

Technical Note

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Subject:	Traffic Distribution Model Sensitivity_Revision				
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Document history

Revision	Purpose description	Originated	Checked	Reviewed	Author-ised	Date
Rev 1.0	For information	LV	CW	SL	JF	13/01/2021
Rev 2.0	Incorporating LHA comment	LV	CW	SL	JF	25/01/2021

Client signoff

Client	Portsmouth Water
Project	Havant Reservoir
Project No.	5169117
Client signature / date	

Introduction

This Technical Note supplements the Transport Assessment (TA) prepared in support of the Havant Reservoir planning application (Havant Ref: APP/20/00990 and East Hampshire District Council Ref: 51680/001).

The development of a distribution model had been discussed prior to submission of the planning application, and comments provided by Hampshire County Council, as Local Highway Authority (LHA), were taken on board in its development. A supplementary Technical Note (*TNPS01_Havant Reservoir_Traffic Distribution Sensitivity_v1.0*) was also presented to the LHA which directly addressed a number of their initial comments, with the intention of demonstrating that the submitted distribution model was fit for purpose. However, the LHA have requested that a holistic review of the assignment of trips is undertaken.

The purpose of this Technical Note is to present a revised distribution / assignment model to the LHA, with a view to coming to an agreed resolution on the assessment of potential impacts of the reservoir.

As a summary, the initial distribution and assignment of development traffic used the following methodology process:

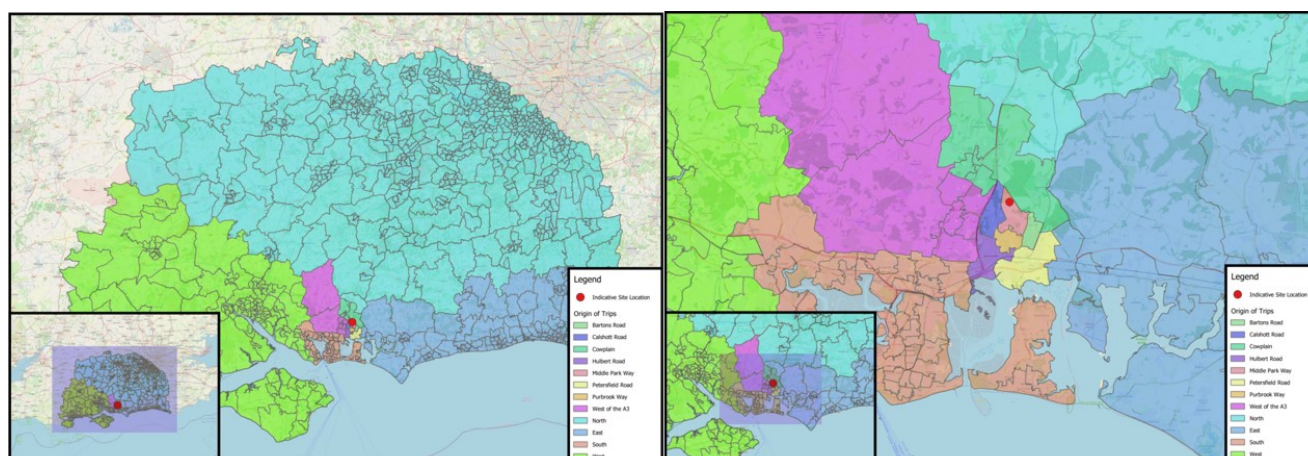
1. PSL report used to determine the proportion of visitors from each of the travel time bands from the site: 0-15mins; 16-30mins; 31mins-1hr; over 1hr;
2. MSOAs mapped by travel time band using straight line isochrones, which is a commensurate method to provide a broad estimate of potential visitor population by distance from site (note the straight-line distances were only used to determine population proportions, and not to determine route assignment);
3. MSOAs within each travel time band combined into MSOA sectors based on similar broad routing characteristics;
4. The population of each MSOA sector calculated and divided by the total population for all MSOAs within that travel time band. This provides the % of trips from the MSOA sector within that time band;
5. Multiply the proportion of trips in each MSOA sector in each travel time band by the overall proportion of trips from that travel time band. This provides the overall proportion of trips by MSOA sector;
6. Use online journey planning software to calculate the shortest journey time route to the site that broadly applies to the majority of the MSOA group. The journey times during the Saturday peak hour were applied; and
7. Combine each MSOA sector with a shared route to calculate the overall proportions by route.

