
Title	Bingham car park feasibility study
Date	18/11/22
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Project Code	3977
Version	2.0



1. Introduction

- 1.1 Integrated Transport Planning (ITP) has been appointed by Rushcliffe Borough Council (RBC) to undertake an access feasibility study for a potential new car park in Bingham.
- 1.2 Following a review carried out by RBC of potential locations around the town, an area of land (edged red within Figure 1-1) located north of Bingham train station, close to the new Bingham Arena Leisure Centre, Bingham Town Football Club and Butt Field, has been identified as potentially being suitable for accommodating a surface level car park, as shown in Figure 1-1.

Figure 1-1 : Site location



Image source: p1, Utilities Assessment Phase 1, October 2021, Waterman Infrastructure & Environment

- 1.3 A potential layout, which could accommodate 233 vehicles within the car park previously prepared by HSSP Architects is shown for context in Figure 1-2.

Figure 1-2 : Potential car park layout



Image source: Appendix A, Utilities Assessment Phase 1, October 2021, Waterman Infrastructure & Environment

- 1.4 The purpose of the study is to review the access arrangements and requirements needed for the new site proposal and summarise the findings.
- 1.5 The remainder of this Technical Note is to be set out as follows:
- Section 2: Motorised Vehicular Access
 - Section 3: Pedestrian Connections
 - Section 4: Summary and Recommendations

2. Motorised Vehicular Access

Route access options

- 2.1 Due to the site's proximity to the railway line to the south, vehicular access can only realistically be achieved from the north via the Chapel Lane / Moorbridge Road junction. This opens the site up to being accessed from two potential routes seen in Figure 2-1.
- 2.2 Parsons Hill Court (green): two-way access point on the eastern side of the site (proposed car park site marked with a yellow fill) linking Chapel Lane to the site via Moorbridge Road and Moorbridge Road East, with all roads subject to a 30mph speed limit. The Parsons Hill Court option would be accessible by all modes with sufficient carriageway width present from the site entrance to the industrial estate's exit seen in Figure 2-2. Access from Parsons Hill Court could be achieved via a route between the existing turning head at the south of Parsons Hill Court and the existing Bingham Town Sports Club car park.

Figure 2-1 : Proposed Routes



Image source: OpenStreetMap contributors, October 2022

- 2.3 Bridleway Bingham BW26 (red): access point on western side of site with a 5mph speed limit connecting the site to Moorbridge Road East. The bridleway route option runs

south from Moorbridge Road East towards the north western corner of the proposed site. This has a good quality surface but is only wide enough for a single vehicle to use.

- 2.4 The southern section of the bridleway leading into Bingham Town Sports Club runs parallel to the proposed site and links directly to the existing footpath to the south. The path has no distinction between vehicular and pedestrian paving, with little space available for pedestrians once a vehicle traverses the route.

Figure 2-2 : Parsons Hill Court (proposed site is to the left of fence)



Image source: ITP, October 2022

- 2.5 Figure 2-1 also shows in blue where the bridleway continues south across the railway line to provide pedestrian access towards the town centre. The route to the south west of the site runs across the rail line at grade, merging into Moor Lane by Bingham train station seen in Figure 2-1. As a bridleway, this route is available to both cyclists and pedestrians, with gates in place either side of the railway where users are required to cross at grade, however, the surfacing of the path in this section is in poor condition so is challenging for usage by wheelchairs and prams.
- 2.6 As an alternative crossing point, there is a footbridge at Bingham train station, however this is not connected to bridleway BW26. There is also the opportunity to cross the railway at Chapel Lane by virtue of the new path adjacent to the railway constructed for

the leisure centre development, albeit this is likely to take pedestrians off their desire lines towards the town centre of train station.

- 2.7 Any proposal for a new car park to the north side of the railway line will need to consider, in conjunction with Network Rail, options for improved, Equality Act 2010 compliant pedestrian crossing opportunities for users of the car park who wish to access Bingham town centre and the station.

Figure 2-3 : Public Rights of Way (proposed site location is shown with a star)

