

REDDITCH DEVELOPMENT TRAFFIC MODEL Protocol for use of the model

1. Introduction

- 1.1 Worcestershire County Council have developed the spreadsheet based Redditch Development Traffic Model (RDTM) to provide an indication of the likely highway impact of future development in Redditch in order to:
- *Assess planning applications and identify transport mitigation measures (infrastructure and services);*
 - *Assist in the development of the Local Development Framework (LDF) Core Strategy and Site Allocations;*
 - *Inform the development of the Local Transport Plan (LTP3) and capital programme.*
- 1.2 Worcestershire County Council expects that the RDTM will be used to assess all developments in and adjacent to Redditch. This will help to ensure that proposed developments are consistent with local and national sustainable transport policies and measures.
- 1.3 The RDTM is a spreadsheet modelling tool which forecasts the growth in vehicular traffic flows through key junctions and links as a result of future housing and/or commercial development proposals in Redditch.
- 1.4 The results are in the form of AM (08:00 – 09:00) and PM (17:00 – 18:00) peak hour highway network maps with colour coded link and turning movement arrow annotations, giving an immediate picture of the high-level highway impacts of the new development. The specific link and turning movement outputs provided by the model are:
- *Development traffic flows in vehicles per hour*
 - *Total traffic flows (baseline plus development flows) in vehicles per hour; and*
 - *Percentage uplifts from baseline to total*
- 1.5 These outputs may then be used to feed into more detailed analysis such as junction capacity modelling required as part of a detailed Transport Assessment for new developments (see Worcestershire County Council's Requirements for Transport Assessments and Transport Statements).
- 1.6 Future year development traffic trip-ends have been based on generic trip rates derived from the TRICS database, with Redditch Borough Council, as the planning authority, providing quantum of development under each land use class. Table 1 summarises the future development site names, land uses and sizes currently assumed in the model, in line with the Redditch Core Strategy projections. It is acknowledged that these may be subject to significant change.

Table 1: Assumed Future Redditch Development

Site Name/Location	Land Use	Scale/Quantum
Webheath	600 Dwellings	Residential
Foxydiate Green Belt	150 Dwellings	Residential
	2.5 ha	Employment
Brockhill Green Belt	400 Dwellings	Residential
Brockhill ADR	425 Dwellings	Residential
	5.3 ha	Employment
A435 ADR	(1) 175 Dwellings	Residential
	(2) 175 Dwellings	
	(3) 2 ha	Employment
	(4) 2 ha	
Alexandra	145 Dwellings	Residential
	0.5 ha	Employment
Ravensbank ADR	10.3 ha	Employment

Source: RBC Preferred Option Document

- 1.7 It is important to note that trip rates used in the model are generic and require to be updated with site specific trip rates when assessing specific development proposals. Agreement to these trip rates is required before running the RDTM.
- 1.8 It is anticipated that the use of the RDTM will take the form of one of the following:
- *The individual development impact in isolation, assessing the agreed highway network in the vicinity of the development site and assuming background traffic growth;*
 - *The individual development impact in context with the other proposed developments, assessing both the local highway network and the impact on the wider Droitwich network and its connections to the surrounding strategic highway; and*
 - *Provision of data from the model for network, zonal or land use information.*
- 1.9 Provision of information will depend on the scale and complexity of the request from the third party. In house staff from Worcestershire County Council may be able to provide information from the RDTM database. For the more complex modelling requests the councils' consultants may be commissioned to undertake the work.
- 1.10 The RDTM represents a significant investment for the authority. To maintain the value of this asset it will be necessary to undertake regular updating of the model to get maximum value from it during day-to-day operation. This in turn means charges will be levied for use of and access to the model.