The revised method retains steps 1-5 from above with use of Census population data and travel journey times an established method of distributing and assigning development traffic. However, some additional disaggregation of MSOA sector has been undertaken. Step 6 has been amended so that the MSOA sector proportions have been applied across several routes that have broadly comparable journey times. This accounts for the fact that there is more than one potential route from each MSOA sector to the site, reflecting the more holistic overview of assignment requested by the LHA. However, weighting has been applied in cases where one route is clearly quicker for a high proportion of the MSOA sector.

Revised Sensitivity Test

The MSOA sectors used within the submitted distribution model have been broadly retained, as shown within **Figure-1** (and copied within Appendix A); the Waterloo (west of A3) sector has been disaggregated, with an additional sector to capture 'Cowplain' being created.

Figure-1 - MSOA Sectors to Derive Population Proportions



The MSOA sectors have been allocated within a drivetime cordon, to determine the proportion of potential visitors within each drivetime cordon that are situated within the MSOA sector. The visitor proportions in each market category, which informed the agreed trip generation, have then been applied to the potential visitors, to capture the propensity to visit the site from the potential visitor population.

For reference, the market catchments and percentage of total vehicular trips to the site from each market catchment is presented in **Table-1**, with a summary of the resulting visitor distribution presented in **Table-2**.

Table-1 – Market Catchment Visitor Proportions

Market	Proportion of total vehicle trips
Residential market	
Up to 15 mins	19.3%
16 to 30 mins	33.2%
31 to 60 mins	19.3%
61 to 90	6.2%
Dual use visitors from Leigh Park Gardens (Staunton)	1.3%
Tourists and Others	
Tourists (excl SFR ¹)	1.4%
Staying with friends or relatives	3.6%
Day visits	2.7%
Passing traffic ²	12.9%

Note that the within the previous distribution model 'Tourists and Others' were all assigned to the 15-minute cordon in order to capture a robust assessment of local roads. However, as part of the review it is considered more likely that day visits and passing traffic would be from outside of the local cordon, and these have therefore been split proportionally across the regional drivetime cordons. These trips are captured as 'new trips on the network, despite being titled 'passing traffic' and have not been netted off the existing traffic flow.

¹ Staying with friends or relatives

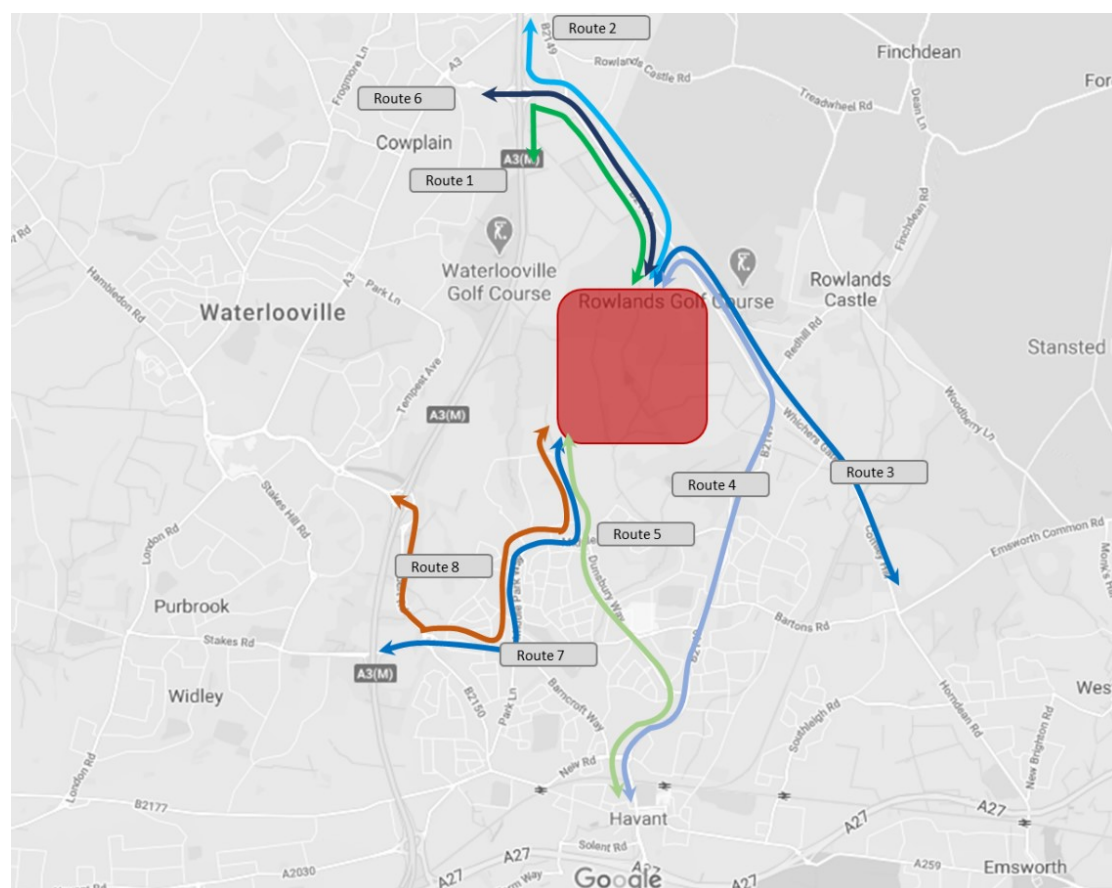
² Passing traffic has been included as 'new' trips on the network for assessment purposes and have not be netted off the agreed trip generation.

