

A1 - D3 - 2026 Do Nothing, AM

Summary

Data Errors and Warnings

No errors or warnings

Run Summary

Analysis set used	Run start time	Run finish time	Run duration (s)	Modelling start time (HH:mm)	Network Cycle Time (s)	Performance Index (£ per hr)	Total network delay (PCU-hr/hr)	Highest DOS (%)	Item with highest DOS	Number of oversaturated items	Percentage of oversaturated items (%)	Item with worst signalised PRC	Item with worst unsignalised PRC	Item with worst overall PRC	Network within capacity
1	27/04/2022 16:51:52	27/04/2022 16:51:52	0.92	07:30	100	170.14	10.88	80.89	3C/1	0	0	3C/1	3A2/1	3C/1	✓

Analysis Set Details

Name	Use Simulation	Description	Use specific Demand Set(s)	Optimise specific Demand Set(s)	Include in report	Locked
					✓	

Demand Set Details

Scenario name	Time Period name	Description	Composite	Demand sets	Start time (HH:mm)	Locked	Run automatically
2026 Do Nothing	AM				07:30		✓

Local OD Matrix - Local Matrix: 3

Local Matrix Options

OD Matrix	Name	Use for point to point table	Auto calculate	Allocation mode	Allow paths past exit locations	Allow looped paths on arms	Allow looped paths on traffic nodes	Copy flows	Matrix to copy flows from	Limit paths by length	Path length limit multiplier	Limit paths by number	Path number limit	Limit paths by flow	Low path flow threshold
3		✓	✓	Path Equalisation			✓			✓	1.25				

Normal Input Flows (PCU/hr)

		To		
		3-1	3-2	3-3
From	3-1	0	9	931
	3-2	0	0	42
	3-3	1194	90	0

Bus Input Flows not shown as they are blank.

Tram Input Flows not shown as they are blank.

Pedestrian Input Flows not shown as they are blank.

Locations

OD Matrix	Location	Name	Entries	Exits	Colour
3	3-1	3A2/1	3Ax/1	3Ax/1	#008000
	3-2	3B/1	3Bx2/1	3Bx2/1	#FFA500
	3-3	3C/1, 3C/2	3Cx/1	3Cx/1	#A52A2A

Normal Paths and Flows

OD Matrix	Path	Description	From location	To location	Path items	Allocation type	Normal Calculated Flow (PCU/hr)
3	2		3-2	3-3	3B/1, 3Cx/1	Normal	42
	3		3-3	3-2	3C/2, 3Bx2/1	Normal	90
	4		3-3	3-1	3C/1, 3Ax/1	Normal	1194
	5		3-1	3-2	3A2/1, 3A1/1, 3Bx2/1	Normal	9
	6		3-1	3-3	3A2/1, 3A1/2, 3Cx/1	Normal	931

Signal Timings

Network Default: 100s cycle time; 100 steps

Controller Stream 3

Controller Stream	Name	Description	Use sequence	Cycle time source	Cycle time (s)	Minimum possible cycle time (s)
3			1	NetworkDefault	100	39

Controller Stream 3 - Properties

Controller Stream	Manufacturer name	Type	Model number	(Telephone) Line Number	Site number	Grid reference	Gaining delay type
3		Unspecified					Absolute

Controller Stream 3 - Optimisation

Controller Stream	Allow offset optimisation	Allow green split optimisation	Optimisation level	Auto redistribute	Enable stage constraint
3	✓	✓	Offsets And Green Splits	✓	

Phases

Controller Stream	Phase	Name	Street minimum green (s)	Maximum green (s)	Relative start displacement (s)	Relative end displacement (s)	Type
3	A		5	300	0	0	Unknown
	B		5	300	0	0	Unknown
	C		5	300	0	0	Unknown
	D		5	300	0	0	Unknown
	E		3	300	0	0	Unknown
	F		3	300	0	0	Unknown

	G		3		300		0		0	Unknown
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Library Stages

Controller Stream	Library Stage	Phases in stage	User stage minimum (s)	Run every N cycles	Probability of running (%)
3	1	A, C, G	1	1	100
	2	A, F, G	1	1	100
	3	B, C, E	1	1	100
	4	B, E, F	1	1	100
	5	C, D, E	1	1	100
	6	C, E, G	1	1	100
	7	D, E, F	1	1	100
	8	E, F, G	1	1	100

Stage Sequences

Controller Stream	Sequence	Name	Multiple cycling	Stage IDs	Stage ends	Minimum possible cycle time (s)	Exclude from analysis
3	1	(untitled)	Single	1, 3, 7	55, 69, 90	39	
	2	(untitled)	Single	1, 4, 5	25, 58, 90	39	
	3	(untitled)	Single	1, 4, 7	26, 60, 90	39	
	4	(untitled)	Single	1, 5, 4	26, 60, 90	39	
	5	(untitled)	Single	1, 7, 3	25, 58, 90	39	
	6	(untitled)	Single	1, 7, 4	26, 60, 90	39	
	7	(untitled)	Single	2, 3, 5	26, 60, 90	39	
	8	(untitled)	Single	2, 3, 7	26, 60, 90	39	
	9	(untitled)	Single	2, 4, 5	25, 58, 90	42	
	10	(untitled)	Single	2, 5, 3	28, 60, 90	39	

Intergreen Matrix for Controller Stream 3

		To						
		A	B	C	D	E	F	G
From	A		5		5	5		
	B	5			5			5
	C						5	
	D	5	5					5
	E	10						
	F			8				
	G	9		9				

Banned Stage transitions for Controller Stream 3

		To							
		1	2	3	4	5	6	7	8
From	1								
	2								
	3								
	4								
	5								
	6								
	7								
	8								

Interstage Matrix for Controller Stream 3

		To							
		1	2	3	4	5	6	7	8
From	1	0	5	9	9	9	5	9	5
	2	8	0	9	9	9	8	9	5
	3	10	10	0	5	5	5	5	5
	4	10	10	8	0	8	8	5	5
	5	10	10	5	5	0	5	5	5
	6	10	10	9	9	9	0	9	5
	7	10	10	8	5	8	8	0	5
	8	10	10	9	9	9	8	9	0

Resultant Stages

Controller Stream	Resultant Stage	Is base stage	Library Stage ID	Phases in this stage	Stage start (s)	Stage end (s)	Stage duration (s)	User stage minimum (s)	Stage minimum (s)
3	1	✓	1	A,C,G	90	55	65	1	5
	2	✓	3	B,C,E	64	69	5	1	5
	3	✓	7	D,E,F	74	80	6	1	5

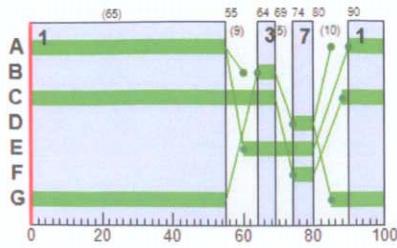
Resultant Phase Green Periods

Controller Stream	Phase	Green period	Is base green period	Start time (s)	End time (s)	Duration (s)
3	A	1	✓	90	55	65
	B	1	✓	64	69	5
	C	1	✓	88	69	81
	D	1	✓	74	80	6
	E	1	✓	60	80	20
	F	1	✓	74	80	6
	G	1	✓	85	55	70

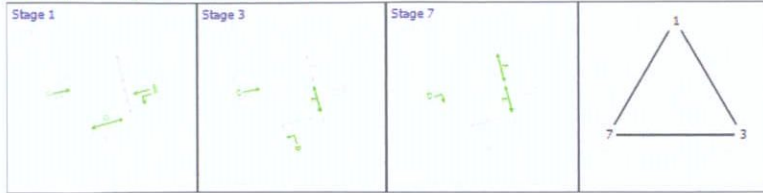
Traffic Stream Green Times

Arm	Traffic Stream	Traffic Node	Controller Stream	Phase	Green Period 1		
					Start	End	Duration
3B	1	3	3	B	64	69	5
3C	1	3	3	C	88	69	81
3C	2	3	3	D	74	80	6
3A1	1	3	3	A	90	55	65
3A1	2	3	3	A	90	55	65

Phase Timings Diagram for Controller Stream 3



Stage Sequence Diagram for Controller Stream 3



Resultant penalties

Time Segment	Controller stream	Phase min max penalty (£ per hr)	Intergreen broken penalty (£ per hr)	Stage constraint broken penalty (£ per hr)	Cost of controller stream penalties (£ per hr)
07:30-08:30	3	0.00	0.00	0.00	0.00

Final Prediction Table

Traffic Stream Results

Arm	Traffic Stream	Name	Traffic node	SIGNALS		FLOWS		PERFORMANCE				PER PCU			QUEUES		WEIGHTS		PENALTIES	P.I.
				Controller stream	Phase	Calculated flow entering (PCU/hr)	Calculated sat flow	Actual green (s per cycle)	Wasted time total (s per cycle)	Degree of saturation (%)	Practical reserve capacity	JourneyTime (s)	Mean Delay per Veh (s)	Mean stops per Veh (%)	Mean max queue (PCU)	Mean end of red queue (PCU)	Delay weighting multiplier (%)	Stop weighting multiplier (%)		
3Ax	1		7			1194	Unrestricted	100	8.00	0	Unrestricted	10.58	0.00	0.00	0.00		100	100	0.00	0.00
3B	1	L	3	3	B	42	1800	5	3.00	39	131	58.61	55.72	104.99	1.24	1.22	100	100	0.00	9.78
3C	1	S	3	3	C	1194 <	1800	81	0.00	81	11	16.02	9.89	53.48	19.26 +	7.65	100	100	0.00	54.57
	2	R	3	3	D	90	1800	6	0.00	71	26	84.58	78.45	126.17	3.25	3.15	100	100	0.00	29.27
3Cx	1					973	Unrestricted	100	15.00	0	Unrestricted	9.20	0.00	0.00	0.00		100	100	0.00	0.00
3A1	1	L	3	3	A	9	1800	65	65.00	1	11780	8.79	5.96	32.83	0.09	0.09	100	100	0.00	0.25
	2	S	3	3	A	931 <	1800	65	0.00	78	15	20.09	17.37	72.28	19.50 +	10.19	100	100	0.00	72.23
3A2	1		6			940	1800	100	81.00	52	72	5.16	1.09	0.00	0.28		100	100	0.00	4.05
3Bx2	1					99	Unrestricted	100	86.00	0	Unrestricted	6.06	0.00	0.00	0.00		100	100	0.00	0.00

Network Results

	Distance travelled (PCU-km/hr)	Time spent (PCU-hr/hr)	Mean journey speed (kph)	Uniform delay (PCU-hr/hr)	Random plus oversat delay (PCU-hr/hr)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Excess queue penalty (£ per hr)	Performance Index (£ per hr)
Normal traffic	304.72	20.84	14.62	6.37	4.31	151.69	18.46	0.00	170.14
Bus									
Tram									
Pedestrians	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	304.72	20.84	14.62	6.37	4.31	151.69	18.46	0.00	170.14

- < = adjusted flow warning (upstream links/traffic streams are over-saturated)
- * = Traffic Stream - Normal, Bus or Tram Stop or Delay weighting has been set to a value other than 100%
- ^ = Traffic Stream - Normal, Bus or Tram Stop or Delay Path weighting has been set to a value other than 100%
- + = average link/traffic stream excess queue is greater than 0
- P.I. = PERFORMANCE INDEX

TRANSYT 16
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Filename: H087 Commercial TRANSYT Model J3 with BusConnects 20220427.t16
 Path: J:\H_JOBS\Job-H087\B_Documents\C_Civil\A_CS Reports\Traffic\Modelling\H087 Commercial Modelling
 Report generation date: 27/04/2022 16:53:30

«A1 - : D4 - 2026 Do Nothing, PM :

- »Summary
- »Local OD Matrix - Local Matrix: 3
- »Signal Timings
- »Final Prediction Table

Summary of network performance

PM					
	Set ID	PI (£ per hr)	Total delay (PCU-hr/hr)	Highest DOS	Number oversaturated
2026 Do Nothing					
Network	D4	4566.83	317.13	147% (TS 3A1/2)	3 (20%)

File summary

File description

File title	Heuston South Quarter Commercial
Location	Dublin 8
Site number	
UTCRegion	
Driving side	Left
Date	27/04/2022
Version	Junction 3 BusConnects Layout
Status	
Identifier	
Client	
Jobnumber	H087
Enumerator	GF
Description	

Model and Results

Enable controller offsets	Enable fuel consumption	Enable quick flares	Display journey time results	Display OD matrix distances	Display level of service results	Display blocking and starvation results	Display end of red and green queue results	Display excess queue results	Display separate uniform and random results	Display unweighted results	Display TRANSYT 12 style timings	Display effective greens in results	Display Red-With-Amber	Display End-Of-Green Amber	Display controller phase minimums
			✓			✓	✓	✓	✓	✓	✓	✓			

Units

Cost units	Speed units	Distance units	Fuel economy units	Fuel rate units	Mass units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
£	kph	m	l/100km	l/h	kg	PCU	PCU	perHour	s	-Hour	perHour

Sorting

Show names instead of IDs	Sorting direction	Sorting type	Ignore prefixes when sorting	Analysis/demand set sorting	Link grouping	Source grouping	Colour Analysis/Demand Sets
	Ascending	Numerical		ID	Normal	Normal	✓

Simulation options

Criteria type	Stop criteria (%)	Stop criteria time (s)	Stop criteria number of trials	Random seed	Results refresh speed (s)	Average animation capture interval (s)	Use quick response	Do flow sampling	Uniform vehicle generation	Last run random seed	Last run number of trials	Last run time taken (s)
Delay	3.00	999	200	-1	3	60	✓			0	0	0.00

A1 - D4 - 2026 Do Nothing, PM

Summary

Data Errors and Warnings

No errors or warnings

Run Summary

Analysis set used	Run start time	Run finish time	Run duration (s)	Modelling start time (HH:mm)	Network Cycle Time (s)	Performance Index (£ per hr)	Total network delay (PCU-hr/hr)	Highest DOS (%)	Item with highest DOS	Number of oversaturated items	Percentage of oversaturated items (%)	Item with worst signalised PRC	Item with worst unsignalised PRC	Item with worst overall PRC	Network within capacity
1	27/04/2022 16:53:25	27/04/2022 16:53:26	1.69	16:30	100	4586.83	317.13	148.68	3A1/2	3	20	3A1/2	3A2/1	3A1/2	

Analysis Set Details

Name	Use Simulation	Description	Use specific Demand Set(s)	Optimise specific Demand Set(s)	Include in report	Locked
					✓	

Demand Set Details

Scenario name	Time Period name	Description	Composite	Demand sets	Start time (HH:mm)	Locked	Run automatically
2026 Do Nothing	PM				16:30		✓

Local OD Matrix - Local Matrix: 3

Local Matrix Options

OD Matrix	Name	Use for point to point table	Auto calculate	Allocation mode	Allow paths past exit locations	Allow looped paths on arms	Allow looped paths on traffic nodes	Copy flows	Matrix to copy flows from	Limit paths by length	Path length limit multiplier	Limit paths by number	Path number limit	Limit paths by flow	Low path flow threshold
3		✓	✓	Path Equalisation			✓			✓	1.25				

Normal Input Flows (PCU/hr)

		To		
		3-1	3-2	3-3
From	3-1	0	19	1769
	3-2	0	0	119
	3-3	744	39	0

Bus Input Flows not shown as they are blank.

Tram Input Flows not shown as they are blank.

Pedestrian Input Flows not shown as they are blank.

Locations

OD Matrix	Location	Name	Entries	Exits	Colour
3	3-1		3A2/1	3Ax/1	#008000
	3-2		3B/1	3Bx2/1	#FFA500
	3-3		3C/1, 3C/2	3Cx/1	#A52A2A

Normal Paths and Flows

OD Matrix	Path	Description	From location	To location	Path Items	Allocation type	Normal Calculated Flow (PCU/hr)
3	2		3-2	3-3	3B/1, 3Cx/1	Normal	119
	3		3-3	3-2	3C/2, 3Bx2/1	Normal	39
	4		3-3	3-1	3C/1, 3Ax/1	Normal	744
	5		3-1	3-2	3A2/1, 3A1/1, 3Bx2/1	Normal	19
	6		3-1	3-3	3A2/1, 3A1/2, 3Cx/1	Normal	1769

Signal Timings

Network Default: 100s cycle time; 100 steps

Controller Stream 3

Controller Stream	Name	Description	Use sequence	Cycle time source	Cycle time (s)	Minimum possible cycle time (s)
3			1	NetworkDefault	100	39

Controller Stream 3 - Properties

Controller Stream	Manufacturer name	Type	Model number	(Telephone) Line Number	Site number	Grid reference	Gaining delay type
3	Unspecified						Absolute

Controller Stream 3 - Optimisation

Controller Stream	Allow offset optimisation	Allow green split optimisation	Optimisation level	Auto redistribute	Enable stage constraint
3	✓	✓	Offsets And Green Splits	✓	

Phases

Controller Stream	Phase	Name	Street minimum green (s)	Maximum green (s)	Relative start displacement (s)	Relative end displacement (s)	Type
3	A		5	300	0	0	Unknown
	B		5	300	0	0	Unknown
	C		5	300	0	0	Unknown
	D		5	300	0	0	Unknown
	E		3	300	0	0	Unknown
	F		3	300	0	0	Unknown
	G		3	300	0	0	Unknown

Library Stages

Controller Stream	Library Stage	Phases in stage	User stage minimum (s)	Run every N cycles	Probability of running (%)
3	1	A, C, G	1	1	100
	2	A, F, G	1	1	100
	3	B, C, E	1	1	100
	4	B, E, F	1	1	100
	5	C, D, E	1	1	100
	6	C, E, G	1	1	100
	7	D, E, F	1	1	100
	8	E, F, G	1	1	100

Stage Sequences

Controller Stream	Sequence	Name	Multiple cycling	Stage IDs	Stage ends	Minimum possible cycle time (s)	Exclude from analysis
3	1	(untitled)	Single	1, 3, 7	55, 69, 79	39	
	2	(untitled)	Single	1, 4, 5	25, 58, 90	39	
	3	(untitled)	Single	1, 4, 7	26, 60, 90	39	
	4	(untitled)	Single	1, 5, 4	26, 60, 90	39	
	5	(untitled)	Single	1, 7, 3	25, 58, 90	39	
	6	(untitled)	Single	1, 7, 4	26, 60, 90	39	
	7	(untitled)	Single	2, 3, 5	26, 60, 90	39	
	8	(untitled)	Single	2, 3, 7	26, 60, 90	39	
	9	(untitled)	Single	2, 4, 5	25, 58, 90	42	
	10	(untitled)	Single	2, 5, 3	26, 60, 90	39	

Intergreen Matrix for Controller Stream 3

		To						
		A	B	C	D	E	F	G
From	A	5			5	5		
	B	5			5		5	
	C						5	
	D	5	5					5
	E	10						
	F			8				
	G	9		9				

Banned Stage transitions for Controller Stream 3

		To							
		1	2	3	4	5	6	7	8
From	1								
	2								
	3								
	4								
	5								
	6								
	7								
	8								

Interstage Matrix for Controller Stream 3

		To							
		1	2	3	4	5	6	7	8
From	1	0	5	9	9	9	5	9	5
	2	8	0	9	9	9	8	9	5
	3	10	10	0	5	5	5	5	5
	4	10	10	8	0	8	8	5	5
	5	10	10	5	5	0	5	5	5
	6	10	10	9	9	9	0	9	5
	7	10	10	8	5	8	8	0	5
	8	10	10	9	9	9	8	9	0

Resultant Stages

Controller Stream	Resultant Stage	Is base stage	Library Stage ID	Phases in this stage	Stage start (s)	Stage end (s)	Stage duration (s)	User stage minimum (s)	Stage minimum (s)
3	1	✓	1	A,C,G	89	55	66	1	5
	2	✓	3	B,C,E	64	69	5	1	5
	3	✓	7	D,E,F	74	79	5	1	5

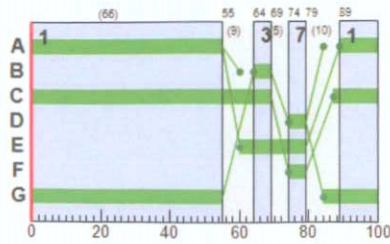
Resultant Phase Green Periods

Controller Stream	Phase	Green period	Is base green period	Start time (s)	End time (s)	Duration (s)
3	A	1	✓	89	55	66
	B	1	✓	64	69	5
	C	1	✓	87	69	82
	D	1	✓	74	79	5
	E	1	✓	60	79	19
	F	1	✓	74	79	5
	G	1	✓	84	55	71

Traffic Stream Green Times

Arm	Traffic Stream	Traffic Node	Controller Stream	Phase	Green Period 1		
					Start	End	Duration
3B	1	3	3	B	64	69	5
3C	1	3	3	C	87	69	82
3C	2	3	3	D	74	79	5
3A1	1	3	3	A	89	55	66
3A1	2	3	3	A	89	55	66

Phase Timings Diagram for Controller Stream 3



Stage Sequence Diagram for Controller Stream 3



Resultant penalties

Time Segment	Controller stream	Phase min max penalty (£ per hr)	Intergreen broken penalty (£ per hr)	Stage constraint broken penalty (£ per hr)	Cost of controller stream penalties (£ per hr)
16:30-17:30	3	0.00	0.00	0.00	0.00

Final Prediction Table

Traffic Stream Results

Arm	Traffic Stream	Name	Traffic node	SIGNALS		FLOWS		PERFORMANCE				PER PCU		QUEUES		WEIGHTS		PENALTIES		P.I.
				Controller stream	Phase	Calculated flow entering (PCU/hr)	Calculated sat flow	Actual green (s per cycle)	Wasted time total (s per cycle)	Degree of saturation (%)	Practical reserve capacity	JourneyTime (s)	Mean Delay per Veh (s)	Mean stops per Veh (%)	Mean max queue (PCU)	Mean end of red queue (PCU)	Delay weighting multiplier (%)	Stop weighting multiplier (%)	Cost of traffic penalties (£ per hr)	
3Ax	1		7			744	Unrestricted	100	9.00	0	Unrestricted	10.58	0.00	0.00	0.00					0.00
3B	1	L	3	3	B	119 <	1800	5	0.00	110	-18	299.22	296.32	258.38	11.36 +	11.21	100	100	0.00	142.59
3C	1	S	3	3	C	744	1800	82	0.00	50	81	9.79	3.66	27.23	6.03	3.76	100	100	0.00	13.27
	2	R	3	3	D	39	1800	5	3.00	36	149	60.61	54.47	103.76	1.14	1.12	100	100	0.00	8.89
3Cx	1					1314	Unrestricted	100	10.00	0	Unrestricted	9.20	0.00	0.00	0.00					0.00
3A1	1	L	3	3	A	19	1800	66	66.00	2	5613	8.46	5.63	31.84	0.17	0.17	100	100	0.00	0.50
	2	S	3	3	A	1789 <	1800	66	0.00	147	-39	589.00	586.28	376.82	315.73 +	293.62	100	100	0.00	4147.87
3A2	1		6			1788 <	1800	100	100.00	99	-9	40.05	35.97	0.00	17.87 +		100	100	0.00	253.72
3Bx2	1					58	Unrestricted	100	88.00	0	Unrestricted	6.06	0.00	0.00	0.00		100	100	0.00	0.00

Network Results

	Distance travelled (PCU-km/hr)	Time spent (PCU-hr/hr)	Mean journey speed (kph)	Uniform delay (PCU-hr/hr)	Random plus oversat delay (PCU-hr/hr)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Excess queue penalty (£ per hr)	Performance Index (£ per hr)
Normal traffic	313.32	327.57	0.96	7.97	309.16	4503.23	63.60	0.00	4566.83
Bus									
Tram									
Pedestrians	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	313.32	327.57	0.96	7.97	309.16	4503.23	63.60	0.00	4566.83

- < = adjusted flow warning (upstream links/traffic streams are over-saturated)
- * = Traffic Stream - Normal, Bus or Tram Stop or Delay weighting has been set to a value other than 100%
- ^ = Traffic Stream - Normal, Bus or Tram Stop or Delay Path weighting has been set to a value other than 100%
- + = average link/traffic stream excess queue is greater than 0
- P.I. = PERFORMANCE INDEX

TRANSYT 16
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Filename: H087 Commercial TRANSYT Model J3 with BusConnects 20220427.116
 Path: J:\H_JOBS\Job-H087\B_Documents\C_CivilA_CS Reports\Traffic\Modelling\H087 Commercial Modelling
 Report generation date: 27/04/2022 16:53:46

«A1 - : D5 - 2026 With Development, AM :

- »Summary
- »Local OD Matrix - Local Matrix: 3
- »Signal Timings
- »Final Prediction Table

Summary of network performance

AM					
Set ID	PI (£ per hr)	Total delay (PCU-hr/hr)	Highest DOS	Number oversaturated	
2026 With Development					
Network	D5	186.42	11.75	82% (TS 3C/1)	0 (0%)

File summary

File description

File title	Heuston South Quarter Commercial
Location	Dublin 8
Site number	
UTCRegion	
Driving side	Left
Date	27/04/2022
Version	Junction 3 BusConnects Layout
Status	
Identifier	
Client	
Jobnumber	H087
Enumerator	GF
Description	

Model and Results

Enable controller offsets	Enable fuel consumption	Enable quick flares	Display journey time results	Display OD matrix distances	Display level of service results	Display blocking and starvation results	Display end of red and green queue results	Display excess queue results	Display separate uniform and random results	Display unweighted results	Display TRANSYT 12 style timings	Display effective greens in results	Display Red-With-Amber	Display End-Of-Green Amber	Display controller phase minimums
			✓			✓	✓	✓	✓	✓	✓	✓			

Units

Cost units	Speed units	Distance units	Fuel economy units	Fuel rate units	Mass units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
£	kph	m	l/100km	l/h	kg	PCU	PCU	perHour	s	-Hour	perHour

Sorting

Show names instead of IDs	Sorting direction	Sorting type	Ignore prefixes when sorting	Analysis/demand set sorting	Link grouping	Source grouping	Colour Analysis/Demand Sets
	Ascending	Numerical		ID	Normal	Normal	✓

Simulation options

Criteria type	Stop criteria (%)	Stop criteria time (s)	Stop criteria number of trials	Random seed	Results refresh speed (s)	Average animation capture interval (s)	Use quick response	Do flow sampling	Uniform vehicle generation	Last run random seed	Last run number of trials	Last run time taken (s)
Delay	3.00	999	200	-1	3	60	✓			0	0	0.00

A1 - D5 - 2026 With Development, AM

Summary

Data Errors and Warnings

No errors or warnings

Run Summary

Analysis set used	Run start time	Run finish time	Run duration (s)	Modelling start time (HH:mm)	Network Cycle Time (s)	Performance Index (£ per hr)	Total network delay (PCU-hr/hr)	Highest DOS (%)	Item with highest DOS	Number of oversaturated items	Percentage of oversaturated items (%)	Item with worst signalised PRC	Item with worst unsignalised PRC	Item with worst overall PRC	Network within capacity
1	27/04/2022 16:53:43	27/04/2022 16:53:44	1.13	07:30	100	186.42	11.75	81.89	3C/1	0	0	3C/1	3A2/1	3C/1	✓

Analysis Set Details

Name	Use Simulation	Description	Use specific Demand Set(s)	Optimise specific Demand Set(s)	Include in report	Locked
					✓	

Demand Set Details

Scenario name	Time Period name	Description	Composite	Demand sets	Start time (HH:mm)	Locked	Run automatically
2026 With Development	AM				07:30		✓

Local OD Matrix - Local Matrix: 3

Local Matrix Options

OD Matrix	Name	Use for point to point table	Auto calculate	Allocation mode	Allow paths past exit locations	Allow looped paths on arms	Allow looped paths on traffic nodes	Copy flows	Matrix to copy flows from	Limit paths by length	Path length limit multiplier	Limit paths by number	Path number limit	Limit paths by flow	Low path flow threshold
3		✓	✓	Path Equalisation			✓			✓	1.25				

Normal Input Flows (PCU/hr)

		To		
		3-1	3-2	3-3
From	3-1	0	10	931
	3-2	0	0	54
	3-3	1194	103	0

Bus Input Flows not shown as they are blank.

