

1 INTRODUCTION

1.1 Purpose of Report

1.1.1 This Modelling Brief has been prepared to present Systra with a methodology to undertake traffic modelling using the Hayling Island microsimulation model in order to assess four live planning applications for major developments on Hayling Island.

1.1.2 The four live applications are summarised in Table 1.1.

Table 1.1: Live Planning Application Details

App. No.	Description	Quantum (no. dwellings)	Applicant	Transport Consultant
APP/21/01350	North of Oysters, Station Road	Up to 29	Hayling Island Builders	Paul Basham Associates (PBA)
APP/21/01351	South of Saltmarsh Lane	Up to 60	Hayling Island Builders	Paul Basham Associates (PBA)
APP/21/01434	Rook Farm	Up to 300	Gladman	Prime Transport Planning (Prime)
APP/22/00001	Fathom's Reach	51 (demolition of 5)	Taylor Wimpey	Hydrock

1.1.3 A previous version of the microsimulation model, produced by Systra using Paramics software, was used in the Hayling Island Transport Assessment (HITA) (2019) to support the previous version of the Havant Local Plan which was withdrawn in early 2022 following Examination in Public in summer 2021. One of the reasons for the withdrawal was to allow HBC to undertake additional modelling work to consider the impact of the Local Plan developments during the summertime period, with the Island being a popular tourist destination in the summer months.

1.1.4 This Modelling Brief has been prepared by Prime Transport Planning with input from Hydrock and Paul Basham Associates. It is the intention to provide Systra with a methodology agreed with the following three key parties:

- Havant Borough Council (HBC) as owners of the model and local planning authority;
- Hampshire County Council (HCC) as local highway authority; and
- National Highways (NH) as trunk road authority responsible locally for the A27.

1.1.5 This draft Modelling Brief has been shared with the above three parties with their input welcomed. Text in this report has been underlined in bold font where specific input from the parties is required.

1.1.6 Following this introduction, Section 2 presents model parameters for use in the assessment.

1.2 Summary of Recent Discussions

HCC

1.2.1 The three transport consultants listed in Table 1.1 met with HCC via Teams on 17th April 2023. HCC called the meeting following a meeting they held with HBC to discuss how the live applications on Hayling Island should be considered, particularly as timescales for the potential adoption of the emerging Local Plan are such that they do not align with the aspirations of the developers with live applications on the Island.

1.2.2 HCC is aware of the seasonal assessment modelling work being undertaken and an update of the neutral month model. HBC have shared some of their 2022 traffic data with HCC, and HCC have observed that there has been little change in traffic flow volumes on the Island between the updated data and that used in the 2019 model. As such, HCC is content that the 2019 neutral month model remains fit for continued use, and advised HBC that their summer model should be prioritised so that both models could be used to assess the impact of the live applications. HCC were informed that the summer model would be ready for use in a few weeks.

1.2.3 The three consultants were content with the approach suggested and it was provisionally agreed, on HCC's recommendation, that there would be benefit to a degree of collaboration between the three applicants and their consultants.

1.2.4 HCC also reiterated that whilst the microsimulation models should be used to consider impact on journey times on the Island, this work should be supplemented by traditional standalone junction capacity assessments at key junctions, with those mentioned being:

- A3023 Havant Road/Church Road (Mill Rythe Roundabout);
- A3023 Langstone Road/Northney Lane; and
- A27/Langstone Road/Park Road South (Langstone Roundabout).

1.2.5 It was agreed that the mitigation package assessed in the HITA would form a reasonable starting point for mitigation, however HCC expressed concerns with the proposed signalisation scheme for the first two junctions listed above, noting that whilst signals might show beneficial modelling results in the peak hours, they would introduce delay outside of the peaks. Other junctions that may require standalone capacity assessments may be unique to individual applications such as the individual site accesses and St Mary's Road/Church Road/Tournerbury Lane for Rook Farm.

1.2.6 Systra will need to provide existing and forecast year turning counts, and queue lengths if possible, to each consultant for each junction identified for capacity assessment.

1.2.7 Action: HCC to confirm list of individual junctions for capacity assessments associated with each application.

Systra

1.2.8 Prime met with Systra via Teams on 5th May 2023 to outline the initial brief.

1.2.9 Systra advised that the timescales quoted by HCC were correct, however the 2023 neutral month model was being progressed at the same time as the summer model and both would be ready at the same time. Prime agreed that it would be sensible to use the 2023 neutral month model rather than the 2019 version.

