



Wyre Local Plan Support

Wyre Borough Council

Technical Note

13 January 2016

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1. Introduction

1.1 Overall Study

This Technical Note presents the methodology and key parameters used to model the traffic impacts of development scenarios being considered for the Wyre Local Plan. The Local Plan is presently being developed by Wyre Council and covers the period until 2031.

The present draft of the Local Plan considers three options for development coming forward in the Plan. The options relate to spatial variations in housing distribution (provided by Wyre Council in a Technical Note included as Appendix B). A summary of these options is set out below:

1. Option 1 focuses the majority of new development on the main urban towns of the Fylde Coast Peninsula (Fleetwood, Thornton, Cleveleys & Poulton-le-Fylde) with the remainder of new development being split between settlements on the A6 Corridor (Garstang, Catterall, Bilsborrow, Bowgreave and Barton) and other defined rural settlements.
2. Option 2 directs a greater proportion of new development to the A6 Corridor settlements of Garstang, Catterall, Bilsborrow, Bowgreave and Barton. A moderate level of development would still be directed to the existing urban area of the Fylde Coast peninsula and, as with Option 1, some development would be directed to other defined rural settlements. However, unlike Option 1, this option would also consolidate and expand Winmarleigh and Nateby, both of which are in relatively close proximity to the A6 and Garstang.
3. Option 3 results in development being dispersed more evenly across the Borough. It would lead to a significantly greater proportion of development being directed to rural settlements. As with Option 2, this option would also consolidate and expand Winmarleigh and Nateby

To these three options a quantum of employment growth (as identified within the Wyre Employment Land Study) has also been included which is consistent across the three housing options that have been modelled.

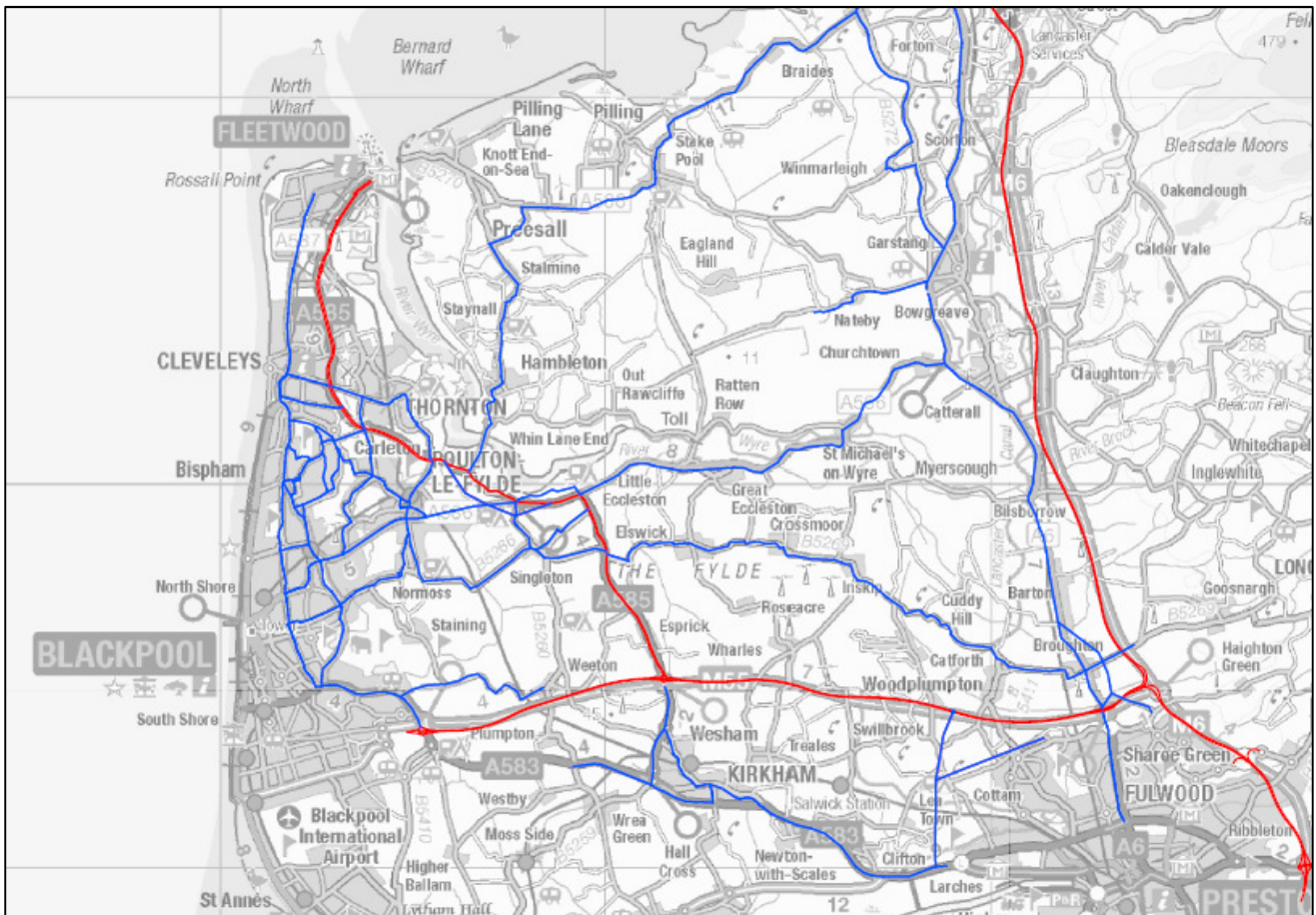
The above scenarios have been modelled using the GraHAM (Gravity Highways Agency Model) spreadsheet based modelling tool which has been developed for Highways England by CH2M Hill consultants and has been provided by Wyre Council. The GraHAM tool sets out the combined traffic distributions of residential and employment sites and also provides capacity analysis (volume/capacity) for links on the Highways England network for which background traffic data is available. Where background data is available for the Highways England network, a further 'No development' scenario has also been modelled, which includes no residential or employment development which serves to provide a comparison between the impact of background growth without the addition of Wyre's growth aspirations.