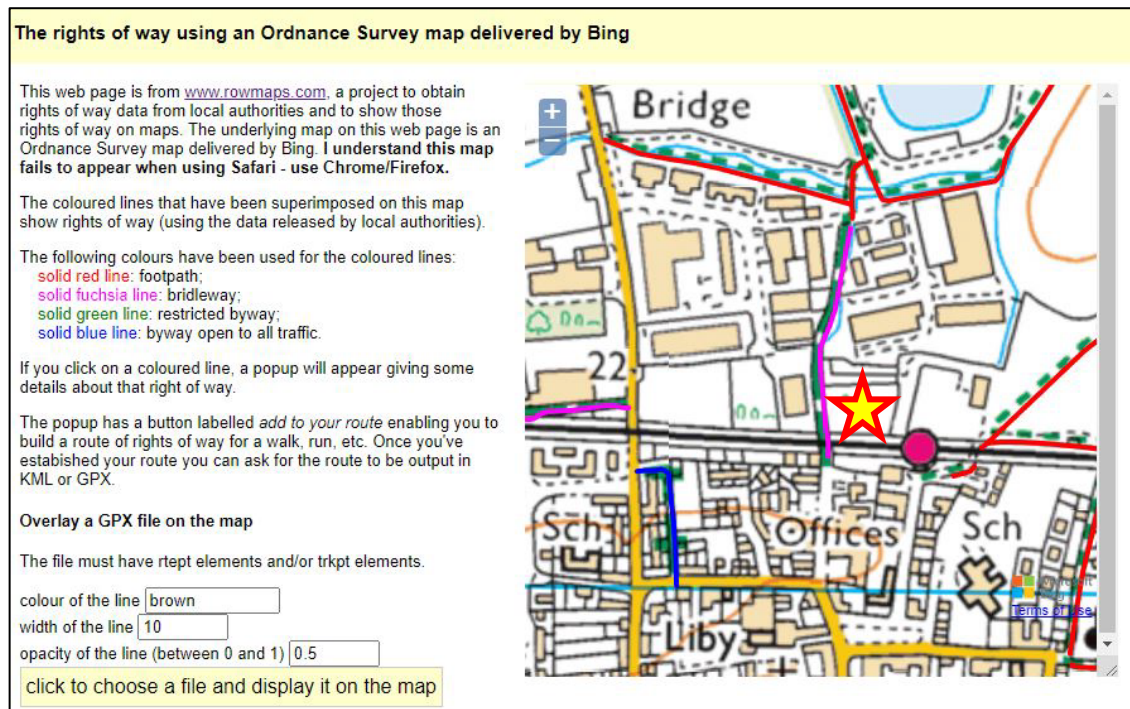


Image source: Rowmaps, October 2022

Swept Path Analysis

- 2.8 To determine whether the access junction and proposed routes are suitable access points, vehicular swept path analysis (SPA) has been undertaken to ensure that the site is accessible by:
- Large family car – Toyota Landcruiser Amazon (Length 5.45m)
 - Refuse collection vehicle – Phoenix 2-23W (Length 10.52m)
 - Fire Engine – Dennis Sabre Fire Tender (Length 7.7m)
- 2.9 SPA was conducted along 4 major points of interest:
- Route 1 - Chapel Lane / Moorbridge Road junction
 - Route 2 - Moorbridge Road East / Bridleway junction
 - Route 3 - Bridleway / Site junction

- Route 4 - Parsons Hill Court / Site junction.
- 2.10 The analysis has been undertaken using AutoDesk vehicle tracking software with an OS Mastermap base map. This base mapping provides a good understanding of where issues could arise with movement but is not as detailed as a full topographical survey in respect of kerblines, vegetation and street furniture for example.
- 2.11 The swept paths show how efficiently a vehicle can park and make a turn, measured by the chassis during the manoeuvre, as well as the overhang of the vehicle. SPA analysis drawings are presented in **Appendix A**.
- 2.12 The SPA assessment criteria is designed to reflect the suitability for the connecting routes considered for the primary entrance/ exit into the site. Red, Amber Green (RAG) analysis is utilised to differentiate between the junction and route design in terms of spacing for vehicles, measure of turning circle, and whether the paths are suitable for 2-way traffic. This analysis has been informed by visual analysis through on-site observations and SPA only.

Table 2-1 : Road / Junction Thresholds

Green	Amber	Red
Road suitable for 2-way traffic without any undue difficulties	Road / junction suitable for 1-way traffic / 2-way traffic with difficulty. Minor difficulties turning / traversing	Road / junction unsuitable for access

Table 2-2 : Swept Path Analysis RAG

Vehicle	View	Description	RAG
5.45m Toyota Landcruiser Amazon	View 1 – Moorbridge Road / Chapel Lane Junction	Entry suitable for 2-way traffic.	
	View 2 – Moorbridge Road East / Bridleway Junction	Path suitable for vehicle to be able to turn from Moorbridge Road East into bridleway without undue difficulty.	

	View 3 – Bridleway entering site	Bridleway is unsuitable for 2-way traffic. Path is suitable for 1-way traffic with entrance into site from western access point easily achieved.	
	View 4 – proposed site access from Parsons Hill Court	Parsons Hill Court is suitable for 2-way traffic. Entrance into site from eastern access point easily achieved.	
10.52m Phoenix 2-23W (with Elite 6x4 Chassis) – Refuse vehicle	View 1 – Moorbridge Road / Chapel Lane Junction	Entry suitable for 2-way traffic, however left turn onto Chapel Lane overlaps onto incoming lane.	
	View 2 – Moorbridge Road East / Bridleway Junction	Path suitable for vehicle to be able to turn from Moorbridge Road East into bridleway	
	View 3 – Bridleway entering site	Bridleway is unsuitable for 2-way traffic. Path is suitable for 1-way traffic with entrance into site from western access point possible.	
	View 4 – proposed site access from Parsons Hill Court	Parsons Hill Court is suitable for 2-way traffic. Entrance into site from eastern access point easily achieved.	
7.7m Dennis Sabre Fire Tender	View 1 – Moorbridge Road / Chapel Lane Junction	Entry suitable for 2-way traffic, however left turn onto Chapel Lane overlaps onto incoming lane.	

	View 2 – Moorbridge Road East / Bridleway Junction	Path suitable for vehicle to be able to turn from Moorbridge Road East into bridleway without undue difficulty.	
	View 3 – Bridleway entering site	Bridleway is unsuitable for 2-way traffic. Path is suitable for 1-way traffic with entrance into site from western access point possible.	
	View 4 – proposed site access from Parsons Hill Court	Parsons Hill Court is suitable for 2-way traffic. Entrance into site from eastern access point easily achieved.	