1.2.10 Following the meeting, Systra provided an outline methodology and indicative cost for the modelling work, both of which have been shared with Hydrock and PBA.

National Highways

1.2.11 Prime met with NH and Jacobs, their consultant, via Teams on 17th May 2023. The purpose of the meeting was to update NH with the preferred methodology and also seek clarification on NH's stance on the modelling work as HBC and HCC appear to be under the impression that NH are content with the modelling work to date.

1.2.12 NH affirmed that it is content with the principle of the microsimulation modelling supplemented by standalone capacity assessment at Langstone Roundabout. However NH is not currently in a position to agree that the model is fit for purpose. NH requests further detailed modelling reports such as a baseline data report, calibration/validation report and forecast methodology information.

1.2.13 Prime queried NH's stance on traffic growth and use of TEMPro. NH are content that growth on the Island will be associated with the proposed developments and background growth should not need to be applied, however this cannot be said of movements to and from the A27. As such, TEMPro growth should be applied to A27 movements i.e. trips to and from the A27 via the slip roads at Langstone Roundabout. NH feel that this is also particularly important for the emerging Local Plan as HBC will need to demonstrate that the impact on all local strategic road network junctions is acceptable. Proposed TEMPro factors are presented in the following section.

1.2.14 Action: HBC/Systra to provide NH with model reports and methodology information when ready. Information should also be shared with HCC.

2 MODELLING PARAMETERS

2.1 Baseline

- 2.1.1 The 2022 Baseline traffic flows from the neutral month and summer microsimulation models will be used as the base year with capacity assessments undertaken at key junctions as identified by HCC. Observed queues should also be provided to aid capacity assessment calibration.
- 2.1.2 Prime constructed capacity assessment models using Junctions 9 and LinSig 3 as appropriate for the following junctions as part of the 2017 application at Rook Farm (APP/17/00007):
- A27/A3023 Langstone Road/Park Road South (Langstone Roundabout) – grade separated signal controlled roundabout;
 - A3023 Langstone Road/Langstone Technology Park Access/Southbrook Road – staggered crossroads with ghost island right turns;
 - A3023 Havant Road/Church Road (Mill Rythe Roundabout) – 3 arm roundabout;
 - A3023 Manor Road/St Mary's Road/Station Road – 4 arm staggered crossroads with ghost island right turn to St Mary's Road;
 - Elm Grove/Cherrywood Gardens – 3 arm priority;
 - St Mary's Road/Cherrywood Gardens – 3 arm split priority; and
 - Church Road/Tournerbury Lane/Elm Grove/St Mary's Road – staggered crossroads with ghost island right turns.
- 2.1.3 The models will be reviewed and recalibrated using the 2022 data. The models can be shared with the other consultants.

2.2 Background Traffic Growth

- 2.2.1 Two forecast years will be assessed, the first being 2025. This will act as the year of opening for the four development proposals. Whilst only a small proportion of the Rook Farm will be occupied in this year, full build-out will be assessed in line with NH recommendations. A second forecast year of 2032 will be assessed, this representing the year of application (2022 – noting that three of the applications were made in late 2021 and the Fathom's Reach application in early 2022) plus 10 years.
- 2.2.2 **Action: HCC and NH to confirm acceptance of forecast years or suggest alternatives if required.**
- 2.2.3 As stated in the Introduction, the development proposals will likely account for local traffic growth on the Island, therefore no traffic growth will be applied to local movements i.e. Island to Island, Island to mainland local roads and mainland local road to Island trips. Whilst NH in the meeting on 17th May 2023 expressed a preference for TEMPro to be applied to movements to/from the A27, trips associated with the live applications will be assigned to the A27 slip roads and will likely account for

