

- **Network mean delay (s):** The average mean delay during the model simulation period.
- **Average Speed (Km/h):** The average speed travelled by all vehicles that completed a journey during the model simulation period.

9.2 The two measurements are averages so can be used to compare between the various scenarios.

Network Mean Delay

9.3 The result for the mean delay over the modelling period is presented below.

Time period	Scenario 1	Scenario 2	Scenario 3	Scenario 4
Morning Peak (07:00 to 10:00)	264	521	371	377
Evening Peak (16:00 to 19:00)	288	534	367	366

Figure 9a: Network Mean Delay (s)

9.4 The results indicate that delay over the network increases from Scenario 1 to Scenario 2. This is expected as traffic levels increase through background growth. Following the introduction of the development together with the identified mitigation, the delay is predicted to decrease significantly, demonstrating that the identified mitigation delivers better than nil-detriment.

9.5 The inclusion of the NQ has a negligible impact on the results.

9.6 This demonstrates that the road network will not be affected following the delivery of the development.

Average Speeds

9.7 The result for the average speeds over the modelling period is presented below.

Time period	Scenario 1	Scenario 2	Scenario 3	Scenario 4
Morning Peak (07:00 to 10:00)	56	29	41	40
Evening Peak (16:00 to 19:00)	49	27	39	40

Figure 9b: Average Speeds in kph

9.8 The analysis of the average speeds indicates that the addition of development traffic to the network results in vehicle speeds increasing by 12kph following the introduction of the mitigation strategy, but with vehicle speeds which are faster when judged against the Reference case (Scenario 2).

9.9 The inclusion of the NQ has a negligible impact on the results.

9.10 This demonstrates that the road network will not be negatively affected following the delivery of the development, with the mitigation strategy offering better than nil-detriment.

Interpretation of Results

9.11 The information above presents the results for the network wide statistics in the assessment of the Adastral Park development. The findings are summarised below:

Mean Delay

- Following mitigation, the mean delay decreases

Average Speeds

- Following mitigation, the average speed increases

Results Summary

- 9.12 This chapter has reviewed the network wide statistics generated by Paramics, which provide a high level overview of the operation of the wider road network. This has indicated that through the introduction of the identified highway interventions, there is a betterment in both the morning and evening peaks.
- 9.13 Based on the results of the network statistics, from a highway stand point, the residential element will not have a beneficial impact on the highway network and therefore the development should be supported.

10 Road Network Review – Journey Times

Introduction

- 10.1 Outputs from the Paramics model includes an estimation of journey times across key routes on the network. The impact on average journey times can be compared between the assessed traffic scenarios. The routes that are applicable to this development are indicated below:

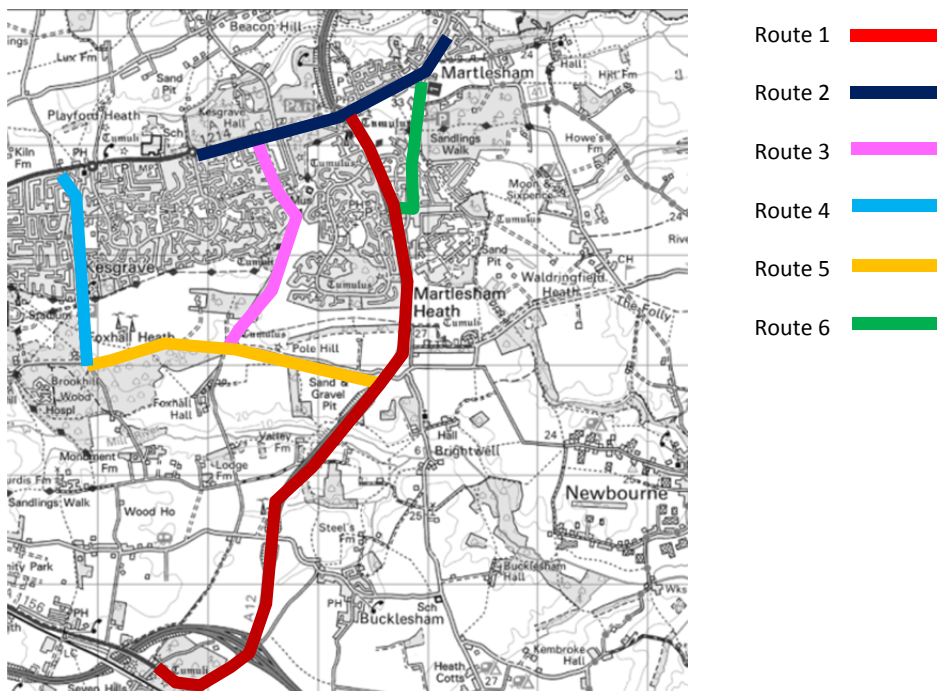


Figure 10a: Journey time routes

- Route 1 – A12 between A1214 and the A14
- Route 2 – The A1214 / Main Street between Ropes Drive and Felixstowe Road
- Route 3 – Dobbs Lane between A1214 and Foxhall Road
- Route 4 – Bell Lane between A1214 and Foxhall Road
- Route 5 – Foxhall Road between Bell Lane and A12
- Route 6 – Felixstowe Road / Gloster Road between Main Street and A12

10.2 The results of the journey time is presented below.

Route			Scenario 1		Scenario 2		Scenario 3		Scenario 4	
			7 to 10	16 to 19	7 to 10	16 to 19	7 to 10	16 to 19	7 to 10	16 to 19
1	A12 between A1214 and the A14	Northbound	296	303	520	615	408	336	410	338
		Southbound	317	367	509	744	441	666	441	688
2	The A1214 / Main Street between Ropes Drive and Felixstowe Road	Eastbound	318	260	665	275	308	289	320	287
		Westbound	243	252	543	270	365	260	576	260
3	Dobbs Lane between A1214 and Foxhall Road	Southbound	145	149	158	154	151	163	153	161
		Northbound	144	145	318	147	146	148	146	147
4	Bell Lane between A1214 and Foxhall Road	Southbound	124	130	135	147	130	147	130	146
		Northbound	216	169	298	237	147	143	147	145
5	Foxhall Road between Bell Lane and A12	Eastbound	173	114	555	115	148	124	152	124
		Westbound	115	116	118	120	106	112	106	111
6	Felixstowe Road / Gloster Road between Main Street and A12	Southbound	145	247	137	2019	140	392	140	392
		Northbound	191	165	137	139	139	141	141	142

Figure 10b: Journey time routes

10.3 The difference in flows has been assessed against the following criteria.

Rating	Score
Delay reduction	
No significant change with a difference of less 15%	
Minor increase with a difference between 15% and 25%	
Moderate Increase with a difference between 25% and 50%	
Major Increase with a difference greater than 50%	