- 2.13 Based upon the swept path analysis, it is evident that the bridleway is not wide enough to accommodate two-way traffic **See Appendix A**. Furthermore, the route would require a Traffic Regulation Order (TRO) to permit regular motorised vehicle access and manage traffic flow. Therefore, Parsons Hill Court (green option) is most appropriate for accessing the site based upon the level of assessment contained within this report **see Appendix B**.

Visibility Splays

- 2.14 Visibility splay measurements have been taken to gain an insight into the level of visibility for vehicles traversing the industrial estate at the following locations:
- Moorbridge Road East / Bridleway junction
 - Chapel Lane / Moorbridge Road junction
- 2.15 Seeing as both junctions are subject to a 30mph speed limit, they should achieve a visibility splay in each direction of at least 43m from 2.4m behind the give way line of the junction in accordance with the Nottinghamshire County Council (NCC) Highway Design Guide.
- 2.16 Whilst it has been established that the bridleway is not a suitable option for two-way traffic, it could still be an option to use the path as a one way exit with Parsons Hill Court as the entrance, therefore visibility splay measurements have been considered.

- 2.17 Visibility splays are presented in **Appendix C**.

Figure 2-4 : Bridleway / Moorbridge Road East Junction



Image source: ITP, October 2022

- 2.18 The required 43m visibility splays for the bridleway junction with Moorbridge Road East is hindered, where foliage blocks incoming traffic to the west seen in Figure 2-4. Subject to ownership confirmation of the area of foliage a maintenance plan could be adopted to enable the visibility to be achieved.

Figure 2-5 : Chapel Lane / Moorbridge Road Junction



Image source: ITP, October 2022

- 2.19 The measurements show that the visibility splays to the North and South of the Moorbridge Road and Chapel Lane junction are in excess of 43 metres from a setback of 2.4 metres. The visibility lines overlap grass verges; however, these verges and their accompanying signage are far enough back to not pose risk to the driver's line of sight seen in Figure 2-5 and are likely to be within the adopted highway and therefore not third-party land (subject to confirmation).

3. Pedestrian Connections

- 3.1 This study has examined the pedestrian access to the proposed location from both sides of the railway in respect of footway widths, accessibility to the platform and crossing junctions, as pedestrian usage could intensify if a car park was constructed.

Figure 3-1 : Bridleway



Image source: ITP, October 2022

- 3.2 Once parked, pedestrians would have three routes into Bingham: Parsons Hill Court (eastern entrance), the bridleway (western entrance), and the bridleway path south of the site, with two of these routes linking to Chapel Lane and one crossing the railway line into Moor Lane. With the existing railway crossing having to be closed during major events for safety reasons, the implementation of a subway/bridge and level crossing may be necessary to accommodate the increase in pedestrian usage, greatly increasing the required budget for the project unless Network Rail already plan to upgrade the existing crossing point. Alternatively, there is a pedestrian bridge at the train station east of the proposed site. However, the bridge is steps only and therefore not suitable for people with mobility impairments, pushchairs or cycles and connections to the bridge would also require upgrading from the proposed car park.
- 3.3 As illustrated in Figure 3-1 and 3-2, sections of the bridleway will need resurfacing to be suitable for any increased pedestrian accessibility. Furthermore, appropriate lighting may be required to accommodate for night time usage. Once pedestrians have traversed the railway line via the bridleway, they are a 3-minute walk from Bingham town centre.

Figure 3-2 : Bridleway (southern entrance)



Image source: Streetview, October 2022

- 3.4 The northern part of the bridleway and Parson's Hill Court both connect to Moorbridge Road East, leading to Chapel Lane, giving access to the western side of Bingham. Whilst the bridleway is the quicker access route, Parsons Hill Court's maintained, adopted footways see **Appendix D** make it more appropriate for wheelchair users, prams, and those who may struggle on uneven surfaces.
- 3.5 With Parsons Hill Court being identified as a more suitable access point to the proposed car park for vehicles, the installation of a bollard or gate at the north of the bridleway may be necessary to prevent vehicles from using bridleway and coming into conflict with pedestrians.

4. Summary and Recommendations

- 4.1 The assessment presented within this Technical Note provides a high level analysis into the suitability of the routes available for accessing the potential Bingham car park site.
- 4.2 Based on the route width, potential to overhang verges, issues with visibility at its northern end and lack of ability to accommodate two-way traffic it is suggested that bridleway BW26 is discounted as a possible access route.
- 4.3 Parsons Hill Court is the recommended access route due to its ability to accommodate two-way traffic for all vehicle types. There are no issues noted regarding visibility at junctions to / from here.
- 4.4 Improvements to this route could also enhance access into the nearby sports club with their current route being via the unmaintained bridleway. The swept paths show that vehicles can travel through the existing car park for the fields without the removal of a considerable number of spaces being lost. The existing route east of the sports field connecting to the bridleway will need to be widened to accommodate two-way access into the proposed car park from the north.
- 4.5 With the increase in pedestrian usage, the existing railway crossing south of the bridleway may need a subway / bridge to be implemented to ensure pedestrian safety. Alternatively, an improved route to the existing footbridge east of the site and enhancements to the structure might be considered.
- 4.6 A bollard or gate may need to be implemented at the north of the bridleway at the Moorbridge Road East junction to prevent ongoing informal car usage if the car park is accessed from Parsons Hill Court, to enable pedestrians to traverse the route safely.