- all island to A27 growth and vice versa. TEMPro growth will however be applied to A27 to mainland and mainland to A27 trips.
- 2.2.4 HBC's planning portal has been reviewed to consider the need to explicitly model any committed developments on the mainland, however the majority are relatively small scale or are located closer to other SRN junctions, as such, full (unadjusted) TEMPro will be used as a proxy for any mainland based development related growth.
- 2.2.5 **Action: HBC to confirm whether any committed developments, that were not fully built out at the time of the 2022 traffic surveys, need to be included.**
- 2.2.6 It should be noted that the emerging allocations from the withdrawn Local Plan, not including the live applications, will not be included in the model as they do not currently have any planning status as confirmed with HCC during the meeting on 17th April 2023.
- 2.2.7 We are aware of a live outline application by Persimmon for 65 dwellings on land south of The Mallards and west of Langstone Road north of the Island (APP/21/00647), however HCC informed us that whilst Persimmon have been invited to take part in this modelling process, they have yet to respond to the invitation, as such we will proceed with this process and exclude Persimmon as a committed development.
- 2.2.8 **Action: HBC to confirm acceptance of Persimmon site not being included in modelling work.**
- 2.2.9 TEMPro (core) growth should be applied to light vehicles (cars and vans) and National Road Traffic Projections (NRTP) (core) for HGVs and trunk roads should be applied to heavy vehicles (HGVs, buses and coaches) for movements to and from the A27 slip roads at Langstone Roundabout from and to mainland Havant. The middle layer super output areas in Havant which may add traffic to the A27 at the Langstone Roundabout have been identified and the associated growth factors are shown in Table 2.1 along with the NRTP based growth factors. Details of the NRTP calculation are provided in Appendix I.

Table 2.1: Traffic Growth Factors to be Applied to Mainland Movements

Area Description		AM Peak		PM Peak		N RTP
Level	Name	Origin	Destination	Origin	Destination	
2022-2025						
E02004769	Havant 008	1.0435	1.0315	1.0319	1.0392	
E02004770	Havant 009	1.0387	1.0138	1.0177	1.0349	
E02004771	Havant 010	1.0425	1.0305	1.0301	1.0370	
E02004775	Havant 014	1.0267	1.0231	1.0225	1.0248	
E02006822	Havant 018	1.0276	1.0295	1.0263	1.0252	
Average		1.0358	1.0257	1.0257	1.0322	1.0163
2022-2032						
E02004769	Havant 008	1.1082	1.0688	1.0742	1.0972	
E02004770	Havant 009	1.0942	1.0424	1.0500	1.0858	
E02004771	Havant 010	1.1047	1.0690	1.0713	1.0910	
E02004775	Havant 014	1.0639	1.0545	1.0536	1.0595	
E02006822	Havant 018	1.0659	1.0647	1.0605	1.0612	
Average		1.0874	1.0599	1.0619	1.0789	1.0531

2.2.10 Action: HCC and NH to confirm acceptance of traffic growth methodology.

2.3 Assessment Periods

Neutral Month Model

2.3.1 The focus of the neutral month model will be on the weekday network peak hours to be identified by Systra from the 2022 traffic surveys. The school PM peak should also be considered for the following junctions:

- A3023 Havant Road/Church Road (Mill Rythe Roundabout); and
- Church Road/Tournerbury Lane/Elm Grove/St Mary's Road.

Summer Model

2.3.2 The focus of the seasonal model will be on the traditional AM and PM peak hours, to be confirmed from review of trip generation survey data, and on the summertime AM peak which we understand to be 11am-12pm. We further understand that the summertime PM peak aligns with the traditional residential PM peak.

2.3.3 Action: HCC and NH to confirm suitability of peak hour assessments.

2.4 Development Trip Generation

2.4.1 Systra has undertaken trip generation surveys of residential developments on the Island during both the August peak and November neutral month programs. We are content for the resultant trip rates from these surveys to be used in the assessment rather than trip rates derived from the more standard TRICS database.

2.4.2 From discussions with Systra, we understand that the trip rate calculation process for the Local Plan modelling may be behind the live application in terms of timescales, as such, Prime may present trip rates subject to HBC allowing its commissioned survey data to be shared.

2.4.3 **Action: HBC to allow Systra to share trip generation survey results from St Benedict Road (Bellway) and Billy Road (Barratt Homes) developments with Prime.**

2.4.4 **Action: Prime or Systra to present trip rates for local trip generation surveys for agreement with HCC and NH.**

2.5 Development Trip Distribution

2.5.1 We are content for the distribution used in the 2019 model to be re-used. This was based on the use of observed distributions from appropriate neighbouring areas (proxy zones).