2. Contacts

2.1 Where use of the RDTM is required, the key contacts to discuss its use are indicated below:

Steve Harrison

Worcestershire County Council
Tel: 01905 766 179
Email: sharrison@worcestershire.gov.uk

Kate Emerson

Worcestershire County Council
Tel: 01905 766 151
Email: kemerson@worcestershire.gov.uk

3. Department for Transport Guidance

3.1 The Department for Transport (DfT) have produced guidance (Guidance on Transport Assessments, DfT, March 2007) to be followed within the production of a Transport Assessment (TA). This document is not intended to inform on how to undertake such a process however the tables of indicative thresholds for TA production are of use. These are not prescriptive and are open to amendment by Worcestershire County Council but provide a useful guide. Table 1 is a reproduction of the table in Appendix B of the thresholds at which a TA is required.

Table 1 – Modelling Requirement Thresholds

Ref	Land Use	Size	Threshold
1	Food retail (A1)	GFA	> 800 sq. m
2	Non-food retail (A1)	GFA	> 1500 sq. m
3	A2 Financial and Professional Services	GFA	> 2500 sq. m
4	A3 Restaurants and Cafes	GFA	> 2500 sq. m
5	A4 Drinking establishments	GFA	> 600 sq. m
6	A5 Hot food takeaway	GFA	> 500 sq. m
7	B1 Business	GFA	> 2500 sq. m
8	B2 General industrial	GFA	> 4000 sq. m
9	B8 Storage of distribution	GFA	> 5000 sq. m
10	C1 Hotels	Bedroom	> 100 bedrooms
11	C2 Residential institutions – hospitals, nursing homes	Beds	> 50 beds
12	C2 Residential institutions – residential education	Student	> 150 students
13	C2 Residential institutions – institutional hostels	Resident	> 400 residents
14	C3 Dwelling Houses	Dwelling Unit	> 80 units
15	D1 Non-residential institutions	GFA	> 1000 sq. m
16	D2 Assembly and leisure	GFA	> 1500 sq. m

4. Charging Protocol

4.1 The scale of charging to be applied to use of the model will depend on the task requested and following agreement between the council and third party. The charges to be applied will cover the following:

- *Access charges*
- *Fixed item charges*
- *Development charges*

5. Access Charges

5.1 An access charge will be made of **£750** to cover the cost of general use of the model and to assist in the maintenance and upkeep of the model.

6. Fixed Item Charges

6.1 Fixed charges will apply to the provision of data from the model from it being used as a database for interrogation. Such items for charge are as follows:

- *Junction information such as turning flows and levels of service/RFC will be charged at the current standard rate of £100 per junction up to a maximum of 50 junctions above which an additional daily time charge will be applied;*
- *Available traffic count information which may be contained within the model also to be charged at £100 per count up to a maximum of 50 locations above which an additional daily time charge will be incurred;*
- *Other data requests will be assessed on their merits and charged at the discretion of the council*

6.2 The actual charges for access to information are to be set by Worcestershire County Council although additional Halcrow staff time for provision of these will also need to be determined.

7. Use of Model for a Developer's Transport Assessment

- 7.1 In drafting their transport assessments developers will be required to use the RDTM to assess the impact of their proposals. For this element of work model run charges will be incurred dependant on the scale of the development and/or the agreed level of complexity of the modelling to be applied. It is likely that due to the elements of the transport assessments to be addressed, existing forecast year modelling scenarios will not always be in existence. As a result bespoke model runs will be required to generate forecast year matrices to assess some significant developments.
- 7.2 A fee will be charged for running the model and then providing outputs back to the developer for their own assessments to be undertaken and mitigation proposed when required. In addition, developers are required to pay an upfront fee of £500 at the outset of the process to cover the costs incurred by Worcestershire County Council in preparing and reviewing the specification of the model runs. This is to cover the costs of any abortive work in the event that the developer decides not to proceed with the preparation of their transport assessment. This fee will be deducted from the final payment due following the completion of the process.
- 7.3 In all situations a bespoke fee will be provided by Worcestershire County Council's consultants (Halcrow at the moment) for running the RDTM and providing the outputs. Work will only commence once Worcestershire County Council have written confirmation from the developer agreeing to pay indicated amount. An indication of likely timescales are provided below although it should be noted this is an estimate only and actual timescales and subsequent fees could be either lower or higher than that indicated:
- *Calculate multi-modal person trip rates for input into the tool: Up to 1 week following receipt of full site specific development proposals*
 - *Set up the tool, run, analyse and report results; 2.5 days per scenario (there would be a reduced per-run timescale in the case of a larger number of scenarios)*
 - *Undertake further analysis such as junction capacity modelling, timescales to be quoted as required.*
- 7.4 If significant changes to the development transport proposals are identified following the initial model runs, further modelling may be required for which a further fee would be charged.