This Technical Note sets out the modelling parameters used (Section 2), confirms the quantum of development tested for each scenario (Section 3) and lists the outputs provided from the modelling (Scenario 4). Subsequent analysis of the modelling results is to be undertaken by the Local Highway Authority, Lancashire County Council. Further details on the methodology employed by the GraHAM model is available in Technical Note (reference no. 201263.AA.00.98) produced by CH2M Hill consultants and dated 22 April 2014.

1.2 Model Coverage

The coverage of the GraHAM model is shown in Figure 1 and includes the Highways England Strategic Road Network and key links within Wyre and the surrounding area. Owing to concerns about the potential impacts of cross boundary traffic affecting Blackpool, several key links suggested by Blackpool Council were also 'switched on' and added to the modelled network by CH2M.

Figure 1 Coverage of GraHAM Model



1.3 Limitations of Study

Prior to outlining the methodology used for the GraHAM modelling, the following limitation of this study should be noted:

1. The quantum of residential development considered in each scenario has been derived from a Technical Note provided by Wyre Council with the number of dwellings for an overall area (e.g. Fylde Coast, A6 corridor) for each scenario provided and then proportioned between settlements and agreed with Wyre Council. It should be noted that this does not account for any of the following:
 - Available land within each settlement to accommodate the additional development;
 - Developments which are committed (i.e. already have planning consent);
 - Developments which are currently under construction; or
 - Developments which have been occupied since the baseline traffic included within the model was collected (Highways England Network).

As this methodology uses a set of high level assumptions, with no consideration of physical feasibility, deliverability or phasing, it is recommended that further refinement is required to provide a definitive option for development, which associated phasing in order to understand the scale of infrastructure improvements that may be required to accommodate it. Furthermore the current piece of work provides no assessment of link capacity (with and without development) for the local highway network; this is

required to provide a better understanding of where the network is most sensitive to local growth, and the locations at which more detailed analysis is required.