Tram Input Flows not shown as they are blank.

Pedestrian Input Flows not shown as they are blank.

Locations

OD Matrix	Location	Name	Entries	Exits	Colour
3	3-1		3A2/1	3Ax/1	#008000
	3-2		3B/1	3Bx2/1	#FFA500
	3-3		3C/1, 3C/2	3Cx/1	#A52A2A

Normal Paths and Flows

OD Matrix	Path	Description	From location	To location	Path items	Allocation type	Normal Calculated Flow (PCU/hr)
3	2		3-2	3-3	3B/1, 3Cx/1	Normal	54
	3		3-3	3-2	3C/2, 3Bx2/1	Normal	103
	4		3-3	3-1	3C/1, 3Ax/1	Normal	1194
	5		3-1	3-2	3A2/1, 3A1/1, 3Bx2/1	Normal	10
	6		3-1	3-3	3A2/1, 3A1/2, 3Cx/1	Normal	931

Signal Timings

Network Default: 100s cycle time; 100 steps

Controller Stream 3

Controller Stream	Name	Description	Use sequence	Cycle time source	Cycle time (s)	Minimum possible cycle time (s)
3			1	NetworkDefault	100	39

Controller Stream 3 - Properties

Controller Stream	Manufacturer name	Type	Model number	(Telephone) Line Number	Site number	Grid reference	Gaining delay type
3	Unspecified						Absolute

Controller Stream 3 - Optimisation

Controller Stream	Allow offset optimisation	Allow green split optimisation	Optimisation level	Auto redistribute	Enable stage constraint
3	✓	✓	Offsets And Green Splits	✓	

Phases

Controller Stream	Phase	Name	Street minimum green (s)	Maximum green (s)	Relative start displacement (s)	Relative end displacement (s)	Type
3	A		5	300	0	0	Unknown
	B		5	300	0	0	Unknown
	C		5	300	0	0	Unknown
	D		5	300	0	0	Unknown
	E		3	300	0	0	Unknown
	F		3	300	0	0	Unknown

	G		3		300		0		0		Unknown
--	---	--	---	--	-----	--	---	--	---	--	---------

Library Stages

Controller Stream	Library Stage	Phases in stage	User stage minimum (s)	Run every N cycles	Probability of running (%)
3	1	A, C, G	1	1	100
	2	A, F, G	1	1	100
	3	B, C, E	1	1	100
	4	B, E, F	1	1	100
	5	C, D, E	1	1	100
	6	C, E, G	1	1	100
	7	D, E, F	1	1	100
	8	E, F, G	1	1	100

Stage Sequences

Controller Stream	Sequence	Name	Multiple cycling	Stage IDs	Stage ends	Minimum possible cycle time (s)	Exclude from analysis
3	1	(untitled)	Single	1, 3, 7	55, 69, 81	39	
	2	(untitled)	Single	1, 4, 5	25, 58, 90	39	
	3	(untitled)	Single	1, 4, 7	26, 60, 90	39	
	4	(untitled)	Single	1, 5, 4	26, 60, 90	39	
	5	(untitled)	Single	1, 7, 3	25, 58, 90	39	
	6	(untitled)	Single	1, 7, 4	26, 60, 90	39	
	7	(untitled)	Single	2, 3, 5	26, 60, 90	39	
	8	(untitled)	Single	2, 3, 7	26, 60, 90	39	
	9	(untitled)	Single	2, 4, 5	25, 58, 90	42	
	10	(untitled)	Single	2, 5, 3	26, 60, 90	39	

Intergreen Matrix for Controller Stream 3

		To						
		A	B	C	D	E	F	G
From	A		5		5	5		
	B	5			5			5
	C						5	
	D	5	5					5
	E	10						
	F			8				
	G	9		9				

Banned Stage transitions for Controller Stream 3

		To							
		1	2	3	4	5	6	7	8
From	1								
	2								
	3								
	4								
	5								
	6								
	7								
	8								

Interstage Matrix for Controller Stream 3

		To							
		1	2	3	4	5	6	7	8
From	1	0	5	9	9	9	5	9	5
	2	8	0	9	9	9	8	9	5
	3	10	10	0	5	5	5	5	5
	4	10	10	8	0	8	8	5	5
	5	10	10	5	5	0	5	5	5
	6	10	10	9	9	9	0	9	5
	7	10	10	8	5	8	8	0	5
	8	10	10	9	9	9	8	9	0

Resultant Stages

Controller Stream	Resultant Stage	Is base stage	Library Stage ID	Phases in this stage	Stage start (s)	Stage end (s)	Stage duration (s)	User stage minimum (s)	Stage minimum (s)
3	1	✓	1	A,C,G	91	55	64	1	5
	2	✓	3	B,C,E	64	69	5	1	5
	3	✓	7	D,E,F	74	81	7	1	5

Resultant Phase Green Periods

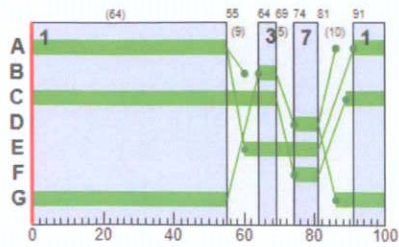
Controller Stream	Phase	Green period	Is base green period	Start time (s)	End time (s)	Duration (s)
3	A	1	✓	91	55	64
	B	1	✓	64	69	5
	C	1	✓	89	69	80
	D	1	✓	74	81	7
	E	1	✓	60	81	21
	F	1	✓	74	81	7
	G	1	✓	86	55	69

Traffic Stream Green Times

Arm	Traffic Stream	Traffic Node	Controller Stream	Phase	Green Period 1		
					Start	End	Duration
3B	1	3	3	B	64	69	5
3C	1	3	3	C	89	69	80
3C	2	3	3	D	74	81	7
3A1	1	3	3	A	91	55	64
3A1	2	3	3	A	91	55	64

Phase Timings Diagram for Controller Stream 3

DCC PLAN NO: 4610/22
 RECEIVED: 04/08/2022



Stage Sequence Diagram for Controller Stream 3



Resultant penalties

Time Segment	Controller stream	Phase min max penalty (£ per hr)	Intergreen broken penalty (£ per hr)	Stage constraint broken penalty (£ per hr)	Cost of controller stream penalties (£ per hr)
07:30-08:30	3	0.00	0.00	0.00	0.00

Final Prediction Table

Traffic Stream Results

Arm	Traffic Stream	Name	Traffic node	SIGNALS		FLOWS		PERFORMANCE			PER PCU			QUEUES		WEIGHTS		PENALTIES	P.I.	
				Controller stream	Phase	Calculated flow entering (PCU/hr)	Calculated sat flow	Actual green (s per cycle)	Wasted time total (s per cycle)	Degree of saturation (%)	Practical reserve capacity	Journey Time (s)	Mean Delay per Veh (s)	Mean stops per Veh (%)	Mean max queue (PCU)	Mean end of red queue (PCU)	Delay weighting multiplier (%)	Stop weighting multiplier (%)	Cost of traffic penalties (£ per hr)	P.I.
3Ax	1		7			1194	Unrestricted	100	9.00	0	Unrestricted	10.58	0.00	0.00	0.00	100	100	0.00	0.00	
3B	1	L	3	3	B	54	1800	5	3.00	50	80	64.68	61.78	110.40	1.68	1.65	100	100	0.00	13.91
3C	1	S	3	3	C	1194 <	1800	80	0.00	82	10	16.97	10.84	56.84	20.39 +	8.12	100	100	0.00	59.55
	2	R	3	3	D	103	1800	7	0.00	72	26	80.25	74.11	122.99	3.61	3.47	100	100	0.00	31.70
3Cx	1					985	Unrestricted	100	15.00	0	Unrestricted	9.20	0.00	0.00	0.00	100	100	0.00	0.00	
3A1	1	L	3	3	A	10	1800	64	64.00	1	10430	9.14	6.31	33.83	0.10	0.10	100	100	0.00	0.29
	2	S	3	3	A	931 <	1800	64	0.00	80	13	21.28	18.57	74.81	20.14 +	10.57	100	100	0.00	76.92
3A2	1		6			941	1800	100	63.00	52	72	5.17	1.09	0.00	0.29		100	100	0.00	4.06
3Bx2	1					113	Unrestricted	100	84.00	0	Unrestricted	6.06	0.00	0.00	0.00		100	100	0.00	0.00

Network Results

	Distance travelled (PCU-km/hr)	Time spent (PCU-hr/hr)	Mean journey speed (kph)	Uniform delay (PCU-hr/hr)	Random plus oversat delay (PCU-hr/hr)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Excess queue penalty (£ per hr)	Performance Index (£ per hr)
Normal traffic	307.36	21.99	13.98	7.05	4.70	166.80	19.62	0.00	186.42
Bus									
Tram									
Pedestrians	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	307.36	21.99	13.98	7.05	4.70	166.80	19.62	0.00	186.42

- < = adjusted flow warning (upstream links/traffic streams are over-saturated)
- * = Traffic Stream - Normal, Bus or Tram Stop or Delay weighting has been set to a value other than 100%
- ^ = Traffic Stream - Normal, Bus or Tram Stop or Delay Path weighting has been set to a value other than 100%
- + = average link/traffic stream excess queue is greater than 0
- P.I. = PERFORMANCE INDEX

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Filename: H087 Commercial TRANSYT Model J3 with BusConnects 20220427.t16
 Path: J:\H_JOBS\Job-H087\B_Documents\C_Civil\A_CS Reports\Traffic\Modelling\H087 Commercial Modelling
 Report generation date: 27/04/2022 16:54:07

«A1 - : D6 - 2026 With Development, PM :

- »Summary
- »Local OD Matrix - Local Matrix: 3
- »Signal Timings
- »Final Prediction Table

Summary of network performance

PM				
Set ID	PI (£ per hr)	Total delay (PCU-hr/hr)	Highest DOS	Number oversaturated
2026 With Development				
Network	D6	4675.49	147% (TS 3A1/2)	3 (20%)

File summary

File description

File title	Heuston South Quarter Commercial
Location	Dublin 8
Site number	
UTCRegion	
Driving side	Left
Date	27/04/2022
Version	Junction 3 BusConnects Layout
Status	
Identifier	
Client	
Jobnumber	H087
Enumerator	GF
Description	

Model and Results

Enable controller offsets	Enable fuel consumption	Enable quick flares	Display journey time results	Display OD matrix distances	Display level of service results	Display blocking and starvation results	Display end of red and green queue results	Display excess queue results	Display separate uniform and random results	Display unweighted results	Display TRANSYT 12 style timings	Display effective greens in results	Display Red-With-Amber	Display End-Of-Green Amber	Display controller phase minimums
			✓			✓	✓	✓	✓	✓	✓	✓			

Units

Cost units	Speed units	Distance units	Fuel economy units	Fuel rate units	Mass units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
£	kph	m	l/100km	l/h	kg	PCU	PCU	perHour	s	-Hour	perHour

Sorting

Show names instead of IDs	Sorting direction	Sorting type	Ignore prefixes when sorting	Analysis/demand set sorting	Link grouping	Source grouping	Colour Analysis/Demand Sets
	Ascending	Numerical		ID	Normal	Normal	✓

Simulation options

Criteria type	Stop criteria (%)	Stop criteria time (s)	Stop criteria number of trials	Random seed	Results refresh speed (s)	Average animation capture interval (s)	Use quick response	Do flow sampling	Uniform vehicle generation	Last run random seed	Last run number of trials	Last run time taken (s)
Delay	3.00	999	200	-1	3	60	✓			0	0	0.00

A1 - D6 - 2026 With Development, PM

Summary

Data Errors and Warnings

No errors or warnings

Run Summary

Analysis set used	Run start time	Run finish time	Run duration (s)	Modelling start time (HH:mm)	Network Cycle Time (s)	Performance index (£ per hr)	Total network delay (PCU-hr/hr)	Highest DOS (%)	Item with highest DOS	Number of oversaturated items	Percentage of oversaturated items (%)	Item with worst signalised PRC	Item with worst unsignalised PRC	Item with worst overall PRC	Network within capacity
1	27/04/2022 16:54:02	27/04/2022 16:54:02	0.87	16:30	100	4675.49	324.72	146.88	3A1/2	3	20	3A1/2	3A2/1	3A1/2	

Analysis Set Details

Name	Use Simulation	Description	Use specific Demand Set(s)	Optimise specific Demand Set(s)	Include in report	Locked
					✓	

Demand Set Details

Scenario name	Time Period name	Description	Composite	Demand sets	Start time (HH:mm)	Locked	Run automatically
2026 With Development	PM				16:30		✓

Local OD Matrix - Local Matrix: 3

Local Matrix Options

OD Matrix	Name	Use for point to point table	Auto calculate	Allocation mode	Allow paths past exit locations	Allow looped paths on arms	Allow looped paths on traffic nodes	Copy flows	Matrix to copy flows from	Limit paths by length	Path length limit multiplier	Limit paths by number	Path number limit	Limit paths by flow	Low path flow threshold
3		✓	✓	Path Equalisation			✓			✓	1.25				

Normal Input Flows (PCU/hr)

		To		
		3-1	3-2	3-3
From	3-1	0	22	1769
	3-2	0	0	135
	3-3	744	45	0

Bus Input Flows not shown as they are blank.

Tram Input Flows not shown as they are blank.

Pedestrian Input Flows not shown as they are blank.

Locations

OD Matrix	Location	Name	Entries	Exits	Colour
3	3-1		3A2/1	3Ax/1	#008000
	3-2		3B/1	3Bx2/1	#FFA500
	3-3		3C/1, 3C/2	3Cx/1	#A52A2A

Normal Paths and Flows

OD Matrix	Path	Description	From location	To location	Path items	Allocation type	Normal Calculated Flow (PCU/hr)
3	2		3-2	3-3	3B/1, 3Cx/1	Normal	135
	3		3-3	3-2	3C/2, 3Bx2/1	Normal	45
	4		3-3	3-1	3C/1, 3Ax/1	Normal	744
	5		3-1	3-2	3A2/1, 3A1/1, 3Bx2/1	Normal	22
	6		3-1	3-3	3A2/1, 3A1/2, 3Cx/1	Normal	1769

Signal Timings

Network Default: 100s cycle time; 100 steps

Controller Stream 3

Controller Stream	Name	Description	Use sequence	Cycle time source	Cycle time (s)	Minimum possible cycle time (s)
3			1	NetworkDefault	100	39

Controller Stream 3 - Properties

Controller Stream	Manufacturer name	Type	Model number	(Telephone) Line Number	Site number	Grid reference	Gaining delay type
3		Unspecified					Absolute

Controller Stream 3 - Optimisation

Controller Stream	Allow offset optimisation	Allow green split optimisation	Optimisation level	Auto redistribute	Enable stage constraint
3	✓	✓	Offsets And Green Splits	✓	

Phases

Controller Stream	Phase	Name	Street minimum green (s)	Maximum green (s)	Relative start displacement (s)	Relative end displacement (s)	Type
3	A		5	300	0	0	Unknown
	B		5	300	0	0	Unknown
	C		5	300	0	0	Unknown
	D		5	300	0	0	Unknown
	E		3	300	0	0	Unknown
	F		3	300	0	0	Unknown
	G		3	300	0	0	Unknown

Library Stages

Controller Stream	Library Stage	Phases in stage	User stage minimum (s)	Run every N cycles	Probability of running (%)
3	1	A, C, G	1	1	100
	2	A, F, G	1	1	100
	3	B, C, E	1	1	100
	4	B, E, F	1	1	100
	5	C, D, E	1	1	100
	6	C, E, G	1	1	100
	7	D, E, F	1	1	100
	8	E, F, G	1	1	100

Stage Sequences

Controller Stream	Sequence	Name	Multiple cycling	Stage IDs	Stage ends	Minimum possible cycle time (s)	Exclude from analysis
3	1	(untitled)	Single	1, 3, 7	55, 69, 79	39	
	2	(untitled)	Single	1, 4, 5	25, 58, 90	39	
	3	(untitled)	Single	1, 4, 7	26, 60, 90	39	
	4	(untitled)	Single	1, 5, 4	26, 60, 90	39	
	5	(untitled)	Single	1, 7, 3	25, 58, 90	39	
	6	(untitled)	Single	1, 7, 4	26, 60, 90	39	
	7	(untitled)	Single	2, 3, 5	26, 60, 90	39	
	8	(untitled)	Single	2, 3, 7	26, 60, 90	39	
	9	(untitled)	Single	2, 4, 5	25, 58, 90	42	
	10	(untitled)	Single	2, 5, 3	26, 60, 90	39	

Intergreen Matrix for Controller Stream 3

		To						
		A	B	C	D	E	F	G
From	A	5			5	5		
	B	5			5		5	
	C						5	
	D	5	5					5
	E	10						
	F			8				
	G		9	9				

Banned Stage transitions for Controller Stream 3

		To							
		1	2	3	4	5	6	7	8
From	1								
	2								
	3								
	4								
	5								
	6								
	7								
	8								

Interstage Matrix for Controller Stream 3

		To							
		1	2	3	4	5	6	7	8
From	1	0	5	9	9	9	5	9	5
	2	8	0	9	9	9	8	9	5
	3	10	10	0	5	5	5	5	5
	4	10	10	8	0	8	8	5	5
	5	10	10	5	5	0	5	5	5
	6	10	10	9	9	9	0	9	5
	7	10	10	8	5	8	8	0	5
	8	10	10	9	9	9	8	9	0

Resultant Stages

Controller Stream	Resultant Stage	Is base stage	Library Stage ID	Phases in this stage	Stage start (s)	Stage end (s)	Stage duration (s)	User stage minimum (s)	Stage minimum (s)
3	1	✓	1	A,C,G	89	55	66	1	5
	2	✓	3	B,C,E	64	69	5	1	5
	3	✓	7	D,E,F	74	79	5	1	5

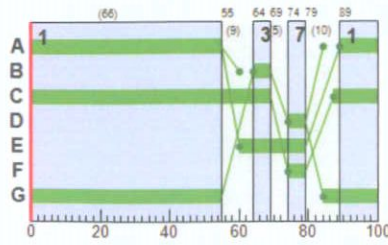
Resultant Phase Green Periods

Controller Stream	Phase	Green period	Is base green period	Start time (s)	End time (s)	Duration (s)
3	A	1	✓	89	55	66
	B	1	✓	64	69	5
	C	1	✓	87	69	82
	D	1	✓	74	79	5
	E	1	✓	60	79	19
	F	1	✓	74	79	5
	G	1	✓	84	55	71

Traffic Stream Green Times

Arm	Traffic Stream	Traffic Node	Controller Stream	Phase	Green Period 1		
					Start	End	Duration
3B	1	3	3	B	64	69	5
3C	1	3	3	C	87	69	82
3C	2	3	3	D	74	79	5
3A1	1	3	3	A	89	55	66
3A1	2	3	3	A	89	55	66

Phase Timings Diagram for Controller Stream 3



Stage Sequence Diagram for Controller Stream 3



Resultant penalties

Time Segment	Controller stream	Phase min max penalty (£ per hr)	Intergreen broken penalty (£ per hr)	Stage constraint broken penalty (£ per hr)	Cost of controller stream penalties (£ per hr)
16:30-17:30	3	0.00	0.00	0.00	0.00

Final Prediction Table

Traffic Stream Results

Arm	Traffic Stream	Name	Traffic node	SIGNALS		FLOWS		PERFORMANCE				PER PCU		QUEUES		WEIGHTS		PENALTIES	P.I.	
				Controller stream	Phase	Calculated flow entering (PCU/hr)	Calculated sat flow	Actual green (s per cycle)	Wasted time total (s per cycle)	Degree of saturation (%)	Practical reserve capacity	JourneyTime (s)	Mean Delay per Veh (s)	Mean stops per Veh (%)	Mean max queue (PCU)	Mean end of red queue (PCU)	Delay weighting multiplier (%)			Stop weighting multiplier (%)
3Ax	1		7			744	Unrestricted	100	9.00	0	Unrestricted	10.58	0.00	0.00	0.00	100	100	0.00	0.00	
3B	1	L	3	3	B	135 <	1800	5	0.00	125	-28	445.06	442.17	316.93	18.14 +	17.99	100	100	0.00	239.75
3C	1	S	3	3	C	744	1800	82	0.00	50	81	9.79	3.66	27.23	6.03	3.76	100	100	0.00	13.27
	2	R	3	3	D	45	1800	5	3.00	42	116	63.19	57.06	106.18	1.35	1.32	100	100	0.00	10.73
3Cx	1					1314	Unrestricted	100	10.00	0	Unrestricted	9.20	0.00	0.00	0.00	100	100	0.00	0.00	
3A1	1	L	3	3	A	22	1800	66	66.00	2	4834	8.46	5.64	31.85	0.20	0.20	100	100	0.00	0.58
	2	S	3	3	A	1769 <	1800	66	0.00	147	-39	589.00	586.28	376.82	315.73 +	293.62	100	100	0.00	4147.87
3A2	1		6			1791 <	1800	100	100.00	100	-10	41.34	37.27	0.00	18.54 +		100	100	0.00	263.30
3Bx2	1					67	Unrestricted	100	86.00	0	Unrestricted	6.06	0.00	0.00	0.00	100	100	0.00	0.00	

