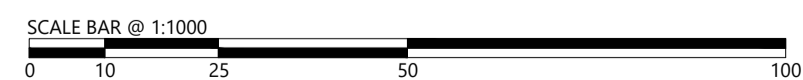
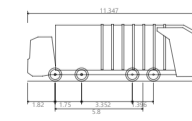


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Basingstoke, Hampshire, RG21 4EB
www.i-transport.co.uk

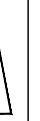


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STAGE ONLY. FURTHER CONSIDERATION REQUIRED BY DETAILED DESIGN TEAM.



NOTE: VEHICLE TRACK SPEEDS MINIMUM OF 15mph



REV	DATE	BY	DESCRIPTION	CHK	APP	PROJ

FILE	CLIENT
PROPOSED ROUNDABOUT TO NEWGATE LANE EAST VEHICLE SWEEP PATH ANALYSIS - LARGE REFUSE VEHICLE	MILLER HOMES AND BARGATE HOMES

STATUS	CLIENT
FOR INFORMATION	MILLER HOMES AND BARGATE HOMES

DRAWN	CHECKED	APPROVED
MC	MC	TW
PROJECT No: ITB10353	SCALE @ A1: 1:500	DATE: 25.10.21
DRAWING No: ITB10353-GA-117	REV:	

APPENDIX A. WCHAR

Report Number

Walking, Cycling and Horse-Riding Assessment Report

Job No:

ITB10353

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1. Scheme Details

1.1. Scheme Client / Developer

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1.3. Other Assessment Team Members

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1.4. Design Team Leader

Name: Matthew Craddy
Organisation: i-Transport LLP
Email: matthew.craddy@i-transport.co.uk
Tel: 07832 881368

1.5. Scheme Location and Description of Highway Works

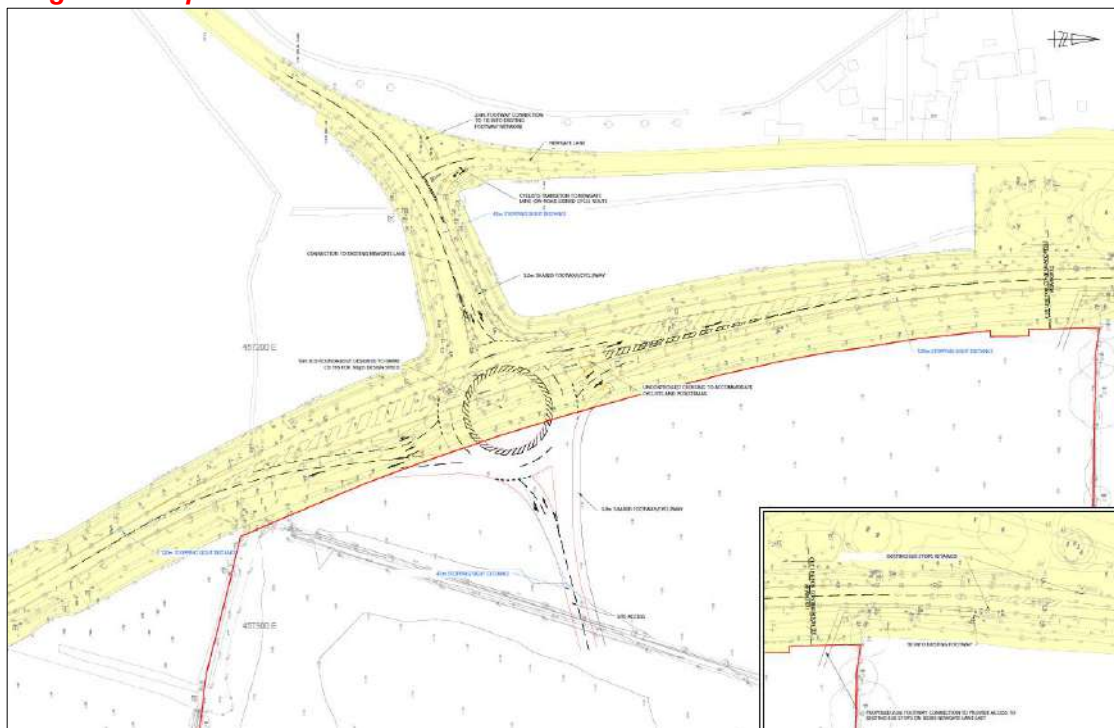
*An existing three-arm ghost island priority junction between the B3385 Newgate Lane East and Newgate Lane is proposed to be upgraded into a four-arm roundabout junction to serve a proposed development of up to 420 residential dwellings. The site boundary is presented below in **Image 1.1**.*

Image 1.1: Site Boundary



*i-Transport Drawing **ITB10353-GA-102** illustrates the proposed roundabout scheme and an extract of the scheme is provided below in **Image 1.2**.*

Image 1.2: Proposed Roundabout Scheme



The roundabout will have an ICD of 50m and will be designed to Design Manual for Roads and Bridges (DMRB) CD 116 for 70kph design speed. It is demonstrated that 120m Stopping Sight Distance (SSD) (commensurate to 70kph design speed, DMRB) can be achieved in the northern and southern approaches and 43m SSD (commensurate to 30mph speed limit, Manual for Streets (MfS)) can be achieved in the eastern and western approaches.

3.0m wide shared footway/cycleway is proposed on the northern edge of the site access and Newgate Lane as illustrated in **Image 1.2** and i-Transport Drawing **ITB10353-GA-102**. This shared footway/cycleway will link the site with the existing cycle route on Newgate Lane which leads to Fareham town centre to the north and Lee-on-the-Solent to the south. Uncontrolled crossing facility with appropriate dropped kerbs and tactile paving will be provided at the roundabout across the B3385 Newgate Lane East.

Bus stops providing access to both northbound and southbound services are located on the B3385 Newgate Lane East, towards the northwest corner of the site. These are approximately 280m north of the proposed roundabout. As illustrated in i-Transport Drawing **ITB10353-GA-102**, a footpath link is proposed from the site which provides access to these bus stops. There is an existing pedestrian crossing facility with refuge island, dropped kerbs and tactile paving.

1.6. WCHAR Study Area

The table provided within Section 4 of the HCC's Technical Guidance Note TG19 sets out that the schemes comprising more than 50 residential units are to be considered as "Large" schemes. Therefore, as the scheme is for a residential development of up to 420 dwellings, it falls under 'Large Scheme' size of GG142.

The WCHAR study area includes the B3385 Newgate Lane East and Newgate Lane in the vicinity of the site. Wider consideration of connectivity between the site and local facilities will be presented in the planning application.

A plan showing the WCHAR study area is provided as **Image 1.3**.

Image 1.3: WCHAR Study Area



2. WCHAR Assessment

2.1. Assessment of walking, cycling and horse-riding policies and strategies

The Manual for Streets (MfS) has been reviewed which states:

“Connected, or ‘permeable’, networks encourage walking and cycling, and make places easier to navigate through.” (Ref: MfS 4.2.3)

MfS emphasises on both internal and external permeability by stating:

“Internal permeability is important but the area also needs to be properly connected with adjacent street networks. A development with poor links to the surrounding area creates an enclave which encourages movement to and from it by car rather than other modes” (Ref: MfS 4.2.5).

In addition, MfS states:

“Residential areas adjacent to one another should be well connected” (Ref: MfS 4.2.7).

Hampshire County Council TG19 - Walking, Cycling and Horse-Riding Assessment and Review (WCHAR) has been reviewed which states:

“The Assessment is the first stage of the process and should be carried out during the initial stages of planning a scheme, to investigate the existing infrastructure and identify potential opportunities to improve conditions for people walking, cycling and where appropriate, riding horses. This shall include the needs of all potential users such as people using mobility aids, prams/buggies and the range of cycles available. It is important to identify these issues at an early stage as this will help the Design Team to achieve the best possible outcome for these users.” (Ref: TG19 1.3).

“The second part of the process is an ongoing review of the Assessment Report throughout the design process, to ensure that all identified opportunities have been given due consideration and incorporated into the scheme where feasible. The review should also identify new opportunities for improvement that may arise during the scheme design that were not evident during the Assessment phase. All design decisions relating to the provision of walking, cycling and horse-riding facilities should be recorded in the Review Report.” (Ref: TG19 1.10)

In addition, TG19 states:

“The Design Manual for Roads and Bridges General Principles document GG 142 sets out the procedure for undertaking a Walking, Cycling and Horse-Riding Assessment and Review.” (Ref: TG19 2.1)

Hampshire Local Transport Plan 2011-2031 has been reviewed which states:

“Policy Objective 12: Invest in sustainable transport measures, including walking and cycling infrastructure, principally in urban areas, to provide a healthy alternative to the car for local short journeys to work, local services or schools; and work with health authorities to ensure that transport policy supports local ambitions for health and well-being.” (Ref: LTP 2011-2031 pg.20)

Fareham Core Strategy 2011 DPD has been reviewed which states:

“Policy CS5 Transport Strategy and Infrastructure: The Council will permit development which is designed and implemented to prioritise and encourage safe and reliable journeys by walking, cycling and public transport.” (Ref: Core Strategy 2011, pg. 37)

2.2. Collision data

Personal Injury Accident (PIA) data was obtained from Hampshire Constabulary for the most recently available five-year period between 01/05/2016 and 30/04/2021. The study area included the B3385 Newgate Lane East in the vicinity of the proposed roundabout running along the western boundary of the site.

Image 2.1 below provides the location and severity of the accidents recorded within the vicinity of the proposed roundabout location during the five years period. Slight injury accidents are represented in yellow and serious injury accidents are represented in blue.

Image 2.1: PIA Plan



Two serious injury accidents and two slight injury accidents were recorded in the latest five-year period within the study area. No fatal accidents were recorded.

There was one serious injury accident recorded at the junction between the B3385 Newgate Lane East and Old Newgate Lane. The collision occurred when a car travelling east along Old Newgate Lane turned right onto the B3385 and collided with a motorcycle travelling north along the B3385 Newgate Lane. Driver error was considered to be the factor leading to the accident.

Another serious injury accident occurred just to the south of access to HMS Collingwood involving a car travelling north colliding with an oncoming car for no apparent reason.

One of the slight injury accidents occurred when a car travelling north on the B3385 Newgate Lane East braked heavily as a deer ran across the road and a following car failed to break in time and collided with the rear of the first car. Another slight injury accident occurred when a motorcycle travelling south filtering passed traffic, misjudged car travelling in slow moving traffic in front and collided with rear of the car.

2.3. Multi-modal transport services and interchange information

*There are northbound and southbound bus stops on the B3385 Newgate Lane East, approximately 280m north of the proposed roundabout. Both of the bus stops are sheltered and have bus timetables. Quick recognition (QR) codes are also provided at these bus stops that can be scanned using a smartphone to access a live departure screen. There is also a pedestrian crossing facility with dropped kerbs and tactile paving along with refuge island to help support safe pedestrian movements across Newgate Lane East for northbound services. **Image 2.2** below illustrates the northbound bus stop and the crossing facility.*

Image 2.2: Northbound Bus Stop on the B3385 Newgate Lane East



There are currently no existing footways from the site leading to these bus stops. However, as part of the development proposals, pedestrian links to these from the site will be provided. This will ensure the bus services are within easy reach of future residents of the site. The bus stops are served by "Route 21" operated by First Portsmouth, Fareham & Gosport. These run between Fareham and Hill Head providing a two-hourly service between 08:58 and 17:00 Mondays to Friday and between 08:21 to 17:39 on Saturdays.

Furthermore, the bus stops on Henry Cort Way which can be accessed within 450m (5-min walk) from the site via Tukes Avenue provides access to frequent Eclipse bus network services E1 and E2 (BRT) linking key towns and destinations in southeast Hampshire. These operate every 10-15 minutes Mondays to Fridays, every 12-15 minutes on Saturdays and every 25 minutes on Sundays. Bus stops in both directions are provided with sheltered seating and RTI displays.

Image 2.3: Henry Cort Way BRT



Sheltered cycle parking facility is also available adjacent to the bus stops.

Image 2.4: Cycle Parking



Fareham Railway Station is located circa 3.5km from the centre of the site and provides the opportunity to travel to destinations including London Victoria, Southampton Central, Cardiff Central and Brighton The station has a new cycle hub that includes 266 sheltered cycle parking spaces, 24 hour access, full CCTV coverage and maintenance tools.

2.4. Trip generators

*The proposed development will have several pedestrian / cyclist access points. These are discussed below and the location of these is illustrated in **Image 2.5**.*

Image 2.5: Pedestrian / Cyclist Access



- **B3385 Newgate Lane East**

The proposed main access to the site will be provided on the B3385 Newgate Lane. The proposals will include new footway/cycleway which will connect to the existing footway and on road cycleway on the old Newgate Lane.

Pedestrian link will also be provided to the bus stops on the B3385 Newgate Lane East from the site towards the northwest corner of the site.

- *Brookers Lane*

Shared emergency and pedestrian/cyclist access on to Brookers Lane will be provided through Brookers Lane development to the south. This will lead to the well-established network of pedestrian footways within the residential settlement of Bridgemary.

- *Tukes Avenue*

It is also intended to provide pedestrian/cyclist links from the northern or eastern boundary of the site leading to Tukes Avenue to the east towards Bridgemary. This is ensure that the local centres and facilities within Bridgemary can be easily accessed on foot or by cycle from the site.

2.5. Site Visits

A site visit to assess walking, cycling and horse riding was completed on 20 October 2021 during the morning peak hour and remaining morning. The walking routes in the vicinity of the site including the old Newgate Lane and Newgate Lane East were assessed and photographed.

Due to the relatively new nature of the Newgate Lane East, the pedestrian crossing facilities within the study area are provided to meet the current standards and are provided with dropped kerbs and tactile paving along with refuge islands to aid those with mobility impairments as well as to enable two-stage crossing of Newgate Lane. All of the bus stops in the study area are considered to be well-maintained and are provided with shelters, bus timetables and live arrivals and departures information either through RTI displays or accessible through QR codes and smartphones.

Footway is provided on the western edge of the old Newgate Lane. It was identified that due to the overgrown hedgerows, the full width of the footway could not be utilised.

2.6. Liaison with key stakeholders

Pre-application consultation conducted with HCC Highways Development Planning team with regards to proposed development. HCC identified a requirement to ensure the scheme is well connected to the local area to promote sustainable transport modes of travel.

2.7. Existing pedestrian, cyclist and equestrian facilities

The existing pedestrian facilities within the WCHAR study area include:

- 1. A continuous footway on the western side of the old Newgate Lane running north to south between Peel Common Roundabout and HMS Collingwood.*
- 2. Pedestrian crossing points with dropped kerbs, tactile paving and refuge islands along the B3385 Newgate Lane East*
- 3. Currently, no pedestrian footway is provided along the B3385 Newgate Lane East*

The existing cyclist facilities within the WCHAR study area include:

- 1. Newgate Lane to the west of the site forms part of a signed cycle connection between Peel Common and Palmerston Drive (connecting to the NCN 224).*

In addition, whilst not in the study area, public footpath/cyclepath is located along the northern boundary of the site. It is intended that pedestrian/cyclist access will be provided to this footpath/cyclepath as part of the development proposals.

There are no existing equestrian facilities within the WCHAR study.

2.8. Walking, cycling and horse-riding survey data (Large schemes only)

No recorded walking, cycling and horse-riding survey data is available and is considered unnecessary at this time due to the limited usage of the route by walkers and cyclists.

Site observations identified:

- *No pedestrian usage of Newgate Lane East*

- *No cycle usage of Newgate Lane East*
- *No incidences of pedestrians crossing Newgate Lane East at the location of the proposed site access or bus stops.*
- *Regular walking usage of Old Newgate Lane, north south between Fareham and Stubbington*
- *Regular cycle use of Newgate Lane, with cyclists travelling on road.*

Assessment has been carried out to consider the likely future demand for walking and cycling at the location of the proposed access. This is summarised below, with Route C being relevant.

	Route A1 - Brookers Lane	Route A2 - Woodcot Lane via Brookers	Route B1 - PROW	Route B2 - PROW	Route C - Newgate Lane East	Route D - East to Tukes Av (Northern Parcel)
Walking Trips (incl Walk to Public Transport)	204	52	44	109	35	291
Cycle Trips	7	3	4	8	4	17
Total Trips	211	54	48	117	39	307
% Trips	27.2%	7.0%	6.1%	15.0%	5.1%	39.6%

There are expected to be some 35 pedestrians who seek to access between the site and Newgate Lane at the site access and some 2 cyclists Considered across the day, the following demand profile is expected.

Hour	Pedestrians	Cyclists
00:00		
01:00		
02:00		
03:00		
04:00		
05:00		
06:00		
07:00	2	0
08:00	4	1
09:00	3	0
10:00	3	0
11:00	2	0
12:00	2	0
13:00	2	0
14:00	3	0
15:00	5	1
16:00	3	0
17:00	4	0
18:00	3	0
19:00		
20:00		
21:00		
22:00		
23:00		
	35	2

2.9. Liaison with local user groups and wider public (Large schemes only)

N/A

3. User Opportunities

The opportunities highlighted below are deemed to be relevant to the highway scheme/works and should be considered by the design team leader throughout the progression of the highway scheme design in addition to any further opportunities that may arise through the ongoing development of the design.

3.1. General

*As stated previously, there are existing northbound and southbound bus stops on the B3385 Newgate Lane East. Pedestrian link will be provided from the site to these bus stops through the northwest corner of the site. This is illustrated in i-Transport Drawing **ITB10353-GA-102**.*

3.2. Strategic Opportunities

Cycle route connection will be provided from the site, across the proposed roundabout and on to the existing on carriageway cycle route on the old Newgate Road. Opportunity to provide a pedestrian connectivity to Footpath 084/76/1 running along the northern boundary of the site is identified and will be provided subject to further review.

3.3. Walking Specific Opportunities

The proposed roundabout scheme includes 3.0m shared footway/cycleway on the northern edge of the site access road and Old Newgate Lane to the west. Appropriate crossing facility with dropped kerbs and tactile paving will be provided at the roundabout.

3.4. Cycling Specific Opportunities

The proposed roundabout scheme includes 3.0m shared footway/cycleway on the northern edge of the site access road and Old Newgate Lane. Appropriate crossing facility with dropped kerbs and tactile paving will be provided at the roundabout.

This shared footway/cycleway will connect with the on-carriageway cycle route on the old Newgate Lane which heads north towards Fareham town centre.

3.5. Horse-Riding Specific Opportunities

There are no horse-riding specific opportunities within the WCHAR study area.

4. Walking, Cycling and Horse-Riding Assessment Team Statement

Lead Assessor

As Lead Assessor, I confirm that this walking, cycling and horse-riding assessment report has been compiled in accordance with HCC Technical Guidance Note TG19.

Name & Title:	Prabin Limbu
Title/Position:	Senior Consultant
Organisation:	i-Transport LLP
Signature:	<i>Prabin Limbu</i>
Date:	01/11/2021

Scheme Client Team Leader

As the Scheme Client Team Leader, I confirm that the assessment has been undertaken at the appropriate stage of the highway scheme development.

I confirm that in my professional opinion the appointed Lead Assessor has the appropriate experience for the role making reference to the expected competencies contained in GG 142.

Name & Title:	Daniel Sampson	Paul Thomas
Title/Position:	Strategic Land and Planning Manager	Head of Planning
Organisation:	Miller Homes	Bargate Homes
Signature:	<i>Daniel Sampson</i>	<i>Paul Thomas</i>
Date:	01/11/2021	01/11/2021

**APPENDIX A. STAGE 1 ROAD SAFETY AUDIT –
FENLEY ROAD SAFETY AUDIT**

Technical Note


Project No: ITB10353
Project Title: Newgate Lane, Fareham
Title: Proposed Access off Newgate Lane East, Stage 1 RSA – Designers Response
Ref: MC/ITB10353-014
Date: 6 December 2021

1.1 Project Details

Table 1: Project Details

Project Details	
Report Title:	Proposed roundabout from B3385 Newgate Lane East, Fareham, Stage 1 RSA Designers Response
Date:	6 December 2021
Document reference and revision:	MC/ITB10353-014
Prepared by:	i-Transport LLP
On behalf of:	Hampshire County Council

Table 2: Authorisation Sheet

Authorisation Sheet	
Project	Newgate Lane, Fareham
Report Title	Proposed roundabout from B3385 Newgate Lane East, Fareham, Stage 1 RSA Designers Response
Prepared By	
Name	Matthew Craddy
Position	Associate
Signed	
Organisation	i-Transport
Date	6 December 2021
Approved By	
Name	Matthew Craddy
Position	Associate
Signed	

Authorisation Sheet	
Organisation	i-Transport
Date	6 December 2021

1.2 Introduction

- 1.2.1 i-Transport LLP has been appointed by Miller Homes and Bargate Homes to provide highways and transport advice in relation to the proposed residential development of up to 425 dwellings on land to the east of Newgate Lane, Fareham.
- 1.2.2 The site is located to the south of Fareham and immediately to the west of Bridgemary ward boundary. An extract of the site location plan is shown in **Image 1.1**. As shown, the B3385 Newgate Lane East forms the western boundary of the site whilst the existing residential area of Bridgemary forms the eastern boundary of the site. Sports pitches are present to the northwest of the site and Brookes Lane development site is located to the south.