Figure 10c: Impact assessment

Route			Scenario 2 Vs Scenario 3		Scenario 2 Vs Scenario 4	
			AM (8-9)	PM (5-6)	AM (8-9)	PM (5-6)
1	A12 between A1214 and the A14	Northbound	-21.5%	-45.4%	-21.2%	-45.0%
		Southbound	-13.4%	-10.5%	-13.4%	-7.5%
2	The A1214 / Main Street between Ropes Drive and Felixstowe Road	Eastbound	-53.7%	5.1%	-51.9%	4.4%
		Westbound	-32.8%	-3.7%	6.1%	-3.7%
3	Dobbs Lane between A1214 and Foxhall Road	Northbound	-4.4%	5.8%	-3.2%	4.5%
		Southbound	-54.1%	0.7%	-54.1%	0.0%
4	Bell Lane between A1214 and Foxhall Road	Northbound	-3.7%	0.0%	-3.7%	-0.7%
		Southbound	-50.7%	-39.7%	-50.7%	-38.8%
5	Foxhall Road between Bell Lane and A12	Eastbound	-73.3%	7.8%	-72.6%	7.8%
		Westbound	-10.2%	-6.7%	-10.2%	-7.5%
6	Felixstowe Road / Gloster Road between Main Street and A12	Southbound	2.2%	-80.6%	2.2%	-80.6%
		Northbound	1.5%	1.4%	2.9%	2.2%

Figure 10d: Routes with change

Scenario 2 Vs Scenario 3

10.4 This compares the delivery of the development, including mitigation against the Reference Case. This identifies that following the introduction of the mitigation, the majority of the routes experience a reduction in journey time, reflecting

that the road network will operate with improved efficiency and journey reliability. There are routes that predict increases, but these are marginal and would not be discernible.

Scenario 2 Vs Scenario 4

- 10.5 This compares the delivery of the development and the NQ, including mitigation against the Reference Case. The results are comparable to Scenario 3, which demonstrates that the development of the NQ will not have a material impact on journey times.

Journey Time Summary

- 10.6 The results of journey time analysis and the betterment observed indicates that the development will not have a severe impact.

11 Road Network Review - Link Assessment

Introduction

- 11.1 Paramics has the capability to review link flows within the modelled road network. This chapter reviews the link flow within the model constraints. This assesses the difference in flows incrementally from the reference case. This demonstrates the capability of the highway network to accommodate the increase in trips from the development.

Assessment Results

- 11.2 The links that are expected to increase by 10% or greater, the threshold identified in the Scoping Note, are indicated below.

Route	Scenario 2 Vs Scenario 3		Scenario 2 Vs Scenario 4	
	AM (8-9)	PM (5-6)	AM (8-9)	PM (5-6)
1 - West of A14 Roundabout	-31%	5%	-31%	4%
2 - South of A14 Roundabout	-24%	5%	-25%	5%
3 - East of A14 Roundabout	-31%	7%	-31%	7%
4 - Bucklesham Access off A14 Roundabout	-37%	0%	-41%	-2%
5 - North of A14 Roundabout	-8%	8%	-9%	8%
6 - Newbourne Road - East of A12 Roundabout	9%	91%	15%	104%
7 - A12 - North of Newbourne Rd Roundabout	3%	10%	3%	10%
8 - Ipswich Rd North	2%	92%	10%	106%
9 - Foxhall Rd East of Dobbs Ln	13%	15%	13%	15%
10 - Barrack Sq - A12 Roundabout Approach	14%	26%	13%	28%
11 - Eagle Way - West of Barrack Sq\A12 Roundabout	5%	-1%	4%	-3%
12 - Barrack Sq -South of Gloster Rd	-2%	5%	-2%	4%
13 - Gloster Road - South of Gated Access	28%	50%	29%	57%
14 - A12 - North of Barrack Sq Roundabout	8%	3%	8%	3%
15 - Eagle Way - West of Anson Rd Roundabout	-13%	-2%	-13%	-2%
16 - Anson Rd - A12 Roundabout Approach	16%	-4%	15%	-5%
17 - Anson Rd - Tesco Roundabout Western Approach	16%	-4%	16%	-5%
18 - Anson Rd - Tesco Roundabout Eastern Approach	-11%	13%	-9%	12%
19 - Gloster Road - South of Anson Rd	0%	59%	2%	64%
20 - Anson Rd- East of Felixstowe Rd	-2%	-2%	-3%	-2%
21 - Felixstowe Rd North of Anson Rd	8%	4%	13%	3%
22 - A12 - South of Park & Ride Roundabout	-2%	5%	-1%	5%
23 - Main Rd - North of Felixstowe Rd	-8%	3%	-9%	2%
24 - Main Rd - South of Felixstowe Rd	-20%	1%	-15%	0%

25 - A12 - North of Park & Ride Roundabout	-3%	0%	-3%	1%
26 - A1214 - West of Park & Ride Roundabout	-2%	7%	-2%	7%
27 - A1214 - West of Dobbs Ln	6%	7%	5%	7%
28 - North Of Ropes Dr (East) Roundabout	-7%	-5%	-10%	-5%
29 - Ropes Dr (East) South of A1214	-25%	-1%	-26%	-2%
30 - A 1214 - West of Ropes Drive (East)	11%	12%	10%	12%
31 - Ropes Dr (West) - South of A1214	5%	-3%	6%	-3%
32 - A1214 East of Bell Ln	3%	1%	3%	1%
33 - A1214 - West of Bell Ln	1%	6%	1%	7%
34 - Bell Ln - South of A1214	8%	27%	9%	29%
35 - Foxhall Rd - West of Bell Ln	1%	9%	0%	9%
36 - Monument Farm Ln - South of Foxhall Rd	-4%	-3%	-5%	-8%
37 - Foxhall Rd - East of Monument Farm Ln	3%	14%	3%	13%
38 - Hall Rd - South of Foxhall Rd	35%	-1%	37%	2%
39 - Dobbs Ln - North of Foxhall Rd	13%	4%	9%	3%

Figure 11a: Link analysis

- 11.3 The results demonstrate that the delivery of the development has the potential to increase flows in numerous locations. The increases are not unexpected given that the delivery of the development will increase traffic levels. However, an increase in traffic does not necessarily relate to an increase in delay or congestion.
- 11.4 The potential to increase delay and congestion relates not only to the link, but the junctions within any link. The potential impact at junctions is considered later in this report.
- 11.5 The theoretical highway capacity refers to the maximum level of traffic that can be accommodated; this being a function of the design and width of the road. Traffic flow along a link has the potential to create congestion if the theoretical highway capacity of that link is exceeded. A review of the traffic levels indicates that the predicted traffic levels do not exceed the theoretical highway capacity.

