new junction) (Lea Lane and Rosemary Lane route).	1	1	1	3
O-16	Single carriageway Preston Western Distributor.	2	2	2	6
O-17	PWD with a southern junction at A584 (replaces the A5085 / A583 junction).	2	2	2	6
Option Packages					
O-18	Northern PWD from M55 J2 (new junction) joining with Cottam Way and M55 J3 to Warton improvements.	2	2	1	5
O-19	SMART motorway: M6 J28-32 and M55 west of J1 to the M6 with junction improvements to M55 J1 and J3.	1	0	1	2
O-20	Local road upgrades (Lea Road / Lane) with the dualling of Lightfoot Lane and Eastway (west of A6).	2	1	2	5

Figure 5-1: Assessment against Primary Objectives

Figure 5-1 shows the scoring against the primary objectives. To progress to the shortlist, an option must make a significant positive contribution towards the primary objectives.

Therefore only options scoring five or six points are taken forward for further assessment.

In summary, dividing the PWD scheme into northern or southern sections greatly limits the impact of the scheme. The overall traffic benefits will be reduced as each alternative only connects to one of the M55 or A583, therefore having a lesser impact on mitigating existing congestion. Access to either the Warton Enterprise Zone or the M55 is compromised if standalone options are considered.

The options concerning the roads in the eastern section of the NW Preston strategic housing location (Lightfoot Lane, Eastway, Tom Benson Way and a Western Broughton bypass) do not address the access needs of the Warton Enterprise Zone. They also route traffic directly onto the already congested A6 with country lanes remaining in the west.

A Western Broughton bypass route (O-10) between the A6 north of Broughton to Tom Benson Way via a new junction on the M55 requires a bridge across the West Coast Mainline. This is the major north-south rail line

through Lancashire and is three tracks wide west of Broughton, meaning the necessary clearance increases the scheme capital and maintenance costs. The Western Broughton bypass route also creates a long diversion away from the direct north-south route offered by the A6 through Broughton to Preston thereby increasing the cost and environmental impact of such an option.

5.2.2 Initial Sift: Feasibility / Deliverability Assessment

To meet the WebTAG multi-criteria analysis requirements, the next stage is to assess each of the potential options against key deliverability and feasibility criteria as listed below.

Deliverability Considerations

1. Political acceptability:-
    a. Who are the key stakeholders?
    b. What level of support is there likely to be from them for the option under consideration?
    c. What level of support is there likely to be from the public for the option under consideration?
    d. Are there any significant environmental impacts for the option under consideration?
2. Planning:-
    a. How far through the planning process is the option under consideration (e.g. not started, part-way through, nearing completion)?
    b. Are there any legal issues e.g. CPO?
3. Implementation timescales / funding likelihood
    a. What is the implementation timescale (e.g. short (less than 2 years), medium (2 to 5 years) and long (greater than 5 years))?
    b. What are the likely funding sources? Are they time-dependent? Is there likely to be a funding gap?
    c. Are there likely to be significant mitigation costs over and above the cost of the option itself?
4. Third Party Issues
    a. Is Third Party land required?
    b. Are there any legal issues e.g. CPO?

Feasibility Considerations

1. Physical constraints
    a. Are there any significant physical constraints that could have a direct impact on the costs and risks associated with the option under consideration e.g. existing structures (viaducts, bridges, retaining walls etc.) or structures required within option design?
2. Land ownership / availability
    a. Will CPO be required?
3. Design standards
    a. Is the option under consideration technically possible from an engineering perspective?

To help inform the deliverability and feasibility judgement, the Preston Western Distributor, East-West Link Road and Cottam Link Road Public Consultation Report (Preston, South Ribble and Lancashire City Deal – Appendix B, October 2014) has been reviewed.

Each of the potential options has been assessed against a three-point scale as illustrated in Figure 5-2.

Options with two or more significant negative deliverability or feasibility considerations from the above items are considered to be ‘very difficult to deliver’ or that ‘significant challenges’ exist. These options have not been progressed for further assessment.