Next Steps

- 4.7 Land ownership of the southern section of Parsons Hill Court shown in Figure 4-1 (blue) will need to be confirmed as this is not publicly adopted highway, however from conversations in November 2022 it is understood Bingham Town Council / Rushcliffe Borough Council have control of this land.

Figure 4-1 : Land Ownership Requirements



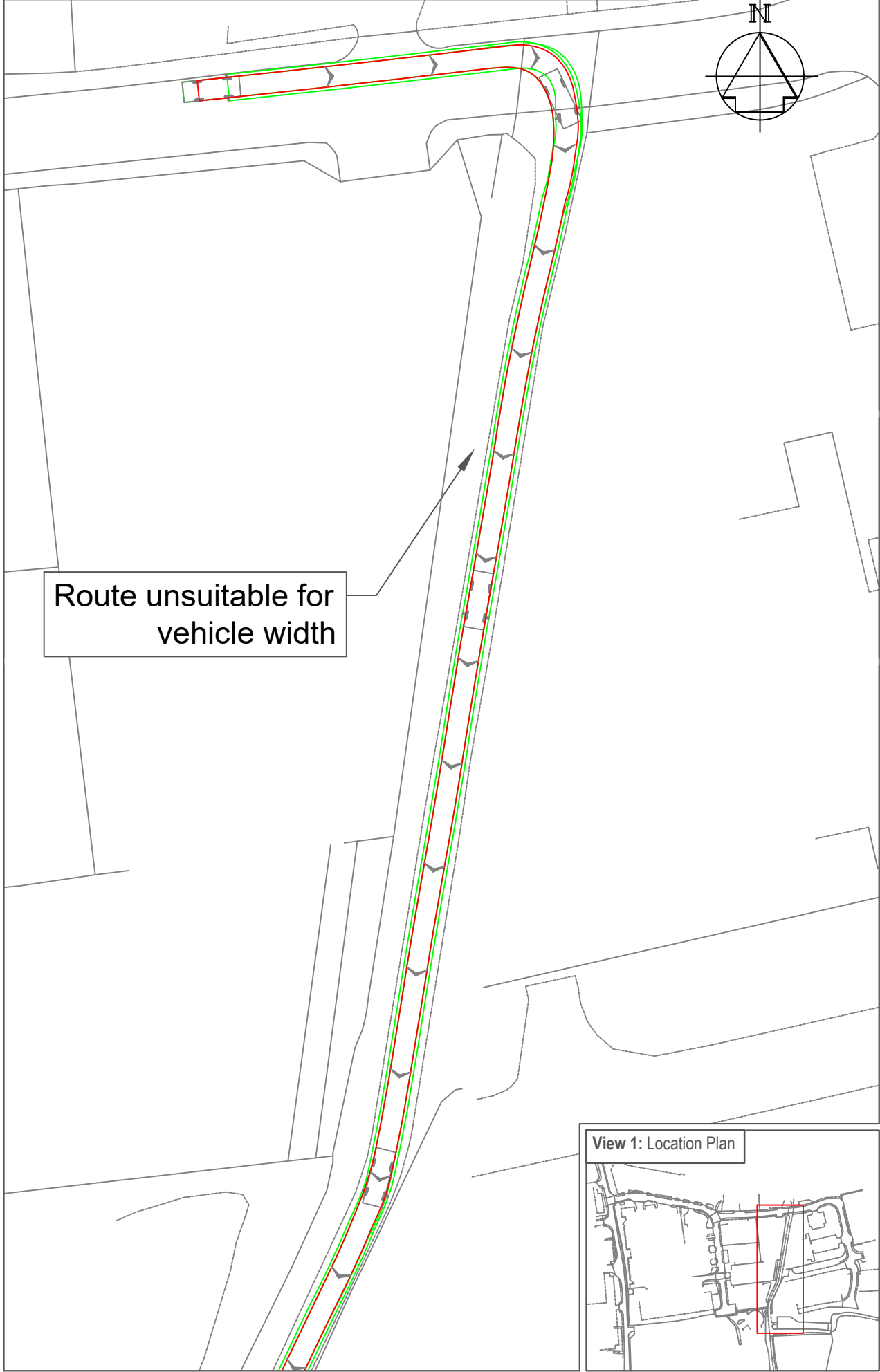
Image source: ITP, October 2022

- 4.8 Potential improvements will need to be made to the southern section of the bridleway leading towards the town centre to allow pedestrians to travel to and from the town centre from the proposed car park. A new subway or bridge may need to be implemented for this purpose. The priority action is to discuss options with Network Rail as costs to upgrade crossing the tracks could be considerable. Lighting and improved surfacing is also recommended to ensure the route is suitable for prams and wheelchair users.
- 4.9 Aside from the planning, engineering and environmental activities which will be required to progress the site, establishing that the proposed car park is in the right place, has the appropriate space to accommodate likely existing and future demand and can generate sufficient income to be operationally attractive are all wider questions which a feasibility study / business case should resolve. This could take place either prior to or during the preparation of planning application documents for the site.