2. The B1, B2 and B8 employment development proposals have been provided by Wyre Council with the same development quantum used for each tested scenario (i.e. the employment locations do not vary with the different residential development options described above). From a brief review of the results of this modelling exercise, the employment land use proposals have a significant impact on the traffic distributions and modelling results and it is suggested that the quantum of employment is refined for future modelling iterations to prevent potentially abortive work;
3. For the B1, B2 and B8 employment sites the overall site area has been provided with assumptions made and agreed with Wyre Council on the quantity of Gross Floor Area (GFA) per hectare (for trip generation purposes). The GFA assumptions are generic and therefore do not consider the particular quantum of development for each site or the site characteristics which could affect the trip generations of a particular site. The developable area of the identified sites is identified at approximately 40% of the total site area following discussions between Wyre Council and Lancashire County Council Highways;
4. The residential and employment trip rates used in this assessment are generic and have been agreed with Lancashire County Council. They do not however take into account the individual characteristics of a particular site which may affect the trip generations (e.g. location within a settlement, availability of public transport and what activities an employment site is actually undertaking);
5. The phasing of the residential and employment development sites is unknown at present and has been assumed to be 100% in the 2015, 2020, 2025 and 2030 assessment years to allow a comparison in background traffic growth to be seen. The present phasing assumptions do not allow a view to be formed of when key links go over capacity which could be linked to when developer contributions are sought for highway upgrades; and
6. The Highways England part of the network considered also show the existing traffic levels using most links and the capacity of each link, allowing a ratio of flow to capacity (V/C) calculation to be determined. The background traffic data and link capacity of the local highway network is not contained within the model to determine network performance on these links.

From points 1 and 2 above, it should be noted that this modelling should be considered as a high level estimate of the expected traffic impacts of the Wyre Local Plan and further modelling iteration(s) will be required to hone the final option taken forward.

2. Modelling Parameters

This section sets out the modelling parameters used. This section only sets out the settings which have been changed in the GraHAM model with the default spreadsheet settings otherwise used.

2.1 Vehicle Trip Generations

The quantum of development for employment sites has been provided by Wyre Council and is set out in Section 3. The development quantum has been provided in terms of the site area (in hectares) of B1 (office), B2 (general industrial) and B8 (storage or distribution) development site.

Vehicular trip rates for the three employment land uses have been derived from the TRICS v7.2.2 database, with the TRICS outputs provided in Appendix A. Trip rates for the B1 and B8 land uses are not available in the TRICS database and thus a trip rate per 100sqm Gross Floor Area has been used and it has thus been agreed with Wyre Council and Lancashire County Council that there would be 4,000sqm of GFA per hectare of B1 development site and 4,100sqm of GFA per hectare of B8 development site.

The resultant AM (08:00-09:00) and PM (17:00-18:00) peak hour trip rates are set out in Table 1.

Table 1 Employment Development Trip Rates

Land Use	AM Peak Arrivals	AM Peak Departures	PM Peak Arrivals	PM Peak Departures
B1 Office (per hectare)	58.92	8.28	6.04	48.88
B2 General Industrial (per hectare)	15.002	6.893	3.931	13.635
B8 Storage and Distribution (per hectare)	11.398	6.15	3.977	9.471

The number of residential dwellings to be tested in each scenario has also been provided by Wyre Council and is set out in Section 3. The trip rates per residential dwelling are set out in Table 2. It should be noted that these trip rates are embedded within the GraHAM model and have not been modified as part of this study.

Table 2 Residential Development Trip Rates

Land Use	AM Peak arrivals	AM Peak departures	PM Peak arrivals	PM Peak departures
Housing (per dwelling)	0.15	0.41	0.38	0.23

2.2 Background Traffic Factors

The GraHAM model also includes background traffic data for the Highways England network contained within the model. Growth in the background traffic data has been applied using the 'generic' setting and applied to the 2015, 2020, 2025 and 2030 assessment years with the growth rates derived from TEMPRO v6.2 in accordance with the approach set out in section 5.5 of WebTAG Unit 3.15.2: Use of TEMPRO data. The TEMPRO growth rates applied are set out in Table 3.

Table 3 TEMPRO Growth Rates

Period	AM Peak growth	PM Peak growth
2013-2015	0.9932	0.9940
2013-2020	1.0669	1.0708
2013-2025	1.1402	1.1477
2013-2030	1.2147	1.2277

To ensure that no double counting of development traffic has taken place within the assessment, the background traffic growth has been determined through the use of the 'alternative planning assumptions' facility in TEMPRO – effectively removing the Wyre developments from the TEMPRO forecasts.

3. Development Quantum

This section sets out the quantum of residential and employment development included in the modelling. Details of the phasing of sites are not available at the present time and thus the full quantum of employment and residential development has been applied to the 2015, 2020, 2025 and 2030 scenario years to assist in identifying the extent to which increasing background traffic volumes affects the modelled results.