Image 1.1: Site Location



- 1.2.3 A Stage 1 Road Safety Audit has been undertaken of the proposed site access arrangement off B3385 Newgate Lane East, Fareham in line with GG119. A Road Safety Audit was undertaken by Fenley Road Safety Limited on 26 November 2021 and can be found at Appendix A.

1.2.4 This Road Safety Audit response has been prepared by Matthew Craddy (Associate) from i-Transport LLP.

1.3 Key Personnel

Key Personnel	
Overseeing Organisation	Hampshire County Council
RSA Team	Audit Team Leader – Jamie Fenning Audit Team Member – Zane Beswick
Design Organisation	Matthew Craddy – Associate – i-Transport

1.4 Road Safety Audit Decision Log

1.4.1 The Road Safety Decision log is presented in at **Appendix B**.

1.5 Design Organisation and Overseeing Organisation Statements

Design Organisation Statement	
On behalf of the design organisation I certify that:	
1) the RSA actions identified in response to the road safety audit problems in this road safety audit have been discussed and agreed with the Overseeing Organisation.	
Name	
Signed	
Position	
Organisation	
Date	

Overseeing Organisation Statement	
On behalf of the Overseeing Organisation I certify that:	
1) the RSA actions identified in response to the road safety audit problems in this road safety audit have been discussed and agreed with the design organisation; and	
2) the agreed RSA actions will be progressed.	
Name	
Signed	
Position	
Organisation	
Date	

Road Safety Audit Report

**Incorporating
Stage 1 Completion of Preliminary Design;
Design Organisation Response to items raised; and
Auditors View of Design Organisation Response.**



Proposed Roundabout and footway link Newgate Lane East Fareham

Client:
i-Transport

Client reference:
ITB10353

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Report Status 4

Job no	RSA-21-110	Issue no	4	Date	December 2021
Prepared by	JJF	Verified by	ZB	Approved by	JJF
Filename and Path	Fenley/Road Safety Audits/RSA-21/RSA-21-110-4				

1.0 PROJECT DETAILS

Report Title:	Stage 1 Road Safety Audit
Date:	December 2021
Document reference and revision:	RSA-21-110-4
Prepared by:	Fenley Road Safety Limited
On behalf of the Overseeing Organisation:	Hampshire County Council
Design Organisation:	i-Transport LLP
Project Sponsor:	Miller Homes and Bargate Homes

REV	ISSUE PURPOSE	AUTHOR	CHECKED	APPROVED	DATE
0	Stage 1 Road Safety Audit drafted for Audit Team discussions	JJF			22 nd November 2021
1	Stage 1 Road Safety Audit finalised and issued to the Design Organisation	JJF	ZB	JJF	26 th November 2021
2	Stage 1 Road Safety Audit Report format amended to incorporate a row for inclusion of a Design Organisation Response in order to maintain a concise record of items raised		JJF		26 th November 2021
3	Design Organisation Response incorporated		Matthew Craddy on behalf of i-Transport		2 nd December 2021
4	Auditor's View of Design Organisation Response		JJF		6 th December 2021

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Appendices:

Stage 1	A1	Documents and Drawings provided for this Road Safety Audit
	A2	Item Location Plan
	A3	Drawings associated with the Design Organisation Response

2.0 INTRODUCTION

- 2.1 This report has been prepared by Fenley Road Safety Limited and results from a Stage 1 Road Safety Audit of a proposed roundabout and footway link along Newgate lane East in Fareham. The works include the provision of a four arm 50 metre ICD roundabout at the existing priority junction of Newgate Lane with Newgate Lane East to allow access to development land to the east as well as a footway link to the existing bus stops both sides of the carriageway to the north. A shared footway / cycleway is also proposed along the northern side of the development access road and Newgate Lane with an uncontrolled crossing at the splitter island of the northern Newgate Lane East arm of the junction. The scheme is to facilitate access to a residential development of circa 425 dwellings.
- 2.2 The Audit Brief identifies that the proposals do not include any Departures from Standard, whether related to strategic decisions or otherwise.
- 2.3 The Road Safety Audit was undertaken during November 2021 in accordance with the Road Safety Audit Brief provided on the 3rd November 2021 by the Design Organisation, i-Transport, on behalf of the Project Sponsors, Miller Homes and Bargate Homes. The Road Safety Audit comprised of a site visit as well as an examination of the documents provided which are identified in **Appendix A1**. The Audit Team were satisfied that that the Audit Brief was sufficient for the purpose of the Audit instructed.
- 2.4 The Road Safety Audit has been undertaken by an Audit Team whose qualifications and experience accord with the requirements of GG119 and have been approved to undertake Road Safety Audits of all stages within Hampshire. The Audit Team consists of the following members:

Audit Team Leader

Jamie Fenning *BSc(Hons), MIHE, MCIHT, MSoRSA, Highways England RSA Certificate of Competency*
Road Safety / Highway Engineer

Audit Team Member

Zane Beswick *MCIHT, MSoRSA*
Road Safety / Highway Engineer

- 2.5 The site visit associated with this Road Safety Audit was undertaken during the afternoon of Friday 5th November 2021 between 1pm and 1:45pm. The site visit involved walking and driving around the local highway network for a 45-minute period whilst observing the local infrastructure and current traffic conditions. The weather during the site visit was clear, the road surface was dry and visibility was good. A number of pedestrians were observed during the site visit walking along Newgate Lane and cyclists were observed travelling along both Newgate Lane and Newgate Lane East. Vehicular traffic was also observed to include motorcycles, cars, public service vehicle, light and heavy goods vehicles. The traffic flow

was considerable with minimal gaps in traffic and free flowing. A maximum queue of 3 vehicles were observed at the give-way associated with the Newgate Lane priority junction.

- 2.6 The terms of reference of this Road Safety Audit are as described in GG119. The scheme has been examined and this report compiled, only with regard to the safety implications for road users of the scheme as presented. It has not been examined or verified for compliance with any other standards or criteria. However, in order to clearly explain a safety problem or the recommendation to resolve a problem, the Audit Team may on occasion have referred to a design standard for information only. All comments and recommendations are referenced to the design drawings supplied with the Audit Brief and the location of road safety concerns raised have been illustrated beneath the items along with relevant photographs for clarity, where appropriate, as well as on the Location Plan attached at **Appendix A2**.

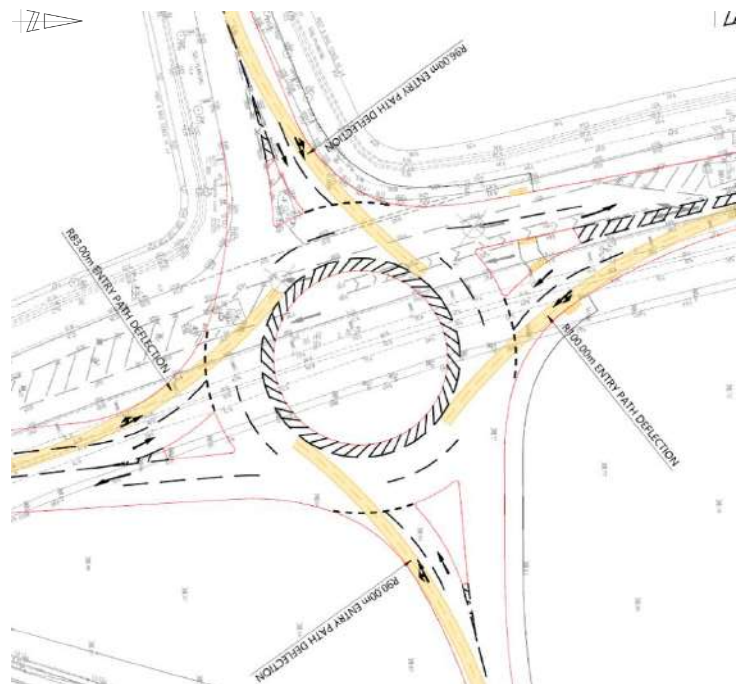
Design Organisation Response

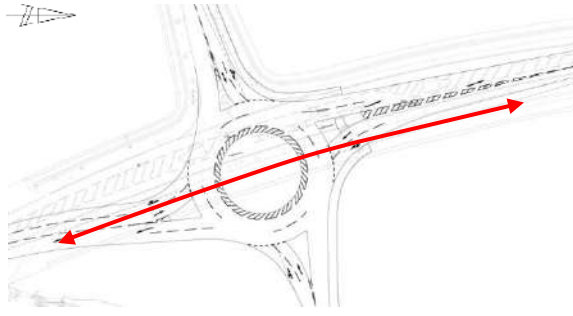

- 2.7 In accordance with national standards, this Road Safety Audit was finalised and issued to the Design Organisation as per the Road Safety Audit Report Template within Appendix D of GG119, which can be provided upon request from either the Audit Team or Design Organisation. The format of the Audit Report was subsequently revised to incorporate these paragraphs under the sub-heading as well as sufficient space beneath the items and recommendation, within Section 4, for the inclusion of a Design Organisation Response. This is generally contained within a separate Design Organisation Response Report but is included within this document in order to maintain a single record of all problems, recommendations and responses for the benefit of a concise Road Safety Audit trail to be held on file for Quality Assurance purposes.
- 2.8 The Design Organisation Response has been prepared by:
Name: Matthew Craddy
Position / Organisation: Associate, i-Transport LLP
- 2.9 Any drawings or documents associated with the Design Organisation Response are listed at **Appendix A3**, if applicable.
- 2.10 Upon the request of the Design Organisation and following receipt of the Design Organisation Response with any associated drawings, the Road Safety Audit Team Leader has provided a further comment on the item raised. The “Auditor’s View on the Design Organisation Response” is included within a row beneath each item, for clarity.

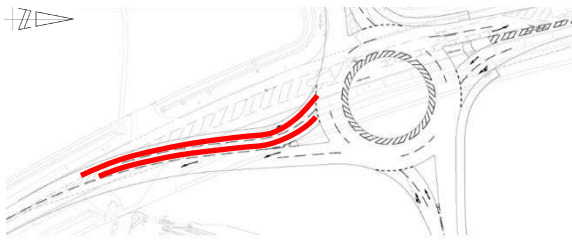

3.0 ITEMS RAISED IN ANY PREVIOUS ROAD SAFETY AUDITS


- 3.1 Fenley Road Safety Limited have not been made aware of any previous road safety audits associated with the proposals that are assessed within this document.


4.0 ITEMS RAISED AT THIS STAGE 1 ROAD SAFETY AUDIT

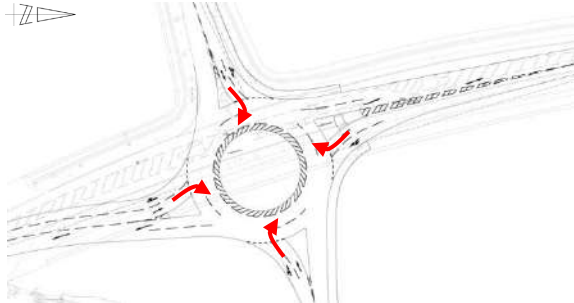

A.1	LOCAL ALIGNMENT
A.1.1	PROBLEM
Location:	Newgate Lane East
Summary:	Traffic may approach the proposed roundabout at inappropriate speeds
Acc Type:	Junction overshoot, heavy braking and loss of control type collisions
<p>Newgate Lane East is a wide two-way single carriageway road that is subject to a 40mph speed limit and according to the Audit Brief observes 85th percentile speeds of 44.3mph and 45.2mph in a north and southbound directions. The proposals that are subject to this Stage 1 Road Safety Audit include the provision of a 50 metre ICD four-arm roundabout at the existing priority junction of Newgate Road with Newgate Road East. The roundabout is to accommodate a circulatory carriageway width of 9 metres with an area of hatching provided around the central island to allow for the swept path of articulated vehicles. The scheme drawings identify that entry deflection on each approach is below 100 metres, however, this is based upon vehicles not entering the hatched area around the central island. The Audit Team have concerns that the area of hatching will not be visible to the driver of a vehicle approaching the proposed roundabout particularly should the road markings fade as they have in proximity to the roundabout junction to the north. An insufficient level of deflection on approach to a roundabout could lead to inappropriate approach speeds and junction overshoot type collisions as well as loss of control as a result of heavy braking.</p>	
RECOMMENDATION:	
It is recommended that an adequate amount of deflection is provided on each approach.	
Location Plan:	
	



<p>DESIGN ORGANISATION RESPONSE provided by i-Transport on the 2nd December 2021 following formal issue of this Stage 1 Road Safety Audit on the 22nd November 2021</p>	
<p>Agreed - The overrun area has been revised to provide a kerbed overrun area. This will provide a 25mm upstand and 150mm wide kerb. 1 in 12 return gradient to the central island with white lines and blacktop. The revised scheme is shown on Drawing ITB10353-GA-102 Rev A</p>	
<p>AUDITOR'S VIEW OF DESIGN ORGANISATION RESPONSE dated 6th December 2021</p>	
<p>Confirmation that the overrun area is to be formed with a 25mm upstand should ensure that the level of deflection is clear to approaching drivers at all times and addresses the road safety concern raised at this stage.</p>	
A.2	GENERAL
A.2.1	PROBLEM
Location:	Newgate Lane East
Summary:	No details of the proposed drainage have been provided at this stage
Acc Type:	Sideswipes and loss of control type collisions
<p>Newgate Lane East is a relief road and benefits from a drainage ditch beyond a grass verge either side. Surface water that falls on the carriageway is understood to flow through a number of existing channels that are cut into the adjacent verge. The proposals that are subject to this Stage 1 Road Safety Audit include the provision of a four-arm roundabout and the realignment of the Newgate Lane East approaches. The proposed highway is to be provided where the existing ditches are present. Whilst levels have been provided on the topographical survey and along the centreline of the proposed carriageway, no details associated with the proposed contours or drainage have been provided at this stage. It can be assumed that the existing ditch is to be removed and that surface water will fall along the carriageway in accordance with the levels, however, an insufficient surface water drainage network could lead to ponding being observed which could result in loss of control type collisions especially during frosts.</p>	
<p>RECOMMENDATION:</p>	
<p>It is recommended that an adequate surface water drainage network is provided</p>	
<p>Location Plan:</p>	
	

<p>DESIGN ORGANISATION RESPONSE provided by i-Transport on the 2nd December 2021 following formal issue of this Stage 1 Road Safety Audit on the 22nd November 2021</p>	
<p>Agreed – diversion and culverting of the existing highway drain subject to OWC consent and to be discussed and agreed with HCC at detailed design stage to ensure adequate water drainage network is provided. Drawing ITB10353-GA-102 Rev A illustrates the likely ditch diversion and culverting that is expected to be required.</p>	
<p>AUDITOR'S VIEW OF DESIGN ORGANISATION RESPONSE dated 6th December 2021</p>	
<p>Confirmation that the ditch is to be diverted and culverted, addresses the road safety concern raised at this stage provided sufficient clearance is provided between the carriageway and diverted ditch.</p>	
A.2.2	PROBLEM
Location:	Newgate Lane East
Summary:	Vehicles may accelerate and overtake on approach to the roundabout
Acc Type:	Junction overshoot, heavy braking and loss of control type collisions
<p>Newgate lane East is a wide single carriageway two-way road that is subject to a 40mph speed limit and observes a traffic flow of circa 2400 during the morning and afternoon peak hours. The proposals that are subject to this Stage 1 Road Safety Audit include the provision of a four-arm roundabout along Newgate Lane East at the existing Newgate Lane priority junction. The scheme drawings provided with the Audit Brief illustrate that the carriageway width of the northbound Newgate Lane East approach to the roundabout increases to two 3.5 metre lanes from a point 70 metres from the give-way line. Whilst the information included within the Audit Brief identifies that the layout allows for two HGV's to enter the proposed roundabout side by side, no swept path of the approach is included. It is noted that the traffic flow data within the Junctions 10 data also provided with the Audit Brief, shows that the HGV content of southern arm of Newgate Lane East makes up just 2% of vehicles and therefore the likelihood of two large vehicles travelling through the junction side by side is negligible. The Audit Team have concerns that the wide two-lane approach will lead to high speed approaches and be utilised for overtaking manoeuvres leading to heavy braking and loss of control or overshoot type collisions.</p>	
<p>RECOMMENDATION:</p>	
<p>It is recommended that the width and length of the two-lane approach is reduced</p>	
<p>Location Plan:</p>	
	



<p>DESIGN ORGANISATION RESPONSE provided by i-Transport on the 2nd December 2021 following formal issue of this Stage 1 Road Safety Audit on the 22nd November 2021</p>	
<p>Agreed - The design has been amended to reduce the width and the length of the two lane approach on the southern side of the roundabout, which is reflected on Drawing ITB10353-GA-102 Rev A, with revised geometries shown on Drawing ITB10353-GA-105 Rev A. Drawing ITB10353-GA-119 has been produced to demonstrate how two 16.5m articulated vehicles can travel side-by-side on the approach to the junction.</p>	
<p>AUDITOR'S VIEW OF DESIGN ORGANISATION RESPONSE dated 6th December 2021</p>	
<p>Confirmation that the northbound approach has been adjusted, addresses the road safety concern raised at this stage.</p>	
A.2.3	PROBLEM
Location:	Newgate Lane East
Summary:	Splitter islands may not be clearly visible
Acc Type:	Loss of control and head-on type collisions
<p>The proposals that are subject to this Stage 1 Road Safety Audit include the provision of a four-arm roundabout along Newgate Lane East that accommodates two-lane approaches as well as two-lane exits that merge on Newgate Lane East and single lane exits on Newgate Lane as well as the proposed development access. The scheme drawings provided with the Audit Brief illustrate splitter islands on each arm of the proposed roundabout segregating traffic entering from traffic exiting, however, the islands may not be clearly visible to approaching drivers leading to kerb strikes and loss of control type collisions. Furthermore, foreign drivers may attempt to pass on the wrong side of the islands into the path of opposing traffic leading to head-on collisions.</p>	
<p>RECOMMENDATION:</p>	
<p>It is recommended that the keep left bollards are provided facing approaching traffic.</p>	
<p>Location Plan:</p> 	
<p>DESIGN ORGANISATION RESPONSE provided by i-Transport on the 2nd December 2021 following formal issue of this Stage 1 Road Safety Audit on the 22nd November 2021</p>	
<p>Agreed – keep left bollards to be provided facing approaching traffic. Exact details to be discussed and agreed with HCC at detailed design stage.</p>	
<p>AUDITOR'S VIEW OF DESIGN ORGANISATION RESPONSE dated 6th December 2021</p>	
<p>Confirmation that keep left bollards are to be provided, addresses the road safety concern raised at this stage.</p>	



A.3	JUNCTIONS
A.3.1	PROBLEM
Location:	Newgate Lane East
Summary:	Proposals will restrict access to existing field entrances
Acc Type:	Rear end impact collisions
<p>Newgate Lane East is a two-way single carriageway road that is bounded by grass verges and allows access to a number of gated field entrances. The proposals that are subject to this Stage 1 Road Safety Audit include the provision of a roundabout and realignment of Newgate Lane East. The scheme drawings provided with the Audit Brief illustrate that the proposals have an impact on two field entrances with the area of hardstanding adjacent to the eastern access, reduced and the area adjacent to the western access increased. No kerbing details have been provided at this stage, however, the provision of full height kerbs will restrict access to the entrances which could lead to a loss of control type collision or a vehicle stopping to mount the full height kerbs and rear impact collisions. Furthermore, the Audit Team have concerns that the hard standing adjacent to the field access to the east, will be inadequate to accommodate a tractor and trailer whilst the gates are being opened or closed which could lead to part of the vehicle encroaching the carriageway and front / rear end collisions.</p>	
RECOMMENDATION:	
It is recommended that dropped kerbs are provided to allow access to the field and the adjacent area of hard standing is adequate to accommodate the expected vehicles.	
Location Plan:	
 	