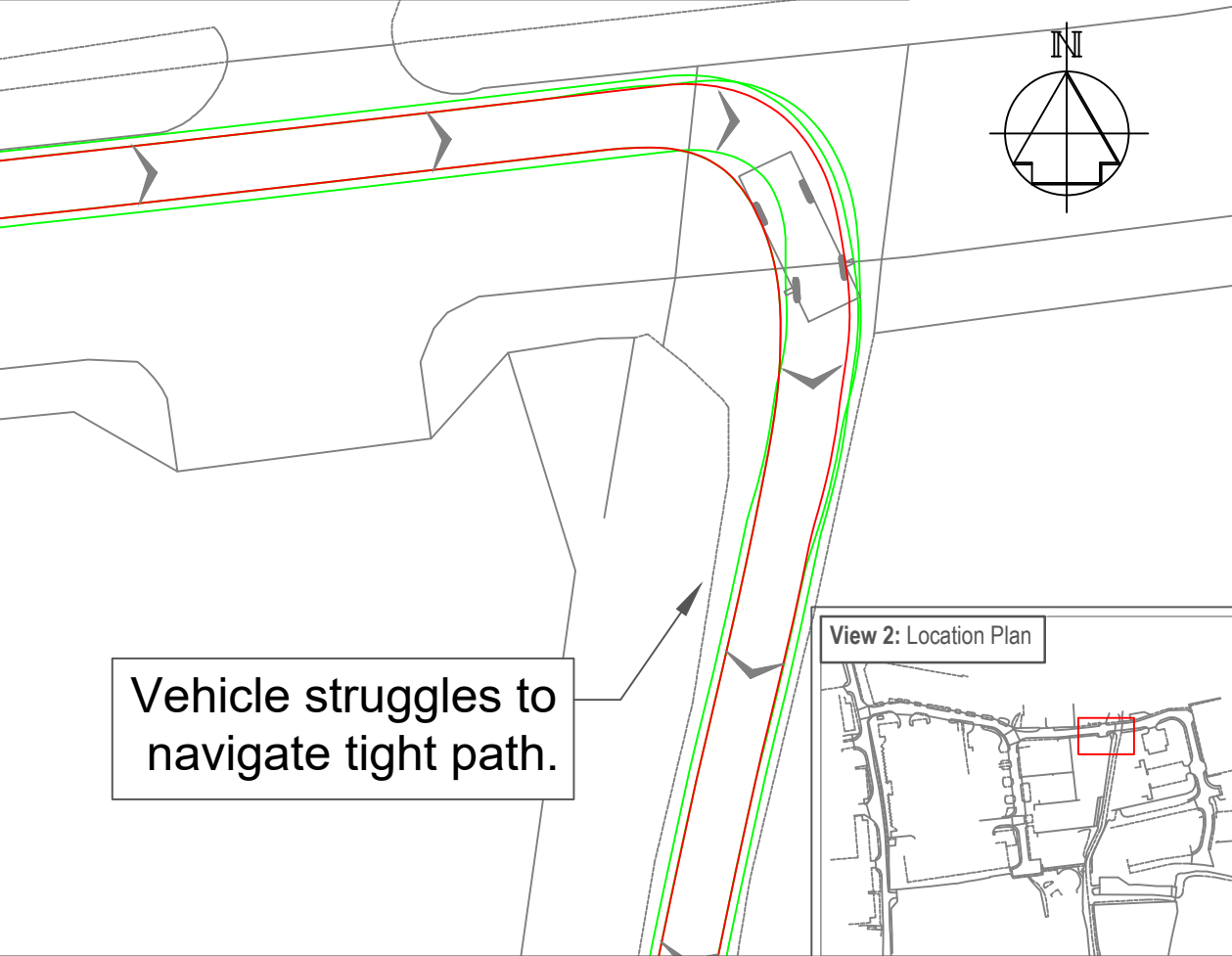
Appendix A

Swept Path Analysis

View 1: 5.45m Toyota Landcruiser turning right from Moorbridge Road East to bridleway towards site Scale as shown



View 2: 5.45m Toyota Landcruiser navigating northern section of bridleway Scale: 1:250



View 3: 5.45m Toyota Landcruiser navigating southern section of bridleway Scale: 1:250



3900-3999 / 3977
Bingham Car Park
Feasibility / Project Files
/ 09 ACAD / Drawings

REVISIONS	REV	Auth	DATE

Key:

- Base mapping
- Vehicle body at widest point
- Vehicle wheelbase at widest point

Toyota Landcruiser Amazon - with bull bars and spare wheel
Overall Length 5.450m
Overall Width 1.940m
Overall Body Height 1.850m
Min Body Ground Clearance 0.256m
Track Width 1.940m
Lock-to-lock time 4.00s
Curb to Curb Turning Radius 5.900m

Note: Vehicle dimensions comply with local SPDs

Client Submission	-	BD	031122
PURPOSE OF ISSUE	REV	Auth	DATE

Integrated Transport Planning Ltd
1 Broadway
Nottingham
NG1 1PR
Tel: 0115 824 8250
http://www.itpworld.net