Table-2 – Summary of Visitor Distribution Proportions

Population Sector	Proportion of total vehicle trips
North	26.1%
East	15.4%
South	16.6%
West of A3	2.7%
Regional West	35.5%
Bartons Road	0.4%
Calshott	0.3%
Hulbert	0.4%
Middle Park Way	0.3%
Petersfield	0.5%
Purbrook	0.5%
Cowplain	1.3%

Potential additional access routes have been reviewed, in line with the holistic overview requested by the LHA, and are presented in **Figure 2**. These are the main route options that area available, though it is acknowledged that there are a number of alternative minor route options available to visitors who are familiar with the local road network. However, incorporating all possible routes would serve to dilute any potential impact of the operational traffic in assessment terms.

Figure 2 – Potential Access Routes



GoogleMaps2020©

Each MSOA sector area has been reviewed, with a proportion of trips from each area assigned to the potential routes to the reservoir, using proportionate assumptions informed by online journey planning tools. It should be noted that whilst the LHA have previously suggested that traffic would usually seek to avoid congested areas (e.g. routing via the B2149 northbound approach to the northern access rather than using the Middle Park Way Roundabout to the southern access), trips have still been assigned through the centre of Havant in this instance. However, if this route is congested it is reasonable to assume that trips would instead favour the strategic road network, or reassign onto other quieter routes to access the site.

Table-3 presents the route assignment assumptions for each of the MSOA cordons.