Information required from the Developers

- 7.5 Prior to a model run being undertaken the developer will need to provide the following information pertaining to their development. It is anticipated that elements of these will have been discussed between Worcestershire County Council and the developer prior to the assessment.
- *Assessment years*
 - *Quantum of development*
 - *Build-out per year*
 - *Site location and layout of the site*
 - *Land uses in the site*

- *Size / units of the development by land use – i.e. housing, employment, shopping, schools etc*
- *Timescales for developments including any phasing (if required)*
- *Access to the site from existing highway*
- *New / changed junction layouts*
- *Any other transport schemes proposed including rail stations (and associated periods of operation and service frequencies), bus routes, frequencies, periods of operation, priority measures (physical and through ITS) and other infrastructure measures, cycle and walk schemes*
- *Any local turning count data obtained*
- *Travel Plan proposals, including any which will impact on trip rates and modal choice, together with associated details of measures and indication of funding proposals, monitoring process and management plan.*

Modelling Process

- 7.6 Worcestershire County Council consultants will use the existing RDTM to determine the background level of trips with planned / committed developments included (as per the Core Scenario agreed during the model development) but without the specific development to be assessed in place. Details of the Core Scenario development assumptions and future transport infrastructure assumptions are provided in Section 1.
- 7.7 Worcestershire County Council consultants will also check modelled base year flows against observed turning counts, where they exist, in the vicinity of the proposed development site. Where there is a discrepancy, base year background flows from the observed turning count will be used and growth will be added from the model. If no observed turning counts exist for junctions that require analysis, modelled turning movements will be checked for 'reasonableness' and the need for obtaining new counts will be considered. To set up the tool, run and analyse and report results.
- 7.8 Where the required assessment years are not standard in the existing model (i.e. 2016), bespoke future year traffic flows will be calculated and inputted into the RDTM. Should the nature of the development be such that this is required for a specific development year, a fee estimate for this work will be provided.

Information to be provided from the model

- 7.9 Worcestershire County Council and/or its consultants will identify development trips in terms of increase in 'demand' volumes on the surrounding transport network, through a comparison of the 'with and without development' AM and PM peak model runs. Trip volumes will then be supplied back to the developers for their assessment via LINSIG/ ARCADY etc and to determine mitigation. It is anticipated that Worcestershire County Council and the developer will liaise to agree which junctions require mitigation based on the model information provided.
- 7.10 Following a run of the model a variety of key statistics can be provided to the developers to assist with their Transport Assessment. For a full model run Worcestershire County Council would expect the following data to be provided:

Highway Model Information

- 7.11 Impact on existing and proposed highway network in terms of changes to (across the network as a whole and local to the development site in each case):
- Turning flows at relevant junctions
 - Total trips
- 7.12 If required, additional information could be provided relating to accessibility and environmental impacts for an additional fee
- 7.13 The production of forecast traffic flows from the RDTM will be subject to caveats (see **Appendix A**).