Route	Peak flow
6 - Newbourne Road - East of A12 Roundabout	504
7 - A12 - North of Newbourne Rd Roundabout	4404
8 - Ipswich Rd North	444
9 - Foxhall Rd East of Dobbs Ln	1749
10 - Barrack Sq - A12 Roundabout Approach	1213
13 - Gloster Road - South of Gated Access	689
16 - Anson Rd - A12 Roundabout Approach	1720
17 - Anson Rd - Tesco Roundabout Western Approach	1610
18 - Anson Rd - Tesco Roundabout Eastern Approach	827
19 - Gloster Road - South of Anson Rd	631
20 - Anson Rd- East of Felixstowe Rd	427
21 - Felixstowe Rd North of Anson Rd	642
30 - A 1214 - West of Ropes Drive (East)	859
34 - Bell Ln - South of A1214	378
37 - Foxhall Rd - East of Monument Farm Ln	1754
38 - Hall Rd - South of Foxhall Rd	42
39 - Dobbs Ln - North of Foxhall Rd	234

Figure 11b: Theoretical highway capacity – highest peak traffic flow reported across all modelling tests

Interpretation of results

- 11.6 This chapter has reviewed the results of the link traffic flows predicted by the Paramics traffic model. This initially identified the links predicted to experience a moderate increase, indicated by a 10% increase. The operation of a link is a factor of the available capacity. Therefore, a review of the predicted traffic flow against the theoretical capacity has been completed.

- 11.7 The review has indicated that the predicted flows will not exceed the theoretical capacity levels.

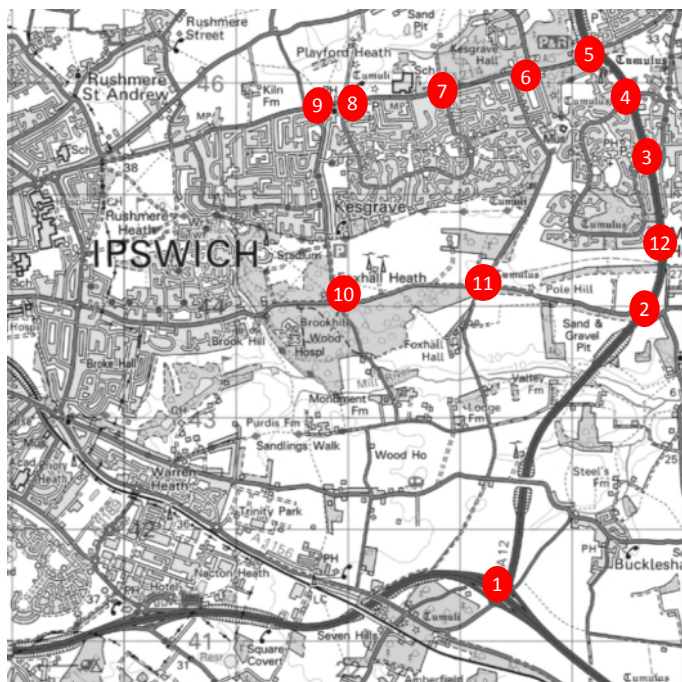
Link Assessment Summary

- 11.8 The above assessment demonstrates that the predicted traffic flows will be within the theoretical capacity of the link and consequently the additional development trips should not give rise to congestion and delay.

12 Road Network Review – Junction Queues

Introduction

- 12.1 The Paramics model also predicts the extent of queuing at numerous junctions across the modelled area. Queue length analysis is intended to provide a more detailed picture of the impacts at specific junctions within the model network.
- 12.2 At this stage the analysis of queue lengths has been based on the average hourly maximum queue length. The hourly maximum for each individual model run has been calculated and then the average of all runs has been calculated for each hour. Those locations that have been assessed are indicated below.



1

Junctions included in Paramics

Figure 12a: Junction Locations

- 12.3 Junctions 1 to 12 have been modelled in the aforementioned Paramics Assessment, for which the results are outlined in this chapter.
- 12.4 Through further discussion with SCC, it was agreed that additional junctions moving towards Ipswich should be analysed. The impact on any offsite Junctions will be dealt with via contributions..

Assessment Results

- 12.5 The difference in queues has been assessed on the following criteria basis.

Rating	Score
Mean Maximum Queue Length difference of less than 5 vehicles	
Negligible increase with a difference between 5 and 15 vehicles	
Minor increase with a difference between 15 and 25 vehicles	
Moderate Increase with a difference between 25 and 50 vehicles	
Major Increase with a difference greater than 50 vehicles	

Junction		Scenario 3 Vs Scenario 4		Scenario 3 Vs Scenario 5	
		AM (8-9)	PM (5-6)	AM (8-9)	PM (5-6)
1	A12	-25	-82	-26	-82
	Bucklesham Lane	-1	1	-1	1
	A14 East	-77	-78	-76	-78
	A1156	9	7	9	6
	A14 West	3	-13	2	-13
2	A12 North	16	-72	18	-70
	Newbourne Road	-7	-79	-10	-77
	A12 South	-3	-64	1	-59
	Foxhall Road	-109	3	-106	3
3	A12 North	-37	-5	-38	-6
	Barrack Square	-2	-20	-1	-24
	Eagle Way	-66	-4	-67	-4
	A12 South	0	0	1	2
4	A12 North	-2	-34	-1	-29
	Anson Road	0	-11	0	-10
	A12 South	19	39	21	43
	Eagle Way	1	0	1	2
5	A12 North	-7	1	-3	-1
	Main Rd East	26	-8	41	-9
	A12 South	10	22	5	22
	Main Rd West	-8	8	-6	7
	Park & Ride	1	1	1	1
6	A1214 East	0	0	4	0
	Dobbs Lane	-10	1	-10	1
	A1214 West	-73	-2	-73	-2
7	Northern Arm	-1	-1	-1	0
	A1214 East	2	1	1	1
	Ropes Drive	-6	-2	-7	-2
	A1214 West	-11	1	-9	1
8	A1214 East	1	-1	0	0
	Ropes Drive	4	-1	2	1
	A1214 West	1	1	1	0
9	A1214 East	1	1	2	3
	Bell Lane	-11	-9	-11	-9
	A1214 West	1	2	1	2
10	Bell Lane	1	4	3	4
	Foxhall Road East	3	12	3	6
	Monument Farm Lane	0	0	0	0
	Foxhall Road West	0	-2	2	-1
11	Dobbs Lane	0	1	1	0
	Foxhall Road East	3	9	7	6
	Hall Road	0	1	0	0
	Foxhall Road West	1	1	1	1

Figure 12b: Junctions with Queues

Interpretation of results

- 12.6 This chapter has provided a detailed review of the levels of queuing predicted at numerous junctions within the Paramics model. This assessment identifies the change in queuing following the introduction of the development. This has demonstrated that there are several junctions that will be improved, with only a limited number experiencing a minor increase.

