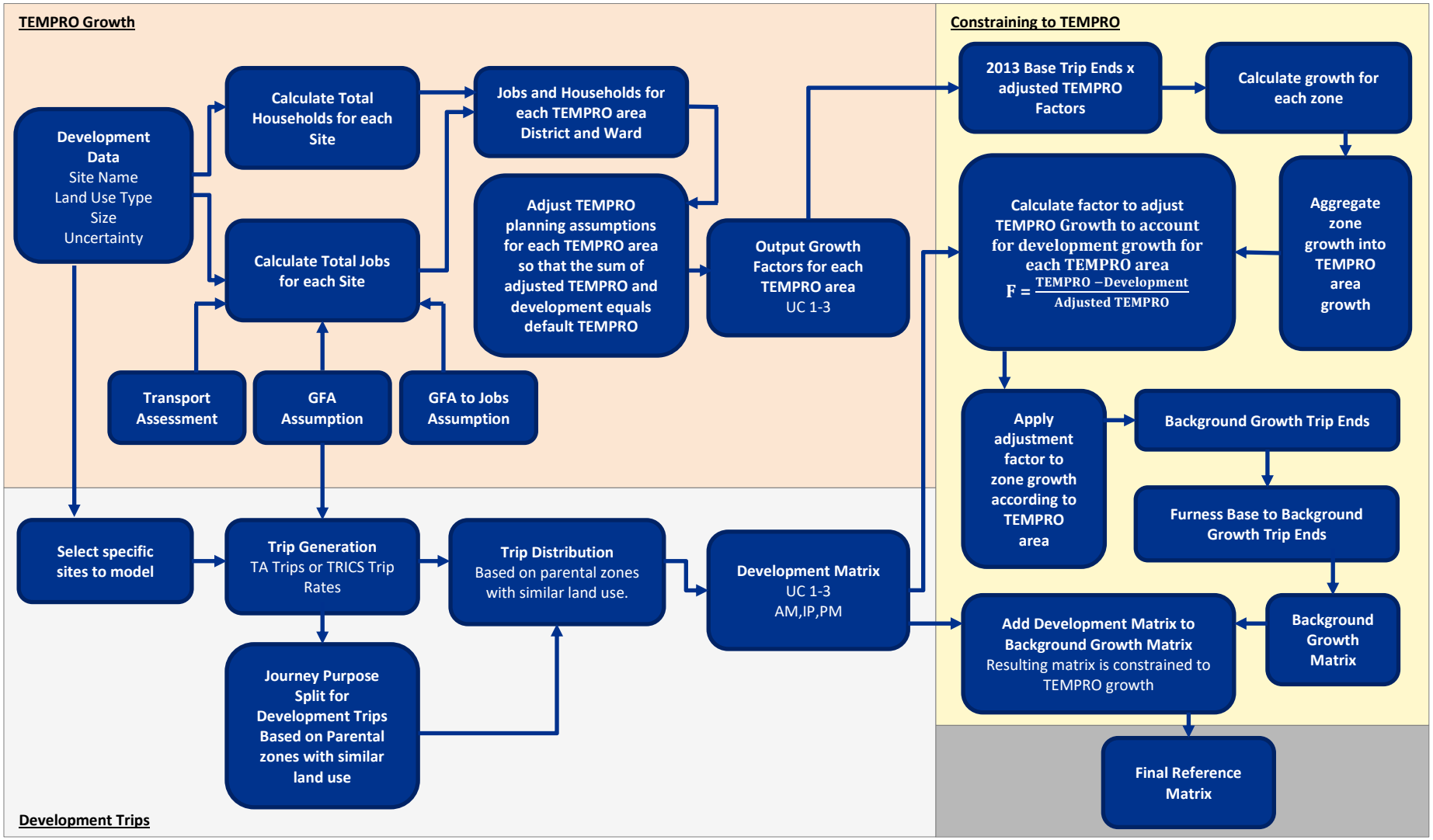

Figure 4-1: Car Reference Forecast Matrix Building Process

4.4 Development Trips

4.4.1 Introduction

In line with TAG Unit M-4, future developments in the vicinity of the scheme should be modelled explicitly rather than as part of growth factors extracted from NTEM.

For each development the modelling process involves estimating the trip generation and trip distribution of the development when fully completed for each time period.

Each development is assigned a model zone (or zones) and the trip distribution uses the model zone system. This provides a development trip matrix which is then added to the forecast matrix derived from applying TEMPRO growth to the base year matrix.

4.4.2 Local Area

TAG Unit M4 requires that uncertainty should be assessed in relation to developments located 'in the vicinity of the scheme' being appraised.

For trunk road improvement schemes such as the PWD, this Local Area should include:

- All district/unitary council areas through which the scheme passes, either in whole or in part;
- Any adjacent district/unitary council areas where the results of the appraisal and design are likely to be sensitive to different development scenarios in those areas.

The Local Area for the PWD scheme is shown in Figure 4-2. It is represented by three TEMPRO district areas in the vicinity of the proposed PWD scheme which satisfy the above criteria: Preston, Fylde and South Ribble. The area generally matches with the simulation network of the CLHTM model and, hence, the appraisal results could be sensitive to developments in that area.

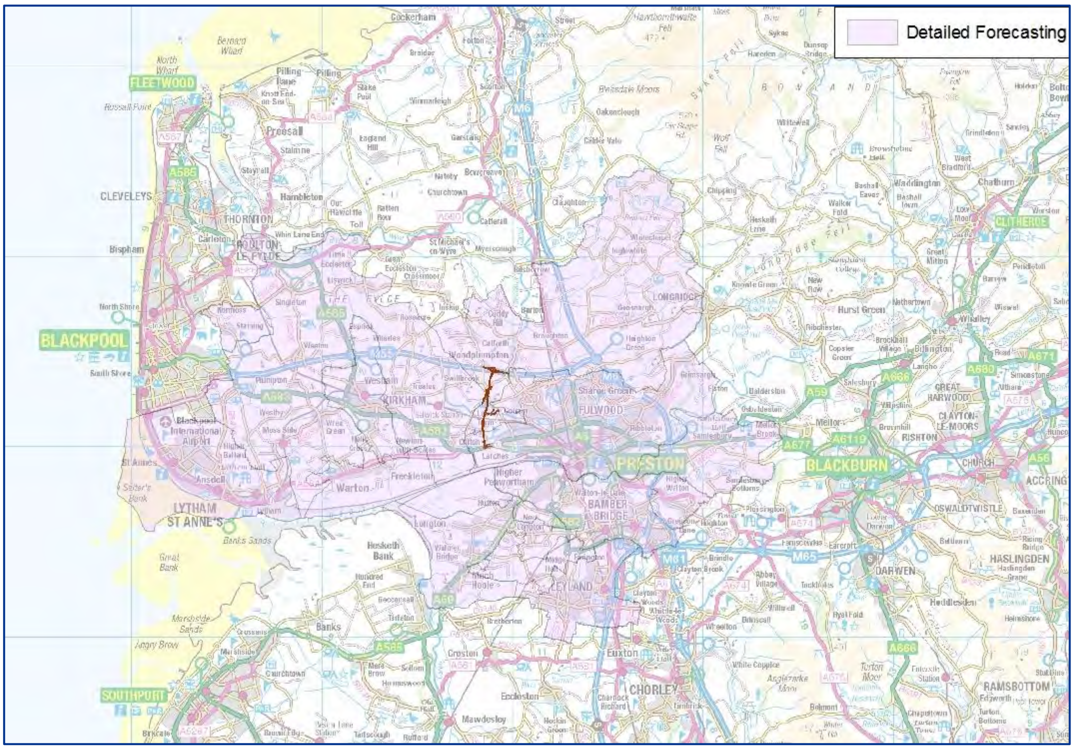

Figure 4-2: Local Area

Trip ends associated with future committed developments within the identified Local Area have been modelled individually and added to the corresponding model zones.

Trip growth associated with future developments in the model zones outside the area have been modelled by applying NTEM v7.2 TEMPRO growth factors to the corresponding model zones.