8. Commissioning Worcestershire County Council to Run the Redditch Development Traffic Model

- 8.1 Any client or developer wishing to have modelling work carried out by Worcestershire County Council using the RDTM, or wishing to access data from the RDTM and/or Database should in the first instance make contact with the Transport Policy & Strategy Team. Stephen Harrison is contactable on 01905 766 179 or SHarrison@worcestershire.gov.uk.
- 8.2 The client/developer needs to review the data sources and services available as discussed in previous sections, with their specific project in mind. Following this initial review, a preliminary meeting with the Worcestershire Transport Policy & Strategy Team is recommended to discuss and confirm the specific modelling requirements of the project. If a full model run is required Worcestershire County Council may require their consultants to attend this meeting.
- 8.3 The client/developer should then submit their requirements to the Worcestershire Transport Policy & Strategy Team in written form (email will suffice). In a case where model runs are required, this written submission should include specifications set out in Paragraph 7.5, above. It should also detail the number of scenarios (i.e. time periods, forecast land use and infrastructure (network) tests). It would also be beneficial to state clearly in the submission the objectives of the study and the purpose for which the data analysis and/or modelling results and outputs will be used.
- 8.4 The Worcestershire Transport Policy & Strategy Team will then review the client's requirements and objectives and provide a quotation including details of the proposed cost (if relevant), methodology and timeframe for the work. If requested, the Worcestershire Transport Policy & Strategy Team will make available a spreadsheet containing a breakdown of costs.
- 8.5 The client/developer should then submit a written acceptance of the quotation and if the project is chargeable, include a Purchase Order Number to allow the work to commence.

9. Basis on which the Worcestershire County Council Service is Offered

- 9.1 The Worcestershire Transport Policy & Strategy Team or its consultants undertakes modelling and data analysis for specific projects strictly according to the client's specifications, requirements and assumptions. It is important to note that carrying out this work and producing the final report on behalf of the client in no way implies Worcestershire County Council endorsement or otherwise for any scheme or development. Nor does it imply endorsement or otherwise for the transportation network and/or land use assumptions supplied by the client as inputs into any modelling work.

- 9.2 Acceptance by all prospective clients of this disclaimer will ensure that the Worcestershire County Council Spreadsheet Model and Database can continue to be used freely and independently.
- 9.3 The information supplied by Worcestershire County Council on any project is to be used solely for the purpose of the stated project and not to be redistributed to any third party, without prior consent in writing from Worcestershire County Council.

10. Conflicts of Interest

- 10.1 There are, and will be further instances, where there may be conflicts of interest with Worcestershire County Council's consultants (Halcrow) working both for a prospective developer and being in charge of running the model for the council to assess the said development.
- 10.2 In such instances it will be important to confirm that Worcestershire County Council is the client for any such work and requests for model runs will need to be through the council only. Worcestershire County Council will be responsible for the direct interaction with the developer on such occasions.
- 10.3 In instances where the developers' consultant is Halcrow Yolles (HY) then an additional transport consultant should be appointed as sub consultant to HY in order to avoid a direct conflict.

Appendix A

Caveats

Census; Journey To Work (JtW) data is an excellent source of comprehensive multi-modal trip data which is very specific to the local areas. However, it is nine years old, contains only commuting trips, and does not define trip time or trip direction (i.e. home to work, or work to home). These limitations have been minimised by combining JtW with alternative sources of information such as National Travel Survey (which gives recent trip purpose splits by time of day but for the entire Country) and new development trip generation inputs (which ensures that new trip-end totals are correct).

Assignment of trips using AutoRoute assumes that all people making a particular journey will choose the same route as each other ('all or nothing assignment'). In practice this does not always happen, but the increasing use of personal satellite navigation systems means that more people will choose the same route as each other over time, as long as the different systems advise the same route as each other for a given start and end point.

Since the baseline traffic counts were not all carried out at the same time as each other, the vehicle flows may not be fully compliant with each other across the mapping outputs. Further, the turning counts are each sources from a single day rather than an average over several days.

The model is highway-only, fixed matrix and fixed assignment model. This means that effects such as modal shift, demand suppression and re-routing are not allowed for by the model. Measurement of such effects would need to be made outside the model, and the model re-run with correspondingly adjusted outputs. This will include taking into account the accessibility assessment of the development. For details of the accessibility assessment requirements, please see the Worcestershire County Council Guidance on Transport Assessments. Peter Blackley is currently in charge of the accessibility assessments (and the Worcestershire Accession Model) and is contactable on 01905 728812 or PBlackley@worcestershire.gov.uk

As with all forecasts, its outputs can only be as good as its inputs. The development traffic inputs to the model must therefore be agreed with Worcestershire County Council in advance of the model run scenarios.