Junction 2

- 12.7 This junction predicts minor increases in queuing on the A12 northern arm, this is balanced by more significant queue reductions on adjacent approaches. This suggests the roundabout will operate more equitably. The results of the journey time assessment suggest that the operation of this junction will not affect the overall journey reliability of trips passing through this location.

Junction 4

- 12.8 This junction predicts minor increases in queuing on the A12 southern arm, this is balanced by queue reductions on adjacent approaches. This suggests the roundabout will operate more equitably. The results of the journey time assessment suggest that the operation of this junction will not affect the overall journey reliability of trips passing through this location.

Junction 5

- 12.9 This junction is predicted to experience increases in queuing, predicted on the Main Road approach. There are corresponding decreases on adjacent approaches. The development will increase the number of trips in the road network and as such this is not unexpected. This junction lies within both Route 1 and Route 2, both of which report negligible impacts following the introduction of the development,

Queue Summary

- 12.10 These increases are typically on a single arm rather than across the junction as a whole. This demonstrates that at this level of assessment the delivery of the residential element will not create a significant level of congestion. This is supported by the results of the journey time results, which predicts betterment across the majority of the routes.

Junction 12 – Additional Site Access / A12

- 12.11 As part of the access proposals, a new junction on the A12 is proposed. The results for the predicted queuing are presented as follows.

Junction	Scenario 5		Scenario 6	
	AM (8-9)	PM (5-6)	AM (8-9)	PM (5-6)
A12 North	44	60	39	55
Site Access	8	5	9	6
A12 South	15	10	15	10

Figure 12c: Junction 12

- 12.12 The junction is controlled by signals which will invariably halt the flow of traffic, which will generate the predicted queuing. However, this in itself does not give rise to a concern. This junction lies within Route 1 journey time corridor.

The results of this route indicate improvement following the delivery of the development. Therefore, this indicates that the operation of this junction will not impede the free flow of traffic.

Assessment Summary

- 12.13 On the basis of the link and junction queuing review, there are no locations that are highlighted that give rise to concern in relation to the level of queuing / congestion predicted and cannot be regarded as 'severe' as described in the NPPF. . Therefore, it is considered that the development should be supported from a transport and highways view point.

13 Limitations

- 13.1 The conclusions and recommendations highlighted above are based on all available background information for the site and all design solutions are based upon the planned usage of the site.
- 13.2 Third party information has been used in the preparation of this report, which Brookbanks Consulting Ltd, by necessity assumes is correct at the time of writing. While all reasonable checks have been made on data sources and the accuracy of data, Brookbanks Consulting Ltd accepts no liability for same.
- 13.3 The benefits of this report are provided to Carlyle Land and Commercial Estates Group for the proposed development on land at Adastral Park.
- 13.4 Brookbanks Consulting Ltd excludes third party rights for the information contained in the report.

Appendix A – Scoping Note

**Land South and East of Adastral Park
Ipswich**

Transport Assessment Scoping Note

Carlyle Land Ltd and Commercial Estates Group

Document Control Sheet

Document Title: Transport Statement Scoping Note

Document Ref: 10391/SR/01

Project Name: Land South and East of Adastral Park, Ipswich

Project Number: 10391

Client: Carlyle Land Ltd and Commercial Estates Group

Document Status

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Appendix

Appendix A – Trip Rates

1 Introduction

- 1.1 This Transportation Scoping Note has been prepared by Brookbanks Consultants Ltd on behalf of CEG for a proposed mixed use development on land South and East of Adastral Park, Ipswich.
- 1.2 The broad location of the Adastral Park is indicated below.

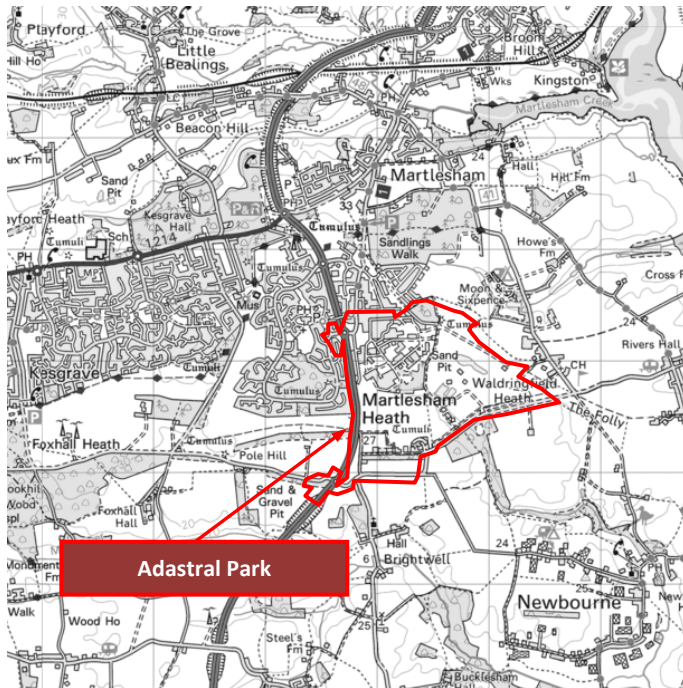


Figure 1a: Site location

- 1.3 Following initial discussions with Suffolk County Council, (SCC) this note sets out the scope for a Transport Assessment which is to be undertaken in due course to demonstrate the viability of the site in transport terms to support a residential development.
- 1.4 The Transport Assessment (TA) will follow the broad structure as detailed below;

Executive Summary

Chapter 1: Introduction

Chapter 2: Background Information

Chapter 3: Policy and Design Guidance Review

Chapter 4: Baseline conditions

Chapter 5: Development Proposals

Chapter 6: Site accessibility

Chapter 7: Travel Plan

Chapter 8: Traffic Generation

Chapter 9: Global Paramics Statistics

Chapter 10: Highway Network Review - Journey Times

Chapter 11: Highway Network Review - Link Capacity

Chapter 12: Highway Network Review - Junction Queues

Chapter 13: Mitigation Strategy

- 1.5 The following chapters in this note provide a framework for the information to be included within the chapters to be included within the TA.

- 1.6 The site was subject to a previous planning application which considered the delivery of a similar mixed use development. The application was supported by a TA, with the document being discussed and agreed with SCC. The overarching principles previously agreed by SCC will be adopted within this assessment where appropriate.

2 Background Information

- 2.1 This chapter will provide the high level of review of the site location in relation to the general highway network, identify the broad development quantum and will identify the general structure of the TA.
- 2.2 This chapter will confirm the development quantum. At the time of writing it is envisaged that the development will deliver a range of housing of mixed type and tenure, local centre, education provision and employment.