CLIENT

Rushcliffe Borough Council

PROJECT

Bingham Car Park

DRAWING TITLE

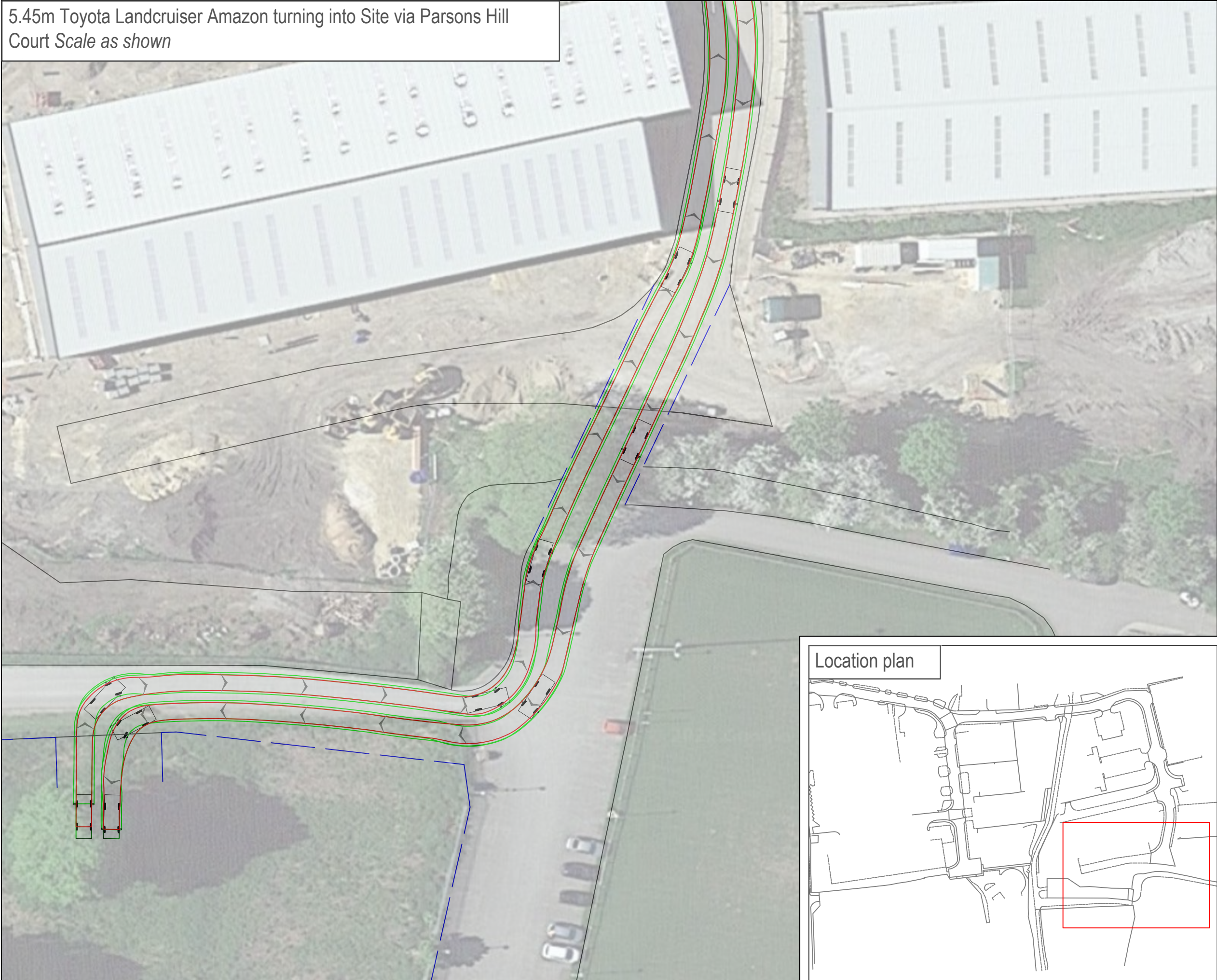
Swept Path Analysis of 4.45m Toyota Landcruiser Traversing Bridleway