2.6 Assessment Scenarios

2.6.1 It is likely that the following assessment scenarios will be required for each of the assessment years (2025 and 2032) **subject to comments on the methodology from the three authorities:**

Future Year Reference Case Model Development:

- a. A Summer scenario representing the AM and PM residential peak periods and the AM summer period (assumed to be 1100-1200).
- b. A Neutral Month model scenario representing the AM and PM peak periods and the school PM peak period (assumed to be 1500-1600).
- c. Both Summer and Neutral Month scenarios will account for committed developments identified by HBC that are beyond the 4 specified developments for testing.
- d. Both Summer and Neutral Month models should include TEMPro and NRTP growth for non-island movement as detailed in Section 2.2 unless another method is suggested such as the use of the strategic model.
- e. Both Summer and Neutral Month scenarios will include network coding changes required to represent future year changes associated with committed developments and infrastructure.

Development Scenario Testing:

- 2.6.2 Using the Reference Case models (2025 and 2032) as a start point, for both Summer and Neutral Month, and each forecast year:
- a. A Development scenario model will be developed to include the Rook Farm development
 - b. A Development scenario model will be developed to include the Fathom's Reach development

- c. A Development scenario model will be developed to include the 2x Hayling Builder's developments
 - d. A Development scenario model will be developed to include all 4 development sites.
- 2.6.3 Using the Reference Case + All Developments scenarios as a start point, both Summer and Neutral Month and each forecast year:
- a. A single mitigation scenario will be developed representing the preferred Hayling Island LDP mitigation package. The details of the package will be agreed with HBC/HCC.

Model Runs & Analysis (Deliverables):

- a. All model runs will be conducted for the full 12hr (neutral month) and 13hr (summer) modelled periods.
- b. Model outputs will be collected for journey times, turn counts, and queue lengths at core locations, and collated by hour, with the peak hour results highlighted/extracted.
- c. A model development and scenario testing report will be developed summarising method and results.

3 NEXT STEPS

- 3.1.1 Once the parameters outlined above have been agreed, a final version of this Modelling Brief will be issued to all parties prior to Systra being instructed to commence the work.

APPENDIX I

NRTP CALCULATIONS

Table 2a: Road traffic projections (billion vehicle miles, bvm) from 2015 to 2060

Vehicle Type	Road Type	Country	Region	Traffic - Billion Vehicle miles (bvm)								
				2015	2020	2025	2030	2035	2040	2045	2050	2055
south east	trunk	hgv	South East	0.4554		0.4811	0.4945	0.5046	0.5199	0.5320	0.5407	0.5486
HGV												
				Year	5 Year Value	5 Year Diff	Linear Diff	Increment	1 Year Value	Check	Factor	
				2015	0.4554	0.0257	0.0026		0.4554			
				2016				1	0.4580			
				2017				2	0.4606			
				2018				3	0.4631			
				2019				4	0.4657			
				2020	0.0000			5	0.4683			
				2021				6	0.4708			
				2022				7	0.4734			
				2023				8	0.4760			
				2024				9	0.4786		22-25	
				2025	0.4811	0.0134	0.0027	10	0.4811	0.0000	1.0163	
				2026				1	0.4838			
				2027				2	0.4865			
				2028				3	0.4892			
				2029				4	0.4919			
				2030	0.4945	0.0101	0.0020	5	0.4945	0.0000		
				2031				1	0.4966		22-32	
				2032				2	0.4986		1.0531	
				2033				3	0.5006			
				2034				4	0.5026			
				2035	0.5046	0.0153	0.0031	5	0.5046	0.0000		
				2036				1	0.5077			
				2037				2	0.5108			
				2038				3	0.5138			
				2039				4	0.5169			
				2040	0.5199	0.0120	0.0024	5	0.5199	0.0000		
				2041				1	0.5223			
				2042				2	0.5247			
				2043				3	0.5272			
				2044				4	0.5296			
				2045	0.5320	0.0087	0.0017	5	0.5320	0.0000		
				2046				1	0.5337			
				2047				2	0.5355			
				2048				3	0.5372			
				2049				4	0.5389			
				2050	0.5407	0.0079	0.0016	5	0.5407	0.0000		