Network Results

	Distance travelled (PCU-km/hr)	Time spent (PCU-hr/hr)	Mean journey speed (kph)	Uniform delay (PCU-hr/hr)	Random plus oversat delay (PCU-hr/hr)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Excess queue penalty (£ per hr)	Performance Index (£ per hr)
Normal traffic	314.64	335.21	0.94	8.05	316.67	4610.99	64.50	0.00	4675.49
Bus									
Tram									
Pedestrians	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	314.64	335.21	0.94	8.05	316.67	4610.99	64.50	0.00	4675.49

- < = adjusted flow warning (upstream links/traffic streams are over-saturated)
- * = Traffic Stream - Normal, Bus or Tram Stop or Delay weighting has been set to a value other than 100%
- ^ = Traffic Stream - Normal, Bus or Tram Stop or Delay Path weighting has been set to a value other than 100%
- + = average link/traffic stream excess queue is greater than 0
- P.I. = PERFORMANCE INDEX

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Filename: H087 Commercial TRANSYT Model J3 with BusConnects 20220427.116
 Path: J:\H_JOBS\Job-H087\B_Documents\C_Civil\A_CS Reports\TrafficModelling\H087 Commercial Modelling
 Report generation date: 27/04/2022 16:54:29

- «A1 - : D7 - 2031 Do Nothing, AM :
- »Summary
 - »Local OD Matrix - Local Matrix: 3
 - »Signal Timings
 - »Final Prediction Table

Summary of network performance

AM					
Set ID	PI (£ per hr)	Total delay (PCU-hr/hr)	Highest DOS	Number oversaturated	
2031 Do Nothing					
Network	D7	218.56	13.81	87% (TS 3C/1)	0 (0%)

File summary

File description

File title	Heuston South Quarter Commercial
Location	Dublin 8
Site number	
UTCRegion	
Driving side	Left
Date	27/04/2022
Version	Junction 3 BusConnects Layout
Status	
Identifier	
Client	
Jobnumber	H087
Enumerator	GF
Description	

Model and Results

Enable controller offsets	Enable fuel consumption	Enable quick flares	Display journey time results	Display OD matrix distances	Display level of service results	Display blocking and starvation results	Display end of red and green queue results	Display excess queue results	Display separate uniform and random results	Display unweighted results	Display TRANSYT 12 style timings	Display effective greens in results	Display Red-With-Amber	Display End-Of-Green Amber	Display controller phase minimums
			✓			✓	✓	✓	✓	✓	✓	✓			

Units

Cost units	Speed units	Distance units	Fuel economy units	Fuel rate units	Mass units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
£	kph	m	l/100km	l/h	kg	PCU	PCU	perHour	s	-Hour	perHour

Sorting

Show names instead of IDs	Sorting direction	Sorting type	Ignore prefixes when sorting	Analysis/demand set sorting	Link grouping	Source grouping	Colour Analysis/Demand Sets
	Ascending	Numerical		ID	Normal	Normal	✓

Simulation options

Criteria type	Stop criteria (%)	Stop criteria time (s)	Stop criteria number of trials	Random seed	Results refresh speed (s)	Average animation capture interval (s)	Use quick response	Do flow sampling	Uniform vehicle generation	Last run random seed	Last run number of trials	Last run time taken (s)
Delay	3.00	999	200	-1	3	60	✓			0	0	0.00

A1 - D7 - 2031 Do Nothing, AM

Summary

Data Errors and Warnings

No errors or warnings

Run Summary

Analysis set used	Run start time	Run finish time	Run duration (s)	Modelling start time (HH:mm)	Network Cycle Time (s)	Performance Index (£ per hr)	Total network delay (PCU-hr/hr)	Highest DOS (%)	Item with highest DOS	Number of oversaturated items	Percentage of oversaturated items (%)	Item with worst signalised PRC	Item with worst unsignalised PRC	Item with worst overall PRC	Network within capacity
1	27/04/2022 16:54:25	27/04/2022 16:54:25	0.57	07:30	100	218.56	13.81	86.65	3C/1	0	0	3C/1	3A2/1	3C/1	✓

Analysis Set Details

Name	Use Simulation	Description	Use specific Demand Set(s)	Optimise specific Demand Set(s)	Include in report	Locked
					✓	

Demand Set Details

Scenario name	Time Period name	Description	Composite	Demand sets	Start time (HH:mm)	Locked	Run automatically
2031 Do Nothing	AM				07:30		✓

Local OD Matrix - Local Matrix: 3

Local Matrix Options

OD Matrix	Name	Use for point to point table	Auto calculate	Allocation mode	Allow paths past exit locations	Allow looped paths on arms	Allow looped paths on traffic nodes	Copy flows	Matrix to copy flows from	Limit paths by length	Path length limit multiplier	Limit paths by number	Path number limit	Limit paths by flow	Low path flow threshold
3		✓	✓	Path Equalisation			✓			✓	1.25				

Normal Input Flows (PCU/hr)

		To		
		3-1	3-2	3-3
From	3-1	0	10	998
	3-2	0	0	44
	3-3	1279	96	0

Bus Input Flows not shown as they are blank.

Tram Input Flows not shown as they are blank.

Pedestrian Input Flows not shown as they are blank.

Locations

OD Matrix	Location	Name	Entries	Exits	Colour
3	3-1		3A2/1	3Ax/1	#008000
	3-2		3B/1	3Bx2/1	#FFA500
	3-3		3C/1, 3C/2	3Cx/1	#A52A2A

Normal Paths and Flows

OD Matrix	Path	Description	From location	To location	Path Items	Allocation type	Normal Calculated Flow (PCU/hr)
3	2		3-2	3-3	3B/1, 3Cx/1	Normal	44
	3		3-3	3-2	3C/2, 3Bx2/1	Normal	96
	4		3-3	3-1	3C/1, 3Ax/1	Normal	1279
	5		3-1	3-2	3A2/1, 3A1/1, 3Bx2/1	Normal	10
	6		3-1	3-3	3A2/1, 3A1/2, 3Cx/1	Normal	998

Signal Timings

Network Default: 100s cycle time; 100 steps

Controller Stream 3

Controller Stream	Name	Description	Use sequence	Cycle time source	Cycle time (s)	Minimum possible cycle time (s)
3			1	NetworkDefault	100	39

Controller Stream 3 - Properties

Controller Stream	Manufacturer name	Type	Model number	(Telephone) Line Number	Site number	Grid reference	Gaining delay type
3	Unspecified						Absolute

Controller Stream 3 - Optimisation

Controller Stream	Allow offset optimisation	Allow green split optimisation	Optimisation level	Auto redistribute	Enable stage constraint
3	✓	✓	Offsets And Green Splits	✓	

Phases

Controller Stream	Phase	Name	Street minimum green (s)	Maximum green (s)	Relative start displacement (s)	Relative end displacement (s)	Type
3	A		5	300	0	0	Unknown
	B		5	300	0	0	Unknown
	C		5	300	0	0	Unknown
	D		5	300	0	0	Unknown
	E		3	300	0	0	Unknown
	F		3	300	0	0	Unknown

	G		3		300		0		0	Unknown
--	---	--	---	--	-----	--	---	--	---	---------

Library Stages

Controller Stream	Library Stage	Phases in stage	User stage minimum (s)	Run every N cycles	Probability of running (%)
3	1	A, C, G	1	1	100
	2	A, F, G	1	1	100
	3	B, C, E	1	1	100
	4	B, E, F	1	1	100
	5	C, D, E	1	1	100
	6	C, E, G	1	1	100
	7	D, E, F	1	1	100
	8	E, F, G	1	1	100

Stage Sequences

Controller Stream	Sequence	Name	Multiple cycling	Stage IDs	Stage ends	Minimum possible cycle time (s)	Exclude from analysis
3	1	(untitled)	Single	1, 3, 7	55, 69, 80	39	
	2	(untitled)	Single	1, 4, 5	25, 58, 90	39	
	3	(untitled)	Single	1, 4, 7	26, 60, 90	39	
	4	(untitled)	Single	1, 5, 4	25, 60, 90	39	
	5	(untitled)	Single	1, 7, 3	25, 58, 90	39	
	6	(untitled)	Single	1, 7, 4	26, 60, 90	39	
	7	(untitled)	Single	2, 3, 5	26, 60, 90	39	
	8	(untitled)	Single	2, 3, 7	26, 60, 90	39	
	9	(untitled)	Single	2, 4, 5	25, 58, 90	42	
	10	(untitled)	Single	2, 5, 3	26, 60, 90	39	

Intergreen Matrix for Controller Stream 3

		To						
		A	B	C	D	E	F	G
From	A		5		5	5		
	B	5			5			5
	C						5	
	D	5	5					5
	E	10						
	F			8				
	G	9		9				

Banned Stage transitions for Controller Stream 3

		To							
		1	2	3	4	5	6	7	8
From	1								
	2								
	3								
	4								
	5								
	6								
	7								
	8								

Interstage Matrix for Controller Stream 3

		To							
		1	2	3	4	5	6	7	8
From	1	0	5	9	9	9	5	9	5
	2	8	0	9	9	9	8	9	5
	3	10	10	0	5	5	5	5	5
	4	10	10	8	0	8	8	5	5
	5	10	10	5	5	0	5	5	5
	6	10	10	9	9	9	0	9	5
	7	10	10	8	5	8	8	0	5
	8	10	10	9	9	9	8	9	0

Resultant Stages

Controller Stream	Resultant Stage	Is base stage	Library Stage ID	Phases in this stage	Stage start (s)	Stage end (s)	Stage duration (s)	User stage minimum (s)	Stage minimum (s)
3	1	✓	1	A,C,G	90	55	65	1	5
	2	✓	3	B,C,E	64	69	5	1	5
	3	✓	7	D,E,F	74	80	6	1	5

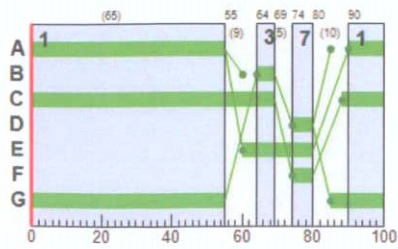
Resultant Phase Green Periods

Controller Stream	Phase	Green period	Is base green period	Start time (s)	End time (s)	Duration (s)
3	A	1	✓	90	55	65
	B	1	✓	64	69	5
	C	1	✓	88	69	81
	D	1	✓	74	80	6
	E	1	✓	60	80	20
	F	1	✓	74	80	6
	G	1	✓	85	55	70

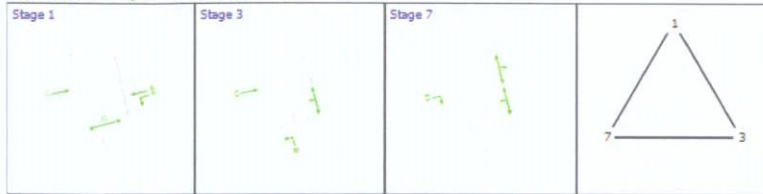
Traffic Stream Green Times

Arm	Traffic Stream	Traffic Node	Controller Stream	Phase	Green Period 1		
					Start	End	Duration
3B	1	3	3	B	64	69	5
3C	1	3	3	C	88	69	81
3C	2	3	3	D	74	80	6
3A1	1	3	3	A	90	55	65
3A1	2	3	3	A	90	55	65

Phase Timings Diagram for Controller Stream 3



Stage Sequence Diagram for Controller Stream 3



Resultant penalties

Time Segment	Controller stream	Phase min max penalty (£ per hr)	Intergreen broken penalty (£ per hr)	Stage constraint broken penalty (£ per hr)	Cost of controller stream penalties (£ per hr)
07:30-08:30	3	0.00	0.00	0.00	0.00

Final Prediction Table

Traffic Stream Results

Arm	Traffic Stream	Name	Traffic node	SIGNALS		FLOWS		PERFORMANCE				PER PCU			QUEUES		WEIGHTS		PENALTIES	P.I.
				Controller stream	Phase	Calculated flow entering (PCU/hr)	Calculated sat flow	Actual green (s per cycle)	Wasted time total (s per cycle)	Degree of saturation (%)	Practical reserve capacity	Journey Time (s)	Mean Delay per Veh (s)	Mean stops per Veh (%)	Mean max queue (PCU)	Mean end of red queue (PCU)	Delay weighting multiplier (%)	Stop weighting multiplier (%)	Cost of traffic penalties (£ per hr)	P.I.
3Ax	1		7			1279	Unrestricted	100	8.00	0	Unrestricted	10.58	0.00	0.00			100	100	0.00	0.00
3B	1	L	3	3	B	44	1800	5	3.00	41	121	59.49	56.60	105.77	1.31	1.29	100	100	0.00	10.41
3C	1	S	3	3	C	1279 <	1800	81	0.00	87	4	19.37	13.24	63.87	24.74 +	9.11	100	100	0.00	77.02
	2	R	3	3	D	96	1800	6	0.00	76	18	92.56	86.42	133.55	3.70	3.57	100	100	0.00	34.33
3Cx	1					1042	Unrestricted	100	15.00	0	Unrestricted	9.20	0.00	0.00			100	100	0.00	0.00
3A1	1	L	3	3	A	10	1800	65	65.00	1	10592	8.79	5.96	32.83	0.09	0.09	100	100	0.00	0.28
	2	S	3	3	A	998 <	1800	65	0.00	84	7	23.41	20.69	80.13	23.21 +	11.56	100	100	0.00	91.47
3A2	1		6			1006	1800	100	70.00	56	61	5.34	1.27	0.00	0.36		100	100	0.00	5.05
3Bx2	1					106	Unrestricted	100	85.00	0	Unrestricted	6.06	0.00	0.00			100	100	0.00	0.00

Network Results

	Distance travelled (PCU-km/hr)	Time spent (PCU-hr/hr)	Mean journey speed (kph)	Uniform delay (PCU-hr/hr)	Random plus oversat delay (PCU-hr/hr)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Excess queue penalty (£ per hr)	Performance index (£ per hr)
Normal traffic	326.41	24.69	13.22	7.37	6.43	196.06	22.50	0.00	218.56
Bus									
Tram									
Pedestrians	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	326.41	24.69	13.22	7.37	6.43	196.06	22.50	0.00	218.56

- < = adjusted flow warning (upstream links/traffic streams are over-saturated)
- * = Traffic Stream - Normal, Bus or Tram Stop or Delay weighting has been set to a value other than 100%
- ^ = Traffic Stream - Normal, Bus or Tram Stop or Delay Path weighting has been set to a value other than 100%
- + = average link/traffic stream excess queue is greater than 0
- P.I. = PERFORMANCE INDEX

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Filename: H087 Commercial TRANSYT Model J3 with BusConnects 20220427.t16
 Path: J:\H_JOBS\Job-H087\B_Documents\C_Civil\A_CS Reports\Traffic\Modelling\H087 Commercial Modelling
 Report generation date: 27/04/2022 16:54:49

- «A1 - : D8 - 2031 Do Nothing, PM :
- »Summary
 - »Local OD Matrix - Local Matrix: 3
 - »Signal Timings
 - »Final Prediction Table

Summary of network performance

PM				
Set ID	PI (£ per hr)	Total delay (PCU-hr/hr)	Highest DOS	Number oversaturated
2031 Do Nothing				
Network	D8	5380.39	373.18	148% (TS 3A1/2) 3 (20%)

File summary

File description

File title	Heuston South Quarter Commercial
Location	Dublin 8
Site number	
UTCRegion	
Driving side	Left
Date	27/04/2022
Version	Junction 3 BusConnects Layout
Status	
Identifier	
Client	
Jobnumber	H087
Enumerator	GF
Description	

Model and Results

Enable controller offsets	Enable fuel consumption	Enable quick flares	Display journey time results	Display OD matrix distances	Display level of service results	Display blocking and starvation results	Display end of red and green queue results	Display excess queue results	Display separate uniform and random results	Display unweighted results	Display TRANSYT 12 style timings	Display effective greens in results	Display Red-With-Amber	Display End-Of-Green Amber	Display controller phase minimums
			✓			✓	✓	✓	✓	✓	✓	✓			

Units

Cost units	Speed units	Distance units	Fuel economy units	Fuel rate units	Mass units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
£	kph	m	l/100km	l/h	kg	PCU	PCU	perHour	s	-Hour	perHour

Sorting

Show names instead of IDs	Sorting direction	Sorting type	Ignore prefixes when sorting	Analysis/demand set sorting	Link grouping	Source grouping	Colour Analysis/Demand Sets
	Ascending	Numerical		ID	Normal	Normal	✓

Simulation options

Criteria type	Stop criteria (%)	Stop criteria time (s)	Stop criteria number of trials	Random seed	Results refresh speed (s)	Average animation capture interval (s)	Use quick response	Do flow sampling	Uniform vehicle generation	Last run random seed	Last run number of trials	Last run time taken (s)
Delay	3.00	999	200	-1	3	60	✓			0	0	0.00

A1 - D8 - 2031 Do Nothing, PM

Summary

Data Errors and Warnings

No errors or warnings

Run Summary

Analysis set used	Run start time	Run finish time	Run duration (s)	Modelling start time (HH:mm)	Network Cycle Time (s)	Performance index (£ per hr)	Total network delay (PCU-hr/hr)	Highest DOS (%)	Item with highest DOS	Number of oversaturated items	Percentage of oversaturated items (%)	Item with worst signalised PRC	Item with worst unsignalised PRC	Item with worst overall PRC	Network within capacity
1	27/04/2022 16:54:45	27/04/2022 16:54:45	0.37	16:30	100	5380.39	373.18	147.77	3A1/2	3	20	3A1/2	3A2/1	3A1/2	

Analysis Set Details

Name	Use Simulation	Description	Use specific Demand Set(s)	Optimise specific Demand Set(s)	Include in report	Locked
					✓	

Demand Set Details

Scenario name	Time Period name	Description	Composite	Demand sets	Start time (HH:mm)	Locked	Run automatically
2031 Do Nothing	PM				16:30		✓

Local OD Matrix - Local Matrix: 3

Local Matrix Options

OD Matrix	Name	Use for point to point table	Auto calculate	Allocation mode	Allow paths past exit locations	Allow looped paths on arms	Allow looped paths on traffic nodes	Copy flows	Matrix to copy flows from	Limit paths by length	Path length limit multiplier	Limit paths by number	Path number limit	Limit paths by flow	Low path flow threshold
3		✓	✓	Path Equalisation			✓			✓	1.25				

Normal Input Flows (PCU/hr)

		To		
		3-1	3-2	3-3
From	3-1	0	19	1896
	3-2	0	0	126
	3-3	798	41	0

Bus Input Flows not shown as they are blank.

Tram Input Flows not shown as they are blank.

Pedestrian Input Flows not shown as they are blank.

Locations

OD Matrix	Location	Name	Entries	Exits	Colour
3	3-1		3A2/1	3Ax/1	#008000
	3-2		3B/1	3Bx2/1	#FFA500
	3-3		3C/1, 3C/2	3Cx/1	#A52A2A

Normal Paths and Flows

OD Matrix	Path	Description	From location	To location	Path items	Allocation type	Normal Calculated Flow (PCU/hr)
3	2		3-2	3-3	3B/1, 3Cx/1	Normal	126
	3		3-3	3-2	3C/2, 3Bx2/1	Normal	41
	4		3-3	3-1	3C/1, 3Ax/1	Normal	798
	5		3-1	3-2	3A2/1, 3A1/1, 3Bx2/1	Normal	19
	6		3-1	3-3	3A2/1, 3A1/2, 3Cx/1	Normal	1896

Signal Timings

Network Default: 100s cycle time; 100 steps

Controller Stream 3

Controller Stream	Name	Description	Use sequence	Cycle time source	Cycle time (s)	Minimum possible cycle time (s)
3			1	NetworkDefault	100	39

Controller Stream 3 - Properties

Controller Stream	Manufacturer name	Type	Model number	(Telephone) Line Number	Site number	Grid reference	Gaining delay type
3	Unspecified						Absolute

Controller Stream 3 - Optimisation

Controller Stream	Allow offset optimisation	Allow green split optimisation	Optimisation level	Auto redistribute	Enable stage constraint
3	✓	✓	Offsets And Green Splits	✓	

Phases

Controller Stream	Phase	Name	Street minimum green (s)	Maximum green (s)	Relative start displacement (s)	Relative end displacement (s)	Type
3	A		5	300	0	0	Unknown
	B		5	300	0	0	Unknown
	C		5	300	0	0	Unknown
	D		5	300	0	0	Unknown
	E		3	300	0	0	Unknown
	F		3	300	0	0	Unknown
	G		3	300	0	0	Unknown

Library Stages

Controller Stream	Library Stage	Phases in stage	User stage minimum (s)	Run every N cycles	Probability of running (%)
3	1	A, C, G	1	1	100
	2	A, F, G	1	1	100
	3	B, C, E	1	1	100
	4	B, E, F	1	1	100
	5	C, D, E	1	1	100
	6	C, E, G	1	1	100
	7	D, E, F	1	1	100
	8	E, F, G	1	1	100

Stage Sequences

Controller Stream	Sequence	Name	Multiple cycling	Stage IDs	Stage ends	Minimum possible cycle time (s)	Exclude from analysis
3	1	(untitled)	Single	1, 3, 7	55, 69, 79	39	
	2	(untitled)	Single	1, 4, 5	25, 58, 90	39	
	3	(untitled)	Single	1, 4, 7	26, 60, 90	39	
	4	(untitled)	Single	1, 5, 4	26, 60, 90	39	
	5	(untitled)	Single	1, 7, 3	25, 58, 90	39	
	6	(untitled)	Single	1, 7, 4	26, 60, 90	39	
	7	(untitled)	Single	2, 3, 5	26, 60, 90	39	
	8	(untitled)	Single	2, 3, 7	26, 60, 90	39	
	9	(untitled)	Single	2, 4, 5	25, 58, 90	42	
	10	(untitled)	Single	2, 5, 3	26, 60, 90	39	

Intergreen Matrix for Controller Stream 3

		To						
		A	B	C	D	E	F	G
From	A	5			5	5		
	B	5			5			5
	C						5	
	D	5	5					5
	E	10						
	F			8				
	G	9		9				

Banned Stage transitions for Controller Stream 3

		To							
		1	2	3	4	5	6	7	8
From	1								
	2								
	3								
	4								
	5								
	6								
	7								
	8								

Interstage Matrix for Controller Stream 3

		To							
		1	2	3	4	5	6	7	8
From	1	0	5	9	9	9	5	9	5
	2	8	0	9	9	9	8	9	5
	3	10	10	0	5	5	5	5	5
	4	10	10	8	0	8	8	5	5
	5	10	10	5	5	0	5	5	5
	6	10	10	9	9	9	0	9	5
	7	10	10	8	5	8	8	0	5
	8	10	10	9	9	9	8	9	0

Resultant Stages

Controller Stream	Resultant Stage	Is base stage	Library Stage ID	Phases in this stage	Stage start (s)	Stage end (s)	Stage duration (s)	User stage minimum (s)	Stage minimum (s)
3	1	✓	1	A, C, G	89	55	66	1	5
	2	✓	3	B, C, E	64	69	5	1	5
	3	✓	7	D, E, F	74	79	5	1	5

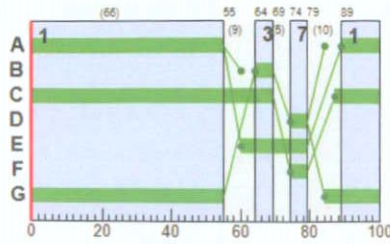
Resultant Phase Green Periods

Controller Stream	Phase	Green period	Is base green period	Start time (s)	End time (s)	Duration (s)
3	A	1	✓	89	55	66
	B	1	✓	64	69	5
	C	1	✓	87	69	82
	D	1	✓	74	79	5
	E	1	✓	60	79	19
	F	1	✓	74	79	5
	G	1	✓	84	55	71

Traffic Stream Green Times

Arm	Traffic Stream	Traffic Node	Controller Stream	Phase	Green Period 1		
					Start	End	Duration
3B	1	3	3	B	64	69	5
3C	1	3	3	C	87	69	82
3C	2	3	3	D	74	79	5
3A1	1	3	3	A	89	55	66
3A1	2	3	3	A	89	55	66