4.4.3 Uncertainty Log

TAG Unit M-4 recommends the production of an Uncertainty Log to summarise the local planning assumptions in relation to the nature, timing, size and other details of the future developments.

The uncertainty log for the PWD scheme was originally produced in late 2015 in collaboration with local councils as part of the OBC, and further reviewed and updated in 2018 to take into account any change since then. It contains the above information in relation to both housing and employment development sites within the three districts.

As it is not practical to consider every potential development within the defined Local Area, minor developments which are not expected to have any impact on the forecasts have been removed from the uncertainty log. The criteria for removing a development from the uncertainty log have been defined as follows:

- For housing development - <50 dwellings
- For employment development - <30 jobs.

In line with TAG only those development sites which can be categorised as ‘Near Certain’ or ‘More than Likely’ based on the Table A2 of TAG Unit M4 have been included in the Core Scenario which represents the most likely outcome and forms the basis for the scheme appraisal.

The uncertainty log is included as Appendix A to this report.

4.4.4 Trip Generation – Residential Developments

Housing development sites planned within Fylde, Preston and South Ribble are shown Figure 4-3 by level of certainty.

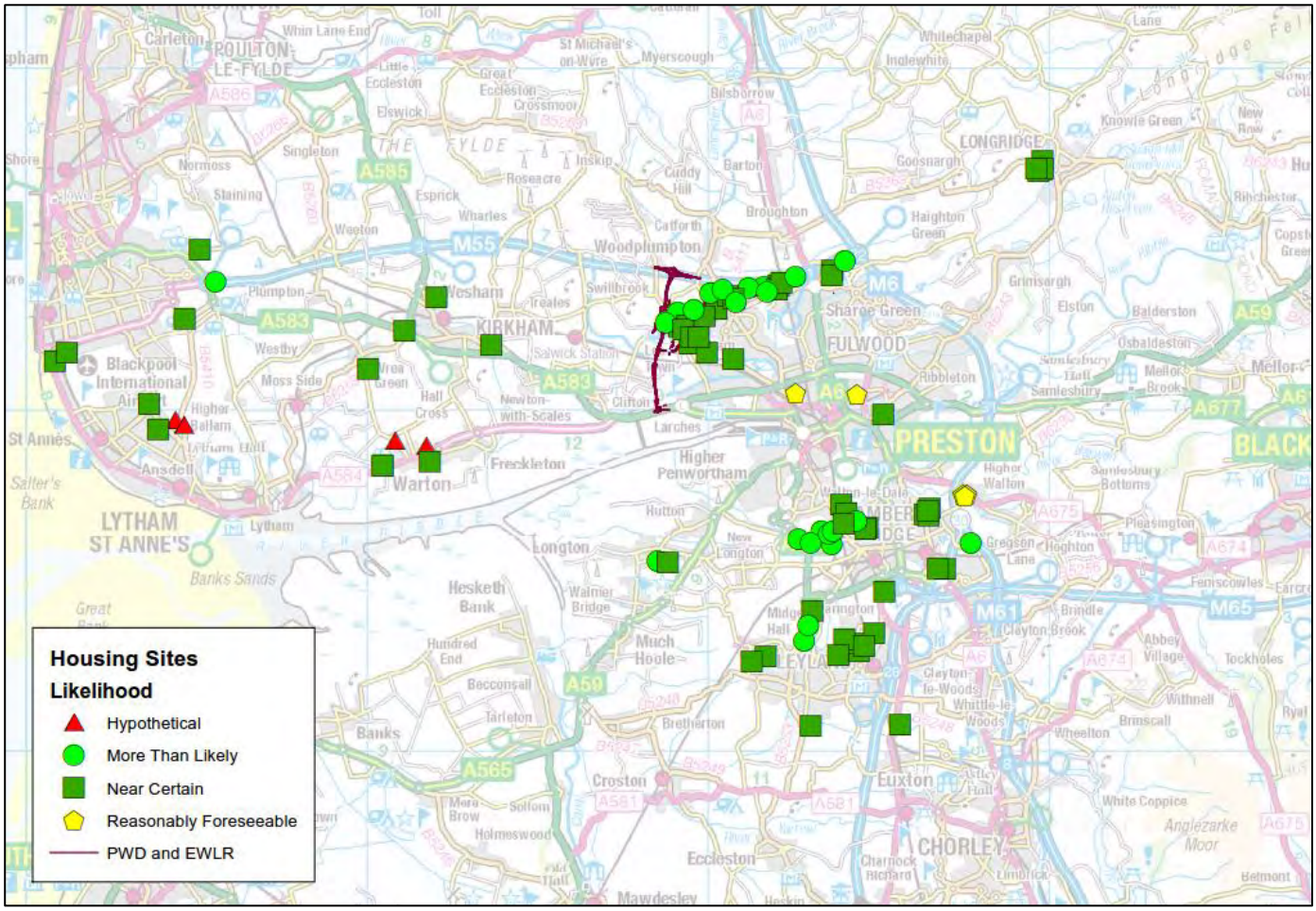

Figure 4-3: Housing Development Sites

There are multiple residential development sites categorised as 'Near Certain' or 'More than Likely' within the uncertainty log. The largest sites in each district meeting these criteria are shown in Figure 4-4 and listed below:

Preston

HS1.15 Former Whittingham Hospital – 650 dwellings

MD1 Cottam Hall – 1300 dwellings

Haydock Grange – 450 dwellings

South Ribble

Pickerings Farm – 1200 dwellings

Moss Side Test Track – 1900 dwellings

Fylde

H1 Land of Queensway, St Annes – 992 dwellings

M2 Whyndyke Farm, Fylde – Blackpool Periphery – 1310 dwellings

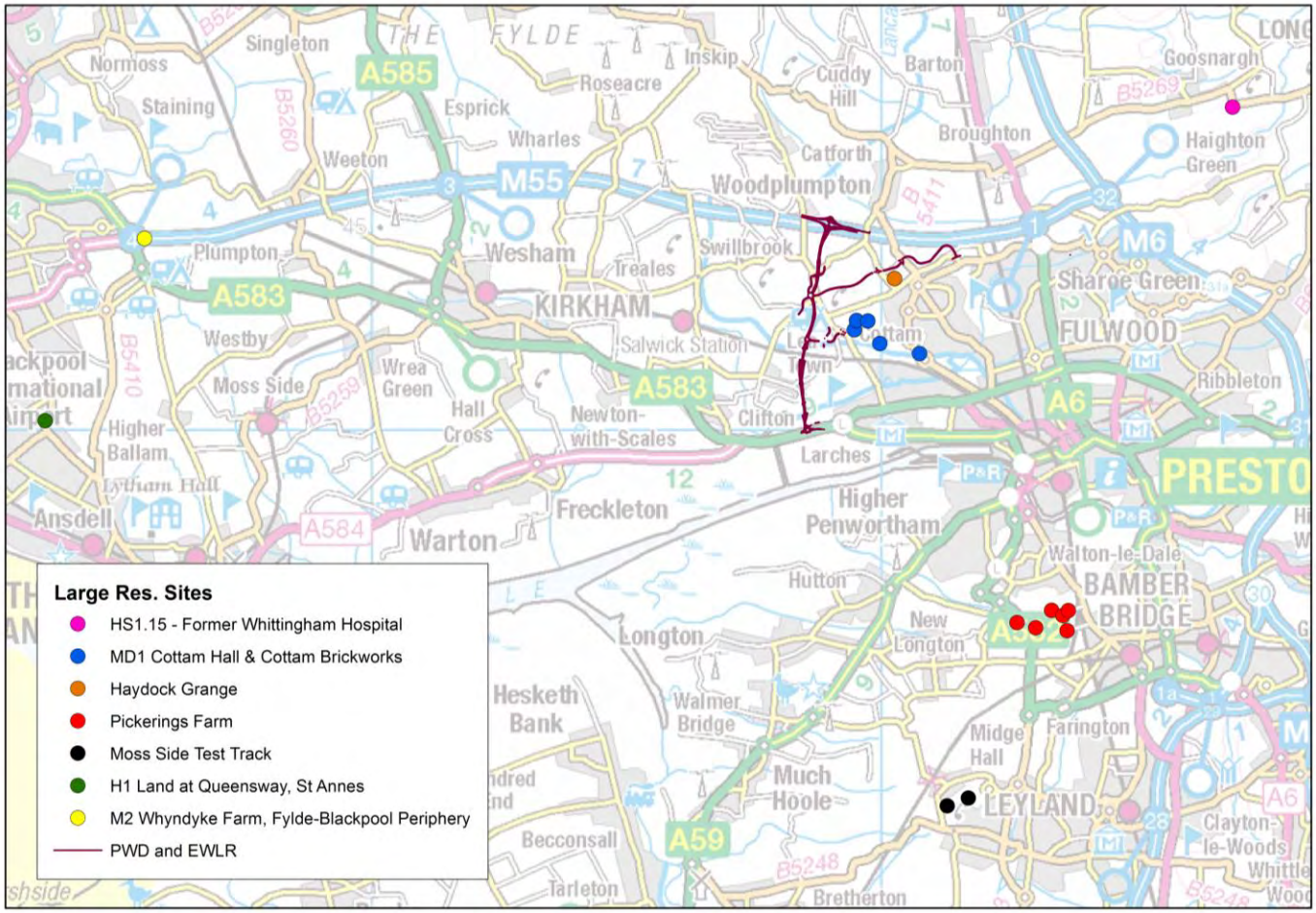

Figure 4-4: Major Housing Development Sites

WebTAG recommends that trip generation for the developments should be consistent with available Transport Assessments. However, given the significant number of residential sites in the local area and to ensure the proportionate approach it has been agreed with the Independent Assurer that a single set of appropriate trip rates would be used across all residential sites. The trip rates were derived from TRICS and were applied to the number of households associated with each development to calculate origin and destination trips.

The TRICS car vehicle trip rates presented in Table 4-A have been calculated using mean average for private housing sites across the North of England.

Table 4-A: Residential Trip Rates

Trip Rate	AM Peak (0800-0900)		Interpeak (1000-1600)		PM Peak (1700-1800)	
	Arrival	Departure	Arrival	Departure	Arrival	Departure
Residential (per dwelling)	0.13	0.39	0.18	0.17	0.33	0.22

To ensure the rates are reasonable they have been benchmarked against the residential trip rates used in the previous studies and found to be appropriate.

4.4.5 Dependent Development Housing

In line with TAG Unit M-4 explicit modelling should be undertaken where the development is potentially dependent on the scheme. However, given that the dependent development is conditional to the provision of the scheme it can only be categorised as Reasonably Foreseeable and therefore should not be included in the Core Scenario.

The North West Preston Development (MD2 in local planning and the uncertainty log) accounts for 5,320 dwellings. During the Outline Business Case stage of the appraisal, and in line with TAG Unit A2.3, a dependency test was undertaken in order to determine whether a certain part of the NWP developments could be built without the PWD, as detailed in Section 4.6 below and Dependency Test note (November 2015).

The test concluded that these developments, with the exception of 450 dwellings at Haydock Grange site, were dependent on the PWD and therefore were not included in the core scenario.

Subsequently, a review of existing planning data identified 5 sites within the NWP development to already have planning permission, either without conditions for developer contributions to the PWD or with no time threshold on such contributions. The 5 sites awarded conditional approvals are:

- Redrow, 330 dwellings;
- Connemara, 125 dwellings;
- Wainhomes Developments, 350 dwellings;
- Hollins Strategic Land Development, 140 dwellings; and
- CEG Development, 350 dwellings.

These 5 sites, comprising around 1300 dwellings, and the 450 dwellings at Haydock Grange were therefore not considered to be dependent developments on the PWD.

Trips generated by the non-dependent part of the NWP development were added to the Core Scenario; whilst the dependent part were used in assessment of the dependent development benefits of the scheme.

4.4.6 Trip Generation – Employment Developments

Employment development sites planned within Fylde, Preston and South Ribble are shown in Figure 4-5 by level of certainty.

Similar to residential developments the ‘Near Certain’ and ‘More than Likely’ employment sites have been identified in the uncertainty log to be included into the Core Scenario, as shown in Figure 4-6 along with their uncertainty log corresponding IDs.