Scheme Proposals

- 2.3 It is proposed to develop the site for a new development delivering residential use together supporting commercial and educational land uses. At the time of writing, with the final quantum and details of development are yet to be finalised. The Proposed Development is likely to comprise the delivery of the following land uses:

- 2,000 Dwellings
- Employment area of circa 0.6ha (use Class B1)
- Primary local centre (comprising use Classes A1, A2, A3, A4, A5, B1, C3, D1 and D2)
- Secondary centre (comprising possible use Classes A1, A3 and A5)
- School
- Green infrastructure (including Suitable Accessible Natural Green Space (SANGS))
- Outdoor play areas
- Aports ground and allotments/community orchards)
- Public footpaths and cycleways
- Vehicle accesses and associated infrastructure

- 2.4 The development will consist of several distinct areas, with each area having a strong landscape and green infrastructure framework, which will define and shape the development.

Previous Application History

- 2.5 An Outline Planning Application was sought for the site previously by David Lock Associates on behalf of British Telecom (BT) in April 2009. Their proposal's included:
- Upgrades to existing employment floorspace and the creation of up to 60,000 sq.m of new employment floorspace;
 - A residential community of up to 2,000 new homes alongside Adastral Park;
 - Comprehensive infrastructure and services to serve the new community including new education and healthcare provision, public transport, shops, leisure and sport facilities and public spaces;
 - A hotel;
 - An on-site energy centre to provide renewable heat and power;
 - Improvement of local infrastructure including an A12 access;
 - An expansion of the university presence at Adastral Park.
- 2.6 Integrated Transport Planning prepared the Transport Assessment and Travel Plan for said planning application, together with an Environmental Assessment for the site.

3 Policy and Design Guidance Review

- 3.1 Local and regional policies regarding the development of new sites within Ipswich will be presented and interpreted in respect of the proposed site. The suitability of the site in the context of these policies will be assessed.
- 3.2 This will include a review of the following documents:
- National Planning Policy Framework
 - Design Manual for Road and Bridges
 - Manual for Streets
 - Local Plan
 - Relevant Local Plan saved policies
 - Local Transport Plan
- 3.3 The Masterplan, access and parking strategy shall refer to and make full use of the Design Manual for Roads and Bridges (DMRB), Manual for Streets Parts 1 and 2, the Suffolk Design Guide and the Suffolk Guidance for Parking.
- 3.4 Both National and Local Planning Policy Guidance will be reviewed in the preparation of the Transport Assessment and the accompanying Travel Plan. The Suffolk County Council team will be contacted to discuss relevant matters.

4 Baseline Conditions

- 4.1 A detailed review of the site location will be provided.
- 4.2 Existing conditions in the vicinity of the site will be described with reference to the layout, function and operation of the local transport network, for all modes of movement. This will include a review of the networks:
- Current highway network
 - Road and rail based public transport facilities / routes
 - Walking and cycling networks
 - Public rights of way adjacent to the site
- 4.3 Any existing barriers or constraints to sustainable movement will be identified, investigated and described.
- 4.4 It is proposed that a review of historical accidents over the past five years is to be carried out using the latest available data to identify any recurring patterns that may indicate a need for further investigation or for remedial measures to address the situation.
- 4.5 The accident study area is identified below.



Figure 4a: Accident study area

5 Development Proposals

- 5.1 This chapter will describe in detail the scheme proposals, which includes the potential to deliver circa 2,000 dwellings supported by ancillary land uses that include a local centre, employment and education land uses.
- 5.2 The chapter will explain how the development will coalesce with the existing wider Adastral Park development and provide a draft timescale for the delivery of the development. At the time of writing it is expected that the planning application will be submitted in 2017, with the first occupation in 2019.
- 5.3 To the west of the site, the A12 borders the site. The previous application considered the delivery of two access points onto the A12. This application will consider the potential to deliver three access points. This chapter will provide an indication of the phasing.
- 5.4 The masterplan for the development will be presented which will highlight the access strategy for walking, cycling and vehicular.
- 5.5 Through discussions with SCC, there is an aspiration to reduce the speed limit along the A12. This will be reviewed through the TA.
- 5.6 The design of the internal site layout will use Manual for Streets (MfS) philosophy. Parking for the site overall will be provided at an appropriate level with regard to maximum standards and consistent with local standards.
- 5.7 A description of the network of pedestrians and cycle routes will be provided. This will include a 3m wide route through the site that will connect to the external networks.
- 5.8 The level of public transport enhancements proposed to support the development will be indicated. This will be guided by discussions with local operators.

6 Site Accessibility

- 6.1 This chapter will assess the development in relation to accessibility. The location and accessibility, by all modes, of community facilities, schools and other local trip generators will be identified and assessed in relation to the proposed site. This will identify key facilities including:
- Key employment opportunities
 - Retail destinations
 - Education
 - Health
 - Leisure
- 6.2 The accessibility of the site will be reviewed in line with 2km and 5km maximum isochrones for trips to be made by walking and cycling.
- 6.3 The Transport Assessment will provide an audit of the site accessibility to key trip attractors, including this proposed in the masterplan.
- 6.4 The Transport Assessment will also consider the likelihood of future residents to travel by sustainable modes of transport to trip attractors' land use, for example employment, education, leisure and health. The Transport Assessment will estimate the length of travel to health or shopping facilities that residents would be willing to travel to by sustainable modes of transport.
- 6.5 The potential site accessibility shall be compared or related to the existing public transport services and highway network.

7 Travel Plan

- 7.1 The development will deliver different land uses, including residential, employment and education. A framework travel plan for each land use will be provided. The proposed targets and measures will be identified in accordance with Local and National Planning Guidance, and agreed with Suffolk County Council.
- 7.2 The website provided by Suffolk County Council: <http://www.greensuffolk.org/travel/travel-plan-support/developer-support/> provides appropriate guidance to achieve a successful scheme which encourages the use of sustainable modes of transport.
- 7.3 This chapter will provide details on the Travel Plan that has been drafted to support this development including any measures that can be utilised to achieve the necessary modal shift. Suffolk Guidance on Travel Plans suggests that an effective residential travel plan should reduce commuter car usage between 11% and 21%. This will become the overarching travel plan target
- 7.4 The benefit of the Travel Plan will be assessed as a sensitivity test only, in order to provide a more robust assessment of the traffic generation and the impact of the development.

8 Traffic Generation

- 8.1 This chapter will present the agreed methodology adopted to assess the development impacts.

Traffic Modelling Methodology

8.2 Through the previous application and validated and calibrated Paramics micro-simulation traffic model was produced. The discussions with SCC have confirmed that the use of the traffic model is recommended. This includes details on:

- Method to re-validate the base model
- Interaction with the Saturn model
- Method to factor to future year scenarios
- Agreed committed developments
- Trip generation

8.3 The strategic and local road network will be addressed and summarised in the forthcoming Transport Assessment. Key destinations from the site will also be addressed.