Phase Timings Diagram for Controller Stream 3



Stage Sequence Diagram for Controller Stream 3



Resultant penalties

Time Segment	Controller stream	Phase min max penalty (£ per hr)	Intergreen broken penalty (£ per hr)	Stage constraint broken penalty (£ per hr)	Cost of controller stream penalties (£ per hr)
16:30-17:30	3	0.00	0.00	0.00	0.00

Final Prediction Table

Traffic Stream Results

Arm	Traffic Stream	Name	Traffic node	SIGNALS		FLOWS		PERFORMANCE			PER PCU		QUEUES		WEIGHTS		PENALTIES	P.I.		
				Controller stream	Phase	Calculated flow entering (PCU/hr)	Calculated sat flow	Actual green (s per cycle)	Wasted time total (s per cycle)	Degree of saturation (%)	Practical reserve capacity	JourneyTime (s)	Mean Delay per Veh (s)	Mean stops per Veh (%)	Mean max queue (PCU)	Mean end of red queue (PCU)			Delay weighting multiplier (%)	Stop weighting multiplier (%)
3Ax	1		7			798	Unrestricted	100	9.00	0	Unrestricted	10.58	0.00	0.00		100	100	0.00	0.00	
3B	1	L	3	3	B	126 <	1800	5	0.00	117	-23	363.59	360.69	286.32	14.18 +	14.03	100	100	0.00	183.14
3C	1	S	3	3	C	798	1800	82	0.00	53	68	10.11	3.98	26.92	6.96	4.07	100	100	0.00	15.41
	2	R	3	3	D	41	1800	5	3.00	38	137	61.43	55.29	104.62	1.21	1.19	100	100	0.00	9.48
3Cx	1					1314	Unrestricted	100	10.00	0	Unrestricted	9.20	0.00	0.00	0.00		100	100	0.00	0.00
3A1	1	L	3	3	A	18	1800	66	66.00	1	5978	8.46	5.63	31.84	0.16	0.16	100	100	0.00	0.47
	2	S	3	3	A	1782 <	1800	66	0.00	148	-39	597.90	595.18	379.61	322.27 +	300.16	100	100	0.00	4241.25
3A2	1		6			1915 <	1800	100	100.00	106	-15	125.10	121.03	72.70	64.38 +		100	100	0.00	930.64
3Bx2	1					59	Unrestricted	100	88.00	0	Unrestricted	6.06	0.00	0.00	0.00		100	100	0.00	0.00

Network Results

	Distance travelled (PCU-km/hr)	Time spent (PCU-hr/hr)	Mean journey speed (kph)	Uniform delay (PCU-hr/hr)	Random plus oversat delay (PCU-hr/hr)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Excess queue penalty (£ per hr)	Performance Index (£ per hr)
Normal traffic	325.74	384.04	0.85	8.06	365.13	5299.20	81.19	0.00	5380.39
Bus									
Tram									
Pedestrians	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	325.74	384.04	0.85	8.06	365.13	5299.20	81.19	0.00	5380.39

- < = adjusted flow warning (upstream links/traffic streams are over-saturated)
- * = Traffic Stream - Normal, Bus or Tram Stop or Delay weighting has been set to a value other than 100%
- ^ = Traffic Stream - Normal, Bus or Tram Stop or Delay Path weighting has been set to a value other than 100%
- += average link/traffic stream excess queue is greater than 0
- P.I. = PERFORMANCE INDEX

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File name: H087 Commercial TRANSYT Model J3 with BusConnects 20220427.116
 Path: J:\H_JOBS\Job-H087\B_Documents\C_Civil\A_CS Reports\Traffic\Modelling\H087 Commercial Modelling
 Report generation date: 27/04/2022 16:55:09

- «A1 -: D9 - 2031 With Development, AM :
- »Summary
 - »Local OD Matrix - Local Matrix: 3
 - »Signal Timings
 - »Final Prediction Table

Summary of network performance

AM					
Set ID	PI (€ per hr)	Total delay (PCU-hr/hr)	Highest DOS	Number oversaturated	
2031 With Development					
Network	D9	239.80	15.25	87% (TS 3C/1)	0 (0%)

File summary

File description

File title	Heuston South Quarter Commercial
Location	Dublin 8
Site number	
UTCRRegion	
Driving side	Left
Date	27/04/2022
Version	Junction 3 BusConnects Layout
Status	
Identifier	
Client	
Jobnumber	H087
Enumerator	GF
Description	

Model and Results

Enable controller offsets	Enable fuel consumption	Enable quick flares	Display journey time results	Display OD matrix distances	Display level of service results	Display blocking and starvation results	Display end of red and green queue results	Display excess queue results	Display separate uniform and random results	Display unweighted results	Display TRANSYT 12 style timings	Display effective greens in results	Display Red-With-Amber	Display End-Of-Green Amber	Display controller phase minimums
			✓			✓	✓	✓	✓	✓	✓	✓			

Units

Cost units	Speed units	Distance units	Fuel economy units	Fuel rate units	Mass units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
£	kph	m	l/100km	l/h	kg	PCU	PCU	perHour	s	-Hour	perHour

Sorting

Show names instead of IDs	Sorting direction	Sorting type	Ignore prefixes when sorting	Analysis/demand set sorting	Link grouping	Source grouping	Colour Analysis/Demand Sets
	Ascending	Numerical		ID	Normal	Normal	✓

Simulation options

Criteria type	Stop criteria (%)	Stop criteria time (s)	Stop criteria number of trials	Random seed	Results refresh speed (s)	Average animation capture interval (s)	Use quick response	Do flow sampling	Uniform vehicle generation	Last run random seed	Last run number of trials	Last run time taken (s)
Delay	3.00	999	200	-1	3	60	✓			0	0	0.00

A1 - D9 - 2031 With Development, AM

Summary

Data Errors and Warnings

No errors or warnings

Run Summary

Analysis set used	Run start time	Run finish time	Run duration (s)	Modelling start time (HH:mm)	Network Cycle Time (s)	Performance Index (£ per hr)	Total network delay (PCU-hr/hr)	Highest DOS (%)	Item with highest DOS	Number of oversaturated items	Percentage of oversaturated items (%)	Item with worst signalised PRC	Item with worst unsignalised PRC	Item with worst overall PRC	Network within capacity
1	27/04/2022 16:55:05	27/04/2022 16:55:06	1.94	07:30	100	239.80	15.25	86.65	3C/1	0	0	3C/1	3A2/1	3C/1	✓

Analysis Set Details

Name	Use Simulation	Description	Use specific Demand Set(s)	Optimise specific Demand Set(s)	Include in report	Locked
					✓	

Demand Set Details

Scenario name	Time Period name	Description	Composite	Demand sets	Start time (HH:mm)	Locked	Run automatically
2031 With Development	AM				07:30		✓

Local OD Matrix - Local Matrix: 3

Local Matrix Options

OD Matrix	Name	Use for point to point table	Auto calculate	Allocation mode	Allow paths past exit locations	Allow looped paths on arms	Allow looped paths on traffic nodes	Copy flows	Matrix to copy flows from	Limit paths by length	Path length limit multiplier	Limit paths by number	Path number limit	Limit paths by flow	Low path flow threshold
3		✓	✓	Path Equalisation			✓			✓	1.25				

Normal Input Flows (PCU/hr)

		To		
		3-1	3-2	3-3
From	3-1	0	11	998
	3-2	0	0	56
	3-3	1279	109	0

Bus Input Flows not shown as they are blank.

Tram Input Flows not shown as they are blank.

Pedestrian Input Flows not shown as they are blank.

Locations

OD Matrix	Location	Name	Entries	Exits	Colour
3	3-1		3A2/1	3Ax/1	#008000
	3-2		3B/1	3Bx2/1	#FFA500
	3-3		3C/1, 3C/2	3Cx/1	#A52A2A

Normal Paths and Flows

OD Matrix	Path	Description	From location	To location	Path items	Allocation type	Normal Calculated Flow (PCU/hr)
3	2		3-2	3-3	3B/1, 3Cx/1	Normal	56
	3		3-3	3-2	3C/2, 3Bx2/1	Normal	109
	4		3-3	3-1	3C/1, 3Ax/1	Normal	1279
	5		3-1	3-2	3A2/1, 3A1/1, 3Bx2/1	Normal	11
	6		3-1	3-3	3A2/1, 3A1/2, 3Cx/1	Normal	998

Signal Timings

Network Default: 100s cycle time; 100 steps

Controller Stream 3

Controller Stream	Name	Description	Use sequence	Cycle time source	Cycle time (s)	Minimum possible cycle time (s)
3			1	NetworkDefault	100	39

Controller Stream 3 - Properties

Controller Stream	Manufacturer name	Type	Model number	(Telephone) Line Number	Site number	Grid reference	Gaining delay type
3	Unspecified						Absolute

Controller Stream 3 - Optimisation

Controller Stream	Allow offset optimisation	Allow green split optimisation	Optimisation level	Auto redistribute	Enable stage constraint
3	✓	✓	Offsets And Green Splits	✓	

Phases

Controller Stream	Phase	Name	Street minimum green (s)	Maximum green (s)	Relative start displacement (s)	Relative end displacement (s)	Type
3	A		5	300	0	0	Unknown
	B		5	300	0	0	Unknown
	C		5	300	0	0	Unknown
	D		5	300	0	0	Unknown
	E		3	300	0	0	Unknown
	F		3	300	0	0	Unknown

	G		3		300		0		0	Unknown
--	---	--	---	--	-----	--	---	--	---	---------

Library Stages

Controller Stream	Library Stage	Phases in stage	User stage minimum (s)	Run every N cycles	Probability of running (%)
3	1	A, C, G	1	1	100
	2	A, F, G	1	1	100
	3	B, C, E	1	1	100
	4	B, E, F	1	1	100
	5	C, D, E	1	1	100
	6	C, E, G	1	1	100
	7	D, E, F	1	1	100
	8	E, F, G	1	1	100

Stage Sequences

Controller Stream	Sequence	Name	Multiple cycling	Stage IDs	Stage ends	Minimum possible cycle time (s)	Exclude from analysis
3	1	(untitled)	Single	1, 3, 7	55, 69, 80	39	
	2	(untitled)	Single	1, 4, 5	25, 58, 90	39	
	3	(untitled)	Single	1, 4, 7	26, 60, 90	39	
	4	(untitled)	Single	1, 5, 4	26, 60, 90	39	
	5	(untitled)	Single	1, 7, 3	25, 58, 90	39	
	6	(untitled)	Single	1, 7, 4	26, 60, 90	39	
	7	(untitled)	Single	2, 3, 5	26, 60, 90	39	
	8	(untitled)	Single	2, 3, 7	26, 60, 90	39	
	9	(untitled)	Single	2, 4, 5	25, 58, 90	42	
	10	(untitled)	Single	2, 5, 3	28, 60, 90	39	

Intergreen Matrix for Controller Stream 3

		To						
		A	B	C	D	E	F	G
From	A		5		5	5		
	B	5			5			5
	C						5	
	D	5	5					5
	E	10						
	F			8				
	G	9		9				

Banned Stage transitions for Controller Stream 3

		To							
		1	2	3	4	5	6	7	8
From	1								
	2								
	3								
	4								
	5								
	6								
	7								
	8								

Interstage Matrix for Controller Stream 3

		To							
		1	2	3	4	5	6	7	8
From	1	0	5	9	9	9	5	9	5
	2	8	0	9	9	9	8	9	5
	3	10	10	0	5	5	5	5	5
	4	10	10	8	0	8	8	5	5
	5	10	10	5	5	0	5	5	5
	6	10	10	9	9	9	0	9	5
	7	10	10	8	5	8	8	0	5
	8	10	10	9	9	9	8	9	0

Resultant Stages

Controller Stream	Resultant Stage	Is base stage	Library Stage ID	Phases in this stage	Stage start (s)	Stage end (s)	Stage duration (s)	User stage minimum (s)	Stage minimum (s)
3	1	✓	1	A,C,G	90	55	65	1	5
	2	✓	3	B,C,E	64	69	5	1	5
	3	✓	7	D,E,F	74	80	6	1	5

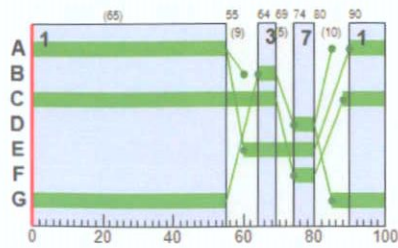
Resultant Phase Green Periods

Controller Stream	Phase	Green period	Is base green period	Start time (s)	End time (s)	Duration (s)
3	A	1	✓	90	55	65
	B	1	✓	64	69	5
	C	1	✓	88	69	81
	D	1	✓	74	80	6
	E	1	✓	60	80	20
	F	1	✓	74	80	6
	G	1	✓	85	55	70

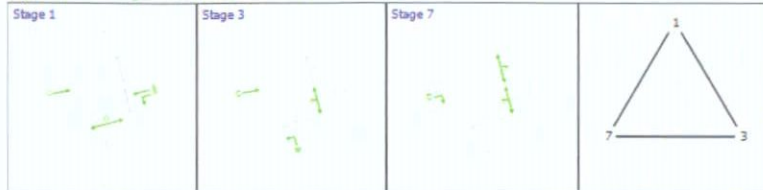
Traffic Stream Green Times

Arm	Traffic Stream	Traffic Node	Controller Stream	Phase	Green Period 1		
					Start	End	Duration
3B	1	3	3	B	64	69	5
3C	1	3	3	C	88	69	81
3C	2	3	3	D	74	80	6
3A1	1	3	3	A	90	55	65
3A1	2	3	3	A	90	55	65

Phase Timings Diagram for Controller Stream 3



Stage Sequence Diagram for Controller Stream 3



Resultant penalties

Time Segment	Controller stream	Phase min max penalty (£ per hr)	Intergreen broken penalty (£ per hr)	Stage constraint broken penalty (£ per hr)	Cost of controller stream penalties (£ per hr)
07:30-08:30	3	0.00	0.00	0.00	0.00

Final Prediction Table

Traffic Stream Results

Arm	Traffic Stream	Name	Traffic node	SIGNALS		FLOWS		PERFORMANCE				PER PCU			QUEUES		WEIGHTS		PENALTIES	P.I.
				Controller stream	Phase	Calculated flow entering (PCU/hr)	Calculated sat flow	Actual green (s (per cycle))	Wasted time total (s (per cycle))	Degree of saturation (%)	Practical reserve capacity	JourneyTime (s)	Mean Delay per Veh (s)	Mean stops per Veh (%)	Mean max queue (PCU)	Mean end of red queue (PCU)	Delay weighting multiplier (%)	Stop weighting multiplier (%)	Cost of traffic penalties (£ per hr)	P.I.
3Ax	1		7			1279	Unrestricted	100	8.00	0	Unrestricted	10.58	0.00	0.00	0.00		100	100	0.00	0.00
3B	1	L	3	3	B	56	1800	5	2.00	52	74	65.92	63.02	111.81	1.78	1.73	100	100	0.00	14.71
3C	1	S	3	3	C	1279 <	1800	81	0.00	87	4	19.37	13.24	63.87	24.74 +	9.11	100	100	0.00	77.02
	2	R	3	3	D	109	1800	6	0.00	87	4	120.38	114.24	154.61	5.03	4.88	100	100	0.00	51.23
3Cx	1					1054	Unrestricted	100	14.00	0	Unrestricted	9.20	0.00	0.00	0.00		100	100	0.00	0.00
3A1	1	L	3	3	A	11	1800	65	65.00	1	9620	8.79	5.96	32.83	0.10	0.10	100	100	0.00	0.30
	2	S	3	3	A	998 <	1800	65	0.00	84	7	23.41	20.69	80.13	23.21 +	11.56	100	100	0.00	91.47
3A2	1		6			1009	1800	100	70.00	56	61	5.34	1.27	0.00	0.36		100	100	0.00	5.07
3Bx2	1					120	Unrestricted	100	84.00	0	Unrestricted	6.06	0.00	0.00	0.00		100	100	0.00	0.00

Network Results

	Distance travelled (PCU-km/hr)	Time spent (PCU-hr/hr)	Mean journey speed (kph)	Uniform delay (PCU-hr/hr)	Random plus oversat delay (PCU-hr/hr)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Excess queue penalty (£ per hr)	Performance Index (£ per hr)
Normal traffic	329.05	26.22	12.55	7.71	7.55	216.59	23.21	0.00	239.80
Bus									
Tram									
Pedestrians	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	329.05	26.22	12.55	7.71	7.55	216.59	23.21	0.00	239.80

- < = adjusted flow warning (upstream links/traffic streams are over-saturated)
- * = Traffic Stream - Normal, Bus or Tram Stop or Delay weighting has been set to a value other than 100%
- ^ = Traffic Stream - Normal, Bus or Tram Stop or Delay Path weighting has been set to a value other than 100%
- + = average link/traffic stream excess queue is greater than 0
- P.I. = PERFORMANCE INDEX

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Filename: H087 Commercial TRANSYT Model J3 with BusConnects 20220427.116
 Path: J:\H_JOBS\Job-H087\B_Documents\C_Civil\A_CS Reports\Traffic\Modelling\H087 Commercial Modelling
 Report generation date: 27/04/2022 16:55:30

«A1 - : D10 - 2031 With Development, PM :

- »Summary
- »Local OD Matrix - Local Matrix: 3
- »Signal Timings
- »Final Prediction Table

Summary of network performance

PM				
Set ID	PI (£ per hr)	Total delay (PCU-hr/hr)	Highest DOS	Number oversaturated
2031 With Development				
Network	D10	5484.63	380.47	148% (TS 3A1/2) 3 (20%)

File summary

File description

File title	Heuston South Quarter Commercial
Location	Dublin 8
Site number	
UTCRegion	
Driving side	Left
Date	27/04/2022
Version	Junction 3 BusConnects Layout
Status	
Identifier	
Client	
Jobnumber	H087
Enumerator	GF
Description	

Model and Results

Enable controller offsets	Enable fuel consumption	Enable quick flares	Display journey time results	Display OD matrix distances	Display level of service results	Display blocking and starvation results	Display end of red and green queue results	Display excess queue results	Display separate uniform and random results	Display unweighted results	Display TRANSYT 12 style timings	Display effective greens in results	Display Red-With-Amber	Display End-Of-Green Amber	Display controller phase minimums
			✓			✓	✓	✓	✓	✓	✓	✓			

Units

Cost units	Speed units	Distance units	Fuel economy units	Fuel rate units	Mass units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
£	kph	m	l/100km	l/h	kg	PCU	PCU	perHour	s	-Hour	perHour

Sorting

Show names instead of IDs	Sorting direction	Sorting type	Ignore prefixes when sorting	Analysis/demand set sorting	Link grouping	Source grouping	Colour Analysis/Demand Sets
	Ascending	Numerical		ID	Normal	Normal	✓

Simulation options

Criteria type	Stop criteria (%)	Stop criteria time (s)	Stop criteria number of trials	Random seed	Results refresh speed (s)	Average animation capture interval (s)	Use quick response	Do flow sampling	Uniform vehicle generation	Last run random seed	Last run number of trials	Last run time taken (s)
Delay	3.00	999	200	-1	3	60	✓			0	0	0.00

A1 - D10 - 2031 With Development, PM

Summary

Data Errors and Warnings

No errors or warnings

Run Summary

Analysis set used	Run start time	Run finish time	Run duration (s)	Modelling start time (HH:mm)	Network Cycle Time (s)	Performance index (£ per hr)	Total network delay (PCU-hr/hr)	Highest DOS (%)	Item with highest DOS	Number of oversaturated items	Percentage of oversaturated items (%)	Item with worst signalised PRC	Item with worst unsignalised PRC	Item with worst overall PRC	Network within capacity
1	27/04/2022 16:55:27	27/04/2022 16:55:28	1.01	16:30	100	5484.63	380.47	147.54	3A1/2	3	20	3A1/2	3A2/1	3A1/2	

Analysis Set Details

Name	Use Simulation	Description	Use specific Demand Set(s)	Optimise specific Demand Set(s)	Include in report	Locked
					✓	

Demand Set Details

Scenario name	Time Period name	Description	Composite	Demand sets	Start time (HH:mm)	Locked	Run automatically
2031 With Development	PM				16:30		✓

Local OD Matrix - Local Matrix: 3

Local Matrix Options

OD Matrix	Name	Use for point to point table	Auto calculate	Allocation mode	Allow paths past exit locations	Allow looped paths on arms	Allow looped paths on traffic nodes	Copy flows	Matrix to copy flows from	Limit paths by length	Path length limit multiplier	Limit paths by number	Path number limit	Limit paths by flow	Low path flow threshold
3		✓	✓	Path Equalisation			✓			✓	1.25				

Normal Input Flows (PCU/hr)

		To		
		3-1	3-2	3-3
From	3-1	0	22	1896
	3-2	0	0	142
	3-3	798	47	0

Bus Input Flows not shown as they are blank.

Tram Input Flows not shown as they are blank.

Pedestrian Input Flows not shown as they are blank.

Locations

OD Matrix	Location	Name	Entries	Exits	Colour
3	3-1		3A2/1	3Ax/1	#008000
	3-2		3B/1	3Bx2/1	#FFA500
	3-3		3C/1, 3C/2	3Cx/1	#A52A2A

Normal Paths and Flows

OD Matrix	Path	Description	From location	To location	Path items	Allocation type	Normal Calculated Flow (PCU/hr)
3	2		3-2	3-3	3B/1, 3Cx/1	Normal	142
	3		3-3	3-2	3C/2, 3Bx2/1	Normal	47
	4		3-3	3-1	3C/1, 3Ax/1	Normal	798
	5		3-1	3-2	3A2/1, 3A1/1, 3Bx2/1	Normal	22
	6		3-1	3-3	3A2/1, 3A1/2, 3Cx/1	Normal	1896

Signal Timings

Network Default: 100s cycle time; 100 steps

Controller Stream 3

Controller Stream	Name	Description	Use sequence	Cycle time source	Cycle time (s)	Minimum possible cycle time (s)
3			1	NetworkDefault	100	39

Controller Stream 3 - Properties

Controller Stream	Manufacturer name	Type	Model number	(Telephone) Line Number	Site number	Grid reference	Gaining delay type
3	Unspecified						Absolute

Controller Stream 3 - Optimisation

Controller Stream	Allow offset optimisation	Allow green split optimisation	Optimisation level	Auto redistribute	Enable stage constraint
3	✓	✓	Offsets And Green Splits	✓	

Phases

Controller Stream	Phase	Name	Street minimum green (s)	Maximum green (s)	Relative start displacement (s)	Relative end displacement (s)	Type
3	A		5	300	0	0	Unknown
	B		5	300	0	0	Unknown
	C		5	300	0	0	Unknown
	D		5	300	0	0	Unknown
	E		3	300	0	0	Unknown
	F		3	300	0	0	Unknown
	G		3	300	0	0	Unknown

Library Stages

Controller Stream	Library Stage	Phases in stage	User stage minimum (s)	Run every N cycles	Probability of running (%)
3	1	A, C, G	1	1	100
	2	A, F, G	1	1	100
	3	B, C, E	1	1	100
	4	B, E, F	1	1	100
	5	C, D, E	1	1	100
	6	C, E, G	1	1	100
	7	D, E, F	1	1	100
	8	E, F, G	1	1	100

Stage Sequences

Controller Stream	Sequence	Name	Multiple cycling	Stage IDs	Stage ends	Minimum possible cycle time (s)	Exclude from analysis
3	1	(untitled)	Single	1, 3, 7	55, 69, 79	39	
	2	(untitled)	Single	1, 4, 5	25, 58, 90	39	
	3	(untitled)	Single	1, 4, 7	26, 60, 90	39	
	4	(untitled)	Single	1, 5, 4	26, 60, 90	39	
	5	(untitled)	Single	1, 7, 3	25, 58, 90	39	
	6	(untitled)	Single	1, 7, 4	26, 60, 90	39	
	7	(untitled)	Single	2, 3, 5	26, 60, 90	39	
	8	(untitled)	Single	2, 3, 7	26, 60, 90	39	
	9	(untitled)	Single	2, 4, 5	25, 58, 90	42	
	10	(untitled)	Single	2, 5, 3	26, 60, 90	39	

Intergreen Matrix for Controller Stream 3

		To						
		A	B	C	D	E	F	G
From	A		5		5	5		
	B	5			5			5
	C						5	
	D	5	5					5
	E	10						
	F			8				
	G		9		9			

Banned Stage transitions for Controller Stream 3

		To							
		1	2	3	4	5	6	7	8
From	1								
	2								
	3								
	4								
	5								
	6								
	7								
	8								