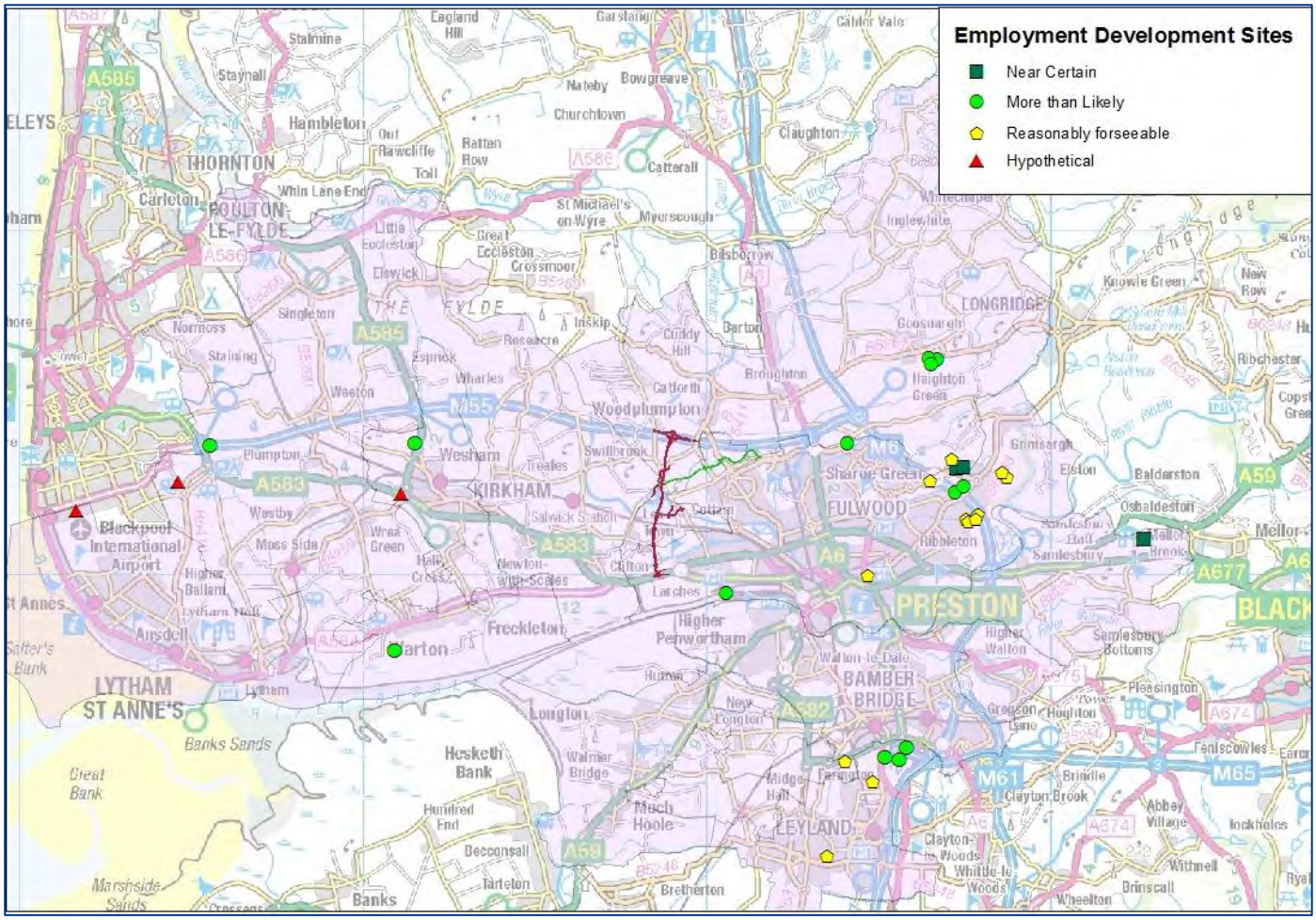

Figure 4-5: Employment Development Sites

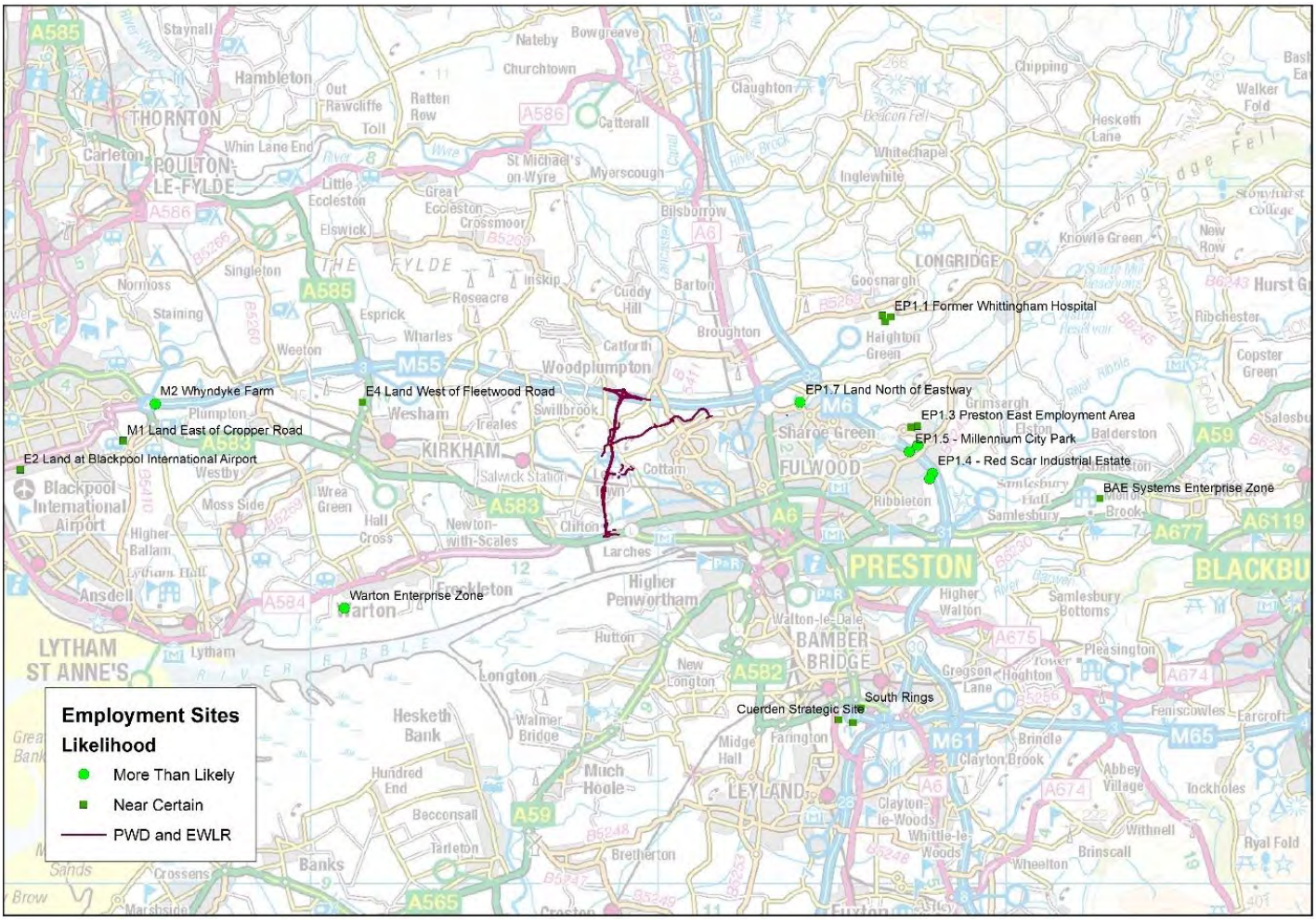

Figure 4-6: More than Likely and Near Certain Employment Development Sites

Transport Assessments and other relevant documents containing estimated trip generation have been reviewed and, where appropriate, were used to derive trip ends for the employment sites.

For the sites which do not have TA's or the information is limited it was agreed to use TRICS trip rates to estimate the trip generation. The TRICS trip rates for employment sites are expressed in vehicle trips per 100sqm of GFA and are presented in Table 4-B below.

Table 4-B: Employment Trip Rates

Trip Rate per 100sqm of GFA	AM Peak (0800-0900)		Interpeak (1000-1600)		PM Peak (1700-1800)	
	Arrival	Departure	Arrival	Departure	Arrival	Departure
B1	1.70	0.24	0.41	0.44	0.13	1.65
B2	0.47	0.17	0.23	0.27	0.09	0.33
B8	0.27	0.14	0.11	0.14	0.03	0.17
D1	0.44	0.07	0.15	0.14	0.13	0.46
D2	0.69	0.81	0.75	0.82	20.4	1.08

Table 4-C below summarises available information and trip generation assumption for employment sites within the local area.

Table 4-C: Employment Development Assumptions

Site	Documents available	Trip Generation	Source of uncertainty on number of jobs	Number of Jobs
M2 Whyndyke Farm, Fylde – Blackpool Periphery	Transport Assessment, Employment Transport Scoping Report	TA	Employment density (GFA to jobs)	1851 jobs
E4 Land West of Fleetwood Road, Wesham	Transport Assessment	TA	Employment density (GFA to jobs)	263 jobs
Warton Enterprise Zone	Consultation Masterplan (2014)	TRICS	Masterplan	1200 jobs
EP1.1 Former Whittingham Hospital	Traffic and Transportation Technical Update Note (Nov 2013)	TA, TRICS for IP	Employment density (GFA to jobs), consistent with information from the Council	750 jobs
EP1.3 Preston East Employment Area	Transport Statement and Travel Plan, Planning Statement	TA, TRICS for IP	TA	1226 jobs
EP1.5 Millennium City Park	Transport Assessment	TA	Employment density (GFA to jobs)	194 jobs
EP1.7 Land North of Eastway	Transport Assessment	TA	Employment density (GFA to jobs)	715 jobs
BAE Systems Enterprise Zone (only partially within the South Ribble zone)	Feasibility Study, Transport Assessment	TA, TRICS for IP	Masterplan	4000 jobs
South Rings	Planning Statement	TRICS	Planning Statement	297 jobs
Cuerden Strategic Site	Masterplan, Transport and Access	TA	Council Website	4500 jobs
M1 Land East of Cropper Road, Fylde-Blackpool	Transport Assessment	TA	Employment density (GFA to jobs)	529 jobs
EP1.4 – Red Scar Industrial Estate	Employment Site Proforma	TRICS	Employment density (GFA to jobs)	1259 jobs

In case of Warton EZ employment density factors were applied to convert the future 1200 jobs at Warton EZ to the GFA.

Conversely where an employment site did not have any reliable information available on the number of jobs the employment density factors were used to convert the GFA by use class extracted from the TAs into the number of jobs for each site.

The GFA to Jobs factors were derived from the Table of Employment Densities contained within the Employment Density Guide 2015 3rd edition and shown in Figure 4-7.