<p>DESIGN ORGANISATION RESPONSE provided by i-Transport on the 2nd December 2021 following formal issue of this Stage 1 Road Safety Audit on the 22nd November 2021</p>	
<p>Agreed - The existing field access point on the western side of Newgate Lane East dropped kerb have been shown on revised Drawing ITB10353-GA-102 Rev A. On the eastern side, the existing field access is to be removed as part of the proposed development and therefore no provision has been made (the field benefits from a separate access some 50m south). This is reflected in the latest design drawing ITB10353-GA-102 Rev A.</p>	
<p>AUDITOR'S VIEW OF DESIGN ORGANISATION RESPONSE dated 6th December 2021</p>	
<p>Confirmation that the field accesses are to removed / retained where appropriate, addresses the road safety concern raised at this stage.</p>	


A.3.2	PROBLEM
Location:	Newgate Lane East
Summary:	Drivers may attempt to circulate the roundabout into opposing traffic
Acc Type:	Sideswipes and loss of control type collisions
<p>The proposals that are subject to this Stage 1 Road Safety Audit include the provision of a four-arm 50 metre Inscribed Circle Diameter (ICD) roundabout along Newgate Lane East that is formed with a 28 metre physical central island with a 2 metre area of hatching overrun area and 9 metre circulatory carriageway. The scheme drawings provided with the Audit Brief illustrate splitter islands on each arm of the proposed roundabout which are aligned such that traffic is guided around the circulatory in a clockwise direction, however, no signage is provided to highlight that traffic must turn left onto the circulatory. Foreign drivers may attempt to turn right onto the circulatory and travel in an anti-clockwise direction into the path of opposing traffic leading to head-on collisions.</p>	
RECOMMENDATION:	
It is recommended that chevron and one-way signs are provided on the central island	
Location Plan:	
 	
DESIGN ORGANISATION RESPONSE provided by i-Transport on the 2nd December 2021 following formal issue of this Stage 1 Road Safety Audit on the 22nd November 2021	
Agreed – chevron and one-way signs to be provided at detailed design stage.	
AUDITOR'S VIEW OF DESIGN ORGANISATION RESPONSE dated 6th December 2021	
<i>Confirmation that chevron and one-way signs are to be provided, addresses the road safety concern raised at this stage.</i>	
A.4	WALKING CYCLING AND HORSE
A.4.1	PROBLEM
Location:	Newgate Lane
Summary:	Pedestrians may enter the live carriageway when it is not safe to do so
Acc Type:	Vehicle pedestrian collisions
<p>Newgate Lane benefits from a footway along the western side of the carriageway that provides a link between Fareham to the north and Lee-on-the-Solent to the south. The proposals that are subject to this Stage 1 Road Safety Audit include the provision of a roundabout along Newgate Lane East that accommodates a shared footway cycleway between the eastern and western arms</p>	

<p>along the northern side of the carriageway and across the northern Newgate Lane East arm. The scheme drawings provided with the Audit Brief illustrate that an uncontrolled crossing is to be provided across the Newgate Lane cul-de-sac with a footway link to the west that approaches inline which will lead to pedestrians walking directly towards the crossing point. Tactile paving is provided to warn pedestrians of the live carriageway, however, just two rows are illustrated on the scheme drawing equating to a dept of 800mm. A pedestrian with a large stride or walking at a fast pace towards the proposed crossing point, could overstep the proposed tactile paving into the path of an approaching vehicle leading to a vehicle pedestrian collision.</p>	
<p>RECOMMENDATION:</p>	
<p>It is recommended that the tactile paving extends for a minimum depth of 1200mm at crossing points that are inline</p>	
<p>Location Plan:</p>	
	
<p>DESIGN ORGANISATION RESPONSE provided by i-Transport on the 2nd December 2021 following formal issue of this Stage 1 Road Safety Audit on the 22nd November 2021</p>	
<p>Agreed – tactile paving has been revised to provide 1200mm depth at crossing points identified. Drawing ITB10353-GA-102 Rev A has been updated to reflect these design changes.</p>	
<p>AUDITOR'S VIEW OF DESIGN ORGANISATION RESPONSE dated 6th December 2021</p>	
<p>Confirmation that the depth of the tactile paving has been increased, addresses the road safety concern raised at this stage.</p>	
A.4.2	PROBLEM
Location:	Newgate Lane East
Summary:	Existing street lighting column is situated within the proposed footway
Acc Type:	Pedestrian collision with column
<p>Newgate lane East is a wide two-way single carriageway road that benefits from street lighting. The proposals that are subject to this Stage 1 Road Safety Audit include the provision of a footway link between the north-western boundary of the site and existing bus stop to the north that benefits from an uncontrolled pedestrian crossing and refuge island. As illustrated on the scheme drawing and observed during the site visit associated with this Audit, a street lighting column is situated in the centre of the proposed footway which will be an obstruction to pedestrians and could lead to one striking the column or a user of perambulators veering off the footway onto unstable ground resulting in a fall and personal injury.</p>	
<p>RECOMMENDATION:</p>	
<p>It is recommended that the existing street lighting column is relocated outside the proposed footway</p>	

<p>Location Plan:</p>  	
<p>DESIGN ORGANISATION RESPONSE provided by i-Transport on the 2nd December 2021 following formal issue of this Stage 1 Road Safety Audit on the 22nd November 2021</p>	
<p>Agreed – existing street lighting column to be relocated outside of the proposed footway. Final details to be discussed and agreed with HCC at detailed design stage.</p>	
<p>AUDITOR'S VIEW OF DESIGN ORGANISATION RESPONSE dated 6th December 2021</p>	
<p>Confirmation that the street lighting column is to be relocated, addresses the road safety concern raised at this stage.</p>	
A.4.3	PROBLEM
Location:	Newgate Lane East
Summary:	The sides of the bus shelter accommodate advertisements that will be an obstruction to pedestrians
Acc Type:	Sideswipes and loss of control type collisions
<p>Newgate Lane East is a wide two-way single carriageway road that is a bus route and accommodates bus stops both sides of the carriageway. The proposals that are subject to this Stage 1 Road Safety Audit include the provision of a footway link between the north-western boundary of the site and existing bus stops just to the north. The existing southbound bus stop benefits from a shelter, however, the sides of the shelter accommodate advertisements that will be an obstruction to pedestrians and could require one to step into the carriageway to pass which may lead to a vehicle pedestrian collision.</p>	
<p>RECOMMENDATION:</p>	
<p>It is recommended that the bus shelter is adjusted accordingly</p>	
<p>Location Plan:</p>  	

<p>DESIGN ORGANISATION RESPONSE provided by i-Transport on the 2nd December 2021 following formal issue of this Stage 1 Road Safety Audit on the 22nd November 2021</p> <p>Agreed – the existing bus stop (southbound) has been relocated to provide a minimum of 1.5m unobstructed footway between the bus stop and kerb edge. For the remainder of footway, there is a minimum of 2.0m. Drawing ITB10353-GA-103 Rev A has been updated to reflect these design changes.</p>	
<p>AUDITOR’S VIEW OF DESIGN ORGANISATION RESPONSE dated 6th December 2021</p> <p>Confirmation that the bus stop is to be relocated to allow for a 1.5 metre clear footway width ensures that pedestrians will be able to pass without the need to step into the carriageway and addresses the road safety concern raised at this stage.</p>	
A.5	TRAFFIC SIGNS, CARRIAGEWAY MARKINGS AND LIGHTING
A.5.1	PROBLEM
Location:	Newgate Lane East
Summary:	The arrow road markings across the uncontrolled crossing point may be misinterpreted by visually impaired pedestrians
Acc Type:	Sideswipes and loss of control type collisions
<p>The proposals that are subject to this Stage 1 Road Safety Audit include the provision of a four-arm roundabout along Newgate Lane East that is to accommodate two-lane approaches as well as splitter islands on each arm to include across the northern arm that is to be utilised as a refuge for cyclists and pedestrians at an uncontrolled crossing point that benefits from tactile paving. The scheme drawings provided with the Audit Brief illustrates that arrow road markings are to be provided within each lane on approach to the roundabout give-way, however, the markings provided on the northern approach are situated on the carriageway where pedestrians and cyclists are likely to be crossing. The Audit Team have concerns that the arrow road markings across the uncontrolled crossing point may be misinterpreted by visually impaired pedestrians who may walk into the path of an approaching vehicle and slippery to walk on during frosts leading to a fall and personal injury.</p>	
RECOMMENDATION:	
It is recommended that the road markings are marginally relocated outside the uncontrolled pedestrian crossing.	
Location Plan:	
	

<p>DESIGN ORGANISATION RESPONSE provided by i-Transport on the 2nd December 2021 following formal issue of this Stage 1 Road Safety Audit on the 22nd November 2021</p>	
<p>Agreed – the road markings have been removed outside of the uncontrolled crossing and updated design presented in Drawing ITB10353-GA-102 Rev A.</p>	
<p>AUDITOR’S VIEW OF DESIGN ORGANISATION RESPONSE dated 6th December 2021</p>	
<p>Confirmation that the road markings have been marginally relocated, addresses the road safety concern raised at this stage.</p>	
A.5.2	PROBLEM
Location:	Newgate Lane East
Summary:	No details of the proposed street lighting have been provided
Acc Type:	Vehicle overshoot and loss of control type collisions
<p>The local highway network in proximity of Newgate Lane East benefits from street lighting with columns situated within the verge both sides of the carriageway. The proposals that are subject to this Stage 1 Road Safety Audit include the provision of 50 metre ICD roundabout along Newgate Lane East. The proposed works have an impact on the existing street lighting columns, however, no street lighting details have been provided at this stage. An insufficient level of street lighting in proximity to a roundabout could result in drivers not becoming aware of the junction at a safe distance and traffic approaching at in-appropriate speeds leading to heavy braking and resulting in overshoot and loss of control type collisions.</p>	
<p>RECOMMENDATION:</p>	
<p>It is recommended that the proposed roundabout junction is illuminated sufficiently</p>	
<p>Location Plan:</p>	
	
<p>DESIGN ORGANISATION RESPONSE provided by i-Transport on the 2nd December 2021 following formal issue of this Stage 1 Road Safety Audit on the 22nd November 2021</p>	
<p>Agreed – a lighting strategy will be discussed and agreed with HCC at detailed design stage.</p>	
<p>AUDITOR’S VIEW OF DESIGN ORGANISATION RESPONSE dated 6th December 2021</p>	
<p>Confirmation that the proposed junction will illuminated sufficiently with a street lighting strategy developed during the detail design stage, addresses the road safety concern raised at this stage.</p>	


A.5.3	PROBLEM
Location:	Newgate Lane East
Summary:	No details of the proposed signage have been provided
Acc Type:	Vehicle sideswipe and shunt type collisions
<p>Newgate Lane East is a link between Fareham and Lee-on-the-Solent and currently accommodates a priority junction with Newgate Lane that benefits from a right turn lane with appropriate signage. The proposals that are subject to this Stage 1 Road Safety Audit include the provision of 50 metre ICD four-arm roundabout along Newgate Lane East that provides access to development land to the east and Newgate Lane to the west. Whilst the scheme drawings illustrate the proposed junction, no details of the proposed signage have been provided at this stage. Insufficient signage of the roundabout ahead, could result in drivers not becoming aware of the junction or routes through at a safe distance and traffic undertaking late lane changes, leading to loss of control and sideswipe type collisions.</p>	
RECOMMENDATION:	
It is recommended that the proposed roundabout and destinations are signed appropriately.	
Location Plan:	
	
<p>DESIGN ORGANISATION RESPONSE provided by i-Transport on the 2nd December 2021 following formal issue of this Stage 1 Road Safety Audit on the 22nd November 2021</p>	
<p>Agreed – The proposed roundabout and destinations will be signed appropriately. Exact details to be discussed and agreed with HCC at detailed design stage.</p>	
<p>AUDITOR'S VIEW OF DESIGN ORGANISATION RESPONSE dated 6th December 2021</p>	
<p>Confirmation that the appropriate signage will be provided, addresses the road safety concern raised at this stage.</p>	

5.0 STAGE 1 ROAD SAFETY AUDIT TEAM STATEMENT

5.1 We certify that this Road Safety Audit has been carried out in accordance with GG119.

Audit Team Leader

Name: **Jamie Fenning** *BSc (Hons), MIHE, MCIHT, MSoRSA, HE RSA Certificate of Competency*

Signed: 

Position: Road Safety / Highway Engineer

Organisation: Fenley Road Safety Limited

Date: 6th December 2021

Audit Team Member

Name: **Zane Beswick** *MCIHT, MSoRSA*

Signed: 

Position: Road Safety / Highway Engineer

Organisation: Fenley Road Safety Limited

Date: 26th November 2021

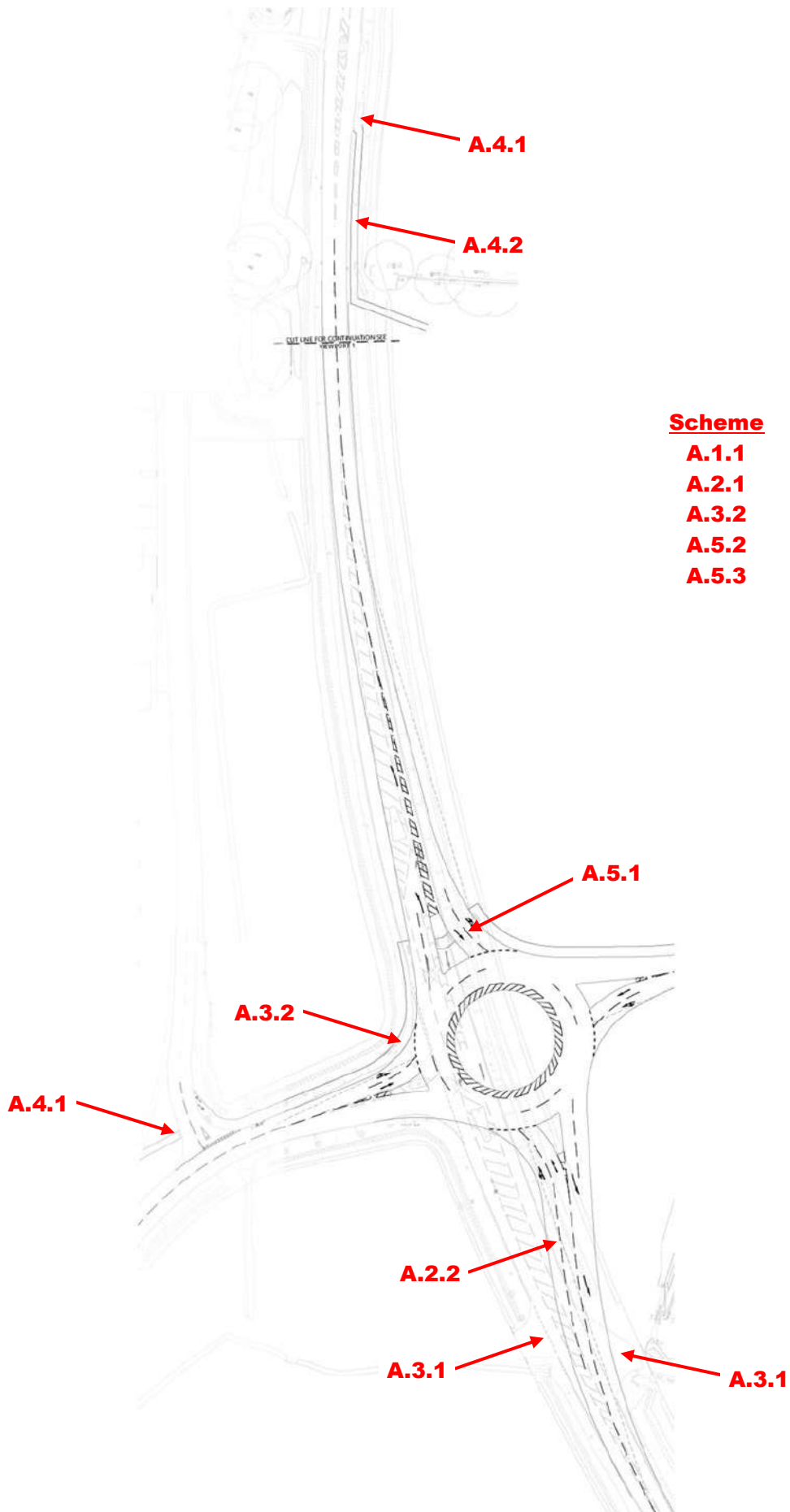
Appendix A1

Documents and Drawings provided for this Stage 1 Road Safety Audit

<u>Audit Stage</u>	<u>Doc. No.</u>	<u>Rev</u>	<u>Title</u>
Stage 1	ITB10353-013		GG119 Stage 1 Road Safety Audit Brief
	Site Access Roundabout		Junctions 10 ARCADY 10 Roundabout Module 2026 and 2036 assessments
	<u>Dwg No.</u>	<u>Rev</u>	<u>Title</u>
	ITB10353-GA-100	-	Site Location Plan
	ITB10353-GA-101	-	Existing detail
	ITB10353-GA-102	-	Proposed site access arrangements
	ITB10353-GA-103	-	Proposed pedestrian connection to existing bus stops
	ITB10353-GA-104	-	Entry path deflection
	ITB10353-GA-105	-	Proposed Geometry
	ITB10353-GA-106	-	1.5 x Stopping Sight Distance (Entry)
	ITB10353-GA-107	-	1.5 x SSD long section sheet 1 of 4
	ITB10353-GA-108	-	1.5 x SSD long section sheet 2 of 4
	ITB10353-GA-109	-	1.5 x SSD long section sheet 3 of 4
	ITB10353-GA-110	-	1.5 x SSD long section sheet 4 of 4
	ITB10353-GA-111	-	Stopping Sight Distance (Exit)
	ITB10353-GA-112	-	Circulatory exit visibility
	ITB10353-GA-113	-	Forward visibility at roundabout
ITB10353-GA-114	-	Vehicle swept path analysis – 16.5m articulated vehicle	
ITB10353-GA-115	-	Vehicle swept path analysis – Pantechicon	
ITB10353-GA-117	-	Vehicle swept path analysis – Single Decker Bus	
ITB10353-GA-116	-	Vehicle swept path analysis – Large Refuse Vehicle	

Appendix A2

Item Location Plan



Appendix A3

Drawings associated with the Design Organisation Response

<u>Audit Stage</u>	<u>Drawing No.</u>	<u>Rev</u>	<u>Title</u>
Stage 1	ITB10353-GA-102	A	Proposed site access arrangements
	ITB10353-GA-103	A	Proposed pedestrian connection to existing bus stops
	ITB10353-GA-104	A	Entry path deflection
	ITB10353-GA-105	A	Proposed Geometry
	ITB10353-GA-106	A	1.5 x Stopping Sight Distance (Entry)
	ITB10353-GA-107	A	1.5 x SSD long section sheet 1 of 4
	ITB10353-GA-108	A	1.5 x SSD long section sheet 2 of 4
	ITB10353-GA-109	A	1.5 x SSD long section sheet 3 of 4
	ITB10353-GA-110	A	1.5 x SSD long section sheet 4 of 4
	ITB10353-GA-111	A	Stopping Sight Distance (Exit)
	ITB10353-GA-112	A	Circulatory exit visibility
	ITB10353-GA-113	A	Forward visibility at roundabout
	ITB10353-GA-114	A	Vehicle swept path analysis – 16.5m articulated vehicle
	ITB10353-GA-115	A	Vehicle swept path analysis – Pantechicon
	ITB10353-GA-116	A	Vehicle swept path analysis – Single Decker Bus
	ITB10353-GA-117	A	Vehicle swept path analysis – Large Refuse Vehicle
	ITB10353-GA-117	A	Vehicle swept path analysis – Single Decker Bus
ITB10353-GA-119	-	Proposed roundabout to Newgate Lane East – 16.5m articulated vehicle northbound approach	

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APPENDIX B. ROAD SAFETY AUDIT LOG