BASE SCALE	DATE
1:500 @ A3	Nov 2022
DRAWING NUMBER	REV
DWG/3977/004	

Appendix B

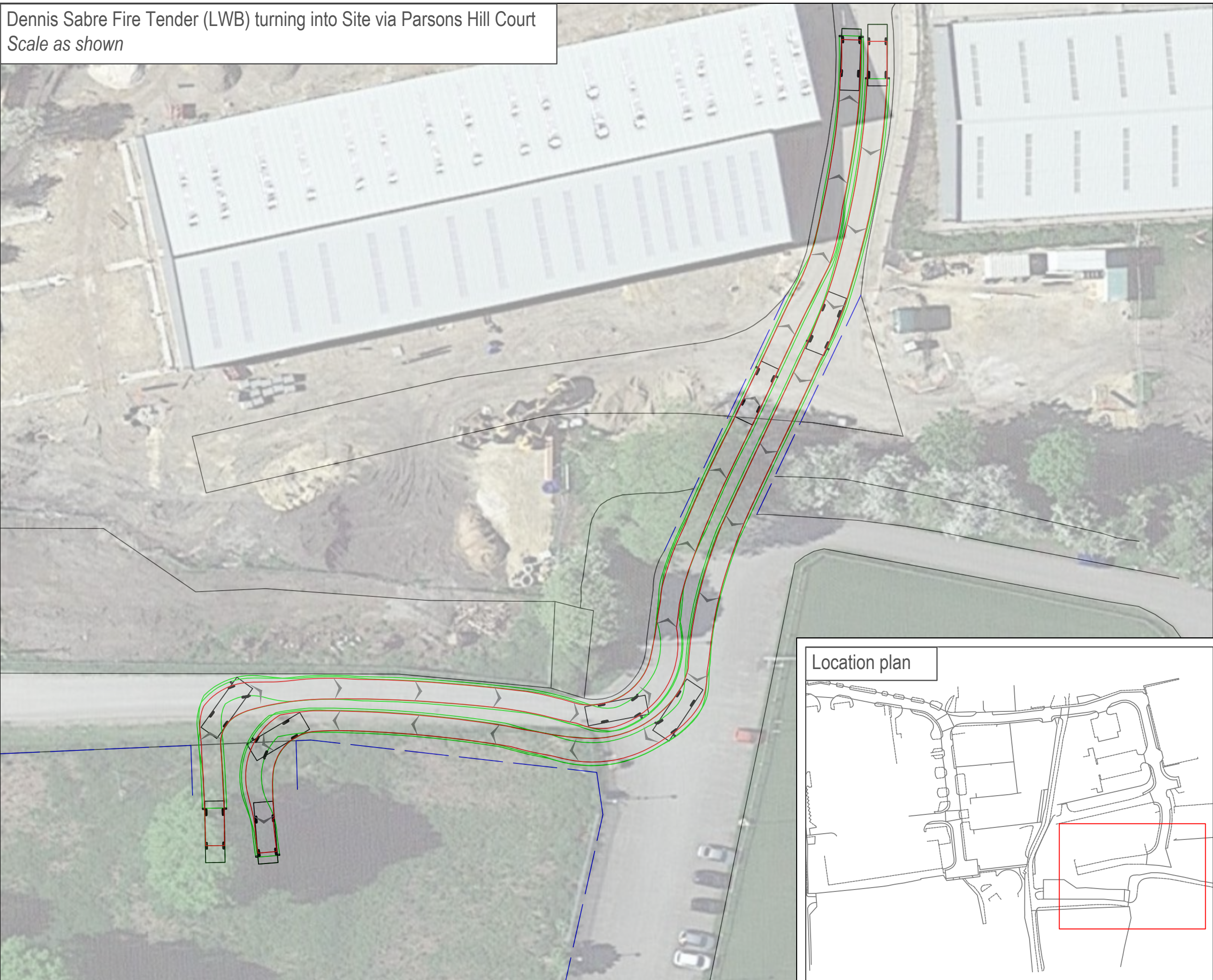
Parsons Hill Court Possible Access Strategy

5.45m Toyota Landcruiser Amazon turning into Site via Parsons Hill
Court Scale as shown



3900-3999 / 3977 Bingham Car Park Feasibility / Project Files / 09 ACAD / Drawings			
REVISIONS	REV	Auth	DATE
<div>Key:</div> <div><div><div></div></div> Base mapping</div> <div><div><div></div></div> Proposed site access adjustments</div> <div><div><div></div></div> Vehicle body at widest point</div> <div><div><div></div></div> Vehicle wheelbase at widest point</div> 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Dennis Sabre Fire Tender (LWB) turning into Site via Parsons Hill Court
Scale as shown

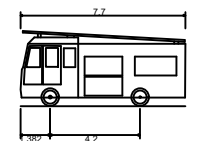


3900-3999 / 3977
Bingham Car Park
Feasibility / Project Files
/ 09 ACAD / Drawings

REVISIONS	REV	Auth	DATE
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Key:

-  Base mapping
-  Proposed site access adjustments
-  Vehicle body at widest point
-  Vehicle wheelbase at widest point



Dennis Sabre Fire Tender (LWB)	
Overall Length	7.700m
Overall Width	2.430m
Overall Body Height	3.512m
Min Body Ground Clearance	0.397m
Track Width	2.380m
Lock-to-lock time	5.00s
Curb to Curb Turning Radius	7.400m

Note: Background satellite imagery taken from Google Maps
Vehicle dimensions comply with local SPDs

Client Submission	-	BD	161122
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PURPOSE OF ISSUE	REV	Auth	DATE
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Integrated Transport Planning Ltd
1 Broadway
Nottingham
NG1 1PR