Use Class	Sub-Category	Sub-Sector	Density (sqm)	Notes
B1a Offices	General Office	Corporate	13	NIA
		Professional Services	12	NIA
		Public Sector	12	NIA
		TMT	11	NIA
		Finance & Insurance	10	NIA
	Call Centres		8	NIA
B1b	R&D Space		40-60	NIA lower densities will be achieved in units with higher provision of shared or communal spaces
B1c	Light Industrial		47	NIA
B2	Industrial & Manufacturing		36	GIA
B8	Storage & Distribution	National Distribution Centre	95	GEA
		Regional Distribution Centre	77	GEA
		'Final Mile' Distribution Centre	70	GEA
Mixed B Class	Small Business Workspace	Incubator	30-60	B1a, B1b – the density will relate to balance between spaces, as the share of B1a increases so too will employment densities.
		Maker Spaces	15-40	B1c, B2, B8 - Difference between 'planned space' density and utilisation due to membership model
		Studio	20-40	B1c, B8
		Co-Working	10-15	B1a - Difference between 'planned space' density and utilisation due to membership model
		Managed Workspace	12-47	B1a, b, c
B8 / Sui Generis	Data Centres	Wholesale	200-950	
		Wholesale Dark Site	440-1,400	
		Co-location Facility	180-540	
A1	Retail	High Street	15-20	NIA
		Foodstore	15-20	NIA
		Retail Warehouse	90	NIA
A2	Finance & Professional Services		16	NIA
A3	Restaurants & Cafes		15-20	NIA
C1	Hotels	Limited Service / Budget	1 per 5 beds	FTE per bed
		Mid-scale	1 per 3 beds	FTE per bed
		Upscale	1 per 2 beds	FTE per bed
		Luxury	1 per 1 bed	FTE per bed
D2	Fitness Centres	Budget	100	GIA
		Mid Market	65	GIA – both types tend to generate between 40-50 jobs per gym
		Family		
	Cinema		200	GIA
	Visitor & Cultural Attractions		30-300	The diversity of the cultural attraction sector means a very wide range exists
	Amusement & Entertainment Centres		70	Potential range of 20-100sqm

Figure 4-7: Table of Employment Densities

4.4.7 Journey Purpose Split

In line with the WebTAG for scheme appraisal the car trips within the CLHTM model have been broken down into user classes representing three journey purposes: Commute, Business and Others.

Therefore, trip ends generated by future developments have been disaggregated further by journey purpose.

This was achieved by applying base year journey purpose proportions of the corresponding model zone.

However, where a land use is expected to significantly change from the base year, the journey purpose split from a zone with the similar land use has been applied.

4.4.8 Trip Distribution

Given that the majority of the developments are large sites allocated to 'greenfield zones' the parental zone distribution approach was used to distribute the development trips.

The parental zones were selected to represent the same area and similar land use as the development zones.

For example, Pickerings Farm residential trips were distributed based on the distribution currently used for the Lower Penwortham zones in the base model.

The distributed trips to and from each development site formed a final development matrix so that trip ends could be calculated and summed up for each TEMPRO area, the development trip ends for each TEMPRO area were then used in calculating background growth and constraining to TEMPRO.

4.5 Background Growth

4.5.1 Introduction

The National Trip End Model (NTEM v7.2) provides growth factors for forecasting changes in car trips between the model base year and each forecast year.

Within the TEMPRO software are a set of adjustable planning assumptions which predict the number of households and jobs per TEMPRO zone for each year between 2011 and 2051.

Given that the development matrix accounts for some of the trips associated with the increase in numbers of jobs and houses within the local area, the planning assumptions within TEMPRO need to be adjusted accordingly to avoid the double counting.

WebTAG recommends that this can be achieved by deducting the number of households or jobs associated with the developments from the number in the NTEM zone that the developments are located in.

TEMPRO then generates growth factors based on adjusted assumptions which exclude the explicitly modelled developments.

The TEMRPO factors, are then applied to the base year matrix to calculate the background growth.

The background growth trip ends are further adjusted to ensure that the total of the background growth trip ends and development matrix trip ends match the TEMPRO forecast growth at a district and overall model scale.

4.5.2 TEMPRO Areas and Alternative Assumptions

As described in Section 4.4 the total number of jobs and households associated with future developments were estimated and aggregated by NTEM zone.

Table 4-D and Table 4-E below demonstrate the uncertainty log assumptions and TEMPRO default planning assumptions for the three districts within the Local Area.

As it can be seen there are a number of NTEM zones where development jobs and households exceed the TEMPRO predicted numbers.

This implies that adjusting the number of jobs and households in TEMPRO downwards by the amount of development jobs and houses would result in negative background growth for some NTEM zones.

Table 4-D: Jobs and Households Assumptions 2022 (NTEM7.2 vs Local Planning Data)

NTEM Zones for Local Growth Assumptions	2022					
	Local Plan		TEMPRO Development Growth		Difference (TEMPRO - Local Plan)	
	HH	Jobs	HH	Jobs	HH	Jobs
Fylde	**1,576**	**1,608**	**1,528**	**1,157**	**-48**	**-451**
Fylde 001	229	727	131	170	-98	-557
Fylde 002	75	75	201	120	126	45
Fylde 003	75	0	106	60	31	60
Fylde 004	800	463	145	110	-655	-353
Fylde 005	0	0	168	58	168	58
Fylde 006	0	0	227	229	227	229
Fylde 007	397	343	148	195	-249	-148
Fylde 008	0	0	218	51	218	51
Fylde 009	0	0	185	165	185	165
Preston	**1,380**	**2,045**	**3,436**	**2,857**	**2,056**	**812**
Preston 001	213	539	172	57	-41	-481
Preston 002	491	0	189	54	-302	54
Preston 003	0	0	219	43	219	43
Preston 004	0	780	170	701	170	-79
Preston 005	68	0	161	30	93	30
Preston 006	0	0	193	1	193	1
Preston 007	0	97	239	164	239	67
Preston 008	0	0	166	52	166	52
Preston 009	0	630	237	119	237	-511
Preston 010	608	0	157	211	-451	211
Preston 011	0	0	162	28	162	28
Preston 012	0	0	291	37	291	37
Preston 013	0	0	274	33	274	33
Preston 014	0	0	192	90	192	90
Preston 015	0	0	127	97	127	97
Preston 016	0	0	206	126	206	126
Preston 017	0	0	280	1,013	280	1,013
South Ribble	**3,063**	**1,348**	**3,530**	**1,365**	**467**	**16**
South Ribble 001	0	0	165	48	165	48
South Ribble 002	0	1,200	198	43	198	-1,157
South Ribble 003	0	0	200	17	200	17
South Ribble 004	84	0	229	65	145	65
South Ribble 005	177	0	185	26	8	26
South Ribble 006	126	0	204	27	78	27
South Ribble 007	0	0	193	138	193	138
South Ribble 008	333	0	198	270	-135	270
South Ribble 009	346	0	240	36	-106	36
South Ribble 010	80	0	183	89	103	89
South Ribble 011	0	0	267	51	267	51
South Ribble 012	1,066	148	226	134	-840	-14

NTEM Zones for Local Growth Assumptions	2022					
	Local Plan		TEMPRO Development Growth		Difference (TEMPRO - Local Plan)	
	HH	Jobs	HH	Jobs	HH	Jobs
South Ribble 013	79	0	236	161	157	161
South Ribble 014	552	0	159	106	-393	106
South Ribble 015	0	0	214	33	214	33
South Ribble 016	220	0	226	88	6	88
South Ribble 017	0	0	207	33	207	33

Table 4-E: Jobs and Households Assumptions 2037 (NTEM7.2 vs Local Planning Data)