	Deliverability (e.g. political, planning, timescale or third party issues)	Feasibility (e.g. physical constraint, land availability and design standards)
	Deliverable in theory	Feasible in theory
	Deliverable but with challenges	Feasible but with challenges
	Very difficult to deliver	Significant challenges

Reference	Option Description	Deliverability	Feasibility
O-01	Motorway around the southwest of Preston between M6 J28 and M55 J2 (new junction).	Very difficult to deliver	Significant challenges
O-02	SMART motorway: M6 J28-32 and M55 west of J1 to the M6.	Deliverable in theory	Feasible in theory
O-03	Improvements to increase road capacity between M55 J3 and Warton (A585 and Kirkham Rd and/or Bryning Ln).	Deliverable in theory	Feasible but with challenges
O-04	Dual carriageway Preston Western Distributor (PWD).	Deliverable in theory	Feasible in theory
O-05	Northern PWD from M55 J2 (new junction) joining with Cottam Way.	Deliverable in theory	Feasible in theory
O-06	Southern PWD from EWL to A583 / A5085 junction.	Deliverable in theory	Feasible in theory
O-07	Dual carriageway PWD with a new Ribble crossing feeding into the A582.	Deliverable but with challenges	Feasible but with challenges
O-08	Extension of EWL eastwards to feed into M55 J1 (J1 to be upgraded).	Deliverable in theory	Feasible but with challenges
O-09	A link between M55 J2 (new junction) and Tom Benson Way (near the Lightfoot Lane roundabout).	Deliverable in theory	Feasible in theory
O-10	O-09 with a northerly link between M55 J2 and the Broughton bypass junction.	Deliverable but with challenges	Feasible but with challenges
O-11	Tom Benson Way dualling and continuation to M55 J1 (J1 to be upgraded).	Deliverable in theory	Feasible but with challenges
O-12	Lightfoot Lane and Eastway dualling (west of A6).	Deliverable in theory	Feasible in theory
O-13	Strategic junctions upgrade package.	Deliverable in theory	Feasible in theory
O-14	Upgrade to local roads from the A5085 to M55 J2 (new junction) (Lea Road route).	Deliverable but with challenges	Feasible but with challenges
O-15	Upgrade to local roads from the A584 to M55 J2 (new junction) (Lea Lane and Rosemary Lane route).	Deliverable but with challenges	Feasible but with challenges
O-16	Single carriageway Preston Western Distributor.	Deliverable in theory	Feasible in theory
O-17	PWD with a southern junction at A584 (replaces the A5085 / A583 junction).	Deliverable in theory	Feasible in theory
Option Packages			
O-18	Northern PWD from M55 J2 (new junction) joining with Cottam Way and M55 J3 to Warton improvements.	Deliverable in theory	Feasible but with challenges
O-19	SMART motorway: M6 J28-32 and M55 west of J1 to the M6 with junction improvements to M55 J1 and J3.	Deliverable in theory	Feasible in theory
O-20	Local road upgrades (Lea Road / Lane) with the dualling of Lightfoot Lane and Eastway (west of A6).	Deliverable but with challenges	Feasible but with challenges

Figure 5-2: Feasibility and Deliverability Assessment

Option O-01 (Motorway around the Southwest of Preston) fails the deliverability and feasibility criteria due to the likelihood of significant environmental concerns along the route, the longer timescale needed to design and construct the scheme, its likely cost and availability of funding.

5.3 Initial Sift Results

The initial sift results presented above were used to sift-out potential options that are unlikely to provide a significant contribution to the identified problems and defined objectives or are unlikely to be deliverable or feasible. The sifting criteria are illustrated in Figure 5-3.

Initial Sifting Criteria
Each option must meet the following sifting criteria to be considered further:

1: Overall fit with primary objectives (Appraisal score >4)
2: Likely to be deliverable
3: Likely to be feasible