RSA Problem	RSA Recommendation	Design Organisation Response	Overseeing Organisation Response	Agreed RSA Action
A.1.1 - Traffic may approach the proposed roundabout at inappropriate speeds	It is recommended that an adequate amount of deflection is provided on each approach.	Agreed - The overrun area has been revised to provide a kerbed overrun area. This will provide a 25mm upstand and 150mm wide kerb. 1 in 12 return gradient to the central island with white lines and blacktop. The revised scheme is shown on Drawing ITB10353-GA-102 Rev A		
A.2.1 - No details of the proposed drainage have been provided at this stage	It is recommended that an adequate surface water drainage network is provided	Agreed – diversion and culverting of the existing highway drain subject to OWC consent and to be discussed and agreed with HCC at detailed design stage to ensure adequate water drainage network is provided. Drawing ITB10353-GA-102 Rev A illustrates the likely ditch diversion and culverting that is expected to be required.		
A.2.2 - Vehicles may accelerate and overtake on approach to the roundabout	It is recommended that the width and length of the two-lane approach is reduced	Agreed - The design has been amended to reduce the width and the length of the two lane approach on the southern side of the roundabout, which is reflected on Drawing ITB10353-GA-102 Rev A, with revised geometries shown on Drawing ITB10353-GA-105 Rev A. Drawing ITB10353-GA-119 has been produced to demonstrate how two 16.5m articulated vehicles can travel side-by-side on the approach to the junction.		
A.2.3 - Splitter islands may not be clearly visible	It is recommended that the keep left bollards are provided facing approaching traffic.	Agreed – keep left bollards to be provided facing approaching traffic. Exact details to be discussed and agreed with HCC at detailed design stage.		
A.3.1 - Proposals will restrict access to existing field entrances	It is recommended that dropped kerbs are provided to allow access to the field and the adjacent area of hard standing is adequate to accommodate the expected vehicles.	Agreed - The existing field access point on the western side of Newgate Lane East dropped kerb have been shown on revised Drawing ITB10353-GA-102 Rev A. On the eastern side, the existing field access is to be removed as part of the proposed development and therefore no provision has been made (the field benefits from a separate access some 50m south). This is reflected in the latest design drawing ITB10353-GA-102 Rev A.		
A.3.2 - Drivers may attempt to circulate the roundabout into opposing traffic	It is recommended that chevron and one-way signs are provided on the central island	Agreed – chevron and one-way signs to be provided at detailed design stage.		
A.4.1 - Pedestrians may enter the live carriageway when it is not safe to do so	It is recommended that the tactile paving extends for a minimum depth of 1200mm at crossing points that are inline	Agreed – tactile paving has been revised to provide 1200mm depth at crossing points identified. Drawing ITB10353-GA-102 Rev A has been updated to reflect these design changes.		
A.4.2 - Existing street lighting column is situated within the proposed footway	It is recommended that the existing street lighting column is relocated outside the proposed footway	Agreed – existing street lighting column to be relocated outside of the proposed footway. Final details to be discussed and agreed with HCC at detailed design stage.		
A.4.3 - The sides of the bus shelter accommodate advertisements that will be an obstruction to pedestrians	It is recommended that the bus shelter is adjusted accordingly	Agreed – the existing bus stop (southbound) has been relocated to provide a minimum of 1.5m unobstructed footway between the bus stop and kerb edge. For the remainder of footway, there is a minimum of 2.0m. Drawing ITB10353-GA-103 Rev A has been updated to reflect these design changes		
A.5.1 - The arrow road markings across the uncontrolled crossing point may be misinterpreted by visually impaired pedestrians	It is recommended that the road markings are marginally relocated outside the uncontrolled pedestrian crossing.	Agreed – the road markings have been removed outside of the uncontrolled crossing and updated design presented in Drawing ITB10353-GA-102 Rev A.		
A.5.2 - No details of the proposed street lighting have been provided	It is recommended that the proposed roundabout junction is illuminated sufficiently	Agreed – a lighting strategy will be discussed and agreed with HCC at detailed design stage.		
A.5.3 - No details of the proposed signage have been provided	It is recommended that the proposed roundabout and destinations are signed appropriately.	Agreed – The proposed roundabout and destinations will be signed appropriately. Exact details to be discussed and agreed with HCC at detailed design stage.		

APPENDIX G. WCHAR

APPENDIX H. Highway Boundary Plan

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SW - 7075549

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Hampshire County Council

Newgate Lane, Fareham [1] [revised]

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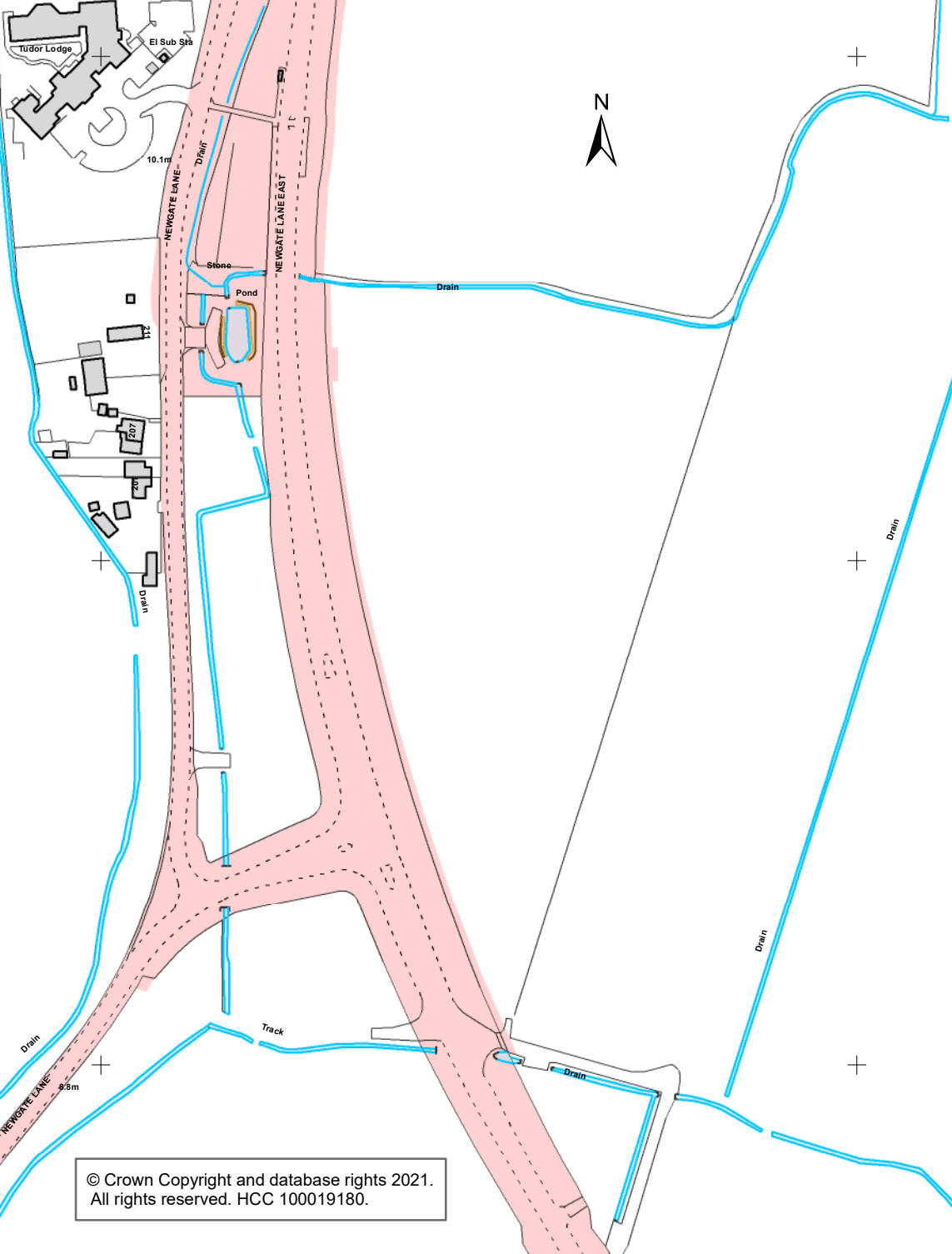
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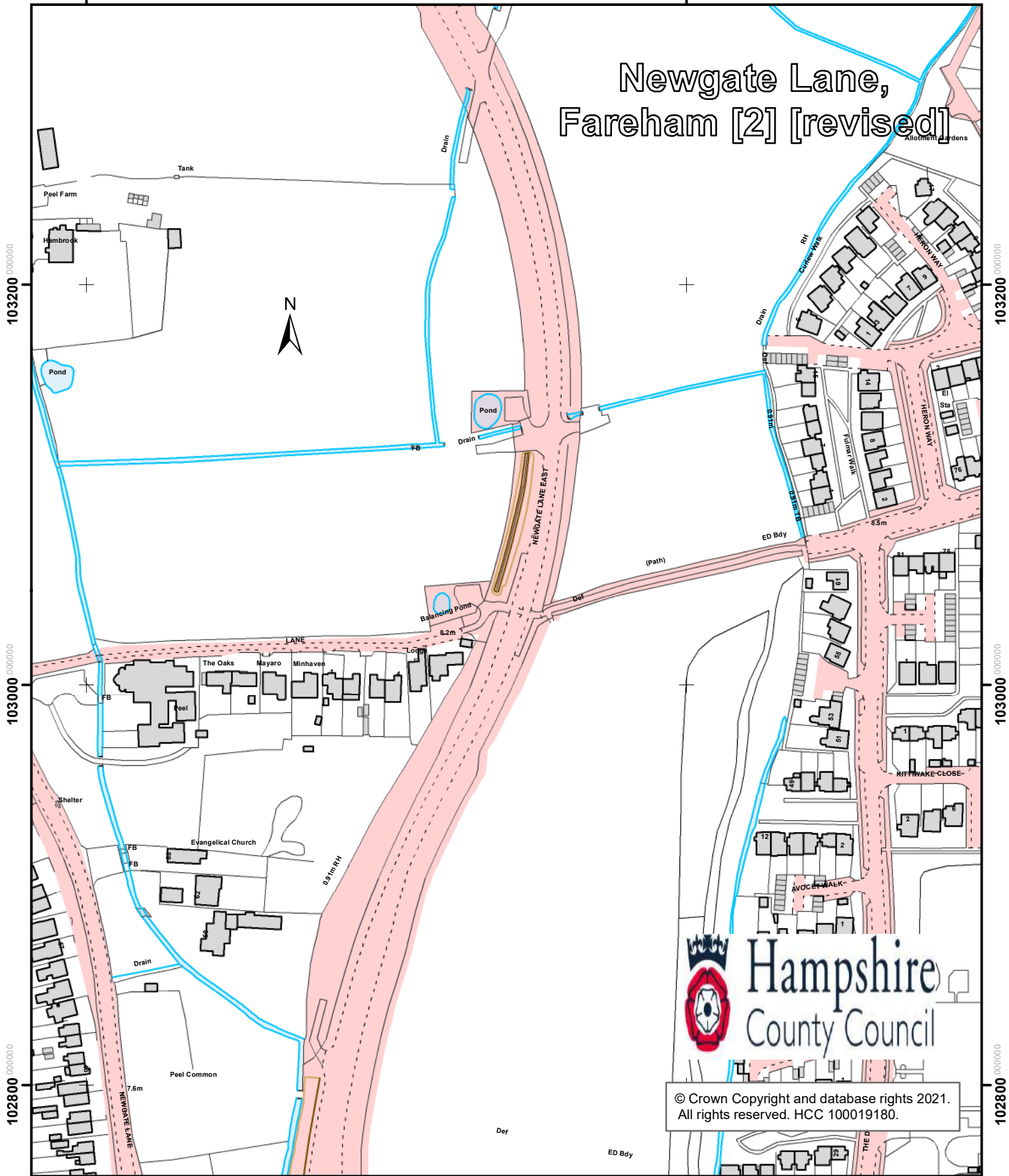
The extent of the highway provided is specific to the property enquired upon and shall not be applicable to any other property.

Ordnance Survey maps are topographic maps and show a representation of the physical features on the ground at the time of survey, which are drawn according to specified tolerances, by the Ordnance Survey. For further information on Ordnance Survey mapping please see: <http://www.ordnancesurvey.co.uk/support/property-boundaries.html>

For questions about the responsibility for ditches please refer to Hampshire County Council's website at: <http://documents.hants.gov.uk/flood-water-management/ditchmaintenanceposter.pdf>

This plan is made on the basis of information at present available to the County Council and is made on the distinct understanding that, in the absence of negligence, neither the County Council nor I as an officer of the Council is to be held responsible should you rely on this statement and consequently suffer damage.

Newgate Lane, Fareham [2] [revised]



The extent of the highway provided is specific to the property enquired upon and shall not be applicable to any other property.

Ordnance Survey maps are topographic maps and show a representation of the physical features on the ground at the time of survey, which are drawn according to specified tolerances, by the Ordnance Survey. For further information on Ordnance Survey mapping please see: <http://www.ordnancesurvey.co.uk/support/property-boundaries.html>

For questions about the responsibility for ditches please refer to Hampshire County Council's website at: <http://documents.hants.gov.uk/flood-water-management/ditchmaintenanceposter.pdf>

This plan is made on the basis of information at present available to the County Council and is made on the distinct understanding that, in the absence of negligence, neither the County Council nor I as an officer of the Council is to be held responsible should you rely on this statement and consequently suffer damage.

APPENDIX I. Abnormal Loads Correspondence

Matthew Craddy

From: abnormal.loads@hampshire.pnn.police.uk
Sent: 28 October 2021 13:11
To: Matthew Craddy
Subject: RE: B3385 Newgate Lane East Abnormal Load?

Good Afternoon Matt

Apologies for not coming back sooner, but Newgate Lane is indeed used by abnormal loads. Many loads go into the old HMS Daedalus site, and there are hauliers who use that site as their operating base, so they are in and out quite often with caravans / portakabins, etc.

If you can let me have more detail of what it is you're looking to put in, I will be able to see if it is likely to cause too many problems.

Regards.

8464 Jan Barfoot (Mrs)
Airwaves & Business Support Officer
for Abnormal Loads

Hampshire Constabulary, Vickery Building, Hamble Lane, Southampton, SO31 4TS

External: 023 8047 8619 Internal: 471 8619

Email: abnormal.loads@hampshire.pnn.police.uk

From: Matthew Craddy [mailto:matthew.craddy@i-transport.co.uk]

Sent: 26 October 2021 16:50

To: ABNORMAL LOADS Mailbox <abnormal.loads@hampshire.pnn.police.uk>; abnormal.loads@hants.gov.uk

Subject: B3385 Newgate Lane East Abnormal Load?

To whom it may concern,

We are undertaking a preliminary design submission for a proposed development in Hampshire. As part of Hampshire County Council (HCC) design submission, HCC require confirmation as to whether the route is an abnormal route.

Could you please confirm if B3385 Newgate Lane East (between B3334 to the south and Longfield Avenue to the north), and Newgate Lane are abnormal routes.

Kind Regards

Matt



Associate
for i-Transport LLP

E: matthew.craddy@i-transport.co.uk

W: www.i-transport.co.uk

Basingstoke Office: The Square, Basing View,
Basingstoke. RG21 4EB
T: 01256 637940 M: 07832 881368



Our Basingstoke office has now relocated to central Basingstoke, in Basing View. Please note our new address.

i-Transport is the trading name of i-Transport LLP, which is a limited liability partnership registered in England under number OC311185. Registered Office: 3rd Floor, One London Square, Cross Lanes, Guildford, Surrey, GU1 1UN. A list of members is available upon request.

We use the word "partner" to refer to a member of i-Transport LLP or an employee or consultant with equivalent standing and qualifications.

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APPENDIX J. Junctions 10 Modelling

Junctions 10
ARCADY 10 - Roundabout Module
Version: 10.0.1.1519 © Copyright TRL Software Limited, 2021
For sales and distribution information, program advice and maintenance, contact TRL Software: +44 (0)1344 379777 software@trl.co.uk trlsoftware.com
The users of this computer program for the solution of an engineering problem are in no way relieved of their responsibility for the correctness of the solution

Filename: Site Access Roundabout.j10

Path: T:\Projects\10000 Series Project Numbers\10353ITB Newgate Lane, Fareham\Tech\Assessments\Arcady\2021 Modelling

Report generation date: 29/11/2021 14:54:40

- »2026 + CD + D (DS2), AM
- »2026 + CD + D (DS2), PM
- »2036 + CD + D (DS2), AM
- »2036 + CD + D (DS2), PM

Summary of junction performance

	AM					PM				
	Set ID	Queue (Veh)	Delay (s)	RFC	LOS	Set ID	Queue (Veh)	Delay (s)	RFC	LOS
2026 + CD + D (DS2)										
1 - Newgate Lane North	D1	0.7	3.25	0.42	A	D2	1.4	4.56	0.59	A
2 - Site Access East		0.1	3.41	0.12	A		0.1	3.85	0.08	A
3 - Newgate Lane South		2.4	4.85	0.71	A		0.8	2.57	0.46	A
4 - Newgate Lane West (Connection)		0.1	8.41	0.13	A		0.1	4.11	0.08	A
2036 + CD + D (DS2)										
1 - Newgate Lane North	D3	0.8	3.37	0.44	A	D4	1.6	4.89	0.62	A
2 - Site Access East		0.1	3.50	0.12	A		0.1	3.99	0.08	A
3 - Newgate Lane South		2.9	5.60	0.75	A		0.9	2.70	0.48	A
4 - Newgate Lane West (Connection)		0.2	9.69	0.15	A		0.1	4.29	0.08	A

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle.

File summary

File Description

Title	(untitled)
Location	
Site number	
Date	05/01/2018
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	I-TRANSPORT\Hotdesk
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
m	kph	Veh	Veh	perTimeSegment	s	-Min	perMin

Analysis Options

Calculate Queue Percentiles	Calculate residual capacity	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)
		0.85	36.00	20.00

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)
D1	2026 + CD + D (DS2)	AM	DIRECT	07:45	08:45	60	15
D2	2026 + CD + D (DS2)	PM	DIRECT	16:00	17:00	60	15
D3	2036 + CD + D (DS2)	AM	DIRECT	07:45	08:45	60	15
D4	2036 + CD + D (DS2)	PM	DIRECT	16:00	17:00	60	15

Analysis Set Details

ID	Network flow scaling factor (%)
A1	100.000

2026 + CD + D (DS2), AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	Site Access	Standard Roundabout		1, 2, 3, 4	4.37	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	4.37	A

Arms

Arms

Arm	Name	Description	No give-way line
1	Newgate Lane North		
2	Site Access East		
3	Newgate Lane South		
4	Newgate Lane West (Connection)		

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	I' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Entry only	Exit only
1 - Newgate Lane North	3.65	8.25	21.8	25.0	50.0	18.4		
2 - Site Access East	3.00	7.56	16.7	25.0	50.0	19.9		
3 - Newgate Lane South	7.00	8.80	18.9	25.0	50.0	18.6		
4 - Newgate Lane West (Connection)	3.65	7.91	8.7	25.0	50.0	23.7		

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/TS)
1 - Newgate Lane North	0.686	508.835
2 - Site Access East	0.625	430.013
3 - Newgate Lane South	0.805	666.193
4 - Newgate Lane West (Connection)	0.610	415.095

The slope and intercept shown above include any corrections and adjustments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)
D1	2026 + CD + D (DS2)	AM	DIRECT	07:45	08:45	60	15

Vehicle mix source	PCU Factor for a HV (PCU)	O-D data varies over time
HV Percentages	2.00	✓

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Scaling Factor (%)
1 - Newgate Lane North		✓	100.000
2 - Site Access East		✓	100.000
3 - Newgate Lane South		✓	100.000
4 - Newgate Lane West (Connection)		✓	100.000

Origin-Destination Data

Demand (Veh/TS)

 07:45 -
08:00

		To			
		1 - Newgate Lane North	2 - Site Access East	3 - Newgate Lane South	4 - Newgate Lane West (Connection)
From	1 - Newgate Lane North	0.00	6.00	191.00	3.00
	2 - Site Access East	13.00	0.00	23.00	0.00
	3 - Newgate Lane South	378.00	9.00	0.00	8.00
	4 - Newgate Lane West (Connection)	7.00	0.00	6.00	0.00

Demand (Veh/TS)

 08:00 -
08:15

		To			
		1 - Newgate Lane North	2 - Site Access East	3 - Newgate Lane South	4 - Newgate Lane West (Connection)
From	1 - Newgate Lane North	0.00	6.00	185.00	5.00
	2 - Site Access East	13.00	0.00	23.00	0.00
	3 - Newgate Lane South	417.00	9.00	0.00	4.00
	4 - Newgate Lane West (Connection)	5.00	0.00	6.00	0.00

Demand (Veh/TS)

 08:15 -
08:30

		To			
		1 - Newgate Lane North	2 - Site Access East	3 - Newgate Lane South	4 - Newgate Lane West (Connection)
From	1 - Newgate Lane North	0.00	6.00	178.00	7.00
	2 - Site Access East	13.00	0.00	23.00	0.00
	3 - Newgate Lane South	438.00	9.00	0.00	5.00
	4 - Newgate Lane West (Connection)	7.00	0.00	9.00	0.00