Interstage Matrix for Controller Stream 3

		To							
		1	2	3	4	5	6	7	8
From	1	0	5	9	9	9	5	9	5
	2	8	0	9	9	9	8	9	5
	3	10	10	0	5	5	5	5	5
	4	10	10	8	0	8	8	5	5
	5	10	10	5	5	0	5	5	5
	6	10	10	9	9	9	0	9	5
	7	10	10	8	5	8	8	0	5
	8	10	10	9	9	9	8	9	0

Resultant Stages

Controller Stream	Resultant Stage	Is base stage	Library Stage ID	Phases in this stage	Stage start (s)	Stage end (s)	Stage duration (s)	User stage minimum (s)	Stage minimum (s)
3	1	✓	1	A,C,G	89	55	66	1	5
	2	✓	3	B,C,E	64	69	5	1	5
	3	✓	7	D,E,F	74	79	5	1	5

Resultant Phase Green Periods

Controller Stream	Phase	Green period	Is base green period	Start time (s)	End time (s)	Duration (s)
3	A	1	✓	89	55	66
	B	1	✓	64	69	5
	C	1	✓	87	69	82
	D	1	✓	74	79	5
	E	1	✓	60	79	19
	F	1	✓	74	79	5
	G	1	✓	84	55	71

Traffic Stream Green Times

Arm	Traffic Stream	Traffic Node	Controller Stream	Phase	Green Period 1		
					Start	End	Duration
3B	1	3	3	B	64	69	5
3C	1	3	3	C	87	69	82
3C	2	3	3	D	74	79	5
3A1	1	3	3	A	89	55	66
3A1	2	3	3	A	89	55	66

Phase Timings Diagram for Controller Stream 3

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Filename: H087 Commercial TRANSYT Model J3 with BusConnects 20220427.t16
 Path: J:\H_JOBS\Job-H087\B_Documents\C_Civil\A_CS Reports\TrafficModelling\H087 Commercial Modelling
 Report generation date: 27/04/2022 16:55:48

- «A1 - : D11 - 2041 Do Nothing, AM :
- »Summary
- »Local OD Matrix - Local Matrix: 3
- »Signal Timings
- »Final Prediction Table

Summary of network performance

AM					
Set ID	PI (£ per hr)	Total delay (PCU-hr/hr)	Highest DOS	Number oversaturated	
2041 Do Nothing					
Network	D11	279.06	17.76	91% (TS 3C/1)	1 (7%)

File summary

File description

File title	Heuston South Quarter Commercial
Location	Dublin 8
Site number	
UTCRegion	
Driving side	Left
Date	27/04/2022
Version	Junction 3 BusConnects Layout
Status	
Identifier	
Client	
Jobnumber	H087
Enumerator	GF
Description	

Model and Results

Enable controller offsets	Enable fuel consumption	Enable quick flares	Display journey time results	Display OD matrix distances	Display level of service results	Display blocking and starvation results	Display end of red and green queue results	Display excess queue results	Display separate uniform and random results	Display unweighted results	Display TRANSYT 12 style timings	Display effective greens in results	Display Red-With-Amber	Display End-Of-Green Amber	Display controller phase minimums
			✓			✓	✓	✓	✓	✓	✓	✓			

Units

Cost units	Speed units	Distance units	Fuel economy units	Fuel rate units	Mass units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
£	kph	m	l/100km	l/h	kg	PCU	PCU	perHour	s	-Hour	perHour

Sorting

Show names instead of IDs	Sorting direction	Sorting type	Ignore prefixes when sorting	Analysis/demand set sorting	Link grouping	Source grouping	Colour Analysis/Demand Sets
	Ascending	Numerical		ID	Normal	Normal	✓

Simulation options

Criteria type	Stop criteria (%)	Stop criteria time (s)	Stop criteria number of trials	Random seed	Results refresh speed (s)	Average animation capture interval (s)	Use quick response	Do flow sampling	Uniform vehicle generation	Last run random seed	Last run number of trials	Last run time taken (s)
Delay	3.00	999	200	-1	3	60	✓			0	0	0.00

A1 - D11 - 2041 Do Nothing, AM

Summary

Data Errors and Warnings

No errors or warnings

Run Summary

Analysis set used	Run start time	Run finish time	Run duration (s)	Modelling start time (HH:mm)	Network Cycle Time (s)	Performance Index (£ per hr)	Total network delay (PCU-hr/hr)	Highest DOS (%)	Item with highest DOS	Number of oversaturated items	Percentage of oversaturated items (%)	Item with worst signalised PRC	Item with worst unsignalised PRC	Item with worst overall PRC	Network within capacity
1	27/04/2022 16:55:45	27/04/2022 16:55:45	0.54	07:30	100	279.06	17.76	91.12	3C/1	1	7	3C/1	3A2/1	3C/1	

Analysis Set Details

Name	Use Simulation	Description	Use specific Demand Set(s)	Optimise specific Demand Set(s)	Include in report	Locked
					✓	

Demand Set Details

Scenario name	Time Period name	Description	Composite	Demand sets	Start time (HH:mm)	Locked	Run automatically
2041 Do Nothing	AM				07:30		✓

Local OD Matrix - Local Matrix: 3

Local Matrix Options

OD Matrix	Name	Use for point to point table	Auto calculate	Allocation mode	Allow paths past exit locations	Allow looped paths on arms	Allow looped paths on traffic nodes	Copy flows	Matrix to copy flows from	Limit paths by length	Path length limit multiplier	Limit paths by number	Path number limit	Limit paths by flow	Low path flow threshold
3		✓	✓	Path Equalisation			✓			✓	1.25				

Normal Input Flows (PCU/hr)

		To		
		3-1	3-2	3-3
From	3-1	0	10	1050
	3-2	0	0	45
	3-3	1345	101	0

Bus Input Flows not shown as they are blank.

Tram Input Flows not shown as they are blank.

Pedestrian Input Flows not shown as they are blank.

Locations

OD Matrix	Location	Name	Entries	Exits	Colour
3	3-1	3A2/1	3Ax/1		#008000
	3-2	3B/1	3Bx2/1		#FFA500
	3-3	3C/1, 3C/2	3Cx/1		#A52A2A

Normal Paths and Flows

OD Matrix	Path	Description	From location	To location	Path items	Allocation type	Normal Calculated Flow (PCU/hr)
3	2		3-2	3-3	3B/1, 3Cx/1	Normal	45
	3		3-3	3-2	3C/2, 3Bx2/1	Normal	101
	4		3-3	3-1	3C/1, 3Ax/1	Normal	1345
	5		3-1	3-2	3A2/1, 3A1/1, 3Bx2/1	Normal	10
	6		3-1	3-3	3A2/1, 3A1/2, 3Cx/1	Normal	1050

Signal Timings

Network Default: 100s cycle time; 100 steps

Controller Stream 3

Controller Stream	Name	Description	Use sequence	Cycle time source	Cycle time (s)	Minimum possible cycle time (s)
3			1	NetworkDefault	100	39

Controller Stream 3 - Properties

Controller Stream	Manufacturer name	Type	Model number	(Telephone) Line Number	Site number	Grid reference	Gaining delay type
3	Unspecified						Absolute

Controller Stream 3 - Optimisation

Controller Stream	Allow offset optimisation	Allow green split optimisation	Optimisation level	Auto redistribute	Enable stage constraint
3	✓	✓	Offsets And Green Splits	✓	

Phases

Controller Stream	Phase	Name	Street minimum green (s)	Maximum green (s)	Relative start displacement (s)	Relative end displacement (s)	Type
3	A		5	300	0	0	Unknown
	B		5	300	0	0	Unknown
	C		5	300	0	0	Unknown
	D		5	300	0	0	Unknown
	E		3	300	0	0	Unknown
	F		3	300	0	0	Unknown

	G		3		300		0		0	Unknown
--	---	--	---	--	-----	--	---	--	---	---------

Library Stages

Controller Stream	Library Stage	Phases in stage	User stage minimum (s)	Run every N cycles	Probability of running (%)
3	1	A, C, G	1	1	100
	2	A, F, G	1	1	100
	3	B, C, E	1	1	100
	4	B, E, F	1	1	100
	5	C, D, E	1	1	100
	6	C, E, G	1	1	100
	7	D, E, F	1	1	100
	8	E, F, G	1	1	100

Stage Sequences

Controller Stream	Sequence	Name	Multiple cycling	Stage IDs	Stage ends	Minimum possible cycle time (s)	Exclude from analysis
3	1	(untitled)	Single	1, 3, 7	55, 69, 80	39	
	2	(untitled)	Single	1, 4, 5	25, 58, 90	39	
	3	(untitled)	Single	1, 4, 7	26, 60, 90	39	
	4	(untitled)	Single	1, 5, 4	26, 60, 90	39	
	5	(untitled)	Single	1, 7, 3	25, 58, 90	39	
	6	(untitled)	Single	1, 7, 4	26, 60, 90	39	
	7	(untitled)	Single	2, 3, 5	26, 60, 90	39	
	8	(untitled)	Single	2, 3, 7	26, 60, 90	39	
	9	(untitled)	Single	2, 4, 5	25, 58, 90	42	
	10	(untitled)	Single	2, 5, 3	26, 60, 90	39	

Intergreen Matrix for Controller Stream 3

		To						
		A	B	C	D	E	F	G
From	A		5		5	5		
	B	5			5			5
	C						5	
	D	5	5					5
	E	10						
	F			8				
	G	9		9				

Banned Stage transitions for Controller Stream 3

		To							
		1	2	3	4	5	6	7	8
From	1								
	2								
	3								
	4								
	5								
	6								
	7								
	8								

Interstage Matrix for Controller Stream 3

		To							
		1	2	3	4	5	6	7	8
From	1	0	5	9	9	9	5	9	5
	2	8	0	9	9	9	8	9	5
	3	10	10	0	5	5	5	5	5
	4	10	10	8	0	8	8	5	5
	5	10	10	5	5	0	5	5	5
	6	10	10	9	9	9	0	9	5
	7	10	10	8	5	8	8	0	5
	8	10	10	9	9	9	8	9	0

Resultant Stages

Controller Stream	Resultant Stage	Is base stage	Library Stage ID	Phases in this stage	Stage start (s)	Stage end (s)	Stage duration (s)	User stage minimum (s)	Stage minimum (s)
3	1	✓	1	A,C,G	90	55	65	1	5
	2	✓	3	B,C,E	64	69	5	1	5
	3	✓	7	D,E,F	74	80	6	1	5

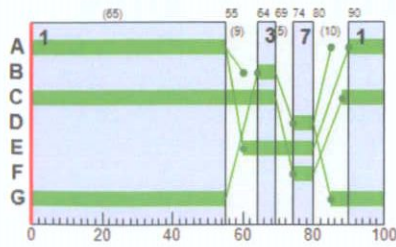
Resultant Phase Green Periods

Controller Stream	Phase	Green period	Is base green period	Start time (s)	End time (s)	Duration (s)
3	A	1	✓	90	55	65
	B	1	✓	64	69	5
	C	1	✓	88	69	81
	D	1	✓	74	80	6
	E	1	✓	60	80	20
	F	1	✓	74	80	6
	G	1	✓	85	55	70

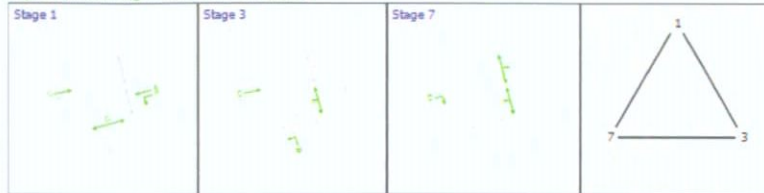
Traffic Stream Green Times

Arm	Traffic Stream	Traffic Node	Controller Stream	Phase	Green Period 1		
					Start	End	Duration
3B	1	3	3	B	64	69	5
3C	1	3	3	C	88	69	81
3C	2	3	3	D	74	80	6
3A1	1	3	3	A	90	55	65
3A1	2	3	3	A	90	55	65

Phase Timings Diagram for Controller Stream 3



Stage Sequence Diagram for Controller Stream 3



Resultant penalties

Time Segment	Controller stream	Phase min max penalty (£ per hr)	Intergreen broken penalty (£ per hr)	Stage constraint broken penalty (£ per hr)	Cost of controller stream penalties (£ per hr)
07:30-08:30	3	0.00	0.00	0.00	0.00

Final Prediction Table

Traffic Stream Results

Arm	Traffic Stream	Name	Traffic node	SIGNALS		FLOWS		PERFORMANCE				PER PCU			QUEUES		WEIGHTS		PENALTIES	P.I.
				Controller stream	Phase	Calculated flow entering (PCU/hr)	Calculated sat flow	Actual green (s per cycle)	Wasted time total (s per cycle)	Degree of saturation (%)	Practical reserve capacity	JourneyTime (s)	Mean Delay per Veh (s)	Mean stops per Veh (%)	Mean max queue (PCU)	Mean end of red queue (PCU)	Delay weighting multiplier (%)	Stop weighting multiplier (%)	Cost of traffic penalties (£ per hr)	P.I.
3Ax	1		7			1345	Unrestricted	100	8.00	0	Unrestricted	10.58	0.00	0.00	0.00	100	100	0.00	0.00	
3B	1	L	3	3	B	45	1800	5	3.00	42	116	59.95	57.06	106.18	1.35	1.32	100	100	0.00	10.73
3C	1	S	3	3	C	1345 <	1800	81	0.00	91	-1	24.14	18.00	75.81	30.48 +	11.06	100	100	0.00	108.29
	2	R	3	3	D	101	1800	6	0.00	80	12	101.15	95.01	140.41	4.13	3.99	100	100	0.00	39.53
3Cx	1					1095	Unrestricted	100	15.00	0	Unrestricted	9.20	0.00	0.00			100	100	0.00	0.00
3A1	1	L	3	3	A	10	1800	65	65.00	1	10592	8.79	5.96	32.83	0.09	0.09	100	100	0.00	0.28
	2	S	3	3	A	1050 <	1800	65	0.00	88	2	27.48	24.76	88.17	26.80 +	13.09	100	100	0.00	114.16
3A2	1		6			1060	1800	100	79.00	59	53	5.50	1.43	0.42			100	100	0.00	5.97
3Bx2	1					111	Unrestricted	100	85.00	0	Unrestricted	6.06	0.00	0.00	0.00		100	100	0.00	0.00

Network Results

	Distance travelled (PCU-km/hr)	Time spent (PCU-hr/hr)	Mean journey speed (kph)	Uniform delay (PCU-hr/hr)	Random plus oversat delay (PCU-hr/hr)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Excess queue penalty (£ per hr)	Performance Index (£ per hr)
Normal traffic	343.14	29.20	11.75	8.31	9.45	252.25	26.81	0.00	279.06
Bus									
Tram									
Pedestrians	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	343.14	29.20	11.75	8.31	9.45	252.25	26.81	0.00	279.06

- < = adjusted flow warning (upstream links/traffic streams are over-saturated)
- * = Traffic Stream - Normal, Bus or Tram Stop or Delay weighting has been set to a value other than 100%
- ^ = Traffic Stream - Normal, Bus or Tram Stop or Delay Path weighting has been set to a value other than 100%
- + = average link/traffic stream excess queue is greater than 0
- P.I. = PERFORMANCE INDEX

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Filename: H087 Commercial TRANSYT Model J3 with BusConnects 20220427.t16
 Path: J:\H_JOBS\Job-H087\B_Documents\C_Civil\A_CS Reports\Traffic\Modelling\H087 Commercial Modelling
 Report generation date: 27/04/2022 16:56:04

- «A1 - : D12 - 2041 Do Nothing, PM :
- »Summary
 - »Local OD Matrix - Local Matrix: 3
 - »Signal Timings
 - »Final Prediction Table

Summary of network performance

PM					
Set ID	PI (£ per hr)	Total delay (PCU-hr/hr)	Highest DOS	Number oversaturated	
2041 Do Nothing					
Network	D12	6071.58	421.64	148% (TS 3A1/2)	3 (20%)

File summary

File description

File title	Heuston South Quarter Commercial
Location	Dublin 8
Site number	
UTCRegion	
Driving side	Left
Date	27/04/2022
Version	Junction 3 BusConnects Layout
Status	
Identifier	
Client	
Jobnumber	H087
Enumerator	GF
Description	

Model and Results

Enable controller offsets	Enable fuel consumption	Enable quick flares	Display journey time results	Display OD matrix distances	Display level of service results	Display blocking and starvation results	Display end of red and green queue results	Display excess queue results	Display separate uniform and random results	Display unweighted results	Display TRANSYT 12 style timings	Display effective greens in results	Display Red-With-Amber	Display End-Of-Green Amber	Display controller phase minimums
			✓			✓	✓	✓	✓	✓	✓	✓			

Units

Cost units	Speed units	Distance units	Fuel economy units	Fuel rate units	Mass units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
£	kph	m	l/100km	l/h	kg	PCU	PCU	perHour	s	-Hour	perHour

Sorting

Show names instead of IDs	Sorting direction	Sorting type	Ignore prefixes when sorting	Analysis/demand set sorting	Link grouping	Source grouping	Colour Analysis/Demand Sets
	Ascending	Numerical		ID	Normal	Normal	✓

Simulation options

Criteria type	Stop criteria (%)	Stop criteria time (s)	Stop criteria number of trials	Random seed	Results refresh speed (s)	Average animation capture interval (s)	Use quick response	Do flow sampling	Uniform vehicle generation	Last run random seed	Last run number of trials	Last run time taken (s)
Delay	3.00	999	200	-1	3	60	✓			0	0	0.00

A1 - D12 - 2041 Do Nothing, PM

Summary

Data Errors and Warnings

No errors or warnings

Run Summary

Analysis set used	Run start time	Run finish time	Run duration (s)	Modelling start time (HH:mm)	Network Cycle Time (s)	Performance Index (£ per hr)	Total network delay (PCU-hr/hr)	Highest DOS (%)	Item with highest DOS	Number of oversaturated items	Percentage of oversaturated items (%)	Item with worst signalised PRC	Item with worst unsignalised PRC	Item with worst overall PRC	Network within capacity
1	27/04/2022 16:56:01	27/04/2022 16:56:02	1.04	16:30	100	6071.58	421.64	147.77	3A1/2	3	20	3A1/2	3A2/1	3A1/2	

Analysis Set Details

Name	Use Simulation	Description	Use specific Demand Set(s)	Optimise specific Demand Set(s)	Include in report	Locked
					✓	

Demand Set Details

Scenario name	Time Period name	Description	Composite	Demand sets	Start time (HH:mm)	Locked	Run automatically
2041 Do Nothing	PM				16:30		✓

Local OD Matrix - Local Matrix: 3

Local Matrix Options

OD Matrix	Name	Use for point to point table	Auto calculate	Allocation mode	Allow paths past exit locations	Allow looped paths on arms	Allow looped paths on traffic nodes	Copy flows	Matrix to copy flows from	Limit paths by length	Path length limit multiplier	Limit paths by number	Path number limit	Limit paths by flow	Low path flow threshold
3		✓	✓	Path Equalisation			✓			✓	1.25				

Normal Input Flows (PCU/hr)

From	To		
	3-1	3-2	3-3
3-1	0	20	1993
3-2	0	0	131
3-3	839	43	0

Bus Input Flows not shown as they are blank.

Tram Input Flows not shown as they are blank.

Pedestrian Input Flows not shown as they are blank.

Locations

OD Matrix	Location	Name	Entries	Exits	Colour
3	3-1		3A2/1	3Ax/1	#008000
	3-2		3B/1	3Bx2/1	#FFA500
	3-3		3C/1, 3C/2	3Cx/1	#A52A2A

Normal Paths and Flows

OD Matrix	Path	Description	From location	To location	Path Items	Allocation type	Normal Calculated Flow (PCU/hr)
3	2		3-2	3-3	3B/1, 3Cx/1	Normal	131
	3		3-3	3-2	3C/2, 3Bx2/1	Normal	43
	4		3-3	3-1	3C/1, 3Ax/1	Normal	839
	5		3-1	3-2	3A2/1, 3A1/1, 3Bx2/1	Normal	20
	6		3-1	3-3	3A2/1, 3A1/2, 3Cx/1	Normal	1993

Signal Timings

Network Default: 100s cycle time; 100 steps

Controller Stream 3

Controller Stream	Name	Description	Use sequence	Cycle time source	Cycle time (s)	Minimum possible cycle time (s)
3			1	NetworkDefault	100	39

Controller Stream 3 - Properties

Controller Stream	Manufacturer name	Type	Model number	(Telephone) Line Number	Site number	Grid reference	Gaining delay type
3	Unspecified						Absolute

Controller Stream 3 - Optimisation

Controller Stream	Allow offset optimisation	Allow green split optimisation	Optimisation level	Auto redistribute	Enable stage constraint
3	✓	✓	Offsets And Green Splits	✓	

Phases

Controller Stream	Phase	Name	Street minimum green (s)	Maximum green (s)	Relative start displacement (s)	Relative end displacement (s)	Type
3	A		5	300	0	0	Unknown
	B		5	300	0	0	Unknown
	C		5	300	0	0	Unknown
	D		5	300	0	0	Unknown
	E		3	300	0	0	Unknown
	F		3	300	0	0	Unknown
	G		3	300	0	0	Unknown

Library Stages

Controller Stream	Library Stage	Phases in stage	User stage minimum (s)	Run every N cycles	Probability of running (%)
3	1	A, C, G	1	1	100
	2	A, F, G	1	1	100
	3	B, C, E	1	1	100
	4	B, E, F	1	1	100
	5	C, D, E	1	1	100
	6	C, E, G	1	1	100
	7	D, E, F	1	1	100
	8	E, F, G	1	1	100

Stage Sequences

Controller Stream	Sequence	Name	Multiple cycling	Stage IDs	Stage ends	Minimum possible cycle time (s)	Exclude from analysis
3	1	(untitled)	Single	1, 3, 7	55, 69, 79	39	
	2	(untitled)	Single	1, 4, 5	25, 58, 90	39	
	3	(untitled)	Single	1, 4, 7	26, 60, 90	39	
	4	(untitled)	Single	1, 5, 4	26, 60, 90	39	
	5	(untitled)	Single	1, 7, 3	25, 58, 90	39	
	6	(untitled)	Single	1, 7, 4	26, 60, 90	39	
	7	(untitled)	Single	2, 3, 5	26, 60, 90	39	
	8	(untitled)	Single	2, 3, 7	26, 60, 90	39	
	9	(untitled)	Single	2, 4, 5	25, 58, 90	42	
	10	(untitled)	Single	2, 5, 3	26, 60, 90	39	

Intergreen Matrix for Controller Stream 3

		To						
		A	B	C	D	E	F	G
From	A	5			5	5		
	B	5			5		5	
	C						5	
	D	5	5					5
	E	10						
	F			8				
	G	9		9				

Banned Stage transitions for Controller Stream 3

		To							
		1	2	3	4	5	6	7	8
From	1								
	2								
	3								
	4								
	5								
	6								
	7								
	8								

Interstage Matrix for Controller Stream 3

		To							
		1	2	3	4	5	6	7	8
From	1	0	5	9	9	9	5	9	5
	2	8	0	9	9	9	8	9	5
	3	10	10	0	5	5	5	5	5
	4	10	10	8	0	8	8	5	5
	5	10	10	5	5	0	5	5	5
	6	10	10	9	9	9	0	9	5
	7	10	10	8	5	8	8	0	5
	8	10	10	9	9	9	8	9	0

Resultant Stages

Controller Stream	Resultant Stage	Is base stage	Library Stage ID	Phases in this stage	Stage start (s)	Stage end (s)	Stage duration (s)	User stage minimum (s)	Stage minimum (s)
3	1	✓	1	A,C,G	89	55	66	1	5
	2	✓	3	B,C,E	64	69	5	1	5
	3	✓	7	D,E,F	74	79	5	1	5

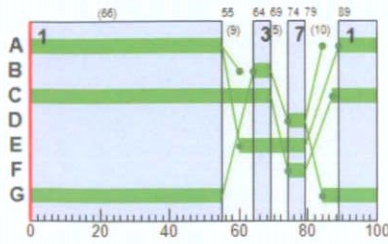
Resultant Phase Green Periods

Controller Stream	Phase	Green period	Is base green period	Start time (s)	End time (s)	Duration (s)
3	A	1	✓	89	55	66
	B	1	✓	64	69	5
	C	1	✓	87	69	82
	D	1	✓	74	79	5
	E	1	✓	60	79	19
	F	1	✓	74	79	5
	G	1	✓	84	55	71

Traffic Stream Green Times

Arm	Traffic Stream	Traffic Node	Controller Stream	Phase	Green Period 1		
					Start	End	Duration
3B	1	3	3	B	64	69	5
3C	1	3	3	C	87	69	82
3C	2	3	3	D	74	79	5
3A1	1	3	3	A	89	55	66
3A1	2	3	3	A	89	55	66