Reference	Option Description	Initial Sifting Criteria			Shortlisted for assessment against supporting objectives
		1	2	3	
O-01	Motorway around the southwest of Preston between M6 J28 and M55 J2 (new junction).	✓	X	X	X
O-02	SMART motorway: M6 J28-32 and M55 west of J1 to the M6.	X	✓	✓	X
O-03	Improvements to increase road capacity between M55 J3 and Warton (A585 and Kirkham Rd and/or Bryning Ln).	X	✓	✓	X
O-04	Dual carriageway Preston Western Distributor (PWD).	✓	✓	✓	✓
O-05	Northern PWD from M55 J2 (new junction) joining with Cottam Way.	X	✓	✓	X
O-06	Southern PWD from EWL to A583 / A5085 junction.	X	✓	✓	X
O-07	Dual carriageway PWD with a new Ribble crossing feeding into the A582.	✓	✓	✓	✓
O-08	Extension of EWL eastwards to feed into M55 J1 (J1 to be upgraded).	X	✓	✓	X
O-09	A link between M55 J2 (new junction) and Tom Benson Way (near the Lightfoot Lane roundabout).	X	✓	✓	X
O-10	O-09 with a northerly link between M55 J2 and the Broughton bypass junction.	X	✓	✓	X
O-11	Tom Benson Way dualling and continuation to M55 J1 (J1 to be upgraded).	X	✓	✓	X
O-12	Lightfoot Lane and Eastway dualling (west of A6).	X	✓	✓	X
O-13	Strategic junctions upgrade package.	X	✓	✓	X
O-14	Upgrade to local roads from the A5085 to M55 J2 (new junction) (Lea Road route).	X	✓	✓	X
O-15	Upgrade to local roads from the A584 to M55 J2 (new junction) (Lea Lane and Rosemary Lane route).	X	✓	✓	X
O-16	Single carriageway Preston Western Distributor.	✓	✓	✓	✓
O-17	PWD with a southern junction at A584 (replaces the A5085 / A583 junction).	✓	✓	✓	✓
Option Packages					
O-18	Northern PWD from M55 J2 (new junction) joining with Cottam Way and M55 J3 to Warton improvements.	✓	✓	✓	✓
O-19	SMART motorway: M6 J28-32 and M55 west of J1 to the M6 with junction improvements to M55 J1 and J3.	X	✓	✓	X
O-20	Local road upgrades (Lea Road / Lane) with the dualling of Lightfoot Lane and Eastway (west of A6).	✓	✓	✓	✓

Figure 5-3: Sifting Criteria

Only those potential options that met all 3 sifting criteria have been selected for further consideration.

The 6 options to pass the initial sift are listed below:

- **Dual carriageway Preston Western Distributor (PWD);**
- **Dual carriageway PWD with a new Ribble crossing feeding into the A582 and A59;**
- **Single carriageway Preston Western Distributor;**
- **PWD with a southern junction at the A584 (replaces the A5085 / A583 junction);**
- **Northern PWD from M55 J2 (new junction) joining with Cottam Way together with M55 J3 to Warton improvements; and**
- **Local road upgrades (Lea Road / Lane) with the dualling of Lightfoot Lane and Eastway (west of A6).**

The assessment also shows that a package of upgrades to strategic junctions scores consistently across the set of problems and objectives and has no major deliverability or feasibility issues. Whilst as an independent option it does not score highly enough to be progressed, specific junction upgrades may deliver additional benefits when combined with the shortlisted options subject to further investigation into junction performance.

5.4 Secondary Sift

Each of the 6 options remaining after the initial sift has been scored according to the expected impact on the supporting objectives. After the fit with the supporting objectives has been determined, the expected scheme cost is considered for financial feasibility.

The assessment is undertaken using a five-point scale as illustrated in Figure 5-4. The supporting objectives are repeated below for reference:

1. Support the delivery of and access to Cottam Parkway rail station (proposed new rail station);
2. Facilitate the implementation of bus priority measures;
3. Facilitate the provision of enhanced walking and cycling networks;
4. Enhance the public realm and local centres;
5. Improve road safety;
6. Improve air quality and reduce noise pollution;
7. Support further housing and employment growth potential in Central Lancashire; and
8. Support the delivery of and access to a new Ribble Crossing joining with the A582 and A59 west of Penwortham.