Transport Assessment Scope

8.4 The proposed extent of the Paramics model is identified below. This provides further coverage than what was previous assessed.

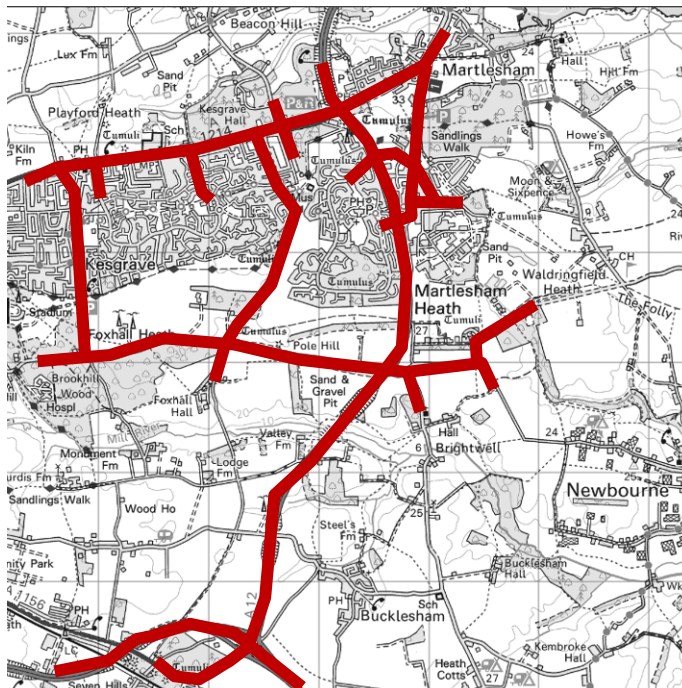


Figure 8a: Traffic Study area

8.5 In addition to this, a manual assessment of the Copdock Interchange will be carried out.

8.6 Through discussions with SCC, it has been identified that the development could have a wider impact outside the Paramics study area. Therefore, it has been agreed that SCC will provide outputs from the Strategic Traffic model to assess further locations.

Assessment Years

8.7 The application is expected to be submitted in spring 2017, with consent given later that year. Therefore, the traffic years to considered are, subject to agreement with Suffolk County Council:

- 2017
- 2027

8.8 Details of the phasing of the development will be provided in the Transport Assessment, ultimately to confirm that the development will be constructed over a ten year period.

Committed Developments

8.9 Committed development in the wider Ipswich Area will be included in the traffic flow modelling, subject to agreement with Suffolk County Council.

Traffic Scenarios

8.10 The Paramics model will be used to assess the impacts of development. On the assumption that the development will be built out over a ten year period, the model runs that are likely to be required are:

- Validated base year 2017 (**Base Year**)
- Future Year (**Base Future Year**)
- Future year plus committed developments 2027 (**Do Nothing**)
- Future year plus committed development plus development 2027 (**Do Minimum**)
- Future year plus committed development plus development 2027 with mitigation (**Do Something**)

8.11 The development will be phased over a number of years, together with the mitigation. Therefore, in addition to the main test identified above further interim tests will be carried out. These will assist in identifying the delivery of the access points and off site interventions.

8.12 Sensitivity tests will be carried out on the model to account for the development phasing and to identify when it may be appropriate to introduce physical mitigation measures on the network.

Previous Mitigation

8.13 The previous assessment identified a range of highway interventions. These will be assessed through the modelling process to identify need / timing. The previously identified mitigation measures are:

- A12 / A14 Levington Seven Hills Interchange – partial signalisation and localised widening
- A12 / Foxhall Road / Newbourne Road – conversion to signalised crossroads
- A12 / Barrack Square / Eagle Way – conversion to signalised junction
- A12 / Anson Road / Eagle Way – conversion to signalised crossroads
- A12 / A1214 – optimised signal timings
- Gloster Road / Barrack Square – conversion to signalised junction

Trip Rates

8.14 The trip base trip rates have been extracted from TRICS. The final trip rates have been discussed in detail with SCC. This has resulted in an agreed position.

8.15 The Trics outputs and a Technical Note providing supporting information are contained in Appendix A and illustrated below.

8.16 The resultant total external trip generation is presented below.

Time Periods	Housing		Primary School		Employment	
	IN	OUT	In	Out	In	Out
0700-0800	148	514	17	5	88	19
0800-0900	290	724	91	63	222	40
0900-1000	276	344	11	19	104	31
1600-1700	556	346	18	31	37	119
1700-1800	664	396	10	15	27	177
1800-1900	470	342	6	8	17	68

Figure 8b: Resultant external trips

9 Global Paramics Statistics

9.1 A number of statistics can be extracted from the modelling results that assess the model as a whole, therefore representing a high level review of the operation of the complete model. This information is to provide the following comparative statistics:

- **Network mean delay (s):** The average mean delay during the model simulation period.
- **Average Speed (Km/h):** The average speed in terms of total time and total distance travelled by all vehicles that completed a journey during the model simulation period.
- **Completed Trips (vehicles):** The number of completed trips recorded in terms of total vehicles and average distance per vehicle during the model simulation.

9.2 The first two measurements are averages so can be used to compare between the various scenarios. The final measurement is an absolute and is dependent on congestion on the network (as this will prevent trips from completing) and the demand within the model (i.e. the number of trips actually trying to complete). As demand differs between scenarios, as well as small variations between runs of the same scenario, we cannot expect the number of completed trips to be the same. However, as the demands do not differ significantly it can still provide an indication of the relative congestion on each network.

10 Highway Network Review - Journey Times

10.1 The difference in Journey Times will be assessed by the following criteria. The route reporting a moderate increase in journey times will be reviewed in detail.

Rating	Score
Delay reduction	Green
No significant change with a difference of less 15%	Light Green
Minor increase with a difference between 15% and 25%	Yellow
Moderate Increase with a difference between 25% and 50%	Red
Major Increase with a difference greater than 50%	Dark Red

Figure 9a: Impact assessment

10.2 Any significant reduction of the journey time will be reviewed in order to understand the possible rerouting and changes in the delays on the network.

10.3 The journey time and distance graph will be used to define the location of the delays.

11 Highway Network Review - Link Capacity

- 11.1 This chapter will review the output from the Paramics modelling work in relation to link flows. To assess the significance of the difference between the scenarios with and without the development, a percentage impact will be used to compare to sets of model data.
- 11.2 Where the difference with and without the development shows a percentage impact of greater than 10% in terms of flow, each link shall be reviewed in greater detail with respect to network summary statistics. This shall be terms of volume of traffic in comparison to highway capacity. DMRB standard TA 79/99 Traffic Capacity of Urban Roads shall be made reference to throughout.