Demand (Veh/TS)

 08:30 -
08:45

		To			
		1 - Newgate Lane North	2 - Site Access East	3 - Newgate Lane South	4 - Newgate Lane West (Connection)
From	1 - Newgate Lane North	0.00	6.00	163.00	5.00
	2 - Site Access East	13.00	0.00	23.00	0.00
	3 - Newgate Lane South	375.00	9.00	0.00	9.00
	4 - Newgate Lane West (Connection)	4.00	0.00	6.00	0.00

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1 - Newgate Lane North	2 - Site Access East	3 - Newgate Lane South	4 - Newgate Lane West (Connection)
From	1 - Newgate Lane North	0	0	5	4
	2 - Site Access East	0	0	0	0
	3 - Newgate Lane South	2	0	0	10
	4 - Newgate Lane West (Connection)	12	0	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS
1 - Newgate Lane North	0.42	3.25	0.7	A
2 - Site Access East	0.12	3.41	0.1	A
3 - Newgate Lane South	0.71	4.85	2.4	A
4 - Newgate Lane West (Connection)	0.13	8.41	0.1	A

Main Results for each time segment

07:45 - 08:00

Arm	Total Demand (Veh/TS)	Circulating flow (Veh/TS)	Capacity (Veh/TS)	RFC	Throughput (Veh/TS)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Newgate Lane North	200.00	14.92	475.60	0.421	199.28	0.7	3.249	A
2 - Site Access East	36.00	199.26	299.41	0.120	35.86	0.1	3.413	A
3 - Newgate Lane South	395.00	15.94	639.72	0.617	393.40	1.6	3.630	A
4 - Newgate Lane West (Connection)	13.00	398.39	157.28	0.083	12.91	0.1	6.229	A

08:00 - 08:15

Arm	Total Demand (Veh/TS)	Circulating flow (Veh/TS)	Capacity (Veh/TS)	RFC	Throughput (Veh/TS)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Newgate Lane North	196.00	14.99	475.62	0.412	196.02	0.7	3.220	A
2 - Site Access East	36.00	196.01	301.56	0.119	36.00	0.1	3.390	A
3 - Newgate Lane South	430.00	17.99	638.56	0.673	429.56	2.0	4.296	A
4 - Newgate Lane West (Connection)	11.00	438.55	135.07	0.081	11.00	0.1	7.255	A

08:15 - 08:30

Arm	Total Demand (Veh/TS)	Circulating flow (Veh/TS)	Capacity (Veh/TS)	RFC	Throughput (Veh/TS)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Newgate Lane North	191.00	17.96	473.74	0.403	191.03	0.7	3.183	A
2 - Site Access East	36.00	193.99	302.99	0.119	36.00	0.1	3.372	A
3 - Newgate Lane South	452.00	19.99	636.82	0.710	451.63	2.4	4.850	A
4 - Newgate Lane West (Connection)	16.00	459.64	122.88	0.130	15.94	0.1	8.412	A

08:30 - 08:45

Arm	Total Demand (Veh/TS)	Circulating flow (Veh/TS)	Capacity (Veh/TS)	RFC	Throughput (Veh/TS)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Newgate Lane North	174.00	15.05	475.67	0.366	174.10	0.6	2.987	A
2 - Site Access East	36.00	174.14	315.92	0.114	36.01	0.1	3.217	A
3 - Newgate Lane South	393.00	18.01	637.90	0.616	393.78	1.6	3.700	A
4 - Newgate Lane West (Connection)	10.00	397.80	160.12	0.062	10.08	0.1	6.003	A

2026 + CD + D (DS2), PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	Site Access	Standard Roundabout		1, 2, 3, 4	3.59	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	3.59	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)
D2	2026 + CD + D (DS2)	PM	DIRECT	16:00	17:00	60	15

Vehicle mix source	PCU Factor for a HV (PCU)	O-D data varies over time
HV Percentages	2.00	✓

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Scaling Factor (%)
1 - Newgate Lane North		✓	100.000
2 - Site Access East		✓	100.000
3 - Newgate Lane South		✓	100.000
4 - Newgate Lane West (Connection)		✓	100.000

Origin-Destination Data

Demand (Veh/TS)

		To			
		1 - Newgate Lane North	2 - Site Access East	3 - Newgate Lane South	4 - Newgate Lane West (Connection)
16:00 - 16:15	From				
	1 - Newgate Lane North	0.00	13.00	267.00	3.00
	2 - Site Access East	7.00	0.00	12.00	0.00
	3 - Newgate Lane South	233.00	22.00	0.00	3.00
	4 - Newgate Lane West (Connection)	4.00	0.00	3.00	0.00

Demand (Veh/TS)

		To			
		1 - Newgate Lane North	2 - Site Access East	3 - Newgate Lane South	4 - Newgate Lane West (Connection)
16:15 - 16:30	From				
	1 - Newgate Lane North	0.00	13.00	257.00	5.00
	2 - Site Access East	7.00	0.00	12.00	0.00
	3 - Newgate Lane South	254.00	22.00	0.00	10.00
	4 - Newgate Lane West (Connection)	4.00	0.00	6.00	0.00

Demand (Veh/TS)

 16:30 -
16:45

		To			
		1 - Newgate Lane North	2 - Site Access East	3 - Newgate Lane South	4 - Newgate Lane West (Connection)
From	1 - Newgate Lane North	0.00	13.00	268.00	4.00
	2 - Site Access East	7.00	0.00	12.00	0.00
	3 - Newgate Lane South	256.00	22.00	0.00	9.00
	4 - Newgate Lane West (Connection)	13.00	0.00	6.00	0.00

Demand (Veh/TS)

 16:45 -
17:00

		To			
		1 - Newgate Lane North	2 - Site Access East	3 - Newgate Lane South	4 - Newgate Lane West (Connection)
From	1 - Newgate Lane North	0.00	13.00	267.00	8.00
	2 - Site Access East	7.00	0.00	12.00	0.00
	3 - Newgate Lane South	267.00	22.00	0.00	4.00
	4 - Newgate Lane West (Connection)	4.00	0.00	6.00	0.00

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1 - Newgate Lane North	2 - Site Access East	3 - Newgate Lane South	4 - Newgate Lane West (Connection)
From	1 - Newgate Lane North	0	0	1	0
	2 - Site Access East	0	0	0	0
	3 - Newgate Lane South	2	0	0	0
	4 - Newgate Lane West (Connection)	0	0	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS
1 - Newgate Lane North	0.59	4.56	1.4	A
2 - Site Access East	0.08	3.85	0.1	A
3 - Newgate Lane South	0.46	2.57	0.8	A
4 - Newgate Lane West (Connection)	0.08	4.11	0.1	A

Main Results for each time segment

16:00 - 16:15

Arm	Total Demand (Veh/TS)	Circulating flow (Veh/TS)	Capacity (Veh/TS)	RFC	Throughput (Veh/TS)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Newgate Lane North	283.00	24.93	487.13	0.581	281.63	1.4	4.351	A
2 - Site Access East	19.00	271.68	258.50	0.074	18.92	0.1	3.756	A
3 - Newgate Lane South	258.00	9.96	646.50	0.399	257.34	0.7	2.308	A
4 - Newgate Lane West (Connection)	7.00	261.32	252.83	0.028	6.97	0.0	3.660	A

16:15 - 16:30

Arm	Total Demand (Veh/TS)	Circulating flow (Veh/TS)	Capacity (Veh/TS)	RFC	Throughput (Veh/TS)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Newgate Lane North	275.00	27.98	485.09	0.567	275.05	1.3	4.285	A
2 - Site Access East	19.00	268.04	260.83	0.073	19.00	0.1	3.720	A
3 - Newgate Lane South	286.00	11.99	645.08	0.443	285.87	0.8	2.505	A
4 - Newgate Lane West (Connection)	10.00	282.89	239.41	0.042	9.98	0.0	3.922	A

16:30 - 16:45

Arm	Total Demand (Veh/TS)	Circulating flow (Veh/TS)	Capacity (Veh/TS)	RFC	Throughput (Veh/TS)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Newgate Lane North	285.00	28.00	485.06	0.588	284.91	1.4	4.494	A
2 - Site Access East	19.00	277.91	254.59	0.075	19.00	0.1	3.819	A
3 - Newgate Lane South	287.00	11.00	645.81	0.444	287.00	0.8	2.507	A
4 - Newgate Lane West (Connection)	19.00	284.99	238.10	0.080	18.96	0.1	4.105	A

16:45 - 17:00

Arm	Total Demand (Veh/TS)	Circulating flow (Veh/TS)	Capacity (Veh/TS)	RFC	Throughput (Veh/TS)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Newgate Lane North	288.00	28.00	485.12	0.594	287.96	1.4	4.563	A
2 - Site Access East	19.00	280.96	252.69	0.075	19.00	0.1	3.851	A
3 - Newgate Lane South	293.00	14.98	642.42	0.456	292.96	0.8	2.575	A
4 - Newgate Lane West (Connection)	10.00	295.95	231.28	0.043	10.04	0.0	4.070	A

2036 + CD + D (DS2), AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	Site Access	Standard Roundabout		1, 2, 3, 4	4.91	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	4.91	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)
D3	2036 + CD + D (DS2)	AM	DIRECT	07:45	08:45	60	15

Vehicle mix source	PCU Factor for a HV (PCU)	O-D data varies over time
HV Percentages	2.00	✓

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Scaling Factor (%)
1 - Newgate Lane North		✓	100.000
2 - Site Access East		✓	100.000
3 - Newgate Lane South		✓	100.000
4 - Newgate Lane West (Connection)		✓	100.000

Origin-Destination Data

Demand (Veh/TS)

		To			
		1 - Newgate Lane North	2 - Site Access East	3 - Newgate Lane South	4 - Newgate Lane West (Connection)
07:45 - 08:00	From				
	1 - Newgate Lane North	0.00	6.00	200.00	4.00
	2 - Site Access East	13.00	0.00	23.00	0.00
	3 - Newgate Lane South	398.00	9.00	0.00	8.00
	4 - Newgate Lane West (Connection)	7.00	0.00	6.00	0.00

Demand (Veh/TS)

		To			
		1 - Newgate Lane North	2 - Site Access East	3 - Newgate Lane South	4 - Newgate Lane West (Connection)
08:00 - 08:15	From				
	1 - Newgate Lane North	0.00	6.00	193.00	5.00
	2 - Site Access East	13.00	0.00	23.00	0.00
	3 - Newgate Lane South	440.00	9.00	0.00	4.00
	4 - Newgate Lane West (Connection)	6.00	0.00	7.00	0.00

Demand (Veh/TS)

 08:15 -
08:30

		To			
		1 - Newgate Lane North	2 - Site Access East	3 - Newgate Lane South	4 - Newgate Lane West (Connection)
From	1 - Newgate Lane North	0.00	6.00	186.00	7.00
	2 - Site Access East	13.00	0.00	23.00	0.00
	3 - Newgate Lane South	462.00	9.00	0.00	6.00
	4 - Newgate Lane West (Connection)	7.00	0.00	9.00	0.00

Demand (Veh/TS)

 08:30 -
08:45

		To			
		1 - Newgate Lane North	2 - Site Access East	3 - Newgate Lane South	4 - Newgate Lane West (Connection)
From	1 - Newgate Lane North	0.00	6.00	170.00	5.00
	2 - Site Access East	13.00	0.00	23.00	0.00
	3 - Newgate Lane South	395.00	9.00	0.00	10.00
	4 - Newgate Lane West (Connection)	4.00	0.00	6.00	0.00

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1 - Newgate Lane North	2 - Site Access East	3 - Newgate Lane South	4 - Newgate Lane West (Connection)
From	1 - Newgate Lane North	0	0	5	4
	2 - Site Access East	0	0	0	0
	3 - Newgate Lane South	2	0	0	10
	4 - Newgate Lane West (Connection)	12	0	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS
1 - Newgate Lane North	0.44	3.37	0.8	A
2 - Site Access East	0.12	3.50	0.1	A
3 - Newgate Lane South	0.75	5.60	2.9	A
4 - Newgate Lane West (Connection)	0.15	9.69	0.2	A

Main Results for each time segment

07:45 - 08:00

Arm	Total Demand (Veh/TS)	Circulating flow (Veh/TS)	Capacity (Veh/TS)	RFC	Throughput (Veh/TS)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Newgate Lane North	210.00	14.92	475.59	0.442	209.21	0.8	3.369	A
2 - Site Access East	36.00	209.19	292.90	0.123	35.86	0.1	3.499	A
3 - Newgate Lane South	415.00	16.93	638.94	0.650	413.17	1.8	3.955	A
4 - Newgate Lane West (Connection)	13.00	418.16	145.73	0.089	12.90	0.1	6.772	A

08:00 - 08:15

Arm	Total Demand (Veh/TS)	Circulating flow (Veh/TS)	Capacity (Veh/TS)	RFC	Throughput (Veh/TS)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Newgate Lane North	204.00	15.97	474.94	0.430	204.03	0.8	3.321	A
2 - Site Access East	36.00	205.01	295.68	0.122	36.00	0.1	3.464	A
3 - Newgate Lane South	453.00	18.00	638.57	0.709	452.43	2.4	4.819	A
4 - Newgate Lane West (Connection)	13.00	461.42	121.49	0.107	12.98	0.1	8.291	A

08:15 - 08:30

Arm	Total Demand (Veh/TS)	Circulating flow (Veh/TS)	Capacity (Veh/TS)	RFC	Throughput (Veh/TS)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Newgate Lane North	199.00	17.96	473.70	0.420	199.03	0.7	3.276	A
2 - Site Access East	36.00	202.00	297.73	0.121	36.00	0.1	3.440	A
3 - Newgate Lane South	477.00	19.99	636.73	0.749	476.48	2.9	5.596	A
4 - Newgate Lane West (Connection)	16.00	483.49	108.77	0.147	15.95	0.2	9.691	A

08:30 - 08:45

Arm	Total Demand (Veh/TS)	Circulating flow (Veh/TS)	Capacity (Veh/TS)	RFC	Throughput (Veh/TS)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Newgate Lane North	181.00	15.07	475.63	0.381	181.11	0.6	3.056	A
2 - Site Access East	36.00	181.16	311.31	0.116	36.01	0.1	3.271	A
3 - Newgate Lane South	414.00	18.01	637.82	0.649	415.05	1.9	4.058	A
4 - Newgate Lane West (Connection)	10.00	418.06	148.09	0.068	10.10	0.1	6.526	A

2036 + CD + D (DS2), PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	Site Access	Standard Roundabout		1, 2, 3, 4	3.80	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	3.80	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)
D4	2036 + CD + D (DS2)	PM	DIRECT	16:00	17:00	60	15

Vehicle mix source	PCU Factor for a HV (PCU)	O-D data varies over time
HV Percentages	2.00	✓

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Scaling Factor (%)
1 - Newgate Lane North		✓	100.000
2 - Site Access East		✓	100.000
3 - Newgate Lane South		✓	100.000
4 - Newgate Lane West (Connection)		✓	100.000

Origin-Destination Data

Demand (Veh/TS)

		To			
		1 - Newgate Lane North	2 - Site Access East	3 - Newgate Lane South	4 - Newgate Lane West (Connection)
16:00 - 16:15	From				
	1 - Newgate Lane North	0.00	13.00	280.00	3.00
	2 - Site Access East	7.00	0.00	12.00	0.00
	3 - Newgate Lane South	246.00	22.00	0.00	3.00
	4 - Newgate Lane West (Connection)	4.00	0.00	3.00	0.00

Demand (Veh/TS)

		To			
		1 - Newgate Lane North	2 - Site Access East	3 - Newgate Lane South	4 - Newgate Lane West (Connection)
16:15 - 16:30	From				
	1 - Newgate Lane North	0.00	13.00	270.00	6.00
	2 - Site Access East	7.00	0.00	12.00	0.00
	3 - Newgate Lane South	268.00	22.00	0.00	10.00
	4 - Newgate Lane West (Connection)	4.00	0.00	7.00	0.00

Demand (Veh/TS)

 16:30 -
16:45

		To			
		1 - Newgate Lane North	2 - Site Access East	3 - Newgate Lane South	4 - Newgate Lane West (Connection)
From	1 - Newgate Lane North	0.00	13.00	281.00	5.00
	2 - Site Access East	7.00	0.00	12.00	0.00
	3 - Newgate Lane South	271.00	22.00	0.00	9.00
	4 - Newgate Lane West (Connection)	13.00	0.00	6.00	0.00

Demand (Veh/TS)

 16:45 -
17:00

		To			
		1 - Newgate Lane North	2 - Site Access East	3 - Newgate Lane South	4 - Newgate Lane West (Connection)
From	1 - Newgate Lane North	0.00	13.00	280.00	8.00
	2 - Site Access East	7.00	0.00	12.00	0.00
	3 - Newgate Lane South	282.00	22.00	0.00	5.00
	4 - Newgate Lane West (Connection)	4.00	0.00	6.00	0.00

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1 - Newgate Lane North	2 - Site Access East	3 - Newgate Lane South	4 - Newgate Lane West (Connection)
From	1 - Newgate Lane North	0	0	1	0
	2 - Site Access East	0	0	0	0
	3 - Newgate Lane South	2	0	0	0
	4 - Newgate Lane West (Connection)	0	0	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS
1 - Newgate Lane North	0.62	4.89	1.6	A
2 - Site Access East	0.08	3.99	0.1	A
3 - Newgate Lane South	0.48	2.70	0.9	A
4 - Newgate Lane West (Connection)	0.08	4.29	0.1	A

Main Results for each time segment

16:00 - 16:15

Arm	Total Demand (Veh/TS)	Circulating flow (Veh/TS)	Capacity (Veh/TS)	RFC	Throughput (Veh/TS)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Newgate Lane North	296.00	24.93	487.12	0.608	294.47	1.5	4.637	A
2 - Site Access East	19.00	284.53	250.39	0.076	18.92	0.1	3.887	A
3 - Newgate Lane South	271.00	9.95	646.44	0.419	270.28	0.7	2.389	A
4 - Newgate Lane West (Connection)	7.00	274.26	244.78	0.029	6.97	0.0	3.784	A

16:15 - 16:30

Arm	Total Demand (Veh/TS)	Circulating flow (Veh/TS)	Capacity (Veh/TS)	RFC	Throughput (Veh/TS)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Newgate Lane North	289.00	28.98	484.42	0.597	289.04	1.5	4.607	A
2 - Site Access East	19.00	283.02	251.38	0.076	19.00	0.1	3.872	A
3 - Newgate Lane South	300.00	12.98	644.22	0.466	299.85	0.9	2.612	A
4 - Newgate Lane West (Connection)	11.00	296.87	230.70	0.048	10.98	0.0	4.096	A

16:30 - 16:45

Arm	Total Demand (Veh/TS)	Circulating flow (Veh/TS)	Capacity (Veh/TS)	RFC	Throughput (Veh/TS)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Newgate Lane North	299.00	28.00	485.05	0.616	298.90	1.6	4.831	A
2 - Site Access East	19.00	291.91	245.75	0.077	19.00	0.1	3.968	A
3 - Newgate Lane South	302.00	12.00	644.95	0.468	301.99	0.9	2.623	A
4 - Newgate Lane West (Connection)	19.00	299.99	228.77	0.083	18.96	0.1	4.290	A

16:45 - 17:00

Arm	Total Demand (Veh/TS)	Circulating flow (Veh/TS)	Capacity (Veh/TS)	RFC	Throughput (Veh/TS)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Newgate Lane North	301.00	28.00	485.11	0.620	300.97	1.6	4.886	A
2 - Site Access East	19.00	293.97	244.47	0.078	19.00	0.1	3.991	A
3 - Newgate Lane South	309.00	14.98	642.40	0.481	308.96	0.9	2.698	A
4 - Newgate Lane West (Connection)	10.00	310.95	221.95	0.045	10.04	0.0	4.249	A

APPENDIX K. Tree Survey

ARBORICULTURAL SURVEY REPORT

Land to east of
Newgate Lane East,
Fareham

November 2021



Barton Hyett Associates
Arboricultural Consultants

Summary table		
Site Name:	Land to east of Newgate Lane East, Fareham	
Project reference:	4547	
Site Address:	Land to east of Newgate Lane East, Fareham	
Nearest Postcode:	PO13 0SG	
Central Grid reference:	SU 57439 03669	
Local Planning Authority:	Fareham Borough Council	
Relevant planning policies:	<p>Fareham Local Development Plan Core Strategy 2011: CS4 - Green infrastructure, biodiversity and geological conservation; CS17 - High quality design. Development Sites & Policies: DSP13 - Nature conservation.</p> <p>DRAFT Fareham Local Plan 2037: NE1 Protection of nature conservation, biodiversity and the local ecological network; NE2 - Biodiversity net gain; NE6 - Trees, woodland and hedgerows; NE9 - Green infrastructure; D1 - High quality design and placemaking.</p>	
Statutory Controls:	Tree Preservation Order	Conservation Area
	None	No
Soil Type: (Source: BGS online soils map © NERC 2021)	Superficial/Drift	Bedrock
	Deep sand to sandy loam over River Terrace Deposits - sand, silt and clay	London Clay Formation clay, silt and sand.
Topographical Survey:	A97690 - Newgate Lane SUR-01 Rev.B	
Notes:	None.	
Report author:	Ian Monger MSc, BSc (Hons), TechCert (ArborA) MArborA	
Date of issue:	11.11.2021	

REPORT CONTENTS:

SECTION 1:	SUMMARY, SITE DETAILS & SURVEY FINDINGS
SECTION 2:	TREE SURVEY & CONSTRAINTS PLAN
SECTION 3:	TREE SURVEY SCHEDULE & SITE IMAGES
SECTION 4:	METHODOLOGY
SECTION 5:	DESIGN GUIDANCE AND GENERIC ADVICE

THIS REPORT HAS BEEN PREPARED TO PROVIDE ADVICE AND GUIDANCE ON THE POTENTIAL FOR DEVELOPMENT OF LAND IN RELATION TO TREES. IT IS THEREFORE INTENDED FOR 'INTERNAL USE' ONLY BY THE NAMED CLIENT AND DESIGN TEAM. IT MAY NOT THEREFORE BE SUITABLE FOR SUBMISSION TO A PLANNING AUTHORITY WITH A PLANNING APPLICATION.