Qualitative assessment against identified objectives		Expected Cost (£m)
2	Large beneficial impact	<50
1	Beneficial impact	50-100
0	Neutral / marginal impact	100-150
-1	Adverse impact	150-250
-2	Large adverse impact	>250

Reference	Option Description	Secondary Objectives									Expected Cost (£m)
		1	2	3	4	5	6	7	8	Total	
O-04	Dual carriageway Preston Western Distributor (PWD).	2	1	1	1	0	-1	2	2	8	100-150
O-07	Dual carriageway PWD with a new Ribble crossing feeding into the A582.	2	2	1	1	0	-1	2	2	9	>250
O-16	Single carriageway Preston Western Distributor.	2	1	1	1	0	-1	1	1	6	50-100
O-17	PWD with a southern junction at A584 (replaces the A5085 / A583 junction).	2	1	1	1	0	-2	2	1	6	100-150
Option Packages											
O-18	Northern PWD from M55 J2 (new junction) joining with Cottam Way and M55 J3 to Warton improvements.	1	1	1	1	0	-1	1	0	4	50-100
O-20	Local road upgrades (Lea Road / Lane) with the dualling of Lightfoot Lane and Eastway (west of A6).	1	1	1	1	0	-1	1	1	5	50-100

Figure 5-4: Assessment against Supporting Objectives

It can be seen that all options have received a negative score for air quality and noise. For the options including the PWD this is due to expected increase in carbon emissions as a result of longer distance trips, whilst for option 20 this is due to increase in noise and local air quality deterioration as a result of additional traffic on local roads.

Option 0-4: Dual Carriageway PWD

Figure 5-4 shows that the dual carriageway Preston Western Distributor (PWD) scores the second highest of the 6 schemes. It scores consistently across the 8 supporting objectives with the exception of an adverse impact to air quality and noise and a negligible impact on road safety. As a result, the Preston Western Distributor is progressed for further appraisal.

Option 0-7: Dual Carriageway PWD with a new Ribble Crossing feeding into the A582

The highest scoring option overall is the dual carriageway PWD with a new Ribble crossing to the A582 and A59 west of Penwortham. Future construction of a bridge is expected to offer further benefits over the PWD option alone. However, the construction of a new bridge adds significant monetary cost and build time to the base PWD option. For these reasons, the PWD with Ribble crossing option will not be progressed at this point.

Option 0-16: Single Carriageway PWD

The single carriageway distributor road scores less than the dual carriageway proposals because of the limited road capacity which is likely to be a greater issue with further development. The option does not offer the future proofing of the dual carriageway option given the potential construction of a new Ribble crossing in the future.

Whilst likely to be a cheaper option than a dual carriageway, it should be noted that a single carriageway still requires much of the same infrastructure and structures to be built including the junctions and earthworks. However, a single carriageway road does offer a lower cost alternative to the dual carriageway Preston Western Distributor and will be progressed for further appraisal.

Option 0-17: PWD with a southern junction at A584

The PWD with a southern junction at the A583/A584 is likely to produce very similar traffic flow and transport user benefits to the A583/A5085 junction. However, the alternative junction at the A583/A584 forces the alignment closer to Lea Town, meaning potentially worse levels of air and noise pollution for residents. This option also provides a reduced level of future proofing due to the need for a longer Ribble crossing connection compared to the A583/A5085 junction alignment. Therefore this option will not be progressed through further appraisal.

Option 0-18: Northern PWD from M55 J2 joining with Cottam Way and M55 J3 to Warton Improvements

This option combines a northern half of the PWD with M55 J3 to Warton improvements. This package limits the impact of the new M55 J2 and does not offer future potential for a Ribble crossing. Southbound traffic from the M55 and NW Preston strategic housing location will need to route onto Cottam Way and then Tom Benson Way, thereby adding to the existing morning peak hour delays on the approach to Preston, increasing journey times and potentially extending the peak period. Therefore this option will not be progressed through further appraisal.

Option 0-20: Local Road Upgrades (Lea Road / Lane) with the dualling of Lightfoot Lane and Eastway

This option combines a Lea Road or Lea Lane upgrade with the dualling of Lightfoot Lane and Eastway to the A6. However, whilst a Lea Lane route gives access to the Warton Enterprise Zone site, it will not provide access to the proposed Cottam Parkway station and vice versa. A single carriageway solution will not provide the same support for future housing and employment growth. This package does not offer a good connection for a Ribble crossing though some scope may exist at a Lea Lane / A584 junction. This option will not be progressed through further appraisal.