3.1 Residential Development

The quantum of residential development considered in each scenario has been derived from a Technical Note provided by Wyre Council (included in Appendix B) which sets out the maximum quantum of development for inclusion in each scenario for each area (e.g. Fylde Coast, A6 corridor, Tables 1-3 of Appendix B) with dwellings then proportioned according to the maximum potential quantum of development in each settlement (e.g. Fleetwood, Thornton, etc within the Fylde Coast Peninsula, Tables 4-7 of Appendix B).

For example the A6 Corridor is expected to accommodate up to 2,250 homes in Scenario 1 (Table 1 of Appendix B) with Garstang within this area able to accommodate 53.9% (2,475/4,590, from Table 5 of Appendix B) of the total development residential development for the area. Thus Garstang has been assumed to account for 53.9% of the total 2,250 homes in Scenario 1 which equates to 1,213 residential dwellings. The use of this methodology was discussed and agreed with Wyre Council.

The resultant quantum of residential development considered in each modelled scenario is set out in Table 4. As previously mentioned, to assist in determining the impacts of background traffic, a 'No Development' scenario have also been modelled which contains no residential development.

Table 4 Location of Residential Developments Included in Each Scenario

Settlement	Quantum of Residential Dwellings Tested		
	Scenario 1	Scenario 2	Scenario 3
Barton	44	88	53
Bilsborrow	221	441	265
Bowgreave	221	441	265
Burn Naze	0	0	0
Cabus	0	0	0
Calder Vale	27	27	45
Carleton	0	0	0
Catterall	551	1103	662
Churchtown and Kirkland	27	27	45
Cleveleys	55	23	32
Crossmoor	0	0	0
Fisher's Row	0	0	0
Fleetwood	220	92	128
Forton and Hollins Lane	81	81	134
Garstang	1213	2426	1456
Great Eccleston	301	301	501
Hambleton	362	362	604
Inskip	54	54	89
Knott End-on-Sea	137	137	228
Myerscough	0	0	0

Nateby	0	425	425
Newsham	0	0	0
Pilling (inc. Smallwood Hey and Stakepool)	54	54	89
Pilling Lane	0	0	0
Poulton-le-Fylde	3237	1349	1888
Preesall	46	46	76
Ratten Row	0	0	0
Scorton	54	54	89
St Michael's on Wyre	27	27	45
Stake Pool	0	0	0
Stalmine	183	183	304
Thornton	1888	787	1101
Trunnah	0	0	0
Winmarleigh	0	475	475

3.2 Employment Development

The quantum of employment land for development is set out in Table 5 and utilise the site references from the Wyre Council Employment Land Study. The employment quantum modelled was identical for all three residential development scenarios but was not included in the No Development scenario.

Table 5 Employment Development Sites Development Quantum

Site Reference	Site description	Estate	B1 Development Quantum (hectares)	B2 Development Quantum (hectares)	B8 Development Quantum (hectares)
WY 06 04	North of Estate Road	East of Fleetwood Road	0.153	1.224	0.153
WY 06 05	South of Estate Road	East of Fleetwood Road	0.407	3.256	0.407
WY 07 01	Butts Road	Red Marsh Industrial Estate	0.021	0.168	0.021
WY 08 06	Off Denham Way	Copse Road Industrial Area	0.025	0.2	0.025
WY 10 03	West of Dock Avenue (Fylde Ice)	Port of Fleetwood	0.125	1	0.125
WY 11 02	West of Aldon Road	Poulton Industrial Estate	0.055	0.44	0.055
WY 11 03	East of Aldon Road	Poulton Industrial Estate	0.027	0.216	0.027
WY 11 04	North of Furness Drive	Poulton Industrial Estate	0.025	0.2	0.025
WY 24 01	Brockholes Way	Brockholes Way, Catterall	0.02	0.16	0.02
WY 04 03	East Road	Hillhouse Secure Site	0.223	1.784	0.223
WY 04 04	South Road fronting Vinollit	Hillhouse Secure Site	0.094	0.752	0.094
WY 04 05	South Road adjoining new substation	Hillhouse Secure Site	0.067	0.536	0.067