1. INSTRUCTION

- 1.1. I am Ian Monger, an arboriculturist with 16 years of experience, and a professional member of the Arboricultural Association.
- 1.2. Barton Hyett Associates Ltd have been instructed by Miller Homes to survey trees located at Land east of Newgate Lane East, Fareham ('the site') in accordance with the recommendations of British Standard 5837:2012 'Trees in relation to design, demolition and construction - recommendations'.
- 1.3. The scope of the instruction was to inspect trees relevant to a planning application at the site and provide written advice on how they inform feasibility and design options for the site. This report is intended for use by the applicant and design team only, and is not for submission to the local planning authority (LPA).

2. SITE DESCRIPTION

- 2.1. The site is four adjoining fields located to the immediate east of Newgate Lane East and to the west of Tukes Avenue, between the towns of Fareham and Gosport to the west of Portsmouth Harbour. The three southernmost fields were arable at the time of my visit, and the northernmost field was a pasture.
- 2.2. The east site boundary is the boundary between the district of Fareham Borough Council (in which the site lies) and that of Gosport Borough Council. The boundaries of the site are a mix of unmanaged hedgerows and linear belts of trees. The south-west site boundary is marked by a highway fence and recently planted highway hedgerow with the recently constructed Newgate Lane East beyond. The internal field boundaries are maintained field hedgerows, and a linear belt of trees and barbed wire fence separates the north field from the field to the south, with no existing access between them.
- 2.3. The site has gated agricultural access with metalled pull-in from Newgate Lane East in the south-west corner, with further access to adjoining off-site fields to the south. The north pasture field has gated access via a lane from Tukes Avenue to the west, which also serves the rear garages for about 38 dwellings along Tukes Avenue. There also appears to be an access from the footpath/cycleway to the north, although this may just be a gap in the vegetation.
- 2.4. The site is in a semi-urban landscape, being located in the middle of the conurbation formed by Fareham, Gosport, Lee-on-the-Solent and the village of Stubbington. Beyond the highway to the west is a residential home, solar farm and water treatment plant. To the north-west of the site is a sports ground, and to the north is the cycleway with a small field and retail park beyond. Beyond the trees to the east is the residential area of Woodcot, and to the south are adjoining fields that are cut through by Newgate Lane East.
- 2.5. The site is fairly level, at about 10m above mean sea level.

3. TREE SURVEY FINDINGS

- 3.1. A total of 85 trees, groups of trees and hedgerows were surveyed. These are summarised in terms of their quality in accordance with the recommendations of BS5837 below, and shown in more detail on the Tree Survey and Constraints Plan (Section 2) and within the Tree Survey Schedule (Section 3).

	Total	A - High quality trees whose retention is most desirable.	B - Moderate quality trees whose retention is desirable.	C - Low quality trees which could be retained but should not significantly constrain the proposal.	U - Very poor quality trees that should be removed unless they have high conservation value.
Trees	36	13	22	-	1
Groups	33	3	19	11	-
Hedgerows	16	-	10	6	-
Total	85	16	51	16	1

Table 1: Summary of arboricultural features of each BS5837 quality category

4. KEY ARBORICULTURAL FEATURES

- 4.1. The most important arboricultural features at the site are the high-quality oak trees growing along the east boundary, within the boundaries of the north field and the boundary that separates the southern fields from the north field and adjacent sports ground. These boundaries (as well as internal hedgerow boundaries) have remained largely unchanged since the start of the C20. Thirteen individual and 3 groups of high-quality oaks were identified, but there are many more moderate quality oaks within these belts.
- 4.2. The north pasture field appears to have been under a low level of management for some time, and so areas of blackthorn and other scrub G17, G22, H14, G32 and G33 (C3) have developed from the now barely-visible hedgerows behind them. They are generally accompanied by bramble which extends further into the field. Although they are low-quality groups, scrub habitat has material conservation value in itself.
- 4.3. Willow T32 (U) is a dead, weathered standing tree that has conservation value in its current location but would be unsuitable for retention within a development proposal for the site.
- 4.4. The maintained field hedgerows are dominated by the usual hawthorn and blackthorn, with field maple, elder and goat willow. Naturally-regenerated tree species are also present, along with dogwood and holly. Dogwood dominates in some hedgerow areas along the east boundary.

5. CONSTRAINTS AND OPPORTUNITIES

- 5.1. Given the peripheral location of the on-site and off-site trees, there should be minimal arboricultural constraint to development within the site. The retention and protection of these trees will serve to provide a level of maturity and maintain landscape and amenity values within the site.
- 5.2. However, there appear to be limited options for creating a new road access between the north field and the fields to the south, without requiring the removal of mature oak trees within the linear belt formed by G4, G5, G7 and G9 (B2). The exceptions to this may be at the locations of G6 and G8 (C2), which contain common ash, aspen, sallow, hawthorn and blackthorn. Although a new road in either of these locations would still impact the Root Protection Areas (RPAs) of adjacent oaks, the impact on the linear belt would be

reduced to the lowest level possible. Engineering solutions may be available, subject to detailed feasibility and engineering design, to reduce the impact on adjacent trees further by minimising excavation for the road structure.

5.3. Please see Section 5 for further advice and guidance on designing new developments near to trees.

6. RECOMMENDATIONS AND CONCLUSION

6.1. The information contained within this report should be used in the preparation of design proposals for the site, in order to minimise negative arboricultural impacts. In particular, the location and engineering design of any proposed new road to link the north field with the fields to the south should aim to minimise removal of the mature oaks and impacts on them.

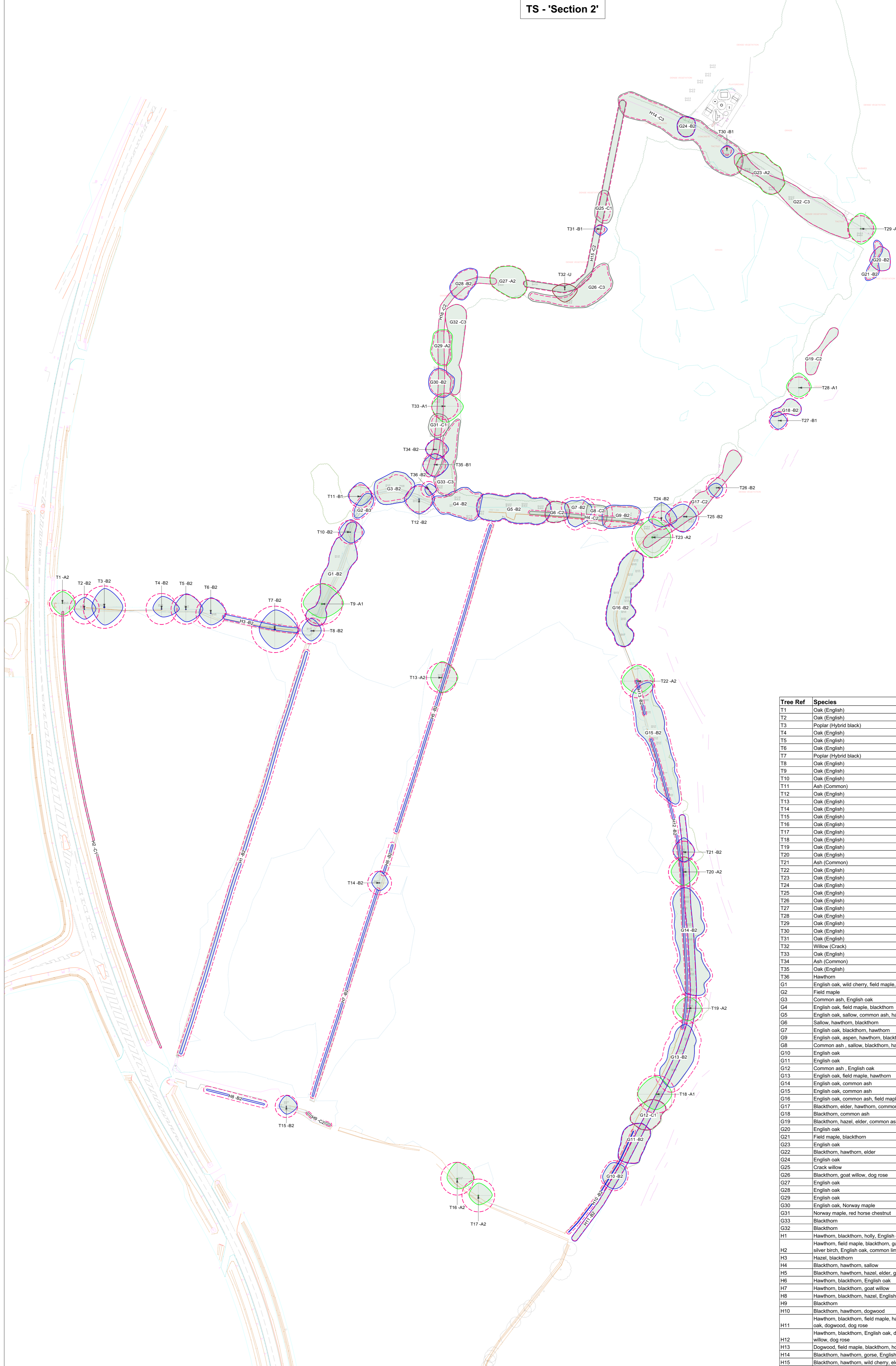
6.2. The information contained within this report should be used in the preparation of design proposals for the site, in order to minimise negative arboricultural impacts.

6.3. No overriding constraints to development have been identified subject to the implementation of appropriate advice herein with respect of confirmed arboricultural constraints. Once the design proposal has been agreed, an arboricultural impacts assessment report should be prepared for submission to the LPA in order for the planning application to be validated and to provide the LPA with sufficient information in order to determine the application.



Ian Monger *BSc (Hons.), MArborA*
Senior Arboriculturist

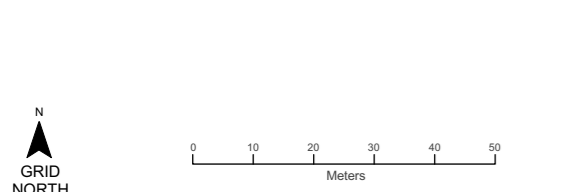
TS - 'Section 2'



Tree Ref	Species	Height (m)	Life Stage	RPA Radius (m)	RPA (m ²)
T1	Oak (English)	13	M	8.4	222
T2	Oak (English)	14	M	9.6	290
T3	Poplar (Hybrid black)	25	M	13.7	588
T4	Oak (English)	14	M	10	312
T5	Oak (English)	13	M	9.6	290
T6	Oak (English)	13	M	9.6	290
T7	Poplar (Hybrid black)	23	M	15	707
T8	Oak (English)	12	M	8.4	222
T9	Oak (English)	17	M	13.2	547
T10	Oak (English)	15	M	7.7	185
T11	Ash (Common)	19	M	7.4	174
T12	Oak (English)	15	M	8.4	222
T13	Oak (English)	15	M	9.8	304
T14	Oak (English)	10	M	7.7	185
T15	Oak (English)	10	M	7.2	163
T16	Oak (English)	11	M	10.6	350
T17	Oak (English)	12	M	10.6	350
T18	Oak (English)	16	M	12.2	471
T19	Oak (English)	14	M	9.6	290
T20	Oak (English)	16	M	9.8	304
T21	Ash (Common)	14	EM	6.8	147
T22	Oak (English)	18	M	10.8	366
T23	Oak (English)	19	M	13.2	547
T24	Oak (English)	16	M	8	256
T25	Oak (English)	18	M	9.6	290
T26	Oak (English)	12	M	6.6	137
T27	Oak (English)	12	EM	6	113
T28	Oak (English)	12	M	7	152
T29	Oak (English)	13	M	8.4	222
T30	Oak (English)	8	SM	2.8	24
T31	Oak (English)	8	SM	2.8	24
T32	Willow (Crack)	15	M	7.2	163
T33	Oak (English)	14	M	8.5	228
T34	Ash (Common)	14	M	6.6	137
T35	Oak (English)	15	M	7.2	163
T36	Hawthorn	6.5	M	5	80
G1	English oak, wild cherry, field maple, hawthorn, elder	4-15	M	10.2	-
G2	Field maple	8	M	5	-
G3	Common ash, English oak	12-17	EM	7.9	-
G4	English oak, field maple, blackthorn	3.5-14	M	8	-
G5	English oak, sallow, common ash, hawthorn, blackthorn	3.5-15	M	8.5	-
G6	Sallow, hawthorn, blackthorn	4-8	EM	3.3	-
G7	English oak, blackthorn, hawthorn	4-13	M	9.1	-
G9	English oak, aspen, hawthorn, blackthorn	3.5-12	EM	5	-
G8	Common ash, sallow, blackthorn, hawthorn	3.5-9	EM	7.3	-
G10	English oak	14-16	M	7.7	-
G11	English oak	12-14	M	6.7	-
G12	Common ash, English oak	12-14	EM	6.7	-
G13	English oak, field maple, hawthorn	6-15	M	9.7	-
G14	English oak, common ash	10-16	M	8.6	-
G15	English oak, common ash	7-16	M	8.4	-
G16	English oak, common ash, field maple	6-17	M	8.4	-
G17	Blackthorn, elder, hawthorn, common ash, field maple, hazel	3-6	SM	2.4	-
G18	Blackthorn, common ash	5-8	EM	2.8	-
G19	Blackthorn, hazel, elder, common ash	4-8	EM	2.4	-
G20	English oak	13	EM	8	-
G21	Field maple, blackthorn	4-8	SM	2.2	-
G23	English oak	10-15	M	9.2	-
G22	Blackthorn, hawthorn, elder	4-6	M	2.4	-
G24	English oak	9	SM	4.2	-
G25	Crack willow	9	EM	4.2	-
G26	Blackthorn, goat willow, dog rose	3-5	EM	1.5	-
G27	English oak	14	M	9.8	-
G28	English oak	10-11	EM	5.4	-
G29	English oak	15	M	7.2	-
G30	English oak, Norway maple	12-13	M	7.2	-
G31	Norway maple, red horse chestnut	8-12	SM	3.6	-
G33	Blackthorn	3-4	SM	0.6	-
G32	Blackthorn	3-5	SM	1.6	-
H1	Hawthorn, blackthorn, holly, English oak, common ash, dog rose	1.5	M	2.2	-
H2	Hawthorn, field maple, blackthorn, guelder rose, wild privet, silver birch, English oak, common lime, goat willow, dog rose	3	Y	0.6	-
H3	Hazel, blackthorn	4	M	2.2	-
H4	Blackthorn, hawthorn, sallow	3	EM	1.8	-
H5	Blackthorn, hawthorn, hazel, elder, goat willow, dog rose	1.5	M	1.8	-
H6	Hawthorn, blackthorn, English oak	1.5	M	2.2	-
H7	Hawthorn, blackthorn, goat willow	1.5	M	1.8	-
H8	Hawthorn, blackthorn, hazel, English oak	1.5	M	2.4	-
H9	Blackthorn	1.5	EM	1.3	-
H10	Blackthorn, hawthorn, dogwood	1.5	EM	1.3	-
H11	Hawthorn, blackthorn, field maple, hazel, common ash, English oak, dogwood, dog rose	4	M	1.8	-
H12	Hawthorn, blackthorn, English oak, dogwood, field maple, goat willow, dog rose	1.5	EM	1.3	-
H13	Dogwood, field maple, blackthorn, holly	1.5	EM	1.3	-
H14	Blackthorn, hawthorn, gorse, English oak, elder	5	M	1.8	-
H15	Blackthorn, hawthorn, wild cherry, elder, English oak, sycamore	5	M	2.4	-
H16	Blackthorn, hawthorn, hazel, English oak, elder, Norway maple	5	M	2	-

KEY

- Category A Tree - High quality (Retention highly desirable)
- Category A - Hedge/Group, Woodland - High quality (Retention highly desirable)
- Category B Tree - Moderate quality (Retention desirable)
- Category B - Hedge/Group, Woodland - Moderate quality (Retention desirable)
- Category C Tree - Low quality (May be retained but should not constrain development)
- Category C - Hedge/Group, Woodland - Low quality (May be retained but should not constrain development)
- Category U Tree - Very low quality (Mostly unsuitable for retention)
- Category U - Hedge/Group, Woodland - Very low quality (Mostly unsuitable for retention)
- Root Protection Area (RPA) - Layout design tool indicating the minimum area around a tree deemed to contain sufficient roots and soil volume to maintain the tree's viability
- Shrub mass/offset tree/outline of scope (COS)



PROJECT TITLE
Land east of Newgate Lane East, Fareham

DRAWING TITLE
Tree Survey & Constraints Plan

SCALE 1:1250 @ A1 **DRAWING NUMBER** BHA_4547_01

DRAWN BY DV **APPROVED BY** IM **REVISION** - **SHEET** - **DATE** 09/11/2021

LAYOUT USED WITHIN DRAWING xxxxxxxxxx

CLIENT Miller Homes

COORDINATE SYSTEM / DATUM British National Grid / Newlyn Datum (AOD)