5.5 Conclusion of Sifting Process

Based on the above analysis, the two options to be progressed for more detailed assessment as part of the business case are:

- **Dual carriageway Preston Western Distributor; and**
- **Single carriageway Preston Western Distributor.**

The sifting process shows that the dual carriageway PWD offers the strongest fit with primary and supporting objectives and is therefore considered to be the preferred option.

A single carriageway PWD is a lower cost option and provides a similar strategic fit but has limited potential to future proof the route in the case of further developments or a new Ribble crossing. Therefore a single carriageway PWD is considered to be the 'next best' and 'low cost' option.

These two options will be fully modelled and appraised, with a comparative value for money assessment of each option undertaken.

The results of this assessment will be presented in the Outline Business Case.

6. Summary

This document represents the Options Assessment Report (OAR) for the Outline Business Case (OBC) development of the Preston Western Distributor (PWD) scheme in line with the Department for Transport's Transport Business Case guidance.

The Options Assessment Report has presented the evidence for the current and future situations in the Preston urban area and from that has identified a number of problems and issues as summarised below:

1. **Congestion in the morning and evening peak periods causes poor journey time reliability and lengthy travel times** for strategic east-west and north-south traffic through Preston. It is causing delays and frustration for motorists and increased CO2 and pollutant emissions.
2. **Poor access to Warton Enterprise Zone is a major constraint** and issue to accessing the **strategic road network** from of the fastest growing Enterprise zones in the country.
3. **Unreliable bus journey times**. Bus journeys have long journey times and poor reliability, notably on the A6 corridor, due to lack of capacity on the existing road network.
4. **Accidents.** There are parts of the road network in and around Preston with accident rates higher than national average. High accident rates is a heavy burden to local economy as accidents have a high cost of prevention and result in unreliable journey times to all travellers.
5. **Air pollution in central Preston** is exacerbated by congestion and slow traffic. Levels of nitrous oxide have exceeded thresholds. Four Air Quality Management Areas are now in place in central Preston and forecast increases in traffic and development will further increase emissions within the AQMAs.
6. **Future housing and business growth constraints**. Large-scale housing developments are planned in North-West Preston in line with Central Lancashire Core Strategy, but are contingent upon additional highway and transport network capacity. The expansion of technology-based businesses with a high value output including the Lancashire Enterprise zone is constrained by traffic congestion and difficulty in attracting skilled labour due to the problems of commuting.

Following on from these issues and constraints, a set of primary and supporting objectives have been identified and agreed based upon the identified problems and issues, responses to the stakeholder consultation, the Central Lancashire Transport Masterplan and an independent assessment of the objectives as part of the OAR development.

The three primary objectives are critical to the delivery of the Central Lancashire Core Strategy and the eight supporting objectives address the identified problems.

The full set of objectives is listed below:

A. Primary Objectives

1. Unlock capacity for 5,000+ dwellings and their residents in North West Preston;
2. Improve access to Warton Enterprise Zone; and
3. Reduce congestion on arterial and radial routes to/from Preston.

B. Supporting Objectives

1. Facilitate access to the proposed Cottam Parkway rail station;
2. Facilitate the implementation of bus priority measures;
3. Facilitate the provision of enhanced walking and cycling networks;
4. Facilitate enhancement of the public realm and local centres;
5. Improve road safety;
6. Improve air quality and reduce noise pollution;
7. Support further housing and employment growth potential in Central Lancashire; and

8. Support the future delivery of a new Ribble Crossing joining with the A582 and A59 routes west of Penwortham.

A range of public and sustainable transport options have been considered, including increased bus capacity, bus priority measures, bus and train park and ride facilities, car sharing schemes and new and improved walking and cycling routes.

It has been established that although some of those options can be viable complimentary measures in tackling the identified transport problems in and around Preston there is a need for a highways based intervention as public transport options alone do not adequately address the current and future transportation needs of the Preston urban area given the scale and location of proposed housing and employment development sites and the subsequent wide distribution of trips across Preston and Lancashire. However, sustainable transport options, such as the proposed Cottam Parkway railway station, will complement a highways scheme when incorporated as part of a package of measures, and therefore facilitating access to the station is critical for a future intervention to fully meet the CLTM outcomes.

