Bournemouth, Dorset and Poole - Draft Mineral Sites Plan

AS13 Roeshot - Modelling of Potential Traffic Impacts

As part of the assessment of the Christchurch Urban Extension, traffic modelling was carried out to assess the potential impact of the development of the Roeshot site, both the Hampshire and Dorset parts of the site, on the assumption that only one would be worked at any one time.

A summary of the findings of the traffic modelling, and the impact on existing traffic flows, is set out below.

The report, presented as a Technical Note, details the methodology of how additional HGV trips have been added to the traffic model, and the effects on journey times on specific routes.

Table 6 on page 12 of the TA (see MSPHD-02, Mineral Sites Plan Examination Library website) indicates the required additional flows and is shown below;

Table 6 – Total Forecast Traffic Generation Comparison – Two Way Flows

	LGVs	HGVs	Total
AM Peak	1	12	13
PM Peak	11	12	23
12 Hour	30	120	150

Additional trips have only been added to the AM and PM periods as there is no Inter Peak Period available

The model used is a variant of the recently re-calibrated Christchurch Paramics model that :-

- Has a Base year of 2017, and
- Includes the proposed Roeshot Hill development (and its associated trips) along with the mitigation measures at Stony Lane Roundabout.

The modelled outputs are shown in tabular form showing the journey time routes and comparing:-

- Observed Journey times for the AM and PM peaks with
  - Modelled journey times
  - Modelled journey times with the Extra HGV trips

The report then concludes that there is little or no effect on journey times as a result of the additional HGV trips.

Technical Note - Roeshot Quarry additional trips

The assessment used a variant of the recently calibrated Christchurch Paramics model.

The model used in this assessment has a Base year of 2017 and has the Roeshot Hill development (and its associated trips) with mitigation measures at Stony Lane Roundabout

Additional HGV trips have been added to the model as stated in Table 6 on page 12 of the Transport Assessment (see MSPHD-02, Mineral Sites Plan Examination Library website).

Table 6 – Total Forecast Traffic Generation Comparison – Two Way Flows

	LGVs	HGVs	Total
AM Peak	1	12	13
PM Peak	11	12	23
12 Hour	30	120	150

INFORMATION

Trips

- 6 origins in both AM and PM peaks
- 6 destinations in both AM and PM peaks

Suggested entry and exit for additional vehicles

- Barrack Road Entry – Zone 1
- Roeshot Hill Exit Zone – 32

Profiles in use

- Origin AM: SOMERFORD
- Origin PM: Zone 4 PM
- Destination AM: AVERAGE
- Destination PM: PM Z1 HGV

HGV Trips have been added to and from these zones as requested, as it is assumed all of the site traffic heads west towards Bournemouth from the site. No additional Car trips have been added to the model as there are so few and would be difficult if not impossible to report on.

The demands were adjusted and the revised model is located:-

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ORIGINS - Zone 32 – Zone 1 (Westbound)

For origins there are currently 10 HGV trips modelled in the AM period of 0700-0930 of which 49 % are in the peak hour (0800-0900). 12 additional trips have been added to this.
New Total for Period 22.
(50% assumed)

For origins there are currently 3 HGV trips modelled in the PM period of 1600-1830 of which 46 % are in the peak hour (1700-1800). 13 additional trips have been added to this.
New Total for Period 16
(50% assumed)

The adjustments now allow for 6 additional HGV vehicles t to be released from the A35 (Roeshot Hill to Barrack Road) in the peak hours – and will also increase the trips either side of the peak hour proportionally but in line with the figures in Table 6 of the TA.

DESTINATIONS - Zone 1 – Zone 32 (Eastbound)

For destinations there are currently 9 HGV trips modelled in the AM period of 0700-0930 of which 36 % are in the AM peak hour (0800-0900). 18 additional trips have been added to this.
New Total for Period 27
(33% assumed) 3 in the peak hour – 9 required

For Destinations there are currently 8 HGV trips modelled in the PM period of 1600-1830 of which 43 % are in the Peak hour (1700-1800). 15 additional trips have been added to this.
New Total for Period 23
(43% assumed) 3.5 in peak - 10 required

The adjustments should now allow for 6 additional HGV vehicles to be released from the A35 (Barrack Road to Roeshot Hill) in the peak hours – and will also increase the trips either side of the peak hour proportionally but in line with the figures in Table 6 of the TA.