NTEM Zones for Local Growth Assumptions	2037					
	Local		TEMPRO Development Growth		Difference (TEMPRO - Local Plan))	
	HH	Jobs	HH	Jobs	HH	Jobs
Fylde	**4,683**	**6,843**	**4,124**	**3,126**	**-559**	**-3,717**
Fylde 001	1,459	2,380	354	436	-1,105	-1,944
Fylde 002	609	263	542	360	-67	97
Fylde 003	170	0	286	209	116	209
Fylde 004	1,749	3,000	391	240	-1,358	-2,760
Fylde 005	0	0	452	150	452	150
Fylde 006	0	0	612	501	612	501
Fylde 007	696	1,200	398	654	-298	-546
Fylde 008	0	0	589	167	589	167
Fylde 009	0	0	500	409	500	409
Preston	**4,740**	**4,145**	**8,534**	**6,890**	**3,794**	**2,745**
Preston 001	1,104	1,118	431	165	-673	-953
Preston 002	2,222	0	476	187	-1,746	187
Preston 003	0	0	542	123	542	123
Preston 004	0	1,574	421	1,433	421	-141
Preston 005	130	0	401	67	271	67
Preston 006	0	0	477	150	477	150
Preston 007	0	194	593	366	593	172
Preston 008	0	0	413	116	413	116
Preston 009	0	1,260	586	310	586	-950
Preston 010	1,170	0	389	513	-781	513
Preston 011	0	0	403	141	403	141
Preston 012	0	0	724	454	724	454
Preston 013	0	0	680	117	680	117
Preston 014	114	0	476	258	362	258
Preston 015	0	0	316	230	316	230
Preston 016	0	0	510	253	510	253
Preston 017	0	0	694	2,008	694	2,008
South Ribble	**7,534**	**4,297**	**8,256**	**3,620**	**722**	**-677**
South Ribble 001	0	0	386	124	386	124
South Ribble 002	0	4,000	465	154	465	-3,846

NTEM Zones for Local Growth Assumptions	2037 Local		2037 TEMPRO Development Growth		2037 Difference (TEMPRO - Local Plan))	
	HH	Jobs	HH	Jobs	HH	Jobs
South Ribble 003	0	0	468	66	468	66
South Ribble 004	84	0	536	168	452	168
South Ribble 005	267	0	433	73	166	73
South Ribble 006	1,159	0	478	65	-681	65
South Ribble 007	0	0	452	267	452	267
South Ribble 008	511	0	463	722	-48	722
South Ribble 009	575	0	559	119	-16	119
South Ribble 010	80	0	429	193	349	193
South Ribble 011	0	0	623	147	623	147
South Ribble 012	2,107	297	529	416	-1,578	119
South Ribble 013	231	0	552	362	321	362
South Ribble 014	1,900	0	372	260	-1,528	260
South Ribble 015	0	0	499	181	499	181
South Ribble 016	220	0	527	220	307	220
South Ribble 017	400	0	484	84	84	84

It was recognised that potential negative background growth factors were to be avoided, and therefore a two-part solution was proposed to overcome this issue.

The first part of the solution was to aggregate the jobs and households assumptions by Authority NTEM areas rather than the NTEM zones.

However, even when aggregated at the authority level there were still more jobs associated with planned development in Fylde and South Ribble than predicted by NTEM.

The following sites accounted for most of the future houses and jobs in Fylde and South Ribble identified in the Uncertainty Log:

- Residential Site: H1 Land of Queensway, St Annes (992 dwellings)
- Employment Site: Whyndyke Farm Development
- Employment Site: Samlesbury sites - BAE Systems Enterprise Zone
- Employment Site: Cuerden Strategic Site
- Employment Site: E2 Land at Blackpool International Airport

The two employment sties which account for most of the future jobs in Fylde and South Ribble are the Whyndyke Farm Development and the Samlesbury Enterprise Zone. Queensway residential is the largest housing development in Fylde. As demonstrated in Figure 4-8, these sites are located at the boundary of the Local Area and partly fall into the adjacent TEMPRO areas. This allows us to assume that only a certain proportion of the housing and future jobs generated by those developments can be attributed to Fylde and South Ribble.

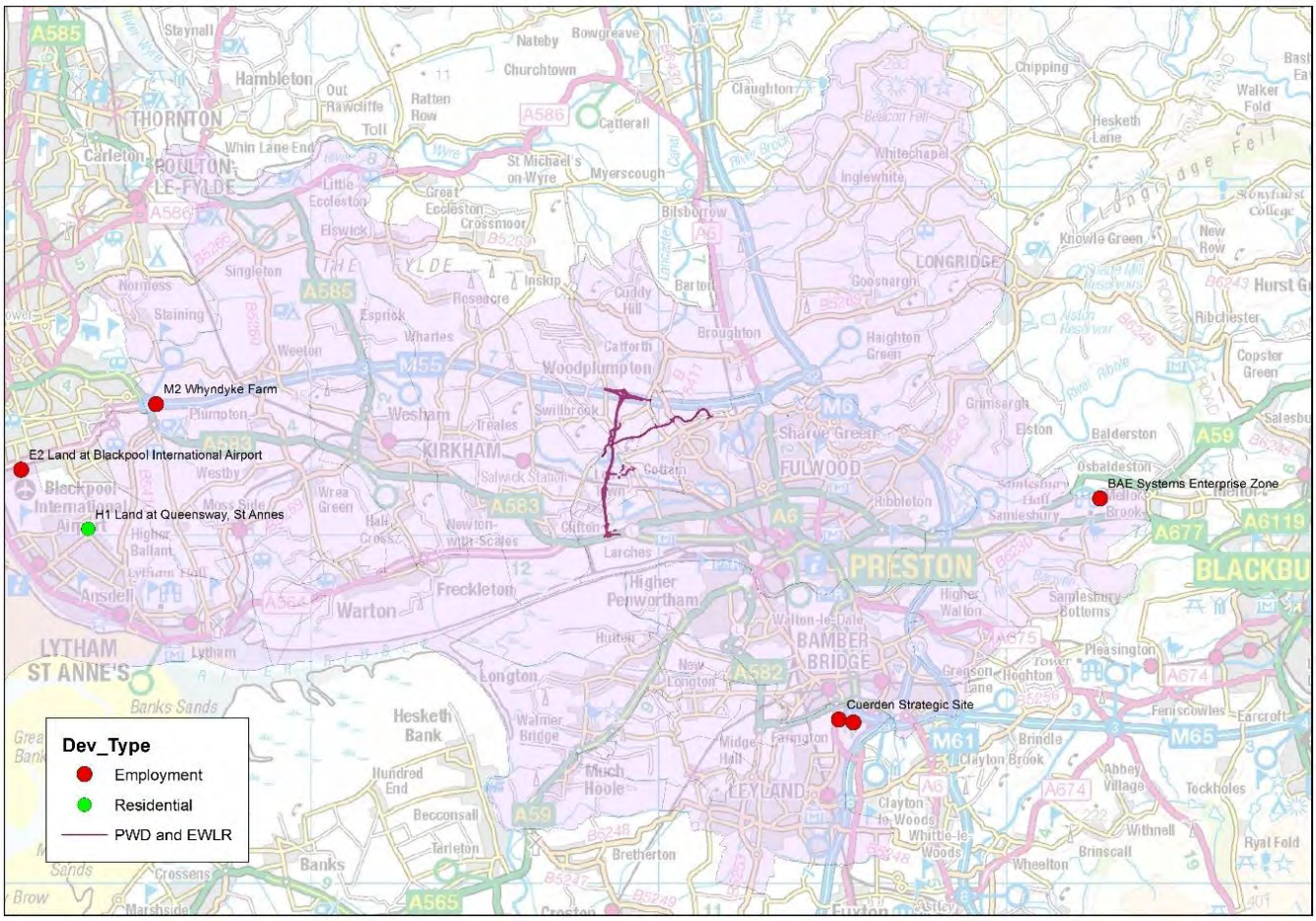

Figure 4-8: Employment Sites at the Boundary of the Local Area

The Central Lancashire Masterplan suggests that the BAE site is “of regional importance and will contribute towards the employment of Central Lancashire and the North West Region as a whole”. It has therefore been assumed that approximately 1/3 of all jobs from this site should be allocated to South Ribble. This was consistent with the number of jobs calculated for the BAE using the Employment Density factors.

The Whyndyke Farm site is partly located in Blackpool and therefore the difference in numbers of jobs between local planning data and TEMPRO forecasts (951 jobs) could be attributed to Blackpool.

The numbers of jobs for the two sites have been updated as shown in Table 4-F.