Table-3 - Route Assignment Assumptions for MSOA cordons

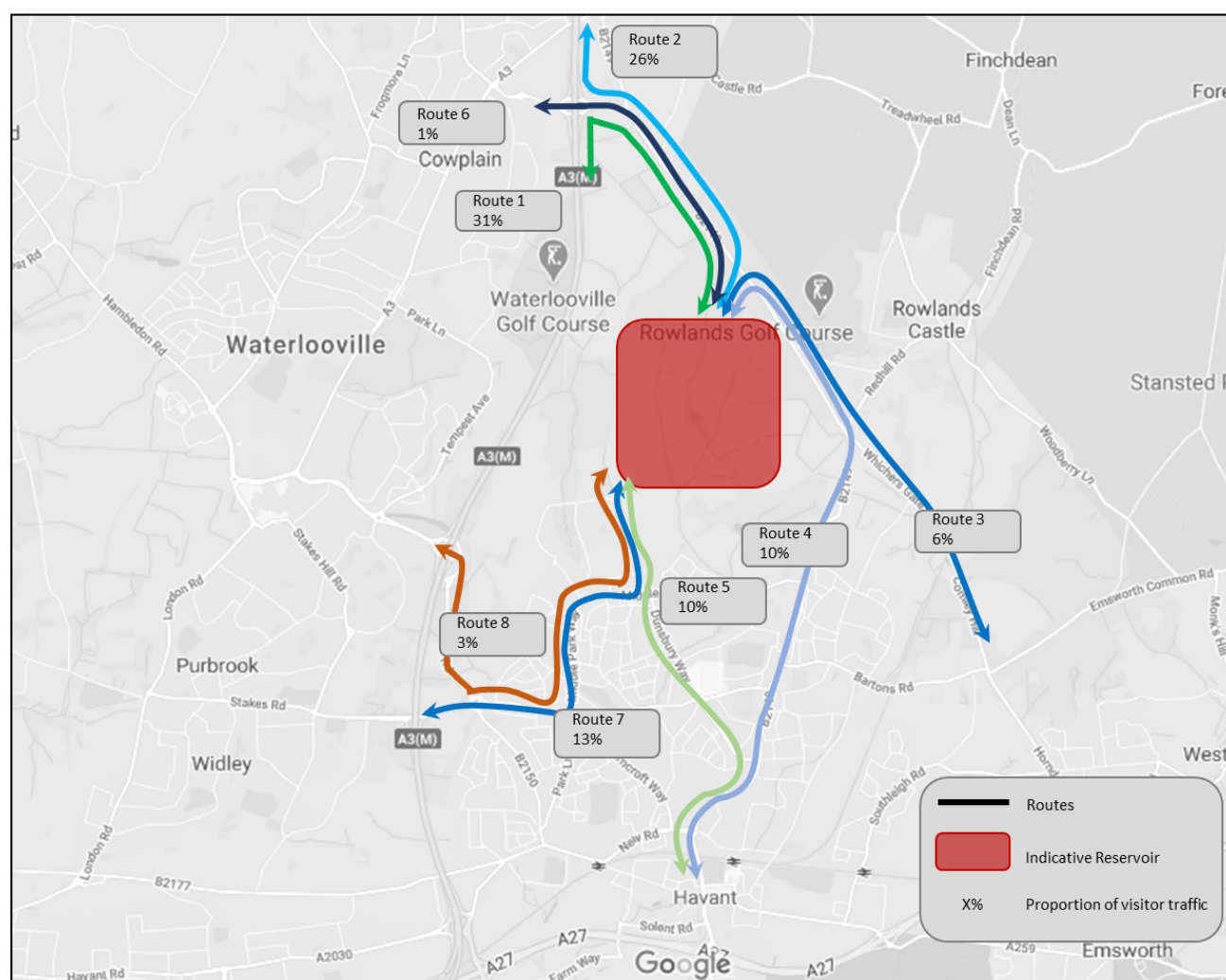
Trip Origin MSOA sector	Assignment Assumption
North	100% of trips assigned to Route 2
East	30% of trips assigned to Route 1 30% of trips assigned to Route 3 10% of trips assigned to Route 4 10% of trips assigned to Route 5 10% of trips assigned to Route 7
South	25% of trips assigned to Route 1 25% of trips assigned to Route 4 25% of trips assigned to Route 5 25% of trips assigned to Route 7
West of A3	100% of trips assigned to Route 8
Regional West	60% of trips assigned to Route 1 10% of trips assigned to Route 4 10% of trips assigned to Route 5 20% of trips assigned to Route 7
Bartons Road	100% of trips assigned to Route 4
Calshott	100% of trips assigned to Route 8
Hulbert	50% of trips assigned to Route 5 50% of trips assigned to Route 7
Middle Park Way	100% of trips assigned to Route 5
Petersfield	40% of trips assigned to Route 3 40% of trips assigned to Route 4 20% of trips assigned to Route 5
Purbrook	50% of trips assigned to Route 5 50% of trips assigned to Route 7
Cowplain	100% of trips assigned to Route 6

To determine the proportion of trips assigned to each of the routes, these assumptions have been applied to the visitor distribution proportions. The resulting assignment of trips using the alternative assignment assumptions is presented in **Table-4**, and illustrated **Figure-3**.

Table-4 – Route Assignment Proportions

Route	Proportion of Total Trips
Route 1	31%
Route 2	26%
Route 3	6%
Route 4	10%
Route 5	10%
Route 6	1%
Route 7	13%
Route 8	3%
Total	100%

Figure-3 - Vehicle Trip Route Proportions



The vehicular trip generation numbers that have been derived from the PSL report and agreed by the LHA are multiplied by the route proportions in Table 4 to calculate the assignment of traffic associated with the reservoir. The resulting number of trips on each route is summarised in **Table-5**, with flow diagrams of the assignment of trips presented in **Appendix B**.