Model outputs

Journey Time Data
The following models have been used in this assessment

Model 1: Christchurch_2017_With Roeshot Dev_with Mitigation_Stony Roundabout_10_02_2016_JTS

Model 2: Variant of Model 1 but with the additional HGV trips associated with the Hants Minerals Planning App Roeshot Hill (as per Table 6 of the TA)

The following tables show the Observed and Modelled journey times. The modelled journey times are shown with and without the additional HGV from the proposed site, for both the AM and PM peaks. An additional column shows the difference between the 'with and without' additional HGVs

It must be borne in mind that the modelled journey times in the tables are now influenced by the additional traffic associated with the Roeshot Hill development and the mitigation measures proposed at Stony Lane Roundabout.

Journey time data is shown below for the AM peak

Route	AM Peak	Route Number	Direction	Observed (secs)	No Additional HGV (secs)	With Additional HGV (secs)	Additional HGV - No Additional HGV (secs)
Bailey Drive to Stony Lane Rbt Entry	0800-0900	1	EB	213	220	223	3.2
Stony Lane Rbt to Bailey Drive Rbt	0800-0900	2	WB	189	189	187	-2.4
Tuckton Bridge to Stour Road / Bargates	0800-0900	3	NB	214	186	192	6.1
Stour Road / Bargates to Tuckton Bridge	0800-0900	4	SB	221	173	169	-4.1
Stour Road / Bargates to Bridge St / Stony lane Signals	0800-0900	5	EB	307	309	302	-7.0
Bridge St / Stony lane Signals to Stour Road / Bargates	0800-0900	6	WB	301	210	211	1.3
Stony Lane Rbt to Lymington Road	0800-0900	9	EB	131	123	122	-1.4
Lymington Road to Stony Lane	0800-0900	10	WB	203	164	161	-2.4
Roeshot hill to Somerford Rbt	0800-0900	11	EB	80	99	99	0.0
Somerford Rbt to Roeshot hill	0800-0900	12	WB	108	127	124	-3.0

Journey time data is shown below for the PM peak

Route	PM Peak	Number	Direction	Observed (secs)	No Additional HGV (secs)	With Additional HGV (secs)	Additional HGV - No Additional HGV (secs)
Bailey Drive to Stony Lane Rbt Entry	1700-1800	1	EB	222	288	295	7.4
Stony Lane Rbt to Bailey Drive Rbt	1700-1800	2	WB	193	257	255	-2.2
Tuckton Bridge to Stour Road / Bargates	1700-1800	3	NB	209	300	307	6.7
Stour Road / Bargates to Tuckton Bridge	1700-1800	4	SB	217	352	340	-11.1
Stour Road / Bargates to Bridge St / Stony lane Signals	1700-1800	5	EB	326	317	330	13.0
Bridge St / Stony lane Signals to Stour Road / Bargates	1700-1800	6	WB	318	373	336	-36.6
Stony Lane Rbt to Lymington Road	1700-1800	9	EB	127	122	121	-1.7
Lymington Road to Stony Lane	1700-1800	10	WB	296	152	152	0.2
Roeshot hill to Somerford Rbt	1700-1800	11	EB	71	99	100	0.4
Somerford Rbt to Roeshot hill	1700-1800	12	WB	108	118	118	0.8

CONCLUSIONS

The revised matrices were assigned to the model and trip generation checked to ensure the correct amount of additional HGV vehicles have been assigned.

Note re: Microsimulation Modelling

No individual model run is the same as the model is randomly seeded.
Therefore for statistically robust results the model has been run 10 times for the AM and PM periods with the average of the runs used for reporting purposes.

AM Peak

With the relatively low number of trips generated by the site - the model appears to be unaffected with only very small variations in journey times.

PM peak

The PM peak is known to be more congested than the AM in the Christchurch area, and the model is therefore more sensitive to changes.

It is also known that there are generally less HGV trips undertaken at this time.

With the relatively low number of trips generated by the site - the model appears to be unaffected with only very small variations in journey times.