Phase Timings Diagram for Controller Stream 3



Stage Sequence Diagram for Controller Stream 3



Resultant penalties

Time Segment	Controller stream	Phase min max penalty (£ per hr)	Intergreen broken penalty (£ per hr)	Stage constraint broken penalty (£ per hr)	Cost of controller stream penalties (£ per hr)
16:30-17:30	3	0.00	0.00	0.00	0.00

Final Prediction Table

Traffic Stream Results

Arm	Traffic Stream	Name	Traffic node	SIGNALS		FLOWS		PERFORMANCE				PER PCU		QUEUES		WEIGHTS		PENALTIES	P.I.	
				Controller stream	Phase	Calculated flow entering (PCU/hr)	Calculated sat flow	Actual green (s per cycle)	Wasted time total (s per cycle)	Degree of saturation (%)	Practical reserve capacity	JourneyTime (s)	Mean Delay per Veh (s)	Mean stops per Veh (%)	Mean max queue (PCU)	Mean end of red queue (PCU)	Delay weighting multiplier (%)	Stop weighting multiplier (%)	Cost of traffic penalties (£ per hr)	P.I.
3Ax	1		7			839	Unrestricted	100	8.00	0	Unrestricted	10.58	0.00	0.00	0.00			0.00	0.00	
3B	1	L	3	3	B	131 <	1800	5	0.00	121	-26	409.34	406.44	304.01	16.35 +	16.20	100	100	0.00	214.13
3C	1	S	3	3	C	839	1800	82	0.00	56	60	10.38	4.25	30.24	7.58	4.32	100	100	0.00	17.23
	2	R	3	3	D	43	1800	5	3.00	40	126	62.29	56.15	105.38	1.28	1.25	100	100	0.00	10.09
3Cx	1					1314	Unrestricted	100	10.00	0	Unrestricted	9.20	0.00	0.00	0.00		100	100	0.00	0.00
3A1	1	L	3	3	A	18	1800	66	66.00	1	5969	8.46	5.63	31.84	0.16	0.16	100	100	0.00	0.47
	2	S	3	3	A	1782 <	1800	66	0.00	148	-39	597.88	595.16	379.60	322.26 +	300.15	100	100	0.00	4241.08
3A2	1		6			2013 <	1800	100	100.00	112	-20	201.75	197.88	84.09	110.53 +		100	100	0.00	1588.57
3Bx2	1					61	Unrestricted	100	87.00	0	Unrestricted	6.06	0.00	0.00	0.00		100	100	0.00	0.00

Network Results

	Distance travelled (PCU-km/hr)	Time spent (PCU-hr/hr)	Mean journey speed (kph)	Uniform delay (PCU-hr/hr)	Random plus oversat delay (PCU-hr/hr)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Excess queue penalty (£ per hr)	Performance index (£ per hr)
Normal traffic	335.10	432.81	0.77	8.14	413.50	5987.26	84.32	0.00	6071.58
Bus									
Tram									
Pedestrians	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	335.10	432.81	0.77	8.14	413.50	5987.26	84.32	0.00	6071.58

- < = adjusted flow warning (upstream link/traffic streams are over-saturated)
- * = Traffic Stream - Normal, Bus or Tram Stop or Delay weighting has been set to a value other than 100%
- ^ = Traffic Stream - Normal, Bus or Tram Stop or Delay Path weighting has been set to a value other than 100%
- + = average link/traffic stream excess queue is greater than 0
- P.I. = PERFORMANCE INDEX

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Filename: H087 Commercial TRANSYT Model J3 with BusConnects 20220427.t16
 Path: J:\H_JOBS\Job-H087\B_Documents\C_Civil\A_CS Reports\Traffic\Modelling\H087 Commercial Modelling
 Report generation date: 27/04/2022 16:56:22

- «A1 - : D13 - 2041 With Development, AM :
- »Summary
 - »Local OD Matrix - Local Matrix: 3
 - »Signal Timings
 - »Final Prediction Table

Summary of network performance

AM					
Set ID	PI (£ per hr)	Total delay (PCU-hr/hr)	Highest DOS	Number oversaturated	
2041 With Development					
Network	D13	305.27	19.55	91% (TS 3C/1)	2 (13%)

File summary

File description

File title	Heuston South Quarter Commercial
Location	Dublin 8
Site number	
UTCRegion	
Driving side	Left
Date	27/04/2022
Version	Junction 3 BusConnects Layout
Status	
Identifier	
Client	
Jobnumber	H087
Enumerator	GF
Description	

Model and Results

Enable controller offsets	Enable fuel consumption	Enable quick flares	Display journey time results	Display OD matrix distances	Display level of service results	Display blocking and starvation results	Display end of red and green queue results	Display excess queue results	Display separate uniform and random results	Display unweighted results	Display TRANSYT 12 style timings	Display effective greens in results	Display Red-With-Amber	Display End-Of-Green Amber	Display controller phase minimums
			✓			✓	✓	✓	✓	✓	✓	✓			

Units

Cost units	Speed units	Distance units	Fuel economy units	Fuel rate units	Mass units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
£	kph	m	l/100km	l/h	kg	PCU	PCU	perHour	s	-Hour	perHour

Sorting

Show names instead of IDs	Sorting direction	Sorting type	Ignore prefixes when sorting	Analysis/demand set sorting	Link grouping	Source grouping	Colour Analysis/Demand Sets
	Ascending	Numerical		ID	Normal	Normal	✓

Simulation options

Criteria type	Stop criteria (%)	Stop criteria time (s)	Stop criteria number of trials	Random seed	Results refresh speed (s)	Average animation capture interval (s)	Use quick response	Do flow sampling	Uniform vehicle generation	Last run random seed	Last run number of trials	Last run time taken (s)
Delay	3.00	999	200	-1	3	60	✓			0	0	0.00

A1 - D13 - 2041 With Development, AM

Summary

Data Errors and Warnings

No errors or warnings

Run Summary

Analysis set used	Run start time	Run finish time	Run duration (s)	Modelling start time (HH:mm)	Network Cycle Time (s)	Performance Index (£ per hr)	Total network delay (PCU-hr/hr)	Highest DOS (%)	Item with highest DOS	Number of oversaturated items	Percentage of oversaturated items (%)	Item with worst signalised PRC	Item with worst unsignalised PRC	Item with worst overall PRC	Network within capacity
1	27/04/2022 16:56:19	27/04/2022 16:56:20	1.15	07:30	100	305.27	19.55	91.12	3C/1	2	13	3C/1	3A2/1	3C/1	

Analysis Set Details

Name	Use Simulation	Description	Use specific Demand Set(s)	Optimise specific Demand Set(s)	Include in report	Locked
					✓	

Demand Set Details

Scenario name	Time Period name	Description	Composite	Demand sets	Start time (HH:mm)	Locked	Run automatically
2041 With Development	AM				07:30		✓

Local OD Matrix - Local Matrix: 3

Local Matrix Options

OD Matrix	Name	Use for point to point table	Auto calculate	Allocation mode	Allow paths past exit locations	Allow looped paths on arms	Allow looped paths on traffic nodes	Copy flows	Matrix to copy flows from	Limit paths by length	Path length limit multiplier	Limit paths by number	Path number limit	Limit paths by flow	Low path flow threshold
3		✓	✓	Path Equalisation			✓			✓	1.25				

Normal Input Flows (PCU/hr)

		To		
		3-1	3-2	3-3
From	3-1	0	11	1050
	3-2	0	0	57
	3-3	1345	114	0

Bus Input Flows not shown as they are blank.

Tram Input Flows not shown as they are blank.

Pedestrian Input Flows not shown as they are blank.

Locations

OD Matrix	Location	Name	Entries	Exits	Colour
3	3-1		3A2/1	3Ax/1	#008000
	3-2		3B/1	3Bx2/1	#FFA500
	3-3		3C/1, 3C/2	3Cx/1	#A52A2A

Normal Paths and Flows

OD Matrix	Path	Description	From location	To location	Path items	Allocation type	Normal Calculated Flow (PCU/hr)
3	2		3-2	3-3	3B/1, 3Cx/1	Normal	57
	3		3-3	3-2	3C/2, 3Bx2/1	Normal	114
	4		3-3	3-1	3C/1, 3Ax/1	Normal	1345
	5		3-1	3-2	3A2/1, 3A1/1, 3Bx2/1	Normal	11
	6		3-1	3-3	3A2/1, 3A1/2, 3Cx/1	Normal	1050

Signal Timings

Network Default: 100s cycle time; 100 steps

Controller Stream 3

Controller Stream	Name	Description	Use sequence	Cycle time source	Cycle time (s)	Minimum possible cycle time (s)
3			1	NetworkDefault	100	39

Controller Stream 3 - Properties

Controller Stream	Manufacturer name	Type	Model number	(Telephone) Line Number	Site number	Grid reference	Gaining delay type
3	Unspecified						Absolute

Controller Stream 3 - Optimisation

Controller Stream	Allow offset optimisation	Allow green split optimisation	Optimisation level	Auto redistribute	Enable stage constraint
3	✓	✓	Offsets And Green Splits	✓	

Phases

Controller Stream	Phase	Name	Street minimum green (s)	Maximum green (s)	Relative start displacement (s)	Relative end displacement (s)	Type
3	A		5	300	0	0	Unknown
	B		5	300	0	0	Unknown
	C		5	300	0	0	Unknown
	D		5	300	0	0	Unknown
	E		3	300	0	0	Unknown
	F		3	300	0	0	Unknown

	G		3	300	0	0	Unknown
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Library Stages

Controller Stream	Library Stage	Phases in stage	User stage minimum (s)	Run every N cycles	Probability of running (%)
3	1	A, C, G	1	1	100
	2	A, F, G	1	1	100
	3	B, C, E	1	1	100
	4	B, E, F	1	1	100
	5	C, D, E	1	1	100
	6	C, E, G	1	1	100
	7	D, E, F	1	1	100
	8	E, F, G	1	1	100

Stage Sequences

Controller Stream	Sequence	Name	Multiple cycling	Stage IDs	Stage ends	Minimum possible cycle time (s)	Exclude from analysis
3	1	(untitled)	Single	1, 3, 7	55, 69, 80	39	
	2	(untitled)	Single	1, 4, 5	25, 58, 90	39	
	3	(untitled)	Single	1, 4, 7	26, 60, 90	39	
	4	(untitled)	Single	1, 5, 4	26, 60, 90	39	
	5	(untitled)	Single	1, 7, 3	25, 58, 90	39	
	6	(untitled)	Single	1, 7, 4	26, 60, 90	39	
	7	(untitled)	Single	2, 3, 5	26, 60, 90	39	
	8	(untitled)	Single	2, 3, 7	26, 60, 90	39	
	9	(untitled)	Single	2, 4, 5	25, 58, 90	42	
	10	(untitled)	Single	2, 5, 3	26, 60, 90	39	

Intergreen Matrix for Controller Stream 3

		To						
		A	B	C	D	E	F	G
From	A		5		5	5		
	B	5			5			5
	C						5	
	D	5	5					5
	E	10						
	F			8				
	G	9		9				

Banned Stage transitions for Controller Stream 3

		To							
		1	2	3	4	5	6	7	8
From	1								
	2								
	3								
	4								
	5								
	6								
	7								
	8								

Interstage Matrix for Controller Stream 3

		To							
		1	2	3	4	5	6	7	8
From	1	0	5	9	9	9	5	9	5
	2	8	0	9	9	9	8	9	5
	3	10	10	0	5	5	5	5	5
	4	10	10	8	0	8	8	5	5
	5	10	10	5	5	0	5	5	5
	6	10	10	9	9	9	0	9	5
	7	10	10	8	5	8	8	0	5
	8	10	10	9	9	9	8	9	0

Resultant Stages

Controller Stream	Resultant Stage	Is base stage	Library Stage ID	Phases in this stage	Stage start (s)	Stage end (s)	Stage duration (s)	User stage minimum (s)	Stage minimum (s)
3	1	✓	1	A,C,G	90	55	65	1	5
	2	✓	3	B,C,E	64	69	5	1	5
	3	✓	7	D,E,F	74	80	6	1	5

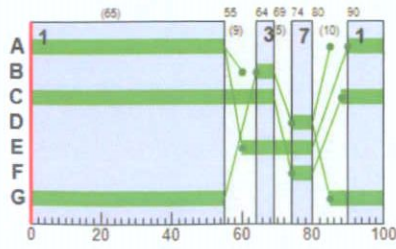
Resultant Phase Green Periods

Controller Stream	Phase	Green period	Is base green period	Start time (s)	End time (s)	Duration (s)
3	A	1	✓	90	55	65
	B	1	✓	64	69	5
	C	1	✓	88	69	81
	D	1	✓	74	80	6
	E	1	✓	60	80	20
	F	1	✓	74	80	6
	G	1	✓	85	55	70

Traffic Stream Green Times

Arm	Traffic Stream	Traffic Node	Controller Stream	Phase	Green Period 1		
					Start	End	Duration
3B	1	3	3	B	64	69	5
3C	1	3	3	C	88	69	81
3C	2	3	3	D	74	80	6
3A1	1	3	3	A	90	55	65
3A1	2	3	3	A	90	55	65

Phase Timings Diagram for Controller Stream 3



Stage Sequence Diagram for Controller Stream 3



Resultant penalties

Time Segment	Controller stream	Phase min max penalty (£ per hr)	Intergreen broken penalty (£ per hr)	Stage constraint broken penalty (£ per hr)	Cost of controller stream penalties (£ per hr)
07:30-08:30	3	0.00	0.00	0.00	0.00

Final Prediction Table

Traffic Stream Results

Arm	Traffic Stream	Name	Traffic node	SIGNALS		FLOWS		PERFORMANCE			PER PCU			QUEUES		WEIGHTS		PENALTIES	P.I.	
				Controller stream	Phase	Calculated flow entering (PCU/hr)	Calculated sat flow	Actual green (s per cycle)	Wasted time total (s per cycle)	Degree of saturation (%)	Practical reserve capacity	Journey Time (s)	Mean Delay per Veh (s)	Mean stops per Veh (%)	Mean max queue (PCU)	Mean end of red queue (PCU)	Delay weighting multiplier (%)	Stop weighting multiplier (%)	Cost of traffic penalties (£ per hr)	P.I.
3Ax	1		7			1345	Unrestricted	100	8.00	0	Unrestricted	10.58	0.00	0.00	0.00	100	100	0.00	0.00	
3B	1	L	3	3	B	57	1800	5	2.00	53	71	66.58	63.69	112.82	1.82	1.77	100	100	0.00	15.13
3C	1	S	3	3	C	1345 <	1800	81	0.00	91	-1	24.14	18.00	75.81	30.48 +	11.08	100	100	0.00	108.29
	2	R	3	3	D	114	1800	6	0.00	90	-1	137.35	131.22	166.98	5.83	5.64	100	100	0.00	61.39
3Cx	1					1107	Unrestricted	100	14.00	0	Unrestricted	9.20	0.00	0.00	0.00	100	100	0.00	0.00	
3A1	1	L	3	3	A	11	1800	65	65.00	1	9620	8.79	5.96	32.83	0.10	0.10	100	100	0.00	0.30
	2	S	3	3	A	1050 <	1800	65	0.00	88	2	27.48	24.76	88.17	26.80 +	13.09	100	100	0.00	114.16
3A2	1		6			1061	1800	100	79.00	59	53	5.50	1.43	0.00	0.42		100	100	0.00	5.99
3Bx2	1					125	Unrestricted	100	84.00	0	Unrestricted	6.06	0.00	0.00	0.00		100	100	0.00	0.00

Network Results

	Distance travelled (PCU-km/hr)	Time spent (PCU-hr/hr)	Mean journey speed (kph)	Uniform delay (PCU-hr/hr)	Random plus oversat delay (PCU-hr/hr)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Excess queue penalty (£ per hr)	Performance Index (£ per hr)
Normal traffic	345.78	31.08	11.13	8.64	10.91	277.63	27.63	0.00	305.27
Bus									
Tram									
Pedestrians	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	345.78	31.08	11.13	8.64	10.91	277.63	27.63	0.00	305.27

- < = adjusted flow warning (upstream links/traffic streams are over-saturated)
- * = Traffic Stream - Normal, Bus or Tram Stop or Delay weighting has been set to a value other than 100%
- ^ = Traffic Stream - Normal, Bus or Tram Stop or Delay Path weighting has been set to a value other than 100%
- + = average link/traffic stream excess queue is greater than 0
- P.I. = PERFORMANCE INDEX

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Filename: H087 Commercial TRANSYT Model J3 with BusConnects 20220427.t16
 Path: J:\H_JOBS\Job-H087\B_Documents\C_Civil\A_CS Reports\Traffic\Modelling\H087 Commercial Modelling
 Report generation date: 27/04/2022 16:56:43

«A1 - : D14 - 2041 With Development, PM :

- »Summary
- »Local OD Matrix - Local Matrix: 3
- »Signal Timings
- »Final Prediction Table

Summary of network performance

PM					
Set ID	PI (£ per hr)	Total delay (PCU-hr/hr)	Highest DOS	Number oversaturated	
2041 With Development					
Network	D14	6180.57	429.26	148% (TS 3A1/2)	3 (20%)

File summary

File description

File title	Heuston South Quarter Commercial
Location	Dublin 8
Site number	
UTCRRegion	
Driving side	Left
Date	27/04/2022
Version	Junction 3 BusConnects Layout
Status	
Identifier	
Client	
Jobnumber	H087
Enumerator	GF
Description	

Model and Results

Enable controller offsets	Enable fuel consumption	Enable quick flares	Display journey time results	Display OD matrix distances	Display level of service results	Display blocking and starvation results	Display end of red and green queue results	Display excess queue results	Display separate uniform and random results	Display unweighted results	Display TRANSYT 12 style timings	Display effective greens in results	Display Red-With-Amber	Display End-Of-Green Amber	Display controller phase minimums
			✓			✓	✓	✓	✓	✓	✓	✓			

Units

Cost units	Speed units	Distance units	Fuel economy units	Fuel rate units	Mass units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
£	kph	m	l/100km	l/h	kg	PCU	PCU	perHour	s	-Hour	perHour

Sorting

Show names instead of IDs	Sorting direction	Sorting type	Ignore prefixes when sorting	Analysis/demand set sorting	Link grouping	Source grouping	Colour Analysis/Demand Sets
	Ascending	Numerical		ID	Normal	Normal	✓

Simulation options

Criteria type	Stop criteria (%)	Stop criteria time (s)	Stop criteria number of trials	Random seed	Results refresh speed (s)	Average animation capture interval (s)	Use quick response	Do flow sampling	Uniform vehicle generation	Last run random seed	Last run number of trials	Last run time taken (s)
Delay	3.00	999	200	-1	3	60	✓			0	0	0.00

A1 - D14 - 2041 With Development, PM

Summary

Data Errors and Warnings

No errors or warnings

Run Summary

Analysis set used	Run start time	Run finish time	Run duration (s)	Modelling start time (HH:mm)	Network Cycle Time (s)	Performance index (£ per hr)	Total network delay (PCU-hr/hr)	Highest DOS (%)	Item with highest DOS	Number of oversaturated items	Percentage of oversaturated items (%)	Item with worst signalised PRC	Item with worst unsignalised PRC	Item with worst overall PRC	Network within capacity
1	27/04/2022 16:56:39	27/04/2022 16:56:40	1.04	16:30	100	6180.57	429.26	147.55	3A1/2	3	20	3A1/2	3A2/1	3A1/2	

Analysis Set Details

Name	Use Simulation	Description	Use specific Demand Set(s)	Optimise specific Demand Set(s)	Include in report	Locked
					✓	

Demand Set Details

Scenario name	Time Period name	Description	Composite	Demand sets	Start time (HH:mm)	Locked	Run automatically
2041 With Development	PM				16:30		✓

Local OD Matrix - Local Matrix: 3

Local Matrix Options

OD Matrix	Name	Use for point to point table	Auto calculate	Allocation mode	Allow paths past exit locations	Allow looped paths on arms	Allow looped paths on traffic nodes	Copy flows	Matrix to copy flows from	Limit paths by length	Path length limit multiplier	Limit paths by number	Path number limit	Limit paths by flow	Low path flow threshold
3		✓	✓	Path Equalisation			✓			✓	1.25				

Normal Input Flows (PCU/hr)

		To		
		3-1	3-2	3-3
From	3-1	0	23	1993
	3-2	0	0	147
	3-3	839	49	0

Bus Input Flows not shown as they are blank.

Tram Input Flows not shown as they are blank.

Pedestrian Input Flows not shown as they are blank.

Locations

OD Matrix	Location	Name	Entries	Exits	Colour
3	3-1		3A2/1	3Ax/1	#008000
	3-2		3B/1	3Bx2/1	#FFA500
	3-3		3C/1, 3C/2	3Cx/1	#A52A2A

Normal Paths and Flows

OD Matrix	Path	Description	From location	To location	Path items	Allocation type	Normal Calculated Flow (PCU/hr)
3	2		3-2	3-3	3B/1, 3Cx/1	Normal	147
	3		3-3	3-2	3C/2, 3Bx2/1	Normal	49
	4		3-3	3-1	3C/1, 3Ax/1	Normal	839
	5		3-1	3-2	3A2/1, 3A1/1, 3Bx2/1	Normal	23
	6		3-1	3-3	3A2/1, 3A1/2, 3Cx/1	Normal	1993

Signal Timings

Network Default: 100s cycle time; 100 steps

Controller Stream 3

Controller Stream	Name	Description	Use sequence	Cycle time source	Cycle time (s)	Minimum possible cycle time (s)
3			1	NetworkDefault	100	39

Controller Stream 3 - Properties

Controller Stream	Manufacturer name	Type	Model number	(Telephone) Line Number	Site number	Grid reference	Gaining delay type
3	Unspecified						Absolute

Controller Stream 3 - Optimisation

Controller Stream	Allow offset optimisation	Allow green split optimisation	Optimisation level	Auto redistribute	Enable stage constraint
3	✓	✓	Offsets And Green Splits	✓	

Phases

Controller Stream	Phase	Name	Street minimum green (s)	Maximum green (s)	Relative start displacement (s)	Relative end displacement (s)	Type
3	A		5	300	0	0	Unknown
	B		5	300	0	0	Unknown
	C		5	300	0	0	Unknown
	D		5	300	0	0	Unknown
	E		3	300	0	0	Unknown
	F		3	300	0	0	Unknown
	G		3	300	0	0	Unknown

Library Stages

Controller Stream	Library Stage	Phases in stage	User stage minimum (s)	Run every N cycles	Probability of running (%)
3	1	A, C, G	1	1	100
	2	A, F, G	1	1	100
	3	B, C, E	1	1	100
	4	B, E, F	1	1	100
	5	C, D, E	1	1	100
	6	C, E, G	1	1	100
	7	D, E, F	1	1	100
	8	E, F, G	1	1	100

Stage Sequences

Controller Stream	Sequence	Name	Multiple cycling	Stage IDs	Stage ends	Minimum possible cycle time (s)	Exclude from analysis
3	1	(untitled)	Single	1, 3, 7	55, 69, 79	39	
	2	(untitled)	Single	1, 4, 5	25, 58, 90	39	
	3	(untitled)	Single	1, 4, 7	28, 60, 90	39	
	4	(untitled)	Single	1, 5, 4	26, 60, 90	39	
	5	(untitled)	Single	1, 7, 3	25, 58, 90	39	
	6	(untitled)	Single	1, 7, 4	26, 60, 90	39	
	7	(untitled)	Single	2, 3, 5	26, 60, 90	39	
	8	(untitled)	Single	2, 3, 7	26, 60, 90	39	
	9	(untitled)	Single	2, 4, 5	25, 58, 90	42	
	10	(untitled)	Single	2, 5, 3	26, 60, 90	39	

Intergreen Matrix for Controller Stream 3

		To						
		A	B	C	D	E	F	G
From	A	5			5	5		
	B	5			5		5	
	C						5	
	D	5	5					5
	E	10						
	F			8				
	G	9		9				

Banned Stage transitions for Controller Stream 3

		To							
		1	2	3	4	5	6	7	8
From	1								
	2								
	3								
	4								
	5								
	6								
	7								
	8								

Interstage Matrix for Controller Stream 3

		To							
		1	2	3	4	5	6	7	8
From	1	0	5	9	9	9	5	9	5
	2	8	0	9	9	9	8	9	5
	3	10	10	0	5	5	5	5	5
	4	10	10	8	0	8	8	5	5
	5	10	10	5	5	0	5	5	5
	6	10	10	9	9	9	0	9	5
	7	10	10	8	5	8	8	0	5
	8	10	10	9	9	9	8	9	0