12 Highway Network Review - Junction Queues

- 12.1 Queue length analysis is intended to provide a more detailed picture of the impacts at specific junctions within the model network. The difference in queues will be assessed against the following criteria.

Rating	Score
Mean Maximum Queue Length of 0 or less than 5 vehicles	
Negligible increase with a difference between 5 and 10 vehicles	
Minor increase with a difference between 10 and 20 vehicles	
Moderate Increase with a difference between 20 and 50 vehicles	
Major Increase with a difference greater than 50 vehicles	

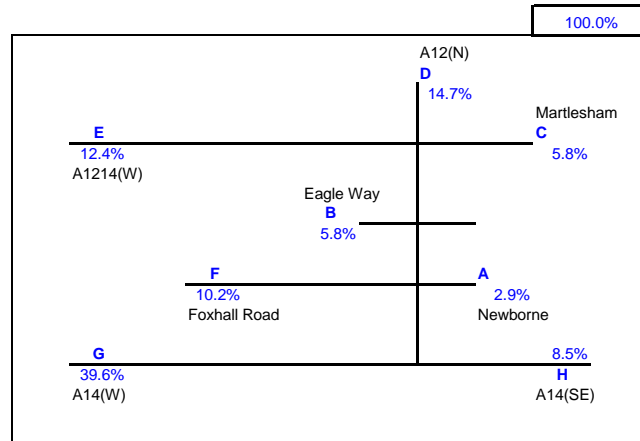
13 Mitigation Strategy

- 13.1 This chapter will summarise the mitigation strategy in order to deliver a sustainable development, including walking, cycling, public transport and the road network.
- 13.2 Overall impacts of the development on the highway network will be considered in conjunction with total network statistics in terms of network mean delay, average speed, completed trips, journey times, link capacity and junction queues. This shall be used in determining if mitigation measures are necessary.

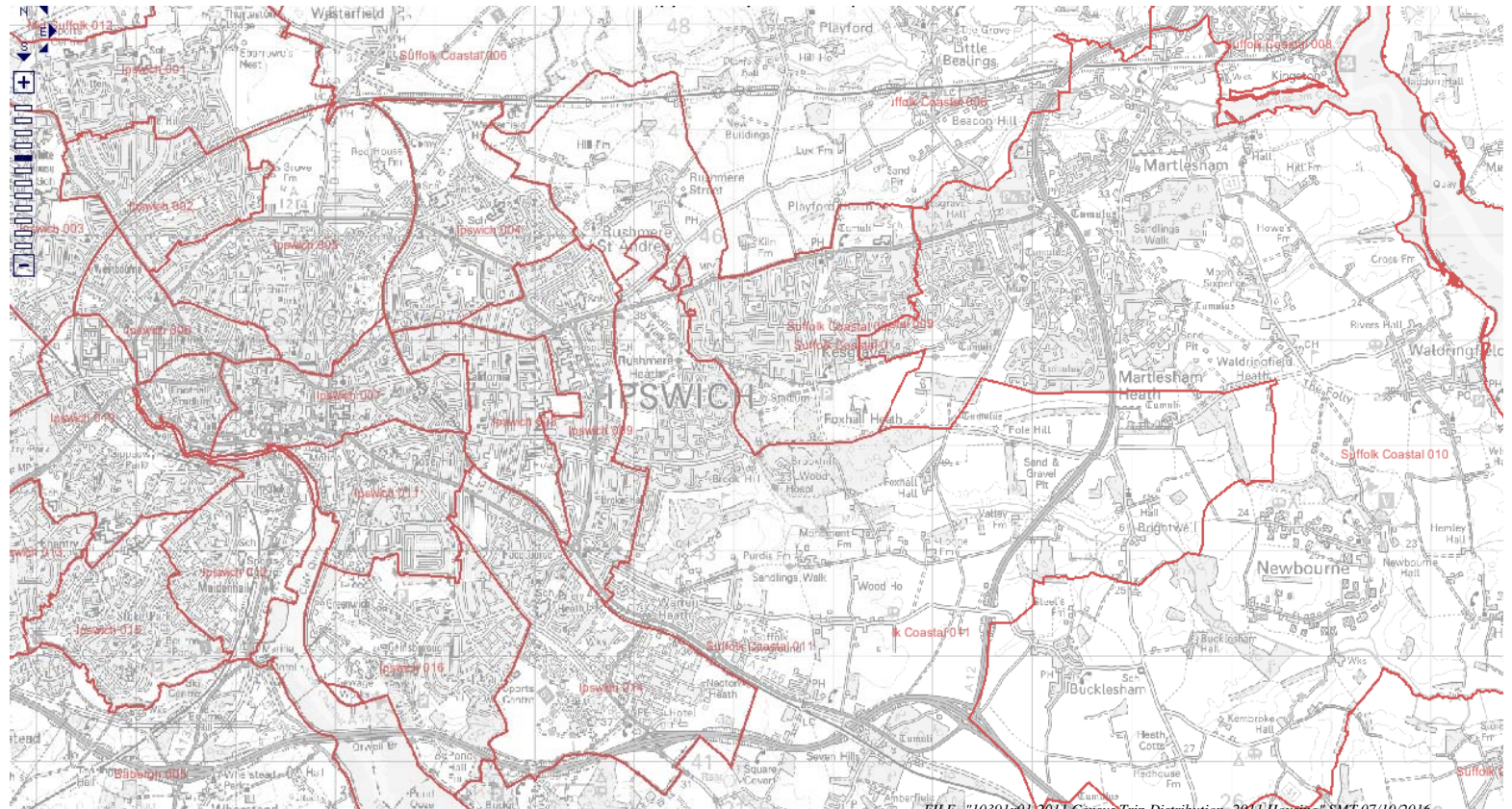
Client:	Client	Prepared by: S.M.T.	Brookbanks Consulting © Brookbanks Consulting Limited 2016
Job:	10391 Adastral Park	07/10/2016	
Title:	2011 Census Travel to Work Trip Distribution - Housing	Figure 1	

for Output Area: **Suffolk Coastal 010**

		Description
2.9%	118	A Newborne
5.8%	237	B Eagle Way
5.8%	237	C Martlesham
14.7%	599	D A12(N)
12.4%	505	E A1214(W)
10.2%	416	F Foxhall Road
39.6%	1608	G A14(W)
8.5%	345	H A14(SE)
100.0%	4065	Total trips assigned
	0	Still to be assigned