Table-5 – Havant Reservoir Trip Distribution

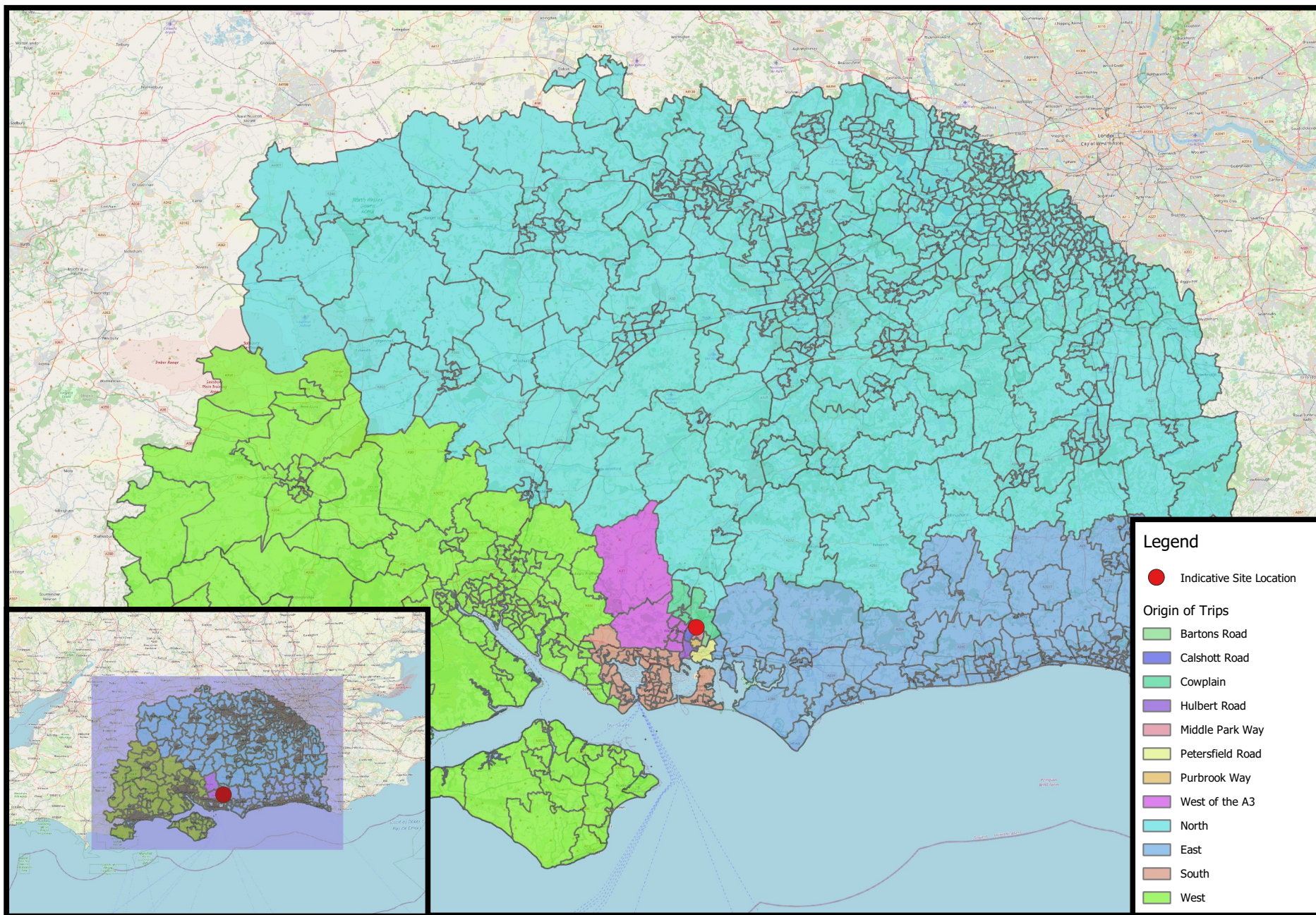
Route	Weekday AM Peak (08:00-09:00)		Weekday PM Peak (17:00-18:00)		Weekend Peak (12:00-13:00)	
	Arrival	Departure	Arrival	Departure	Arrival	Departure
Route 1	2	0	4	4	28	21
Route 2	1	0	3	4	24	18
Route 3	0	0	1	1	5	4
Route 4	0	0	1	1	9	7
Route 5	1	0	1	1	9	7
Route 6	0	0	0	0	1	1
Route 7	1	0	2	2	12	9
Route 8	0	0	0	0	3	2
Total	5	1	12	13	92	69