Table 4-F: Revised Jobs Assumptions

Development Site	Original Number of Jobs	Revised Number of Jobs
Whyndyke Farm	1851	900
BAE Systems EZ (Samlesbury)	4000	1270

The Blackpool International Airport and Queensway development sites fall into the Blackpool southern zone, which is a large buffer zone. Therefore, it was decided to fully exclude these sites from the local plan and consider them as part of the background growth traffic in Blackpool.

Moreover, the Cuerden Strategic site is planned to accommodate around 4500 jobs within South Ribble. The Cuerden site lies in TEMPRO zone ‘South Ribble 012’. Table 4-E shows that the default TEMPRO growth for this zone in 2037 has just 119 more jobs than in the base year. It is clear that NTEM 7.2 does not contain provision for the Cuerden site which is expected to be fully built out in 2037 and for which the planning application was conditionally approved in December 2017.

Whilst Cuerden is a key employment development site with planning commitment in place, in order to comply with TEMPRO growth, the full Cuerden site was omitted from the Core growth scenario.

Its impact on the traffic flows in the study area and the PWD benefits have been tested using an alternative Core+ scenario, with the Cuerden Strategic Site in place.

The above approach allowed the Core Matrices to be constrained to TEMPRO as recommended by WebTAG and ensure that there are no zones with negative growth between the base and the forecast year unless so forecast by TEMPRO.

Figure 4-9 shows how the CLHTM model zones are allocated to TEMPRO areas for the purpose of calculating the background growth.

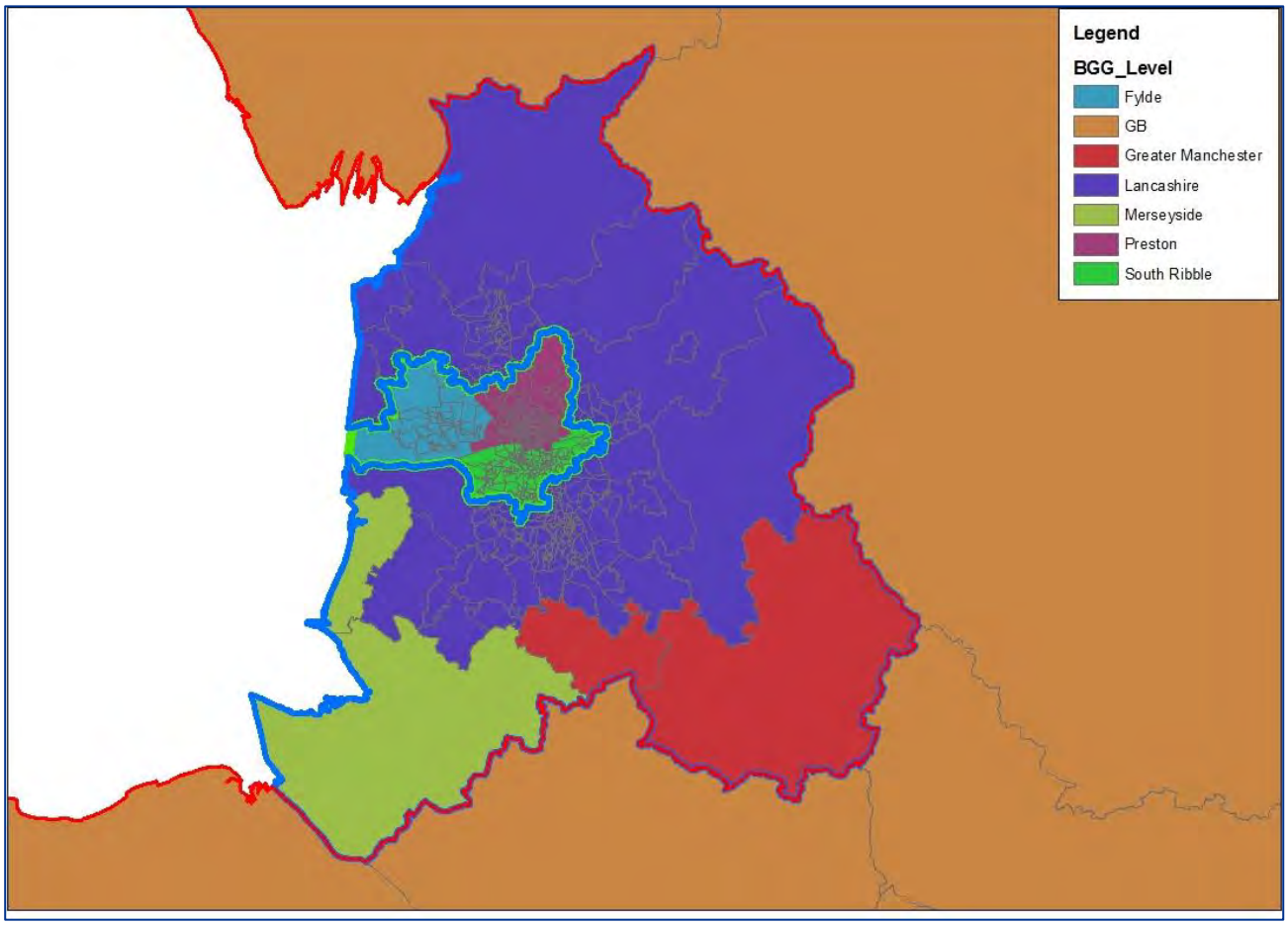

Figure 4-9: TEMPRO to CLHTM zone correspondence

The model zones within the Local Area were increased by the adjusted TEMPRO factors for the corresponding districts.

The zones outside the Local Area were increased by unadjusted TEMPRO factors for either the corresponding County area or the GB depending on how far away they are from the scheme.

4.5.3 Background Growth Calculation and Constraining to TEMPRO

After applying the alternative assumptions on number of jobs and households the adjusted growth factors for the three districts by journey purpose and time period were calculated in TEMPRO.

The forecast demand growth then needed to be constrained to TEMPRO forecast growth.

The adjusted factors for the three district areas and unadjusted factors for other zones were applied to the base year demand of the corresponding model zones. The growth due to TEMPRO in each TEMPRO area was then further adjusted based on the following factor:

$$F = \frac{Default\ TEMPRO\ Growth - Development\ Trips}{Adjusted\ TEMPRO\ Growth}$$

This creates a revised growth for each TEMPRO area which represents final background growth, i.e. growth not including development.

It should be noted that external to external trips are not affected by the development growth and therefore they were excluded from the background growth calculation. These trips were factored by default TEMPRO NTEM v7.2 growth for the corresponding area and added to the final forecast matrices to ensure the through traffic is present in the model.

4.5.4 Trip Distribution and Reference Forecast Matrix

The base matrix was furnessed to the background growth trip ends to create a background growth trip matrix, using the furnessing process (doubly constrained) in SATURN.

The development matrix was then added to the background growth matrix to create a final Core reference forecast matrix constrained to TEMPRO. Subsequently, these matrices were used in the variable demand model, pivoted from the base year skim costs to capture the changes in demand pattern as a result of the travel cost changes. The impacts of VDM on demand are further discussed in Section 5.4.

4.6 2042 Car Matrices

Given there is no data on local developments between 2037 and 2042, a simplified approach was used to create the 2042 matrices.

The 2037 to 2042 default factors by journey purpose and time period were extracted from TEMPRO (NTEM v7.2) and applied to the 2037 background growth trip ends.

The Furnessing process was then used to distribute the trips using the base matrices as a basis for applying growth.

4.7 Dependency Test

One of the key objectives of the Preston Western Distributor scheme is to unlock future housing development in North West Preston (over 5,000 houses), which is a critical driver for the LEP, and the government as part of the agreed City Deal.

WebTAG categorises new development that is dependent on the provision of a transport scheme as Dependent Development. In the case of the PWD scheme, dependency refers to land use development that cannot be realised without the introduction of the PWD.

Given that the dependent development is conditional to the provision of the scheme and to ensure a fair comparison between With and Without Scheme scenarios WebTAG suggests that the dependent development should not be included in to the Core matrices and therefore the benefits associated with the trips generated by the dependent development would not be included in calculation of the Value for Money of the scheme.