Resultant Stages

Controller Stream	Resultant Stage	Is base stage	Library Stage ID	Phases in this stage	Stage start (s)	Stage end (s)	Stage duration (s)	User stage minimum (s)	Stage minimum (s)
3	1	✓	1	A,C,G	89	55	66	1	5
	2	✓	3	B,C,E	64	69	5	1	5
	3	✓	7	D,E,F	74	79	5	1	5

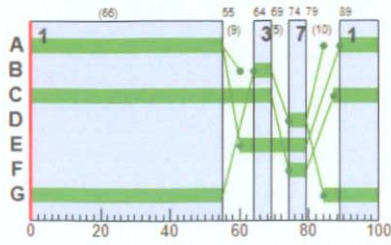
Resultant Phase Green Periods

Controller Stream	Phase	Green period	Is base green period	Start time (s)	End time (s)	Duration (s)
3	A	1	✓	89	55	66
	B	1	✓	64	69	5
	C	1	✓	87	69	82
	D	1	✓	74	79	5
	E	1	✓	60	79	19
	F	1	✓	74	79	5
	G	1	✓	84	55	71

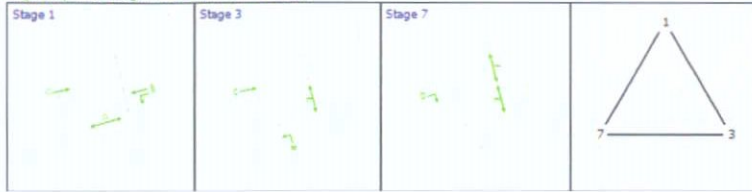
Traffic Stream Green Times

Arm	Traffic Stream	Traffic Node	Controller Stream	Phase	Green Period 1		
					Start	End	Duration
3B	1	3	3	B	64	69	5
3C	1	3	3	C	87	69	82
3C	2	3	3	D	74	79	5
3A1	1	3	3	A	89	55	66
3A1	2	3	3	A	89	55	66

Phase Timings Diagram for Controller Stream 3



Stage Sequence Diagram for Controller Stream 3



Resultant penalties

Time Segment	Controller stream	Phase min max penalty (£ per hr)	Intergreen broken penalty (£ per hr)	Stage constraint broken penalty (£ per hr)	Cost of controller stream penalties (£ per hr)
16:30-17:30	3	0.00	0.00	0.00	0.00

Final Prediction Table

Traffic Stream Results

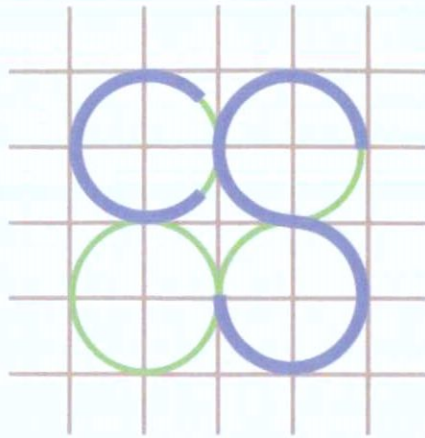
Arm	Traffic Stream	Name	Traffic node	SIGNALS		FLOWS		PERFORMANCE				PER PCU			QUEUES		WEIGHTS		PENALTIES	P.I.
				Controller stream	Phase	Calculated flow entering (PCU/hr)	Calculated sat flow	Actual green (s per cycle)	Wasted time total (s per cycle)	Degree of saturation (%)	Practical reserve capacity	JourneyTime (s)	Mean Delay per Veh (s)	Mean stops per Veh (%)	Mean max queue (PCU)	Mean end of red queue (PCU)	Delay weighting multiplier (%)	Stop weighting multiplier (%)		
3Ax	1		7			839	Unrestricted	100	8.00	0	Unrestricted	10.58	0.00	0.00	0.00					0.00
3B	1	L	3	3	B	147 <	1800	5	0.00	136	-34	545.40	542.51	350.75	23.71 +	23.56	100	100	0.00	319.31
3C	1	S	3	3	C	839	1800	82	0.00	56	60	10.38	4.25	30.24	7.58	4.32	100	100	0.00	17.23
	2	R	3	3	D	49	1800	5	3.00	45	98	65.14	59.01	107.92	1.49	1.46	100	100	0.00	12.07
3Cx	1					1314	Unrestricted	100	10.00	0	Unrestricted	9.20	0.00	0.00	0.00					0.00
3A1	1	L	3	3	A	21	1800	66	66.00	2	5185	8.46	5.64	31.84	0.19	0.19	100	100	0.00	0.54
	2	S	3	3	A	1779 <	1800	66	0.00	148	-39	596.09	593.38	379.04	320.94 +	298.83	100	100	0.00	4222.23
3A2	1		6			2016 <	1800	100	100.00	112	-20	204.04	199.97	84.29	111.98 +		100	100	0.00	1609.16
3Bx2	1					70	Unrestricted	100	87.00	0	Unrestricted	6.06	0.00	0.00	0.00		100	100	0.00	0.00

Network Results

	Distance travelled (PCU-km/hr)	Time spent (PCU-hr/hr)	Mean journey speed (kph)	Uniform delay (PCU-hr/hr)	Random plus oversat delay (PCU-hr/hr)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Excess queue penalty (£ per hr)	Performance Index (£ per hr)
Normal traffic	336.33	440.48	0.76	8.22	421.04	6095.55	85.02	0.00	6180.57
Bus									
Tram									
Pedestrians	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	336.33	440.48	0.76	8.22	421.04	6095.55	85.02	0.00	6180.57

- < = adjusted flow warning (upstream links/traffic streams are over-saturated)
- * = Traffic Stream - Normal, Bus or Tram Stop or Delay weighting has been set to a value other than 100%
- ^ = Traffic Stream - Normal, Bus or Tram Stop or Delay Path weighting has been set to a value other than 100%
- + = average link/traffic stream excess queue is greater than 0
- P.I. = PERFORMANCE INDEX

APPENDIX 11C
WORKPLACE TRAVEL PLAN



CS CONSULTING
GROUP

DUBLIN LONDON LIMERICK

Workplace Travel Plan

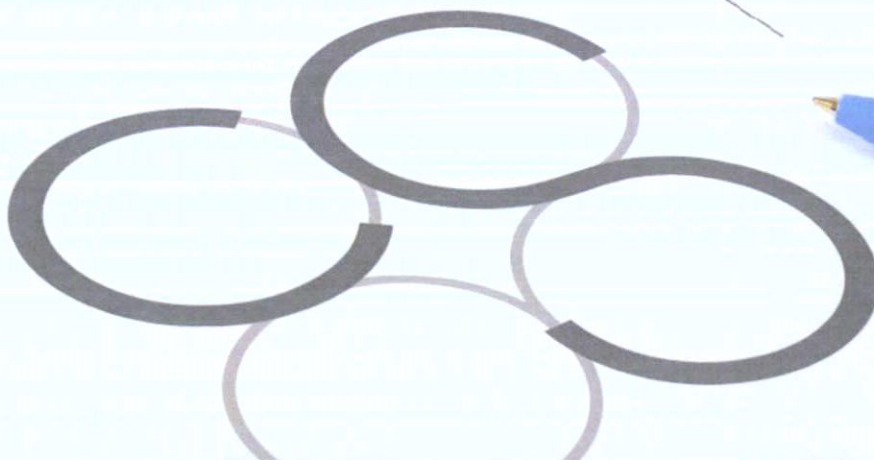
Office and Hotel Development

Heuston South Quarter, St. John's
Road West, Kilmainham, Dublin 8

Client: HPREF HSQ Investments Ltd.

Job No. H087

July 2022



WORKPLACE TRAVEL PLAN

OFFICE AND HOTEL DEVELOPMENT

HEUSTON SOUTH QUARTER, ST. JOHN'S ROAD WEST, KILMAINHAM, DUBLIN 8

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2.0	WORKPLACE TRAVEL PLAN PURPOSE _____	6
3.0	EXISTING SITE CONDITIONS _____	7
4.0	CONTENT OF THE WORKPLACE TRAVEL PLAN _____	17
5.0	WORKPLACE TRAVEL PLAN TARGETS _____	22
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Appendix A: Sample Baseline Workplace Travel Survey

Appendix B: Links to relevant Mobility Management guidance documents

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File Location: Job-H087\B_Documents\C_Civil\A_CS Reports\WTP					
BS 1192 FIELD		HSQ-CSC-ZZ-XX-RP-C-0206-P3			
Job Ref.	Author	Reviewed By	Authorised By	Issue Date	Rev. No.
H087	GF	FB	OS	19.07.2022	P3
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H087	GF	FB	OS	04.02.2022	P0

1.0 INTRODUCTION

Cronin & Sutton Consulting Engineers (CS Consulting) have been commissioned by HPREF HSQ Investments Ltd. to prepare a Workplace Travel Plan for a proposed office and hotel development at Heuston South Quarter, St. John's Road West, Kilmainham, Dublin 8.

1.1 Location, Size and Scale of Development

The proposed development is located on St. John's Road West at the Heuston South Quarter complex in Dublin 8, within the administrative jurisdiction of Dublin City Council.

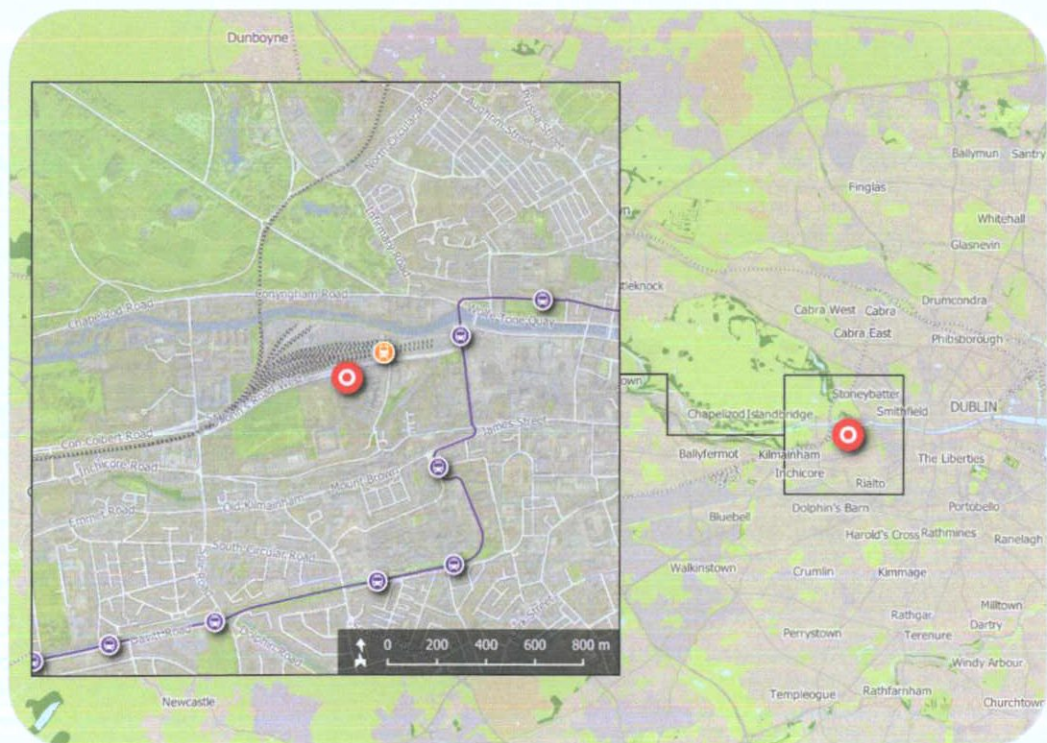


Figure 1 – Location of proposed development site
(map data & imagery: EPA, OSi, OSM Contributors, Google)

The location of the proposed development site is shown in Figure 1 above; the indicative extents of the development site, as well as relevant elements of the surrounding road network, are shown in more detail in Figure 2.

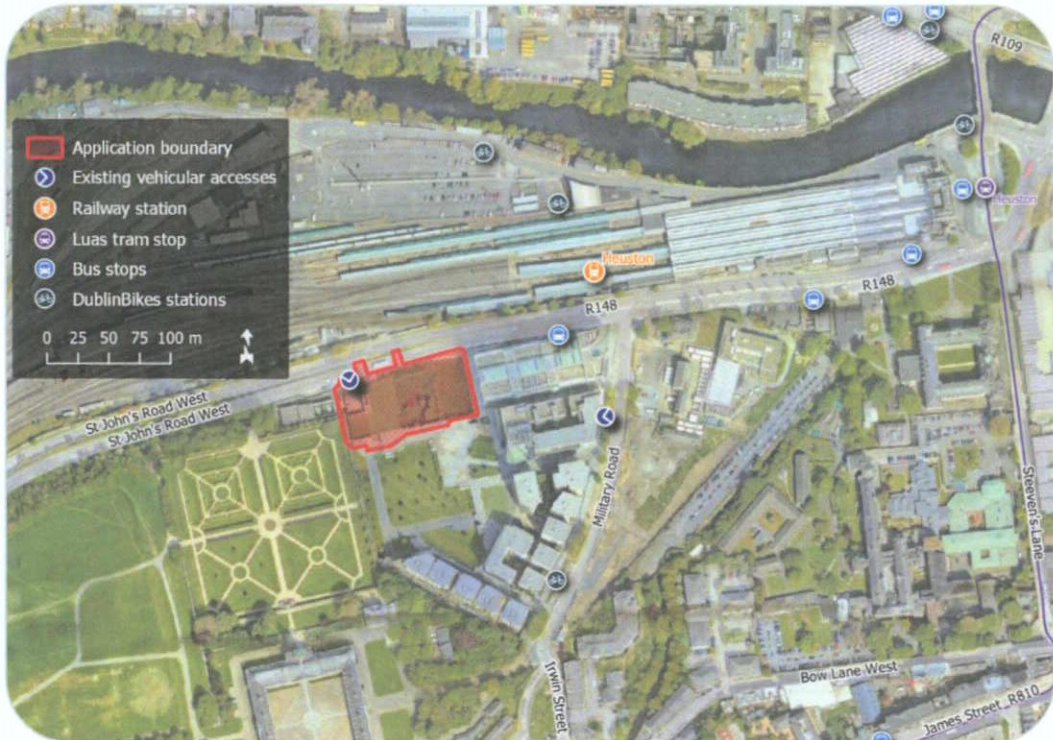


Figure 2 – Site extents and environs
(map data & imagery: NTA, DCC, OSi, OSM Contributors, Google)

The planning application boundary encloses an area of approx. 0.62ha. The development site is bounded to the west by the gardens of the Royal Hospital Kilmainham, to the north by St. John's Road West, to the east by an existing office building, and to the south by a further partially developed section of the wider HSQ complex that is also in the applicant's ownership.

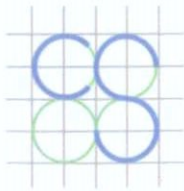
The subject site is brownfield, comprising a partially developed section of the HSQ complex. Some surface level internal roads are present on the site, which benefits from the existing established HSQ vehicular accesses on St. John's Road West (R148) and Military Road. The site has been landscaped as an interim measure to improve its aesthetics pending its complete development. The subject site does not in itself generate any vehicular traffic but is traversed by traffic accessing the existing HSQ complex to/from St. John's Road West.

The development shall be supported by a Workplace Travel Plan as a suitable mechanism by which the development can maintain a low rate of private car use and support the objectives of sustainable development.

1.2 Proposed Development

The proposed development will provide a mixed use commercial development comprising of a hotel (241 no. bedrooms) and an office block delivering a cumulative Gross Floor Area (GFA) of 32,602, inclusive of basement area. The proposed development consists of:

- Site clearance and localised demolitions to remove part of the podium and Basement Level -1 reinforced concrete slabs at the interface of the proposed hotel and office blocks, together with the incorporation of part of the existing basement level structure extending to approximately 4,228 sq.m (GFA).
- The proposed basement will be integrated within the existing basement levels serving the wider HSQ development and will be accessed from the existing vehicular ramped accesses/egresses onto/off St. John's Road West and Military Road to the north and east, respectively. The proposed basement area is split into two areas to provide a dedicated Hotel Basement area of approximately 2,132 sq.m (GFA) and an Office basement area of 2,096 sq.m (GFA).
- The construction of a 5-storey hotel (over lower ground and basement levels) to provide 238 no. bedrooms. At basement level provision is made for 24 no. car parking spaces; 2 no. motorcycle spaces together with plant and storage rooms. A waste storage area with dedicated loading bay / staging area is provided along with dedicated set-down area for deliveries. A dual-purpose service bay is also provided at basement level with modifications to existing line markings to the basement parking area to accommodate the development. At Lower Ground floor level provision is made for 14 no. Bedrooms; Conference

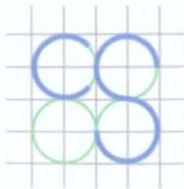


Room; Kitchen and Staff facilities and Changing Rooms / WCs plus ancillary Gym. This floor is arranged around an internal courtyard space. Provision is made at Podium level for 19 no. Bedrooms; Dining Area and Foyer with entrance at the South-Eastern corner of the building onto a new laneway separating the proposed hotel and office building. Provision is made at the south-western corner at podium level for an ESB sub-station / switch room and 15 no Sheffield type bicycle stands are provided for the hotel and the retail / café unit, providing storage space for 30 no. bicycles. A total of 205 no. bedrooms are provided at the upper levels (above podium level). The top floor of the hotel (4th floor) has a splayed setback to provide a west facing roof terrace. An ancillary hotel bar (118 sq.m) opens onto this roof terrace.

- The construction of a 12-storey (over lower ground and basement levels) office building to the east of the proposed hotel building to provide 19,474 sq.m of office floorspace (GFA) from lower ground floor level and above. Provision is made at basement level for 30 no. car parking spaces; 2 motorcycle spaces and 120 no. bicycle storage spaces together with plant and storage rooms. Provision is made for a further 196 no. bicycle storage spaces at Lower Ground floor level plus changing rooms (including showers). At podium level 2 no. ESB sub-stations and switch rooms are proposed. The foyer and entrance is provided at the southern end of the building at Podium level along with a Retail/Café unit of 208 sq.m at the South-Western corner of the building. The building is setback at 4th floor level to provide a west facing roof terrace. Splayed setbacks to the southern and eastern elevations at the 11th floor level forms a roof terrace that wraps around the South-Eastern corner of the building. Plant is provided at rooftop level that is enclosed by curved louvred screens and PV panels.
- Works proposed along the St John's Road West frontage include the omission of the existing left-turn filter lane to the vehicular ramped

access to the HSQ development and re-configuration of the pedestrian crossings at the existing junction together with the re-configuration of the existing pedestrian crossing over the westbound lanes of St. John's Road West leading to an existing pedestrian refuge island and re-alignment of the existing footpath along the site frontage onto St John's Road West to tie into the reconfigured junction arrangement.

- Drainage works proposed include the provision of 2 no. below basement surface water attenuation tanks with duty/stand-by arrangement pump sumps and associated valve chambers, and 2 no. below basement foul pump sumps with duty/stand-by arrangement and 24hr emergency storage and associated valve chambers. New foul drainage and stormwater drainage connections are proposed to existing foul and storm sewers in St. John's Road West with associated site works.
- Hard and soft landscaping works are proposed at lower ground level along St John's Road West and at podium level to provide for the extension and completion of the public plaza to the south of the proposed Office Block and the provision of a new pedestrian laneway connecting St John's Road West with the public plaza at podium level.



2.0 WORKPLACE TRAVEL PLAN PURPOSE

Workplace Travel Plans (WTPs) are developed for the purpose of promoting and enhancing travel via more sustainable modes of transport. They serve to identify travel demand strategies that reduce single occupancy private car travel, which in turn reduces traffic congestion, noise pollution and environmental impacts. Development occupants are informed of existing alternatives to the private car and are given the required advice, support, and encouragement to travel in a sustainable way. The WTP also includes reference to proposed future improvements to those transport options already available.

The aim of the WTP is to provide more sustainable transport choices, which lead to a reduction in the need for vehicular journeys, especially by private car. The WTP recognises that not all trips can be taken by sustainable modes and that some motor vehicle trips will still be necessary.

The WTP should be considered as a dynamic process, wherein a package of measures and campaigns is identified, piloted, and then monitored on an ongoing basis. The nature of the plan therefore changes during its implementation: measures that prove successful are retained, while those that are not supported are discarded. It is important that the plan retains the support of users and receives continuous monitoring. Feedback and active management of the plan are required for it to continue to be successful.

3.0 EXISTING SITE CONDITIONS

The development site benefits from proximity to good quality public transport services. As shown in Figure 3, the development site is situated within a 10-minute walk of both the Heuston Station and James' stops on the Luas Red Line, which is served by frequent trams to and from Dublin city centre, as well as to/from Saggart and Tallaght in the south-west.

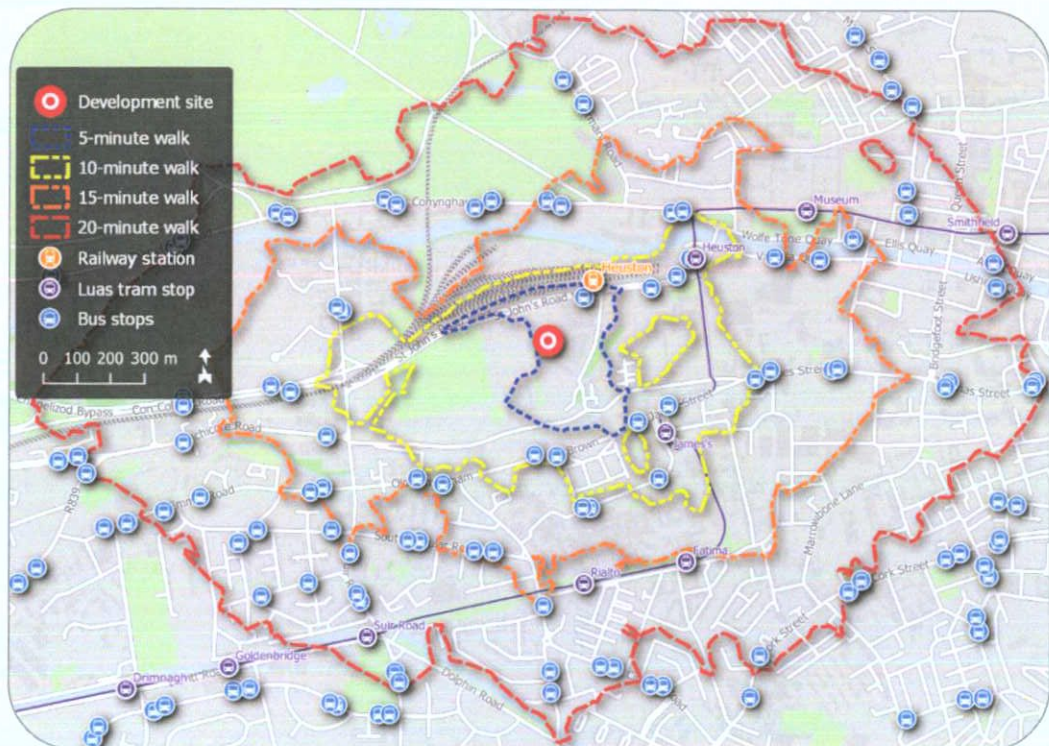


Figure 3 – Walking times and public transport service points
(map data & imagery sources: EPA, NTA, OSi, OSM Contributors)

3.1 Pedestrian Accessibility

One of the specific objectives of the Dublin City Development Plan is to implement, at appropriate locations, pedestrian permeability schemes and enhancements.

Existing pedestrian facilities on Military Road, St. John's Road, Kilmainham Lane and neighbouring streets in the vicinity of the development site are

generally in good condition. Raised footpaths and public lighting are in place on Military road and St. Johns Road in the vicinity of the subject development site.

3.2 Public Transport Services

3.2.1 Light Rail Services

The Luas light rail network consists of two principal lines, which connect to one another at Abbey Street/Marlborough Street/O'Connell Street in Dublin City Centre.

- LUAS Red Line (E-W) Dublin Docklands to Tallaght/Saggart
- LUAS Green Line (N-S) Broombridge to Bride's Glen

Table 1 – Luas Red Line Light Rail Services adjacent to Site

Direction	Destinations	Peak Interval
Northbound	Dublin Docklands	3-4 min
Southbound	Tallaght/Saggart	3-4 min

The subject development site is located within a 10-minute walk of the Heuston and James's stops on the Luas Red Line. Light rail services operating to and from these stops connect them directly to the Point in the east (via Dublin city centre) and to Tallaght / Saggart in the south; interchange with the Luas Green Line is possible at Abbey Street. Trams serve the Heuston and James's stops at intervals of approximately 3-4 minutes at peak times.