WY 04 06	Riverside Business Park	Hillhouse Secure Site	1.127	9.016	1.127
WY 04 07	South Road / Central Road	Hillhouse Secure Site	0.101	0.808	0.101
WY 06 01	Venture Road	Burn Hall Industrial Estate	0.161	1.288	0.161
WY 06 02	Enterprise Way	Burn Hall Industrial Estate	0.014	0.112	0.014
WY 06 03	South East corner	Burn Hall Industrial Estate	0.071	0.568	0.071
WY 08 02	South of Council Depot	Copse Road Industrial Area	0.2	1.6	0.2
WY 08 03	East of Copse Road Builders Yard	Copse Road Industrial Area	0.032	0.256	0.032
WY 08 04	Copse Road (South of Fishermans Friends)	Copse Road Industrial Area	0.094	0.752	0.094
WY 12 01	North west corner	Robson Way	0	0	0
WY 19 01	North of entrance	Nateby Technology Park	0.095	0.76	0.095
WY 08 01	North end of Siding Road	Copse Road Industrial Area	0.017	0.136	0.017
WY 10 06	South of new road	Port of Fleetwood	0.02	0.16	0.02
WY 00 03	Land West of A6	Garstang	0.517	4.136	0.517
WY 00 06b	Catterall Gates Lane South Extn	Catterall	0.68	5.44	0.68
WY 03 01	Block 1 & Robinson House	Norcross	0.184	1.472	0.184
WY 03 02	Block 2 & parking	Norcross	0.92	0	0
WY 03 03	Block 3	Norcross	0.92	0	0
WY 03 04	Blocks 4 & 7	Norcross	0.76	0	0
WY 03 05	Block 5 & Canteen	Norcross	0.89	0	0
WY 04 01	Between West and East Road	Hillhouse Secure Site	1.08	0	0
WY 04 02	West Road	Hillhouse Secure Site	1.231	9.848	1.231
WY 10 01	East of Dock Street	Port of Fleetwood	0.119	0.952	0.119
WY 00 04	Longmoor Lane	Nateby	0.6	4.8	0.6
WY 00 06a	Catterall Gates Lane South West	Catterall Gates Lane South	0.137	1.096	0.137
WY 00 08	-	South of Brockholes Ind Est	0.306	2.448	0.306
WY 01	-	Dorset Avenue, Cleveleys	2.066	16.528	2.066
WY 14	-	Bank View Ind Est, Hambleton	0	0	0

WY 15	-	Sunny Bank Farm Ind Est, Hambleton	0	0	0
WY 16	-	Old Coal Yard, Preesall	0	0	0
WY 17	-	Preesall Mill Ind Est, Preesall	0	0	0
WY 20	-	Taylors Lane Ind Est, Pilling	0	0	0
WY 22	-	Green Lane West, Garstang	0	0	0
WY 23	-	Riverside Ind Est, Catterall	0	0	0
WY 25	-	Creamery Ind Est, Barnacre	0	0	0
WY 26	-	Calder Vale Mill, Calder Vale	0	0	0
WY 27	-	Oakenclough Mill, Oakenclough	0	0	0
WY 00 07	-	Beech House Fields	0	0	0
Great Eccleston	-	-	0.268	2.144	0.268
Inskip	-	-	0	0	0
Bilsborrow	-	-	0.88	7.04	0.88
Myerscough	-	-	0	0	0
Barton	-	-	0	0	0
St Michaels	-	-	0	0	0
Forton	-	-	0	0	0
Fleetwood Quay (off Dock Street)	-	-	0	0	0
Scorton	-	-	0	0	0
Knott-End-On- Sea	-	-	0	0	0

4. Modelling Outputs

The modelled outputs produced by this study from the GraHAM model are summarised in the following sections and analysis of the results is to be undertaken by Lancashire County Council.

4.1 Tabular Outputs

The following tabular model outputs for each highway link within the model are provided:

- Development trips for the no development scenario and Scenarios 1, 2 and 3 for the AM and PM peak periods;
- HATRIS background traffic flows for the AM and PM peak hour periods;
- Grown background traffic flows with additional development traffic for the AM and PM peak periods in 2015, 2020, 2015 and 2030 for the No Development scenario and Scenarios 1, 2 and 3; and
- Volume/capacity for the No Development scenario and Scenarios 1, 2 and 3 for the AM and PM peak periods in 2015, 2020, 2015 and 2030.

4.2 Graphical Outputs

The following graphical model outputs within the model are also provided:

- GIS plots showing the development traffic distributions for Scenarios 1, 2 and 3 across all highway links included in the model; and
- GIS plots showing the Volume/capacity ratios for Scenarios 1, 2 and 3 in 2030 for the Strategic Highway Network.