An initial long list of 20 highways based options was identified at the Options Generation Workshop based on local knowledge, consultation, feedback and independent professional judgement to address the identified problems and objectives.

An initial sift was undertaken which assessed each of the 20 options against the primary objectives and deliverability and feasibility criteria. Six options were subsequently shortlisted.

The six shortlisted options were then scored according to their expected impact on the supporting objectives. After the fit with the supporting objectives has been determined, the expected scheme cost was considered for financial feasibility.

Four options were discarded following the secondary sift, resulting in two options being taken forward for more detailed assessment as part of the business case development. These two options are listed below:

- **Dual carriageway Preston Western Distributor; and**
- **Single carriageway Preston Western Distributor.**

The sifting process shows that a dual carriageway PWD offers the strongest fit with primary and supporting objectives and is therefore considered to be the preferred option. A Preston Western Distributor will increase capacity on the highways and public transport networks in the north and West of Preston to best unlock future housing and employment growth, reduce current and forecast levels of congestion, and promote enhanced accessibility to and from key employment and growth locations.

A single carriageway PWD is a lower cost option and provides a similar strategic fit but has limited potential to future proof the route in the case of further developments or a new Ribble crossing.

Therefore a single carriageway PWD is considered to be the ‘next best’ and ‘low cost’ option.

These two options will be fully modelled and appraised in Stage 2 with a comparative value for money assessment of each option undertaken. The results of this assessment will be presented in the Outline Business Case.

Appendix A. Sifting Spreadsheet

Option Sift

An initial sift of options will be undertaken in line with the guidance set out within TAG Unit 2.1.1.

The initial sift is based upon the 3 primary strategic objectives necessary to deliver the Central Lancashire Core Strategy along with deliverability and feasibility tests to filter out unachievable options. This approach aligns with the strategic and managerial cases considered in the DfTs Early Assessment and Sifting Tool (EAST) to ensure best practice, however this approach offers the scope to score multiple objectives individually compared to the single opportunity to assess objectives in EAST (termed the 'Fit with other objectives'). This approach gives greater ability to differentiate between the strategic fit of options.

Options passing the initial sift will be scored against the supporting objectives and estimated cost of the scheme to rank the options in terms of best overall fit and affordability.

Deliverability (e.g. political, planning, timescale or third party issues)	**Feasibility** (e.g. physical constraint, land availability and design standards)
Deliverable in theory	Feasible in theory
Deliverable but with challenges	Feasible but with challenges
Very difficult to deliver	Significant challenges

Initial Sifting Criteria
Each option must meet the following sifting criteria to be considered further:

1: Overall fit with primary objectives (Appraisal score >4)
2: Likely to be deliverable
3: Likely to be feasible

Qualitative assessment against identified objectives	
2	Large beneficial impact
1	Beneficial impact
0	Neutral / marginal impact
-1	Adverse impact
-2	Large adverse impact