3.2.2 Rail Services

The subject development site is located within a 10-minute walk of Heuston Station. Intercity rail services operating to and from this station connect the development directly to many towns and cities such as Cork, Waterford, Galway and Limerick. A Commuter service also terminates at Heuston Station, serving commuter towns to the south-

east of Dublin. Commuter trains serve Heuston Station at intervals of approximately 20 minutes at peak times.

3.2.3 Bus Services

Bus stop no. 2638, located on St. John's Road West within a 5-minute walk of the site, is served by a total of 3no. Dublin Bus routes (nos. 51d, 79, 79a). Of these, one route (no. 79, between Aston Quay and Spiddal Park/Parkwest) operates at intervals of less than 10 minutes at peak times. A further 39no. bus routes (including nos. 4, 13, 20, 22, 25, 26, 40, 66, 67, 69, 115, 120, 121, 123, 126, 130, 145, 363, 735, 737, 747, 842, X8, X12, X20, and variants) serve stops within a 10-minute walk if the subject site.



Figure 4 – Existing easily accessible public transport routes
(map data sources: EPA, NTA, OSi, OSM Contributors)

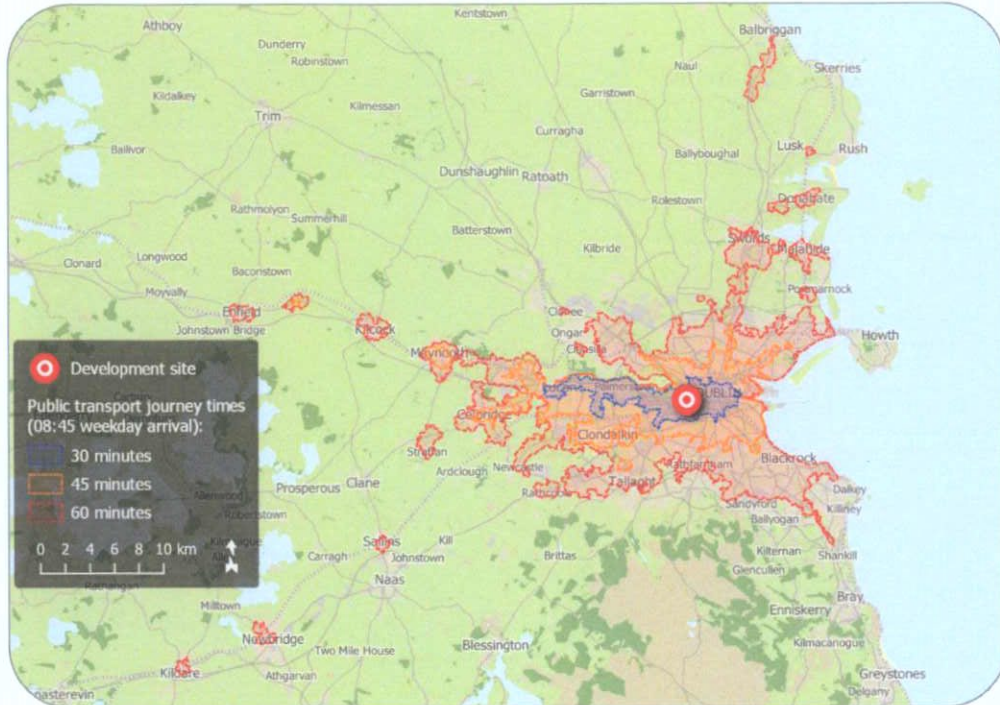
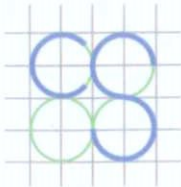


Figure 5 – Public transport travel times TO development site
(map data sources: EPA, OSM Contributors, TravelTime platform)

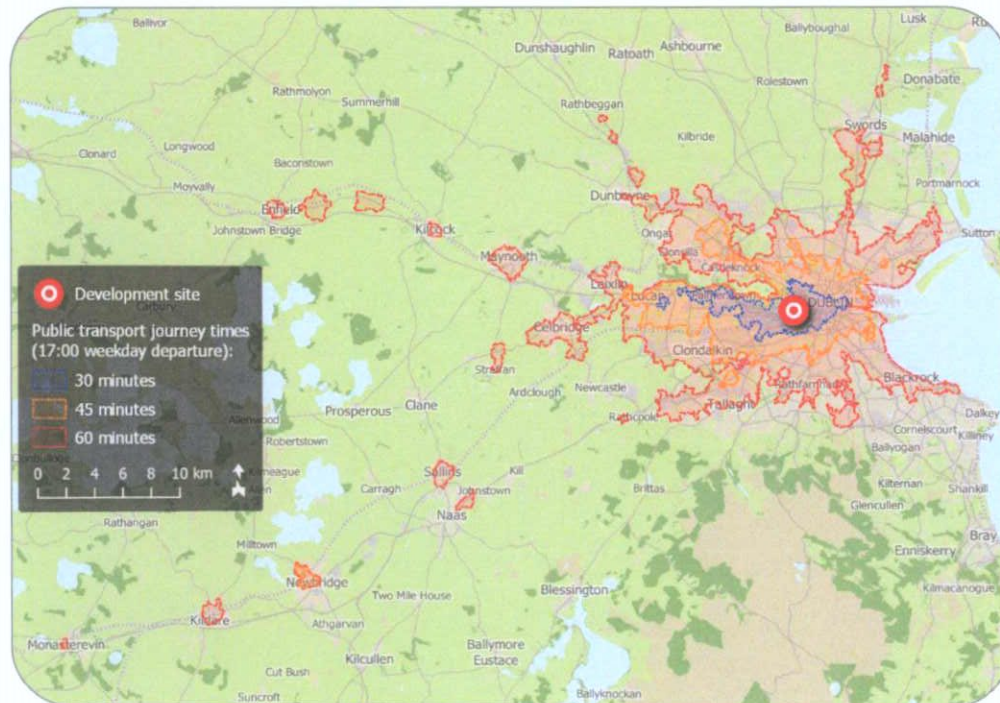


Figure 6 – Public transport travel times FROM development site
(map data sources: EPA, OSM Contributors, TravelTime platform)

Figure 4 shows the extents of the direct bus and rail routes within a 5-minute walk of the development site. Figure 5 shows the reach of public transport journeys to the development site by total travel time (including service interchanges, and walking to and between stops), based upon an arrival time of 08:45 on a typical weekday; Figure 6 shows the reach of public transport journeys from the development site, based upon a departure time of 17:00 on a typical weekday.

3.3 Bicycle Infrastructure

There is no cycle infrastructure present on Military Road adjacent to the subject development site. A cycle lane is present on St. Johns Road in the vicinity of the subject site in both the west and eastbound direction. There is no other existing cycle infrastructure in the immediate vicinity of the subject development site.

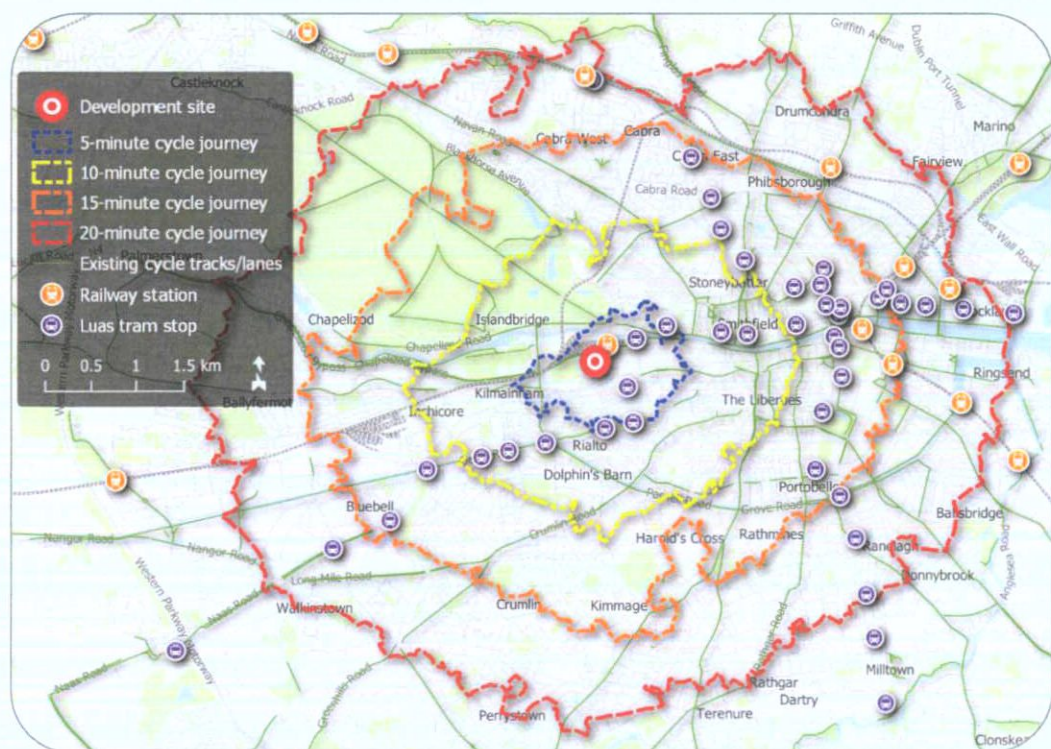


Figure 7 – Bicycle journey times and cycle facilities
(map data & imagery sources: EPA, NTA, OSi, OSM Contributors)

Within the development, bicycle parking for occupants and visitors has been provided in accordance with the requirements of the *Dublin City Development Plan 2016-2022*.

3.4 Proposed Transport Infrastructure and Service Improvements

The NTA BusConnects Core Bus Corridor Project includes the implementation of Core Bus Corridor no. 6 (Lucan to City Centre) along St. John's Road West, in close proximity to the subject development site (see Figure 8). This entails a new westbound bus lane on this section of St. John's Road West and the removal of one westbound general-purpose lane. Changes are also indicated to the existing Heuston South Quarter access junction St. John's Road West.

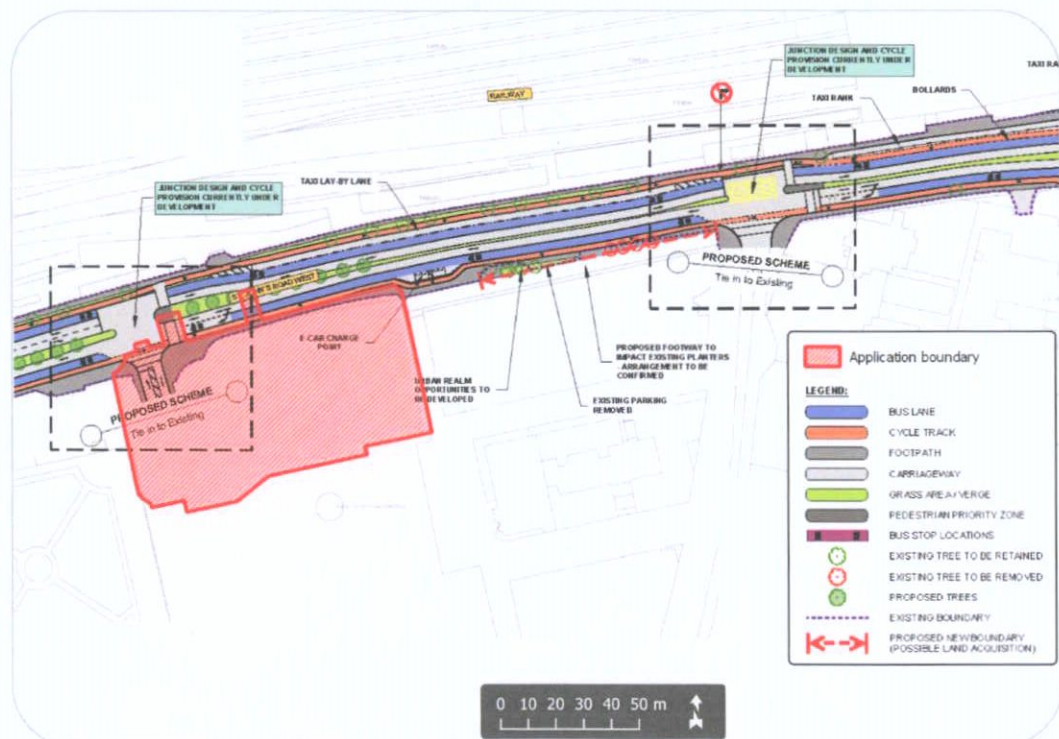
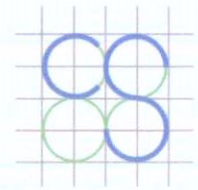


Figure 8 – Extract of Core Bus Corridor no. 6 route mapping
(background imagery source: NTA)



As part of the same BusConnects project, Core Bus Corridor no. 7 (Liffey Valley to City Centre) is to be implemented along James's Street, less than 10 minutes' walk to the south of the subject site.

Three rounds of Public Consultation have been conducted in respect of the Core Bus Corridor Project, and the NTA indicates that it will soon be presenting planning applications to An Bord Pleanála.



Figure 9 – Dublin Area Revised Bus Network Inchicore area map
(background imagery source: NTA)

The Core Bus Corridor Project is accompanied within the BusConnects framework by the Dublin Area Revised Bus Network initiative, which seeks to improve the overall convenience and efficiency of the city's bus routes. Under these Revised Bus Network proposals, it is proposed to implement new spine routes C1, C2, C3 and C4 along St. John's Road West, immediately to the north of the subject site (see Figure 9). These arterial

routes, running between Lucan and Ringsend via the city centre, will operate at intervals of 8 minutes during peak times.

As part of the *Cycle Network Plan for the Greater Dublin Area*, administered by the National Transport Authority, it is proposed that a secondary cycle route (route no. 6A) be implemented along St. John's Road West, in close proximity to the subject development site. This shall continue eastward past Heuston Station and connect to primary cycle route no. 5, which is to run along the North Quays into the city centre (see Figure 10). In addition to these, the proposed Camac Greenway is to pass through the grounds of the Royal Hospital Kilmainham, close to the subject site, and connect to secondary cycle route no. 6A close to Heuston Station.

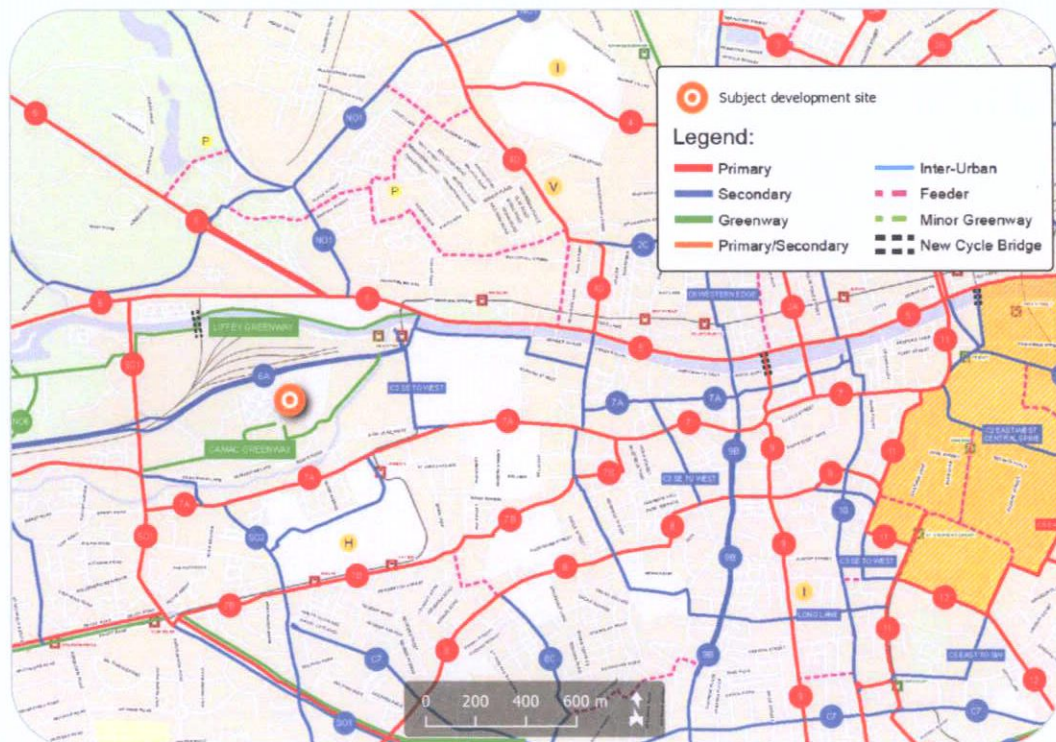


Figure 10 – Extract of GDA Cycle Network mapping
(background imagery source: NTA)

No information is yet publicly available on the proposed design or delivery timeframe of the aforementioned cycle infrastructure objectives.

3.5 External Shared Transport

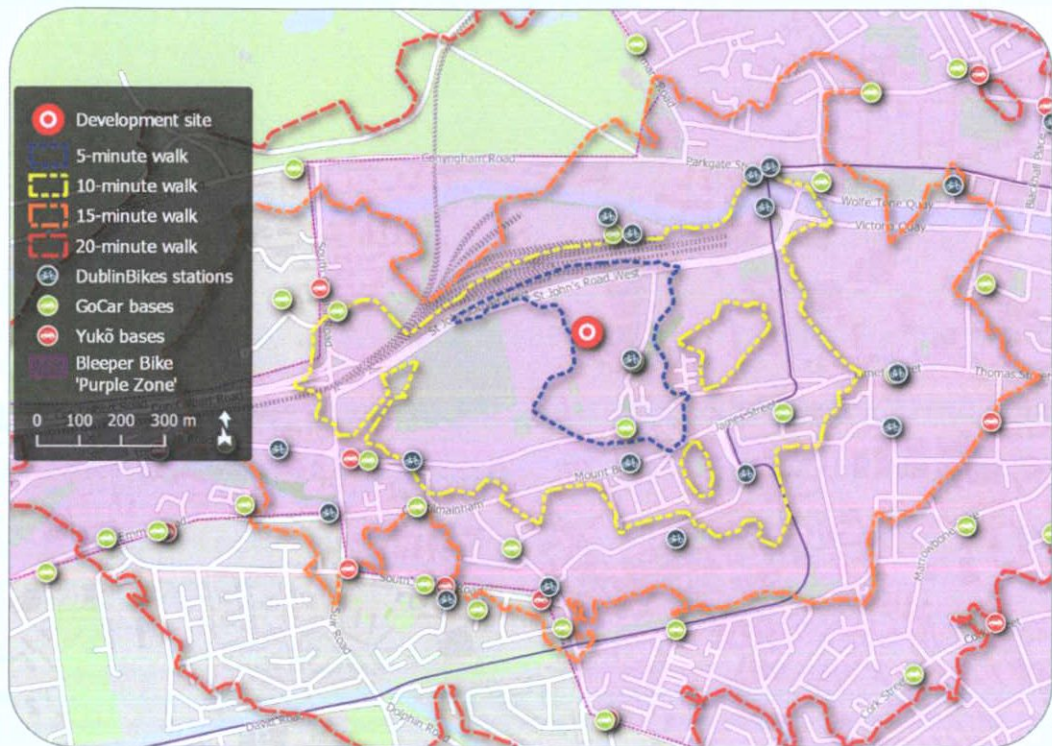
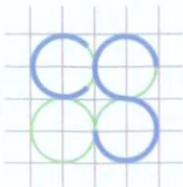


Figure 11 – Walking times and shared transport services
(map data & imagery sources: EPA, DCC, GoCar, Yuko, OSM Contributors)

The area surrounding the subject site is well served by commercial car-share services and by the DublinBikes and Bleeper Bikes bicycle sharing schemes.

- 8no. DublinBikes stations are located within a 10-minute walk of the subject site (including one station on Military Road, adjacent to the HSQ complex).
- 4no. bases for the GoCar commercial car-sharing service are located within a 10-minute walk of the subject site (including one base on Military Road, adjacent to the HSQ complex). A further 10no. GoCar bases are located within a 15-minute walk.
- 6no. bases for the Yuko commercial car-sharing service are located within a 15-minute walk of the subject site.



The development site is also situated within the 'purple zone' for the Bleeper Bikes commercial bicycle sharing scheme. Within this area, a Bleeper Bike may be collected from or returned to any public bicycle parking stand.

Note:

The above car sharing locations represent the most up to date information available on the publicly-accessible GoCar and Yukō bases at the time of preparing this report. These base locations are subject to periodic alteration by the scheme operators, in response to usage demand and to traffic management considerations.

4.0 CONTENT OF THE WORKPLACE TRAVEL PLAN

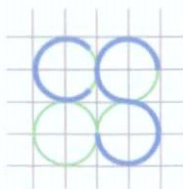
The WTP is a management tool that brings together transport, occupants' and site management issues in a coordinated manner. This report sets out the objectives and specific measures required to establish an effective WTP.

This Plan's aim is to support sustainable transport choices that will allow the lowest possible proportion of journeys to/from the site to be made by single-occupant private cars. The Plan sets out specific targets and objectives, including measures to be implemented to establish and maintain a low modal share for private car journeys to and from the development. The Plan will require regular monitoring to develop an effective implementation of mobility management measures.

Within Ireland, travel demand management is becoming well established through the initiatives and strategies identified in the document *A Platform for Change*, which was published by the Dublin Transportation Office (DTO) in 2001. Within this document, the first steps for travel demand management in Ireland are described as seeking "to reduce the growth in the demand for travel while maintaining economic progress, [through measures] designed to encourage a transfer of trips to sustainable modes".

Building on the policies set forth in *A Platform for Change*, further progress in the Irish context was made with the publication of the document *Smarter Travel: A Sustainable Future – A New Transport Policy for Ireland 2009-2020* and, more recently, the publication of the *Transport Strategy for the Greater Dublin Area 2016-2035*. Within these documents, numerous actions have been proposed which aim to foster improved sustainable travel habits for Ireland.

An effective Workplace Travel Plan should be informed by and founded upon the following:



- A travel survey of development users, to establish the origins and destinations of trips to and from the development;
- An outline of specific schemes/measures implemented to discourage car-dependent transport to and from the site;
- Any comments/suggestions on travel that have been offered by development users;
- A set of targets, to be set out in accordance with approved guideline documents;
- An outline of the specific schemes that the development plans to make available to its users, in order to encourage the desired travel patterns to and from the site. These might include, for example: cycle facilities, public transport subsidies, walking groups, cycle groups, communication and consultation, etc.

The WTP for the subject development follows the above guidelines. The success of the Plan depends on the co-operation of all parties; the appointment of a co-ordinator and a steering group is vital for the success of the Plan. This WTP will need to be reviewed on a regular basis by the steering group, with updates implemented as improvements to the transport network in the vicinity of the development site are carried out.

The objectives of the WTP for the proposed development are as follows:

- To encourage/increase the use of public transport, walking and cycling for development occupants and visitors, and to facilitate travel by bicycle, bus, light rail and train.
- To minimise the overall number of single-occupant vehicles trips for journeys to work and work-related travel.
- To integrate mobility management into the development decisions, policies and practices, and to work closely with governing bodies on means and use of transport services around the vicinity of the development site.

- To provide information and have resources readily available to increase awareness and continue education on sustainable modes of travel for both development occupants and visitors to the development.

4.1.1 Objective 1

To encourage/increase the use of public transport, walking and cycling for development occupants and visitors, and to facilitate travel by bicycle, bus, light rail and train.

The encouragement and increased use of other modes of transport which are less damaging to the environment in terms of congestion and emissions is directly linked to the reduction in car use. Through the encouragement of these alternatives to the car it is hoped that their modal share will increase. Public transport, pedestrian and cycling facilities present in the area of the site, such as the Luas, commuter rail, frequent Dublin Bus services, and car sharing schemes, offer an alternative to the private car in many cases. Facilities are constantly improving with the ongoing implementation of different strategies and projects, such as the Luas Cross-City service connection (completed in 2017), the Metrolink, and the DART Underground.

Apart from the environmental benefits, the use of more sustainable modes of transport reports the following benefits to the individuals:

- Savings in personal costs. Walking is free, cycling does not incur any fuel costs, and buying a bicycle or using public transport is cheaper and can benefit from Government's tax incentives.
- Health benefits. Levels of fitness and wellbeing increase with the practice of exercise, which is directly related to walking and cycling. The use of public transport avoids the stress of driving, traffic congestion, seeking parking spaces, etc.