place of work : 2011 super output area -	Car - drivers	Dest Letter	percentage of SOA	4065
E02006296 Suffolk Coastal 010	592	A	20%	118
E02006296 Suffolk Coastal 010	592	B	40%	237
E02006296 Suffolk Coastal 010	592	C	40%	237
E02005597 South Norfolk 001	2	D	100%	2
E02005598 South Norfolk 002	3	D	100%	3
E02005599 South Norfolk 003	1	D	100%	1
E02005601 South Norfolk 005	1	D	100%	1
E02005602 South Norfolk 006	1	D	100%	1
E02005603 South Norfolk 007	2	D	100%	2
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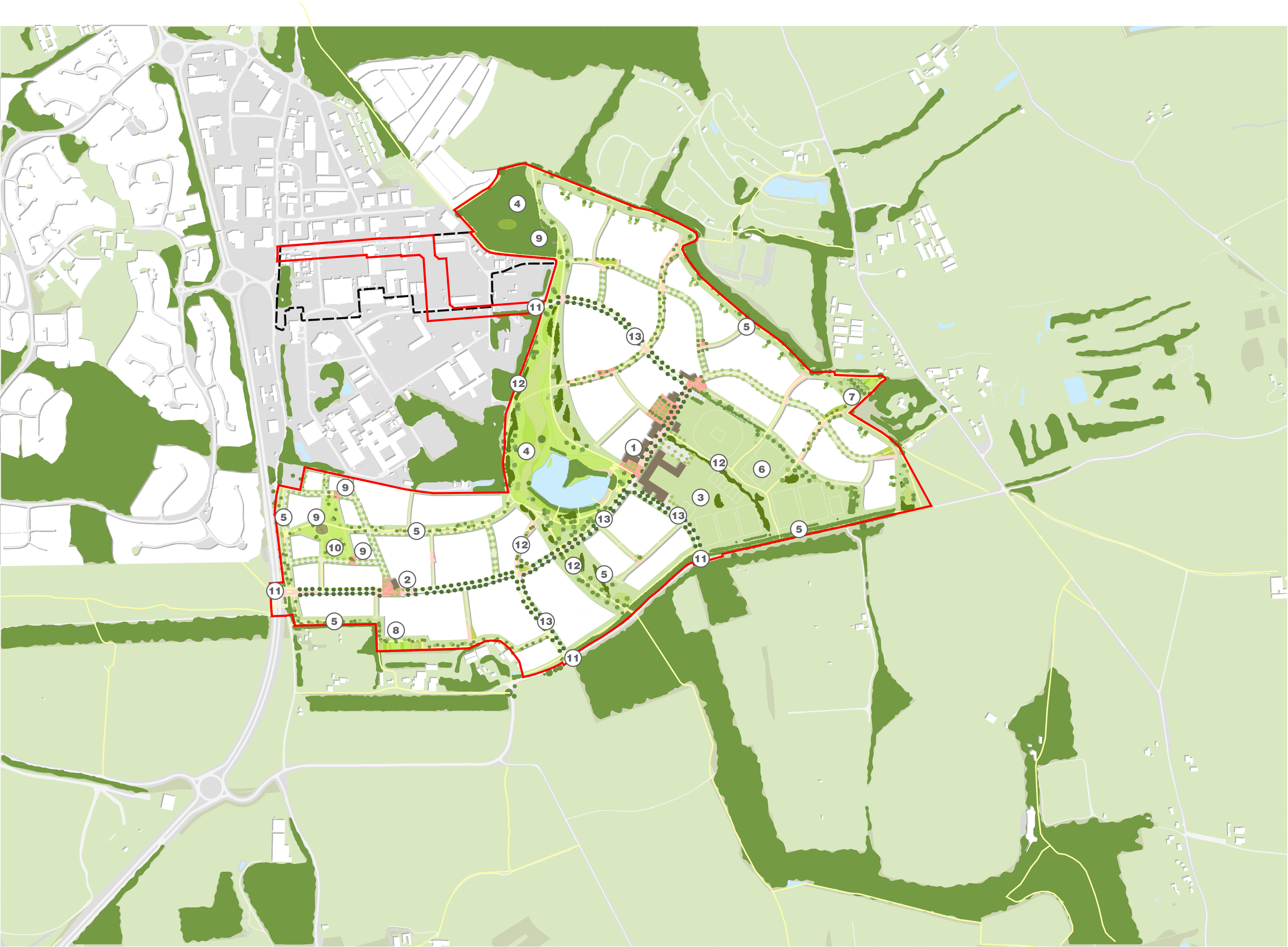


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E02006280	St Edmundsbury 008	2	G	100%	2
E02006281	St Edmundsbury 009	6	G	100%	6
E02006283	St Edmundsbury 011	2	G	100%	2
E02006286	St Edmundsbury 014	1	G	100%	1
E02006342	Epsom and Ewell 008	1	G	100%	1
E02006360	Guildford 017	1	G	100%	1
E02006364	Mole Valley 003	1	G	100%	1

E02006406	Spelthorne 004	1	G	100%	1
E02006578	Crawley 004	1	G	100%	1
E02006593	Horsham 006	1	G	100%	1
E02006642	Wiltshire 038	1	G	100%	1
E02006796	Hillingdon 033	1	G	100%	1
E02006826	Forest Heath 008	4	G	100%	4
E02006833	Tonbridge and Malling 014	1	G	100%	1
E02006853	Tower Hamlets 032	1	G	100%	1
E02006873	South Cambridgeshire 020	1	G	100%	1
E02006877	Peterborough 022	1	G	100%	1
E02006887	Bristol 054	1	G	100%	1
E02006907	Norwich 014	1	G	100%	1
E02006922	Colchester 022	6	G	100%	6
E02006298	Suffolk Coastal 012	112	H	100%	112
E02006299	Suffolk Coastal 013	21	H	100%	21
E02006300	Suffolk Coastal 014	40	H	100%	40
E02006301	Suffolk Coastal 015	172	H	100%	172

Appendix B – Illustrative Framework Masterplan



Contractors are not to scale dimensions from this drawing

- Key
- Site Boundary
 - Northern Quadrant
- Primary local centre
 - Secondary local centre
 - All-through school
 - Main Green Infrastructure Area (mix of informal and formal recreation)
 - Area contributing to open space strategy (green corridor for footpaths/bridleways and trim trails)
 - Area contributing to open space strategy (formal recreation)
 - Allotments / community orchard
 - Allotments
 - Heritage feature
 - Heritage park (mix of informal and formal recreation)
 - Vehicular access point
 - Proposed & existing footpath / bridleway
 - Primary road

Revision	Date	Description
--	YY-MM-DD	--

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Client
CLL / CEG
Project
Land south and east of Adastral Park
Description
Illustrative Framework Masterplan

Status
Draft
Scale 1:5,000@A1 BM
Job Number 31677
Drawn By
Drawing Number 08
Date 22.03.17
Revision G

Appendix C – Accident Statistics