To determine the level and extent of dependency of the development on the scheme the guidance suggests that new housing is dependent on the provision of the transport scheme if, with the new housing, but in the absence of the transport scheme, the transport network would not provide a 'reasonable level of service' to existing and/or new users.

The full detail of the process and results of the dependency test can be found in the Dependency Test Technical Note (November 2015).

Initially based on the WebTAG methodology the North West Preston and Cottam Developments have been identified as potentially dependent on the PWD scheme. Both of these sites are demonstrated in Figure 4-10.

However, given that all of the Cottam Hall development and a part of the North West Preston (Haydock Grange Development) have already been granted planning permission they cannot be treated as dependent on the PWD and therefore they were included into the Core scenario.

The remaining developments in the North West Preston have been recognised as dependent on the PWD based on the results of the dependency test and therefore these developments were excluded from the Core scenario.

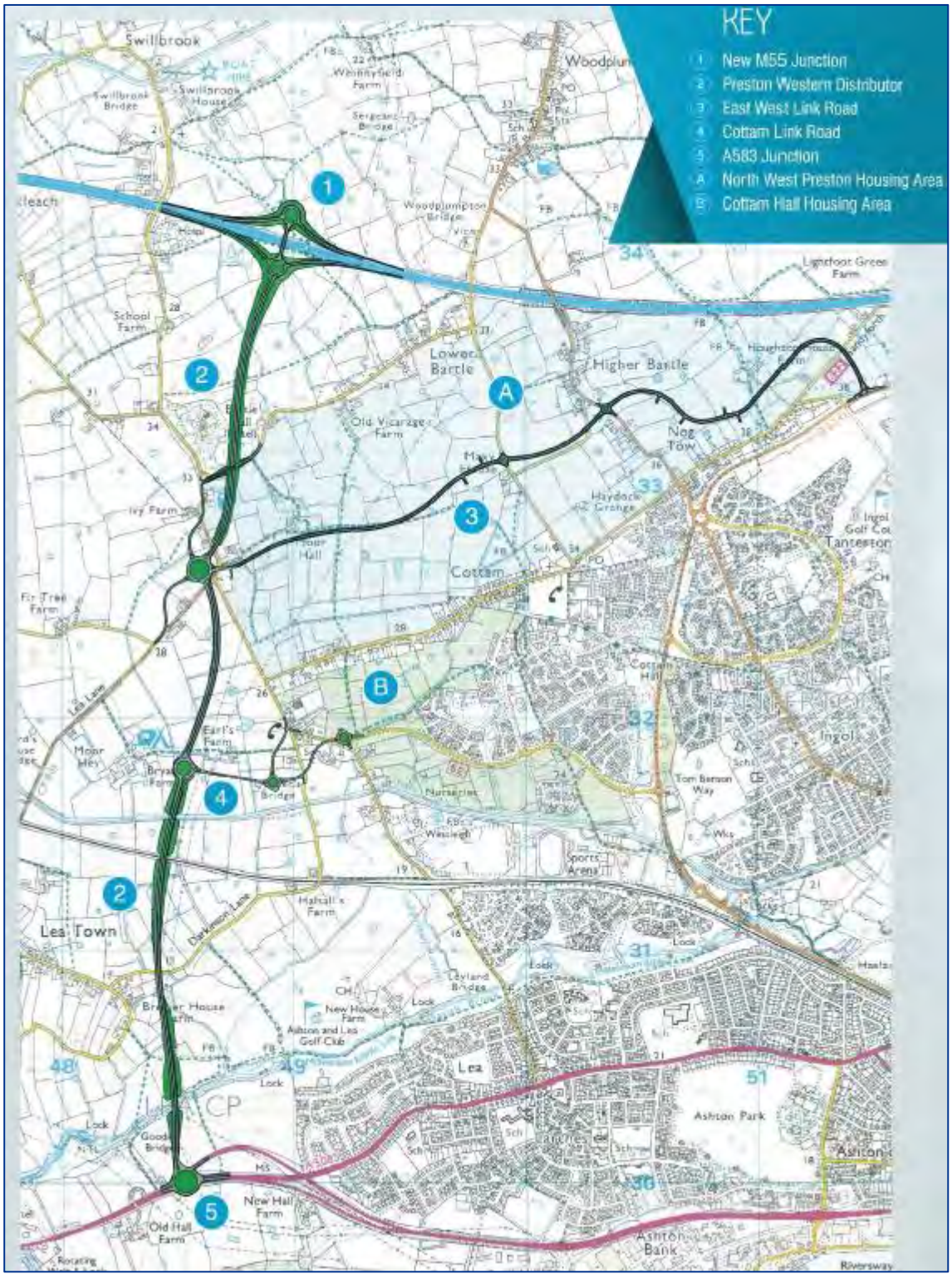

Figure 4-10: North West Preston and Cottam Hall Development Sites

Subsequently, it was found that 5 sites within the NWP development were granted planning permission, either without conditions for developer contributions to the PWD or with no time threshold on such contributions. Therefore, these sites which account for around 1300 dwelling units were removed from the list of dependent developments and included in the core scenario as part of the FBC appraisal.

4.8 LGV and HGV Growth

LGV and HGV growth were based on growth factors calculated for principal roads in England using RTF 2015.

These growth factors were applied to the 2013 base year matrices.

This approach is consistent with TAG Unit M4 guidance on forecasting changes in freight traffic which recommends applying a single growth factor for the whole matrix based on NTM forecast growth.

As the CLTM model does not differentiate between OGV1 and OGV2, the HGV factors have been calculated using the split of 47% and 53% for OGV1 and OGV2, respectively, based on national average splits from COBA Manual Part 4 Chapter 8 ("Table 8/1. Annual Average Category Proportions by Class of Road"). The factors are presented in Table 4-G below.

Table 4-G: RTF Growth Factors

Year	Vehicle Type	North West Region Growth Factor from 2013
2022	LGV	1.23
	HGV	1.06
2037	LGV	1.62
	HGV	1.18
2042	LGV	1.72
	HGV	1.23

4.9 High and Low Growth Scenario Matrices

Whilst the core scenario represents the most likely outcome for future demand, WebTAG recommends undertaking High and Low Growth sensitivity tests to investigate the impact of alternative predictions on the value for money of the scheme.

High and Low growth scenarios include different predictions surrounding the national factors of demographic change (population and employment), GDP growth, fuel price trends and vehicle efficiency changes. WebTAG specifies that these factors can be allowed for by adding (for high growth) and subtracting (for low growth) a variable proportion of the base year matrix from the forecast year matrix. In terms of local factors, WebTAG also recommends changing the local demand related factors assumed in the core, but not the supply factors unless they related to those demand factors.

The methodology for developing the High and Low Growth demand was discussed and agreed with the Independent Assurer and Highways England.

To produce the matrices for the high growth scenario, the uncertainty threshold was lowered so that all the 'Reasonably Foreseeable' developments from the Uncertainty Log were included in the growth forecasts, in additional to the 'Near Certain' and 'More Than Likely' developments already present in the Core scenario. Secondly, following the principles set out in WebTAG a proportion of base year demand was added to the core. The proportion for each modelled year was calculated using the following formula:

- High Growth Scenario, 2022 = +2.5% x √(2022-2013) = +7.5%
- High Growth Scenario, 2037 = +2.5% x √(2037-2013) = +12.2%
- High Growth Scenario, 2042 = +2.5% x √(2042-2013) = +13.5%

The Low Growth Scenario was developed in a similar way. For the matrices, the uncertainty threshold was raised so that only the 'Near Certain' developments from the uncertainty log were included, i.e. the 'More than Likely' developments were excluded. Secondly, the national uncertainty has been assessed in the same way, to factor the base year matrices as follows:

- Low Growth Scenario, 2022 = -2.5% x √(2022-2013) = -7.5%

- Low Growth Scenario, 2037 = -2.5% x √(2037-2013) = -12.2%
- Low Growth Scenario, 2042 = -2.5% x √(2042-2013) = -13.5%