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INDIVIDUAL TREES

Ref	Species	On/off site	Top Height (m)	No. of Stems	Est diam?	Calc. / Actual Stem Dia. (mm)	Crown radii (m) E-S-W	N- Avg. low crown height (m)	1st branch ht (m)	1st branch dir.	Life Stage	Special importance	General Observations	Health & vitality	Structural condition	Estimated Remaining Contribution (Years)	BS5837 Category	RPA Radius (m)	RPA m ²
T1	Oak (English)	On	13.0	1	Yes	700.0	7-8-7-7	4.0	3.5	SW	M	None	Growing to north of ditch. Ivy-clad trunk.	Good	Good	40	A2	8.4	222.0
T2	Oak (English)	On	14.0	1	Yes	800.0	7-7-6-6	4.0	4.0	S	M	None	Growing to south of ditch. Cracks in bole and audible decay. Branch fracture wounds.	Good	Fair	40	B2	9.6	290.0
T3	Poplar (Hybrid black)	On	25.0	2	Yes	1140.0	12-12-11-8	5.0	1.5	SW	M	None	Typical branch fracture wounds.	Good	Good	40	B2	13.7	588.0
T4	Oak (English)	On	14.0	1		830.0	8-11-5-5	6.0	3.0	SE	M	None	Dieback and deadwood in south and west of crown. Retrenchment growth.	Good	Good	40	B2	10.0	312.0
T5	Oak (English)	On	13.0	1	Yes	800.0	10-11-8-7	4.5	4.5	S	M	None	Spreading form.	Good	Good	40	B2	9.6	290.0
T6	Oak (English)	On	13.0	1	Yes	800.0	10-10-7-7	6.0	5.5	S	M	None	Branch dieback. Deadwood.	Fair	Good	20	B2	9.6	290.0
T7	Poplar (Hybrid black)	On	23.0	3	Yes	1270.0	12-15-12-10	4.5	4.5	S	M	None	Two mature suckers close to main trunk and contributing to crown spread.	Good	Good	40	B2	15.0	707.0
T8	Oak (English)	On	12.0	1	Yes	700.0	8-6-6-6	5.0	5.0	S	M	None	No significant visible defects.	Good	Good	40	B2	8.4	222.0
T9	Oak (English)	On	17.0	1		1100.0	13-14-9-12	4.5	4.5	E	M	None	Large spreading tree. Deadwood.	Good	Good	40	A1	13.2	547.0
T10	Oak (English)	On	15.0	1		640.0	8-9-7-7	4.5	6.0	E	M	None	No significant visible defects.	Good	Good	40	B2	7.7	185.0
T11	Ash (Common)	Off	19.0	1	Yes	620.0	9-7-6-8	8.0	8.0	E	M	None	No significant visible defects.	Good	Good	20	B1	7.4	174.0
T12	Oak (English)	On	15.0	1		700.0	9-10-9-9	4.5	4.5	S	M	None	Basal cavity. Deadwood.	Good	Good	40	B2	8.4	222.0
T13	Oak (English)	On	15.0	1		820.0	10-10-9-7	5.0	3.5	S	M	None	Original decayed leader stub being occluded at 4m.	Good	Good	40	A2	9.8	304.0
T14	Oak (English)	On	10.0	1		640.0	7-5-5-5	5.0	3.5	-	M	None	Basal wound. Historical and recent bark wounds on east of trunk from flail.	Good	Good	40	B2	7.7	185.0
T15	Oak (English)	On	10.0	1	Yes	600.0	7-7-5-4	4.5	4.0	S	M	None	Heavy ivy cover on trunk and in crown. Small remnant of blackthorn hedgerow below crown.	Good	Good	40	B2	7.2	163.0
T16	Oak (English)	On	11.0	1		880.0	10-11-6-6	4.5	4.0	N	M	None	Old flail wound.	Good	Good	40	A2	10.6	350.0
T17	Oak (English)	On	12.0	1		880.0	8-9-6-6	4.5	3.5	E	M	None	Location of tree corrected from aerial photo. Soil eroded at base. Two small remnant hedgerow hawthorns at base.	Good	Good	40	A2	10.6	350.0

Ref	Species	On/off site	Top Height (m)	No. of Stems	Est diam?	Calc. / Actual Stem Dia. (mm)	Crown radii (m) E-S-W	N-	Avg. low crown height (m)	1st branch ht (m)	1st branch dir.	Life Stage	Special importance	General Observations	Health & vitality	Structural condition	Estimated Remaining Contribution (Years)	BS5837 Category	RPA Radius (m)	RPA m ²
T18	Oak (English)	Off	16.0	3	Yes	1020.0	11-10-10-12		4.5	4.5	W	M	None	Large spreading tree.	Good	Good	40	A1	12.2	471.0
T19	Oak (English)	On	14.0	2	Yes	800.0	7-9-8-8		5.0	4.0	NW	M	None	Twin-stemmed.	Good	Good	40	A2	9.6	290.0
T20	Oak (English)	On	16.0	2	Yes	820.0	10-8-8-8		4.5	3.5	W	M	None	Twin-stemmed.	Good	Good	40	A2	9.8	304.0
T21	Ash (Common)	Off	14.0	2	Yes	570.0	9-7-6-7		4.0	2.0	W	EM	None	Lower branches to east lopped.	Good	Good	20	B2	6.8	147.0
T22	Oak (English)	On	18.0	1	Yes	900.0	10-10-8-10		5.0	4.0	S	M	None	Deadwood.	Good	Good	40	A2	10.8	366.0
T23	Oak (English)	Off	19.0	4	Yes	1100.0	12-12-13-11		4.5	4.5	W	M	None	Large, spreading multi-stemmed tree.	Good	Good	40	A2	13.2	547.0
T24	Oak (English)	On	16.0	1	Yes	500.0	11-10-4-8		3.0	3.5	W	M	None	No significant visible defects.	Good	Good	40	B2	6.0	113.0
T25	Oak (English)	On	18.0	1	Yes	800.0	8-8-10-12		2.5	5.0	NE	M	None	Tree inaccessible. No significant visible defects.	Good	Good	40	B2	9.6	290.0
T26	Oak (English)	On	12.0	1	Yes	550.0	3-4-6-5		4.0	5.0	N	M	None	Tree inaccessible. Branch dieback.	Fair	Good	40	B2	6.6	137.0
T27	Oak (English)	On	12.0	1	Yes	500.0	5-5-5-5		5.0	4.0	-	EM	None	Tree inaccessible. Stem size estimated.	Good	Good	40	B1	6.0	113.0
T28	Oak (English)	On	12.0	1	Yes	580.0	9-8-6-8		2.0	2.0	N	M	None	Good form. Browse line.	Good	Good	40	A1	7.0	152.0
T29	Oak (English)	Off	13.0	1	Yes	700.0	10-10-10-8		2.5	2.5	-	M	None	Good form.	Good	Good	40	A1	8.4	222.0
T30	Oak (English)	On	8.0	1	Yes	230.0	3-4-4-4		4.0	4.0	-	SM	None	Inaccessible behind scrub.	Good	Good	40	B1	2.8	24.0
T31	Oak (English)	On	8.0	1	Yes	230.0	2-4-4-4		2.5	1.5	-	SM	None	Inaccessible behind scrub.	Good	Good	40	B1	2.8	24.0
T32	Willow (Crack)	On	15.0	1	Yes	600.0	4-8-8-8		4.0	3.0	W	M	None	Dead standing tree. Decayed and weathered.	Poor	Poor	<10	U	7.2	163.0
T33	Oak (English)	On	14.0	1		710.0	8-12-10-8		2.5	3.0	S	M	None	Good form.	Good	Good	40	A1	8.5	228.0
T34	Ash (Common)	On	14.0	1	Yes	550.0	7-8-6-7		3.5	3.5	-	M	None	Tree trunk inaccessible and not visible. Data estimated.	Good	Good	20	B2	6.6	137.0
T35	Oak (English)	On	15.0	1	Yes	600.0	7-9-8-7		3.0	3.0	-	M	None	Lower trunk inaccessible and not visible.	Good	Good	40	B1	7.2	163.0
T36	Hawthorn	On	6.5	9	Yes	420.0	3-5-4-2		2.0	2.0	-	M	None	Historical browsing wounds on stems.	Fair	Fair	20	B2	5.0	80.0

GROUPS OF TREES

Ref	Species	On/off site	Height range (m)	No. of trees	Est diam?	Max stem diam (mm)	Av. Crown radius (m)	Avg. low crown height (m)	Life Stage	Special importance	General Observations	Health & vitality	Structural condition	Estimated Remaining Contribution (Years)	BS5837 Category	RPA Radius (m)
G1	English oak, wild cherry, field maple, hawthorn, elder	On	4-15	20		850	10.0	4.5	M	None	Two mature oaks with semi-to early-mature cherry and field maples and young cherry sucker growth below. One oak has trunk wound from ground to 5m.	Good	Good	40	B2	10.2
G2	Field maple	On	8	2	Yes	420	4.0	1.0	M	None	Both trees are flailed as hedge to 4.5m with contiguous canopy above. South tree has decay cavity in base.	Good	Good	40	B3	5.0
G3	Common ash, English oak	Off	12-17	3	Yes	660	10.0	4.5	EM	None	Growing immediately north of boundary fence.	Good	Good	40	B2	7.9
G4	English oak, field maple, blackthorn	On	3.5-14	7		670	9.0	3.0	M	None	Linear group.	Good	Good	40	B2	8.0
G5	English oak, willow, common ash, hawthorn, blackthorn	On	3.5-15	12		710	8.0	4.5	M	None	Linear group of 9 oaks. One fractured willow stem and one oak branch resting on ground.	Good	Good	40	B2	8.5
G6	Sallow, hawthorn, blackthorn	On	4-8	6		280	3.0	3.5	EM	None	Remnant hedgerow. Decay in sallows.	Good	Fair	20	C2	3.3
G7	English oak, blackthorn, hawthorn	On	4-13	4		760	7.0	2.0	M	None	Linear group of 3 oaks. Middle tree has two stems from ground.	Good	Good	40	B2	9.1
G9	English oak, aspen, hawthorn, blackthorn	On	3.5-12	8	Yes	420	6.0	4.0	EM	None	Linear group of four oaks.	Good	Good	40	B2	5.0
G8	Common ash, willow, blackthorn, hawthorn	On	3.5-9	5	Yes	610	4.0	3.0	EM	None	Single ash is coppice-origin with crown dieback. Sallows have flail damage.	Fair	Fair	20	C2	7.3
G10	English oak	Off	14-16	2	Yes	640	6.5	4.5	M	None	No significant visible defects.	Good	Good	40	B2	7.7
G11	English oak	Off	12-14	4	Yes	560	7.0	5.0	M	None	Decay cavity at base of northernmost oak.	Good	Good	40	B2	6.7
G12	Common ash, English oak	Off	12-14	4	Yes	560	7.0	4.0	EM	None	Two southernmost ash trees are multi-stemmed with decay cavities and Inonotus decay visible.	Fair	Fair	20	C1	6.7
G13	English oak, field maple, hawthorn	Off	6-15	8	Yes	810	6.5	4.5	M	None	One multi-stemmed oak has severe flail wounding on one stem and one deadwood stem.	Good	Good	40	B2	9.7
G14	English oak, common ash	Off	10-16	9	Yes	720	7.0	4.5	M	None	Linear belt of oak trees with one ash. Four trees are on west side of ditch. Two northernmost oaks have large bark wounds on lower trunks.	Good	Good	40	B2	8.6
G15	English oak, common ash	Off	7-16	15	Yes	700	7.0	4.5	M	None	Linear group growing to east of ditch.	Good	Good	40	B2	8.4

Ref	Species	On/off site	Height range (m)	No. of trees	Est diam?	Max stem diam (mm)	Av. Crown radius (m)	Avg. low crown height (m)	Life Stage	Special importance	General Observations	Health & vitality	Structural condition	Estimated Remaining Contribution (Years)	BS5837 Category	RPA Radius (m)
G16	English oak, common ash, field maple	On	6-17	11	Yes	700	8.0	4.0	M	None	Linear group growing to east of ditch. Some suppressed oaks below. Southernmost oak is regrowth from 4m fractured trunk. Patches of scrubby hawthorn below.	Good	Good	40	B2	8.4
G17	Blackthorn, elder, hawthorn, common ash, field maple, hazel	On	3-6	30	Yes	200	2.5	0.0	SM	None	Scrubby remnant hedgerow group inaccessible behind dense bramble.	Good	Fair	20	C2	2.4
G18	Blackthorn, common ash	On	5-8	10	Yes	230	3.0	0.0	EM	None	Area of blackthorn scrub providing screening. One inaccessible ash which might be off-site.	Good	Good	20	B2	2.8
G19	Blackthorn, hazel, elder, common ash	On	4-6	10	Yes	200	2.5	0.0	EM	None	Area of scrub to rear of dense bramble.	Good	Fair	20	C2	2.4
G20	English oak	On	13	3	Yes	500	6.0	5.0	EM	None	Inaccessible group apparently within the site or close to site boundary.	Good	Good	40	B2	6.0
G21	Field maple, blackthorn	On	4-8	10	Yes	180	3.0	1.5	SM	None	Scrub growth that has formed within bramble.	Good	Fair	20	B2	2.2
G23	English oak	Off	10-15	4	Yes	770	9.5	2.5	M	None	One suppressed semi-mature oak.	Good	Good	40	A2	9.2
G22	Blackthorn, hawthorn, elder	On	4-6	50	Yes	200	2.5	0.0	M	None	Unmaintained hedgerow that has become larger area of scrub.	Good	Fair	20	C3	2.4
G24	English oak	On	9	2	Yes	350	4.5	3.5	SM	None	Fused stems.	Good	Good	40	B2	4.2
G25	Crack willow	On	9	2	Yes	350	6.0	1.5	EM	None	Stems appear to be subsiding. Stem bases inaccessible. Could be coppiced.	Good	Fair	20	C1	4.2
G26	Blackthorn, goat willow, dog rose	On	3-5	50	Yes	120	2.5	0.0	EM	None	Area of dense scrub.	Good	Good	20	C3	1.5
G27	English oak	On	14	2		820	9.5	2.0	M	None	Two small dead trees within canopy.	Good	Good	40	A2	9.8
G28	English oak	On	10-11	2	Yes	450	6.0	2.5	EM	None	Inaccessible behind scrub.	Good	Good	40	B2	5.4
G29	English oak	On	15	2	Yes	600	8.0	3.0	M	None	Inaccessible behind scrub.	Good	Good	40	A2	7.2
G30	English oak, Norway maple	On	12-13	3		600	8.0	2.5	M	None	Two semi-mature sycamores are off-site.	Good	Good	40	B2	7.2
G31	Norway maple, red horse chestnut	Off	8-12	2	Yes	300	5.0	2.0	SM	None	The Norway maple has split and partially collapsed into site.	Good	Poor	10	C1	3.6
G33	Blackthorn	On	3-4	100	Yes	50	1.5	0.0	SM	None	Area of blackthorn scrub within bramble.	Good	Good	20	C3	0.6
G32	Blackthorn	On	3-5	100	Yes	130	1.5	0.0	SM	None	Area of blackthorn scrub within bramble.	Good	Good	20	C3	1.6

HEDGEROWS

Ref	Species	On/off site	Av. Height (m)	Av. width (m)	Av. Stem diam (mm)	Avg. low crown height (m)	Life Stage	General Observations	Health & vitality	Structural condition	Estimated Remaining Contribution (Years)	BS5837 Category	RPA Radius (m)
H1	Hawthorn, blackthorn, holly, English oak, common ash, dog rose	On	1.5	1.5	180	0.5	M	Mature maintained hedgerow with occasional gaps.	Good	Good	40	B2	2.2
H2	Hawthorn, field maple, blackthorn, guelder rose, wild privet, silver birch, English oak, common lime, goat willow, dog rose	Off	3.0	1.0	40	0.0	Y	Recently planted highway hedgerow.	Good	Good	40	C1	0.6
H3	Hazel, blackthorn	On	4.0	3.0	180	0.0	M	Scrubby flailed shrubs forming gappy hedgerow growing to north of ditch.	Good	Fair	20	B2	2.2
H4	Blackthorn, hawthorn, sallow	On	3.0	2.0	150	0.5	EM	Scrubby remnant hedgerow flailed on south side. Suppressed.	Fair	Poor	20	C2	1.8
H5	Blackthorn, hawthorn, hazel, elder, goat willow, dog rose	On	1.5	1.0	150	0.0	M	Maintained hedgerow with occasional gaps with bramble.	Good	Good	40	B2	1.8
H6	Hawthorn, blackthorn, English oak	On	1.5	1.0	180	0.5	M	Maintained hedgerow.	Good	Good	40	B2	2.2
H7	Hawthorn, blackthorn, goat willow	On	1.5	1.0	150	0.0	M	Maintained hedgerow.	Good	Good	40	B2	1.8
H8	Hawthorn, blackthorn, hazel, English oak,	On	1.5	1.0	200	0.5	M	Maintained hedgerow with compacted track to north.	Good	Good	40	B2	2.4
H9	Blackthorn	On	1.5	1.0	100	0.5	EM	Maintained remnant hedgerow with some dead shrubs.	Fair	Poor	10	C2	1.3
H10	Blackthorn, hawthorn, dogwood	On	1.5	0.5	100	0.5	EM	Tightly maintained hedgerow.	Good	Fair	20	B2	1.3
H11	Hawthorn, blackthorn, field maple, hazel, common ash, English oak, dogwood, dog rose	Off	4.0	4.0	150	0.0	M	Scrubby unmaintained hedgerow growing on east side of ditch. Becomes very sparse below mature trees.	Good	Fair	40	B2	1.8
H12	Hawthorn, blackthorn, English oak, dogwood, field maple, goat willow, dog rose	On	1.5	1.0	100	0.0	EM	Maintained hedgerow with occasional gaps.	Good	Good	40	B2	1.3
H13	Dogwood, field maple, blackthorn, holly	On	1.5	1.0	100	0.0	EM	Maintained hedgerow with occasional gaps.	Good	Good	40	B2	1.3
H14	Blackthorn, hawthorn, gorse, English oak, elder	On	5.0	5.0	150	0.0	M	Unmaintained hedgerow that has formed larger area of dense scrub.	Fair	Fair	20	C3	1.8
H15	Blackthorn, hawthorn, wild cherry, elder, English oak, sycamore	On	5.0	4.0	200	0.0	M	Inaccessible unmaintained boundary hedgerow.	Fair	Fair	20	C2	2.4
H16	Blackthorn, hawthorn, hazel, English oak, elder, Norway maple	On	5.0	4.0	160	0.5	M	Scrubby unmaintained boundary hedgerow, mostly inaccessible.	Fair	Fair	20	C2	2.0



IMAGE 1: View looking north across the south-eastern field.



IMAGE 2: View along the north boundary of the south-western field, looking west.



IMAGE 3: View looking north-west in the centre of the site, with the sports ground beyond the trees.



IMAGE 4: View along the boundary between the southern arable fields and the north pasture field, looking north-east from T10.



IMAGE 5: View of the boundary between the southern arable fields and the north pasture field, looking north from H5.

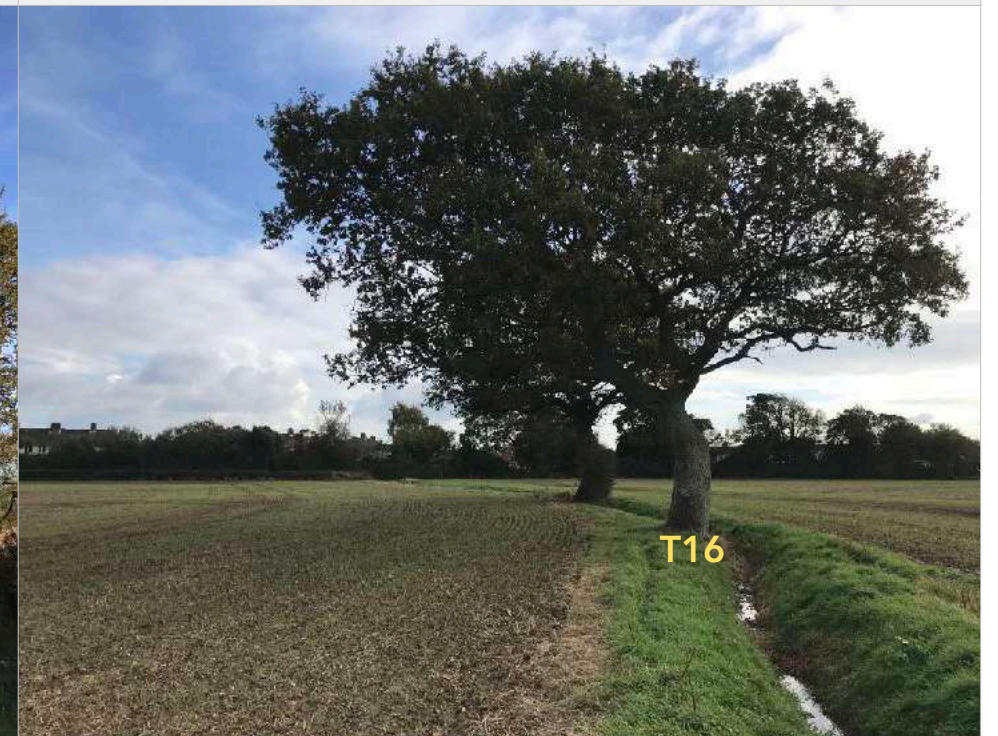


IMAGE 6: View of the two open-grown oaks along the south site boundary, looking east.



IMAGE 7: View looking north along the east site boundary within the arable fields, from the south-east corner of the site.



IMAGE 8: View within the north pasture field, looking north-west.



IMAGE 9: View along the north boundary of the north pasture field, looking east.



IMAGE 10: View of the east boundary of the north pasture field, looking north-east.



IMAGE 11: View along the boundary between the north pasture field and the southern fields, looking east from G5.



IMAGE 12: View of the west boundary of the north pasture field, looking north-west.

- The tree survey was carried out with reference to the methodology set out in BS5837:2012 'Trees in relation to design, demolition and construction – Recommendations'.
- Trees were surveyed individually or as groups where it was considered that they had grown together to form cohesive arboricultural features either aerodynamically (trees that provide companion shelter), visually (e.g. avenues or screens) or culturally (including for biodiversity). However, where it was considered that there was an arboricultural need to differentiate between attributes trees within groups and / or woodlands were also surveyed as individuals.
- The full tree survey findings are recorded in the following tree survey schedule.
- Within the tree survey schedule, each surveyed TREE (T), GROUP (G), HEDGEROW (H), WOODLAND (W) or SHRUB MASS on or adjacent to the site is given a reference number which refers to its position on the tree survey and constraints plan.
- TREE SPECIES are listed by common name.