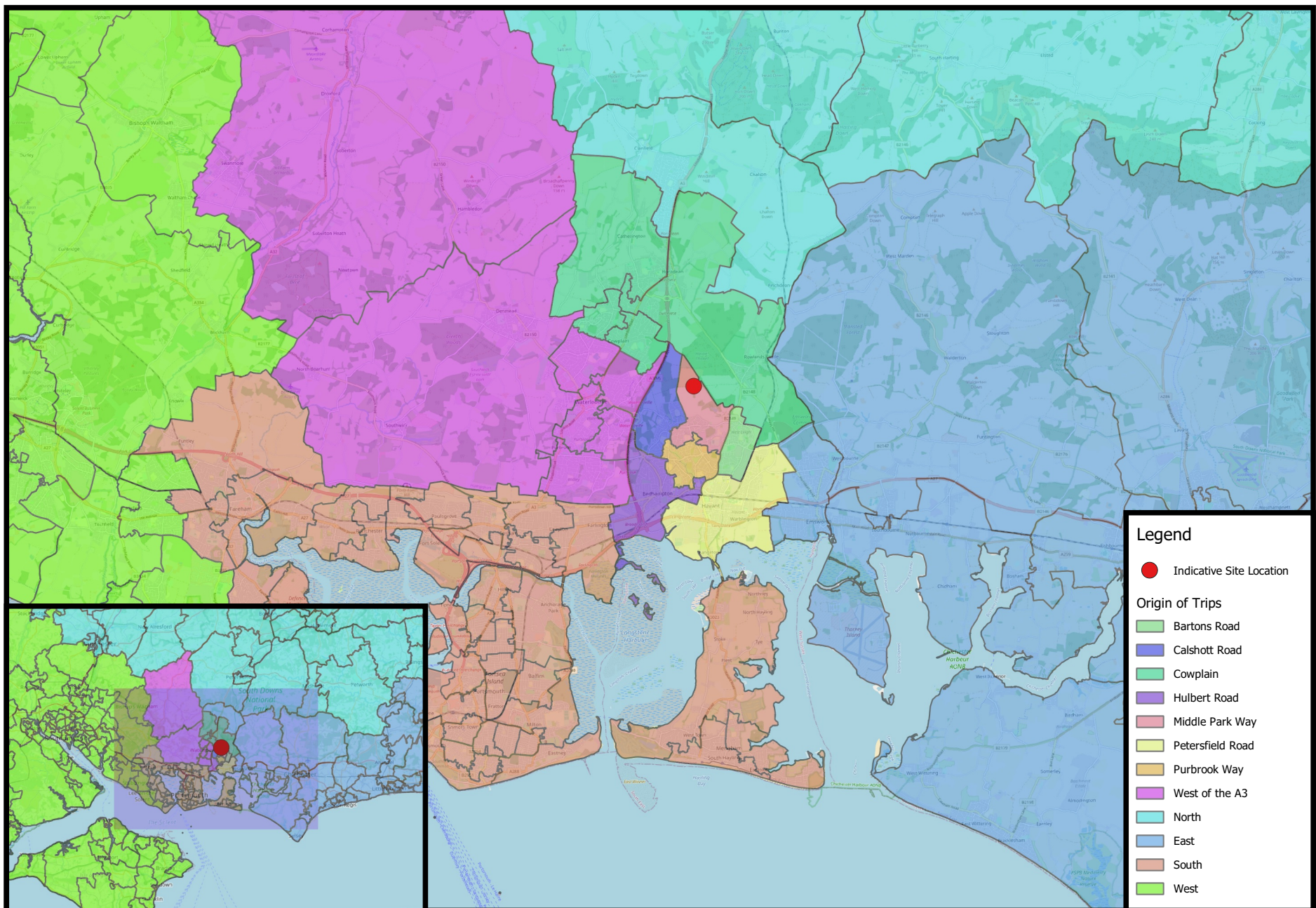
As shown in **Table-5**, the holistic review of the distribution and assignment model results in traffic being spread across a larger number of potential routes to and from the sites. It is intended that this Technical Note serves to aid discussion on any potential impact from the reservoir on the transport network, not currently captured by the submitted TA.

Appendices



Appendix A. MSOA Sectors





- Legend**
- Indicative Site Location
 - Origin of Trips
 - Bartons Road
 - Calshott Road
 - Cowplain
 - Hulbert Road
 - Middle Park Way
 - Petersfield Road
 - Purbrook Way
 - West of the A3
 - North
 - East
 - South
 - West

Appendix B. Trip Assignment Flow Diagrams (available on request)