Expected Cost (£m)
<50
50-100
100-150
150-250
>250

Reference	Option Description	Primary Objectives				Deliverability	Feasibility	Initial Sifting Criteria			Shortlisted for assessment against supporting objectives	Supporting Objectives									Overall Score	Expected Cost (£m)
		1	2	3	Total			1	2	3		1	2	3	4	5	6	7	8	Total		
O-01	Motorway around the southwest of Preston between M6 J28 and M55 J2 (new junction).	1	2	2	5	Very difficult to deliver	Significant challenges	✓	x	x	x									0		
O-02	SMART motorway: M6 J28-32 and M55 west of J1 to the M6.	0	0	0	0	Deliverable in theory	Feasible in theory	x	✓	✓	x									0		
O-03	Improvements to increase road capacity between M55 J3 and Warton (A585 and Kirkham Rd and/or Bryning Ln).	0	2	0	2	Deliverable in theory	Feasible but with challenges	x	✓	✓	x									0		
O-04	Dual carriageway Preston Western Distributor (PWD).	2	2	2	6	Deliverable in theory	Feasible in theory	✓	✓	✓	✓	2	1	1	1	0	-1	2	2	8	14	100-150
O-05	Northern PWD from M55 J2 (new junction) joining with Cottam Way.	2	0	1	3	Deliverable in theory	Feasible in theory	x	✓	✓	x									0		
O-06	Southern PWD from EWL to A583 / A5085 junction.	1	1	1	3	Deliverable in theory	Feasible in theory	x	✓	✓	x									0		
O-07	Dual carriageway PWD with a new Ribble crossing feeding into the A582.	2	2	2	6	Deliverable but with challenges	Feasible but with challenges	✓	✓	✓	✓	2	2	1	1	0	-1	2	2	9	15	>250
O-08	Extension of EWL eastwards to feed into M55 J1 (J1 to be upgraded).	1	0	0	1	Deliverable in theory	Feasible but with challenges	x	✓	✓	x									0		
O-09	A link between M55 J2 (new junction) and Tom Benson Way (near the Lightfoot Lane roundabout).	1	0	1	2	Deliverable in theory	Feasible in theory	x	✓	✓	x									0		
O-10	O-09 with a northerly link between M55 J2 and the Broughton bypass junction.	1	0	1	2	Deliverable but with challenges	Feasible but with challenges	x	✓	✓	x									0		
O-11	Tom Benson Way dualling and continuation to M55 J1 (J1 to be upgraded).	2	0	1	3	Deliverable in theory	Feasible but with challenges	x	✓	✓	x									0		
O-12	Lightfoot Lane and Eastway dualling (west of A6).	1	0	1	2	Deliverable in theory	Feasible in theory	x	✓	✓	x									0		
O-13	Strategic junctions upgrade package.	1	1	1	3	Deliverable in theory	Feasible in theory	x	✓	✓	x									0		
O-14	Upgrade to local roads from the A5085 to M55 J2 (new junction) (Lea Road route).	1	1	1	3	Deliverable but with challenges	Feasible but with challenges	x	✓	✓	x									0		
O-15	Upgrade to local roads from the A584 to M55 J2 (new junction) (Lea Lane and Rosemary Lane route).	1	1	1	3	Deliverable but with challenges	Feasible but with challenges	x	✓	✓	x									0		
O-16	Single carriageway Preston Western Distributor.	2	2	2	6	Deliverable in theory	Feasible in theory	✓	✓	✓	✓	2	1	1	1	0	-1	1	1	6	12	50-100
O-17	PWD with a southern junction at A584 (replaces the A5085 / A583 junction).	2	2	2	6	Deliverable in theory	Feasible in theory	✓	✓	✓	✓	2	1	1	1	0	-2	2	1	6	12	100-150
Option Packages																						
O-18	Northern PWD from M55 J2 (new junction) joining with Cottam Way and M55 J3 to Warton improvements.	2	2	1	5	Deliverable in theory	Feasible but with challenges	✓	✓	✓	✓	1	1	1	1	0	-1	1	0	4	9	50-100
O-19	SMART motorway: M6 J28-32 and M55 west of J1 to the M6 with junction improvements to M55 J1 and J3.	1	0	1	2	Deliverable in theory	Feasible in theory	x	✓	✓	x									0		
O-20	Local road upgrades (Lea Road / Lane) with the dualling of Lightfoot Lane and Eastway (west of A6).	2	1	2	5	Deliverable but with challenges	Feasible but with challenges	✓	✓	✓	✓	1	1	1	1	0	-1	1	1	5	10	50-100

Primary Objectives

1 Unlock capacity for 5,000+ dwellings and their residents in North West Preston.
2 Improve access to Warton Enterprise Zone.
3 Reduce congestion on arterial and radial routes to/from Preston.

Supporting Objectives

1 Support the delivery of and access to Cottam Parkway rail station (proposed new rail station).
2 Facilitate the implementation of bus priority measures.
3 Facilitate the provision of enhanced walking and cycling networks.
4 Enhance the public realm and local centres.
5 Improve road safety.
6 Improve air quality and reduce noise pollution.
7 Support further housing and employment growth potential in Central Lancashire.
8 Support the delivery of and access to a new Ribble Crossing with the A582 west of Penwortham.