The **DIMENSIONS** taken are:

- STEM-No. Indicates the number of main stems (i.e. whether the trunk divides at or below 1.5m; (Used in the calculation of RPA.) "m-s" = Multi-stemmed.
- STEM DIAMETER (measured in millimetres), obtained from the girth measured at approx. 1.5m. For trees with 2 to 5 sub-stems a notional figure is derived from the sum of their cross-sectional areas. For multi-stemmed trees, the notional diameter may be estimated on the basis of the average stem size x the number of stems. (A notional diameter may be estimated where measurement is not possible.)
- HEIGHT (measured in metres), recorded to the nearest half metre for dimensions up to 10m and to the nearest whole metre for dimensions over 10m.
- The CROWN SPREAD, taken at the four cardinal points to derive an accurate representation of the tree crown, recorded up to the nearest half metre for dimensions up to 10m and to up the nearest whole metre for dimensions over 10m.
- CROWN CLEARANCES are expressed both as existing height above ground level of first significant branch along with its direction of growth (e.g. 2.5m-N), and also in terms of the overall crown e.g. the average height of the crown above ground level. Measurements are recorded to the nearest half metre for dimensions up to 10m and to the nearest whole metre for dimensions over 10m.
- ESTIMATES. Where any measurement has had to be estimated, due to inaccessibility for example, this is indicated by a "#" suffix to the measurement as shown in the tree survey schedule.

LIFE STAGE is defined as follows:

- Y Young: Normally stake dependent, establishing trees. Should be growing fast, usually primarily increasing in height more than spread but as yet making limited impact upon the landscape.
- SM Semi-mature: Established young trees, normally of good vigour and still increasing in height but beginning to spread laterally. Beginning to make an impact upon the local landscape and environment. Semi-Mature (still capable of being transplanted without preparation, up to 30cm girth and not yet sexually mature).

- EM Early-mature: Not yet having reached 75% of expected mature size. Established young trees, normally of good vigour and still increasing in height but beginning to spread laterally. Beginning to make an impact upon the local landscape and environment.
- M Mature: Well-established trees, still growing with some vigour but tending to fill out and increase spread. Bark may be beginning to crack and fissure. In the middle half of their safe, useful life expectancies.
- LM Late-Mature: In full maturity but possibly beyond mature and in a state of natural decline). Still retaining some vigour but any growth is slowing.
- A Ancient: A tree that has passed beyond maturity and is old/aged compared with other trees of the same species. Typically having a very wide trunk and a small canopy.

PHYSIOLOGICAL CONDITION (HEALTH & VITALITY):

Essentially a snapshot of the general health of the tree based upon its general appearance, it's apparent vigour and the presence or absence of symptoms associated with poor health, physiological stress etc. (Fungal infections may be recorded here but decay giving rise to structural weakness would be recorded under 'Structural Condition' – see next parameter):

- Good: No significant health issues.
- Fair: Indications of slight stress or minor disease (e.g. the presence of minor dieback/deadwood or of epicormic shoot growth).
- Poor: Significant stress or disease noted; larger areas of dieback than above.
- Dead: (or Moribund).

STRUCTURAL CONDITION:

Defects affecting the structural stability of the tree including decay, significant dead wood, root-plate instability or significant damage to structural roots, weak forks (e.g. those where bark is included between the members) etc. Classified as:

- Good: No obvious structural defects: basically sound.
- Fair: Minor, potential or incipient defects.
- Poor: Significant defect(s) likely to lead to actual failure in the medium to long-term.
- Dead: (or Moribund).

ESTIMATED REMAINING CONTRIBUTION:

An estimate of the length of time in years that a tree might be expected to continue to make a useful contribution to the locality at an acceptable level of risk (based on an assumption of continued routine maintenance):

- Less than 10 years
- 10+ years
- 20+ years
- 40+ years

SPECIAL IMPORTANCE:

Trees that are particularly notable as high value trees such as ancient trees/woodland or veteran trees. Such trees may be regarded as the principal arboricultural features of a site and pose a significant constraint to potential development.

An *ancient* tree is one that has passed beyond maturity and is very old compared with other trees of the same species. Very few trees reach the ancient life-stage.

Veteran trees are often very old but not necessarily so; they may be regarded as ‘survivors’ that have developed some of the characteristic features of an ancient tree but have not necessarily lived as long. All ancient trees are veterans but not all veteran trees are ancient.

An ancient woodland is an area that has been wooded continuously since at least 1600 AD. It includes ancient semi-natural woodland (ASNW), plantations on ancient woodland sites (PAWS) and ancient replanted woodland (ARW)

QUALITY CATEGORY:

Trees are classed as category U, A, B or C, based on criteria given in BS5837:2012; summary definitions as follows (see BS5837 for further details). Categories A, B and C are further characterised by the use of sub-categories, which attempt to identify what aspect of the tree is the main source of its perceived value, These are:

- (1) arboricultural qualities
- (2) landscape qualities, and
- (3) cultural, historic or ecological/conservation qualities.

Examples of these qualities for each of the three categories are given below, although these are indicative only.

Note: This is NOT a health and safety classification; the classification does not take into account any requirement for remedial tree care or ongoing maintenance apart from that which may affect the trees’ general suitability for retention.

CATEGORY A: HIGH QUALITY:

Trees or groups whose retention should be given a particularly high priority within the design process. Normally with an expected useful life expectancy of at least 40 years.

- A1: Notably fine specimens; rare or unusual specimens; essential component trees within groups, semi-formal or formal plantings (e.g. dominant trees within an avenue etc.).
- A2: Trees, groups or woodlands of particular visual importance as landscape features.
- A3: Trees, groups or woodlands of particular significance by virtue of their conservation, historical, commemorative or other value (e.g. veteran trees or wood pasture.)

CATEGORY B: MODERATE QUALITY:

Trees or groups of some importance with a likely useful life expectancy in excess of 20 years. Their retention would be desirable; selective removal of certain individuals may be acceptable but only after full consideration of all alternative courses of action.

- B1: Fair quality but not exceptional; good specimens showing some impairment (e.g. remediable defects, minor storm damage or poor past management.)
- B2: Acceptable trees situated such as to have little visual impact within the wider locality. Also numbers of trees, perhaps in groups or woodlands, whose value as landscape features is greater collectively than would warrant as individuals (such that the selective removal of an individual would not impact greatly upon the trees’ overall, collective value).
- B3: Trees, groups or woodlands with clearly identifiable conservation or other cultural benefits.

CATEGORY C: LOW QUALITY:

Trees or groups of rather low quality, although potentially capable of retention for at least approx. 10 years. Also small trees with stems below 15cm diameter.

Potentially retainable, but not of sufficient value to be regarded as a significant planning constraint.

- C1: Unremarkable trees of very limited merit or of significantly impaired condition.
- C2: Trees offering only low or short-term landscape benefits; also secondary specimens within groups or woodlands whose loss would not significantly diminish their landscape value.
- C3: Trees with extremely limited conservation or other cultural benefit.

CATEGORY U:

Trees likely to prove to be unsuitable for retention for longer than 10 years should any significant increase in site usage arise as a result of development.

E.g. dead or moribund trees; those at risk of collapse or in terminal decline; trees that will be left unstable by other essential works such as the removal of nearby category U trees; trees infected by pathogens that could materially affect other trees; low quality trees that are suppressing better specimens.

(Category U trees may have conservation values that it might be desirable to preserve. This category may also include trees that should be removed irrespective of any development proposals.)

ROOT PROTECTION AREA (RPA):

These are normally represented as a circle centred on the base of each tree stem with a radius of 12 times stem diameter, measured at 1.5m above ground level. The shape of the RPA may be altered where site conditions dictate that there are sound reasons to do so.

VETERAN OR ANCIENT TREE BUFFER (VTB/ATB)

In line with the Standing Advice produced by the Forestry Commission and Natural England this is a buffer zone (in metres) around an ancient or veteran tree that should be at least 15 times larger than the diameter of the tree. The buffer zone should be 5m from the edge of the tree’s canopy if that area is larger than 15 times the tree’s stem diameter.

ANCIENT WOODLAND BUFFER (FOR ASNW, PAWS OR ARW)

In line with the Standing Advice produced by the Forestry Commission and Natural England this is a buffer zone of at least 15 metres to avoid root damage. Where assessment shows other impacts are likely to extend beyond this distance, a larger buffer zone may be required.

THE IMPORTANCE OF TREES

Wider benefits:

There is a growing body of evidence that trees bring a wide range of benefits to the places people live.

Some *Economic* benefits of trees include:

- Trees can increase property values
- As trees grow larger, the lift they give to property values grows proportionately
- They can improve the environmental performance of buildings by reducing heating and cooling costs, thereby cutting bills
- Mature landscapes with trees can be worth more as development sites
- Trees create a positive perception of a place for potential property buyers
- Urban trees improve the health of local populations, reducing healthcare costs

Some *Social* benefits of trees include:

- Trees help create a sense of place and local identity
- They benefit communities by increasing pride in the local area
- They can create focal points and landmarks
- They have a positive impact on people's physical and mental health
- They can have a positive impact on crime reduction

Some *Environmental* benefits of trees include:

- Urban trees reduce the 'urban heat island effect' of localised temperature extremes
- They provide shade, making streets and buildings cooler in summer
- They help remove dust and particulates from the air
- They help to reduce traffic noise by absorbing and deflecting sound
- They help to reduce wind speeds
- By providing food and shelter for wildlife, they help increase biodiversity
- They can reduce the effects of flash flooding by slowing the rate at which rainfall reaches the ground
- They can help remediate contaminated soil

On new development sites:

Trees bring many benefits to new development. Where retained successfully they can form important and sustainable elements of green infrastructure, contribute to urban cooling and reduce energy demands in buildings. Their importance is acknowledged in relation to adaptation to the effects of climate change. Other benefits brought by trees include:

- Increasing property values
- Visual amenity
- Softening, complementing and adding maturity to built form
- Displaying seasonal change
- Increasing wildlife opportunities in built-up areas
- Contributing to screening and shade
- Reducing wind speed and turbulence

NATIONAL PLANNING POLICY

The National Planning Policy Framework 2021 (NPPF paragraph 180) states that, when determining planning applications, local planning authorities should apply the following principle:

c) 'development resulting in the loss or deterioration of irreplaceable habitats (such as ancient woodland and ancient or veteran trees) should be refused, unless there are wholly exceptional reasons and a suitable compensation strategy exists.'

In this respect the following definitions apply:

'Ancient woodland: An area that has been wooded continuously since at least 1600 AD. It includes ancient semi-natural woodland and plantations on ancient woodland sites (PAWS)', and

'Ancient or veteran tree: A tree which, because of its age, size and condition, is of exceptional biodiversity, cultural or heritage value. All ancient trees are veteran trees. Not all veteran trees are old enough to be ancient, but are old relative to other trees of the same species. Very few trees of any species reach the ancient life-stage.'

Note: Further information from the National Planning Policy Guidance Suite and Standing Advice is provided in the design guidance section.

Other paragraphs of the NPPF 2021 of relevance to this report are:

Paragraph 131: *'Trees make an important contribution to the character and quality of urban environments, and can also help mitigate and adapt to climate change. Planning policies and decisions should ensure that new streets are tree-lined, that opportunities are taken to incorporate trees elsewhere in developments (such as parks and community orchards), that appropriate measures are in place to secure the long-term maintenance of newly-planted trees, and that existing trees are retained wherever possible. Applicants and local planning authorities should work with highways officers and tree officers to ensure that the right trees are planted in the right places, and solutions are found that are compatible with highways standards and the needs of different users.'*

Paragraph 174: *'Planning policies and decisions should contribute to and enhance the natural and local environment by:*

b) recognising the intrinsic character and beauty of the countryside, and the wider benefits from natural capital and ecosystem services – including the economic and other benefits of the best and most versatile agricultural land, and of trees and woodland.'

STATUTORY CONTROLS

Statutory tree protection

Works to trees which are covered by Tree Preservation Orders (TPOs) or are within a Conservation Area (CA) require permission or consent from the Local Planning Authority. Where information is available on any Statutory designations such as this they are identified within the summary table in Section 1 and on the Tree Survey and Constraints Plan at Section 2.

Notwithstanding specific exceptions and in general terms, a TPO prevents the cutting down, uprooting, topping, lopping, wilful damage or wilful destruction of protected trees or woodlands without the prior written consent of the LPA.

Penalties for contravention of a TPO tend to reflect the extent of damage caused but can, in the event of a tree being destroyed, result in a fine of up to £20,000 if convicted in a Magistrates' Court, or an unlimited fine if the matter is determined by the Crown Court.

Similarly, and again notwithstanding specific exceptions, it is an offence to carry out any works to a tree in a Conservation Area with a trunk diameter greater than 75mm diameter at 1.5 height without having first provided the LPA with 6 weeks written notification of intent to carry out the works.

On many non-residential sites (excluding specific exemptions) there is also a statutory restriction relating to tree felling that relates to quantities of timber that can be removed within set time periods. In basic

terms, it is an offence to remove more than 5 cubic metres of timber in any one calendar quarter without having first obtained a felling licence from the Forestry Commission.

Any proposed tree works that are planned to be carried out on site must be carried out in accordance with the statutory controls outlined.

Statutory Wildlife Protection

Although preliminary visual checks from ground level of likely wildlife habitats are made at the time of surveying, detailed ecological assessments of wildlife habitats are not made by the arboriculturist and fall outside of the scope for this report.

Trees which contain holes, splits, cracks and cavities could potentially provide a habitat for protected species such as bats in addition to birds and small mammals. It is advised that in some instances specialist ecological advice may be required. This may result in tree works being carried out following a detailed climbing inspection to the tree to ensure that protected species or their nests/roosts are not disturbed. If any are found, the site manager, site owner or consulting arboriculturist should be informed and appropriate action taken as recommended by the appointed Ecologist or Natural England.

It is advised that tree/hedgerow works are carried out with the understanding that birds will generally nest in trees, hedges and shrubs between March and August. This time period only provides an indication of likely nesting times and as such diligence is required when undertaking tree works at all times.

Irrespective of the time of year and other than any actions approved under General Licence, it is an offence to intentionally kill, injure or take any wild bird or to intentionally take, damage or destroy the nest or eggs of any wild bird. Ideally, tree operations should be avoided during the likely bird nesting period. However, any tree works should always only be carried out following a preliminary visual check of the vegetation.

For information, the Wildlife and Countryside Act 1981 (as amended), The Countryside and Rights of Way Act 2000 (as amended) and the Conservation of Habitat and Species Regulations 2010, form the basis of the statutory legislation for flora and fauna in England and Wales. A different legislative framework applies in Scotland and Northern Ireland.

Any proposed tree works that are planned to be carried out on site must be carried out in accordance with any relevant statutory controls, outlined above.

DESIGN GUIDANCE

Approach

The approach adopts the guidelines set out in the British Standard BS 5837:2012 Trees in relation to design, demolition and construction – Recommendations. The process is broken down to coordinate with the key elements within both the RIBA Plan of Work (2013) and British Standard 5837:2012 as set out in the table below:

Information Stage	RIBA Stage	BS5837:2012
Stage A – Tree Survey	2: Concept	4: Feasibility
Stage B – Arboricultural Impact Assessment	3: Developed design	5: Proposals
Stage C – Arboricultural Method Statement	4: Technical design	6: Technical Design
Stage D – Arboricultural Site Supervision	5: Construction	7: Demolition and construction

A hierarchical approach is adopted in order to achieve optimum use of the site and location of built structures. This is set out below:

Avoid

The starting point of Site layout design should be to avoid the RPA of retained trees and provide suitable clearance from above ground constraints [tree canopies]. Where possible building lines should be at least 2m outside the RPA to provide working space for construction. However, protection measures can be taken if such clearance is not achievable.

Mitigate

Where intrusion within the RPA is unavoidable then its impact on the tree can be mitigated by specialist measures:

Foundations that avoid trenching e.g. screw piles, suspended floor slabs or casting at ground level for lightweight structures such as bin and cycle stores.

Limited use may be made for parking, drives or hard surfaces within the root protection areas, subject to advice from a qualified arboriculturist. Cellular confinement systems that enable hard surfaces to be built above existing soil levels are acceptable methods subject to site-specific soil conditions.

Service runs that cannot be routed outside the RPA(s) can be installed by, for example, thrust boring, directional drilling, air excavation or hand digging. These operations often require supervision by the project arboriculturist.

Compensate

Replacement planting can ensure the continuity of tree cover where tree removal is unavoidable or desirable. Off-site provision may be considered in some circumstances but this will require negotiation with the local planning authority.

Considerations:

For proposed residential developments, consideration must be given to numerous factors future tree growth and orientation.

Tree constraints

Root Protection Areas:

With reference to BS5837:2012, a root protection area (RPA) is defined as “a layout design tool indicating the minimum area around a tree deemed to contain sufficient roots and rooting volume to maintain the tree’s viability, and where the protection of the roots and soil structure should be treated as a priority”. **“The default position [when considering design layout in relation to RPAs] should be that structures are located outside the RPAs of trees to be retained”.**

BS5837:2012 states (4.6.2) that, “where pre-existing site conditions or other factors indicate that rooting has occurred asymmetrically, a polygon of equivalent area should be produced.” The BS goes on to state that, “modifications to the shape of the RPA should reflect a soundly based arboricultural assessment of likely root distribution,” and that any deviation from the original circular plot should take into account:

- Morphology and disposition of roots;
- topography and drainage;
- soil type and structure;
- the likely tolerance of the tree to root damage/disturbance.

Additional buffer zones beyond the RPA:

The following text is taken from the Standing Advice produced by the Forestry Commission and Natural England as included in the National Planning Policy Guidance:

‘A buffer zone’s purpose is to protect ancient woodland and individual ancient or veteran trees. The size and type of buffer zone should vary depending on the scale, type and impact of the development’.

Ancient woodland buffer:

‘For ancient woodlands, you should have a buffer zone of at least 15 metres to avoid root damage. Where assessment shows other impacts are likely to extend beyond this distance, you’re likely to need a larger buffer zone. For example, the effect of air pollution from development that results in a significant increase in traffic’.

Ancient and veteran tree buffer:

‘A buffer zone around an ancient or veteran tree should be at least 15 times larger than the diameter of the tree. The buffer zone should be 5m from the edge of the tree’s canopy if that area is larger than 15 times the tree’s diameter’.

Above ground:

Above ground constraints posed by trees describe the capacity for trees to have an overbearing or dominating effect on new developments; usually post occupancy. Typical above ground constraints include a number or combination of inconveniences including shading, branch spread, movement of trees during strong winds and so on. If not adequately considered, above ground constraints can lead to repeated requests to fell or heavily prune retained and protected trees.

Shade:

Adverse shading and blocked views from windows raise concerns for incoming residents, which may lead to pressure to fell or remove trees in the future. Wherever possible it is advisable to arrange fenestration away from tree canopies to lessen the conflict, or increase window size to accommodate ambient light.

Conversely, appropriate designed development can use existing or new trees to create necessary and welcome shade and screening.

As part of the adopted approach the above considerations and constraints are assessed cumulatively in order to provide clear and site-specific advice on the areas of a site most suitable for the location of development.

Dependent on the site and nature of the proposed development, the Tree Survey and Constraints Plans may show the following:

Recommended Developable area - an advisory area defined in order to minimise arboricultural impacts using standard approaches to construction. Restricting proposed development to this area will limit the risk of harm to retained trees and of the Local Planning Authority objecting to the proposed development. It may be possible to propose development outside of this area but specific ‘low impact’ construction techniques may be needed recommended.

Recommended Buffer to development - similar to the Recommended Developable Area but defined as a line marking a suitable buffer to retained trees. More commonly used on large sites or sites where the presence of trees is localised.

Tree Opportunities

Depending on the scale of developments existing trees can often provide opportunities to enhance the existing arboricultural resource of a site by bringing it into good management or by putting in place remedial measures e.g. soil amelioration.

Appropriately designed new tree planting is extremely important in maintaining healthy and sustainable tree populations. For the reasons highlighted, new trees can bring many benefits to new developments. It is critical to the establishment of new tree planting that the locations, species and specification of new trees is appropriate. Subsequently the sourcing of high-quality stock, suitable planting and the provision of post planting maintenance are essential to allow new trees to establish and to allow them to mature.