Tel: 0115 824 8250
http://www.itpworld.net

CLIENT

Rushcliffe Borough Council

PROJECT

Bingham Car Park

DRAWING TITLE

Swept Path Analysis of Fire Engine on Route to Proposed Car Park

BASE SCALE

1:500 @ A3

DATE _____

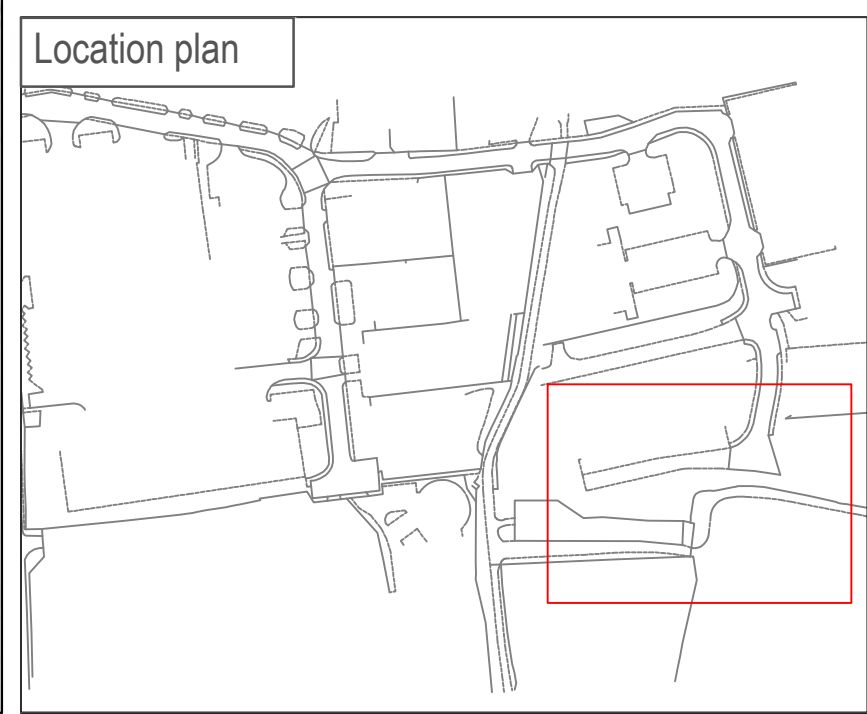
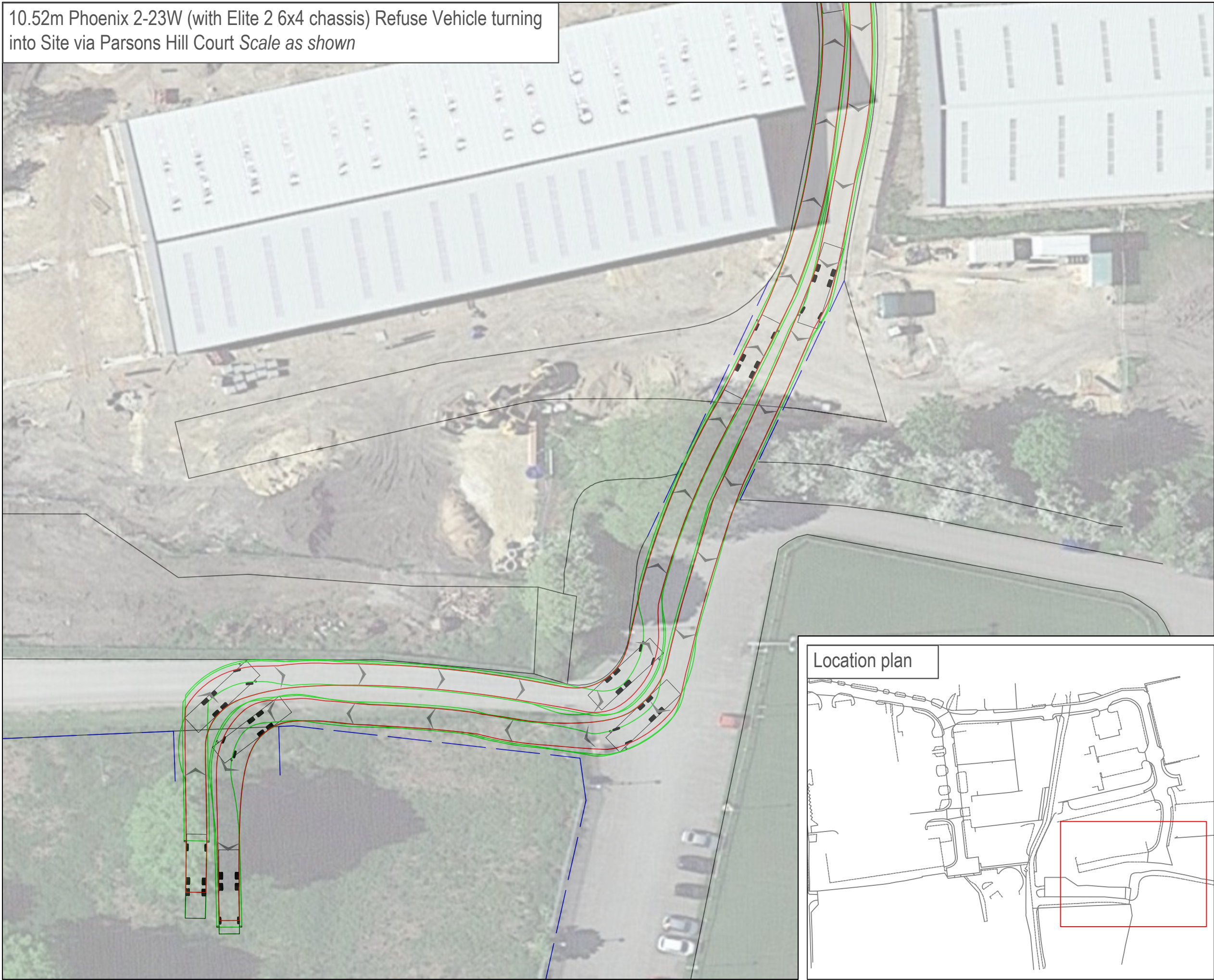
Nov 2022

DRAWING NUMBER

DWG/3977/009

REV

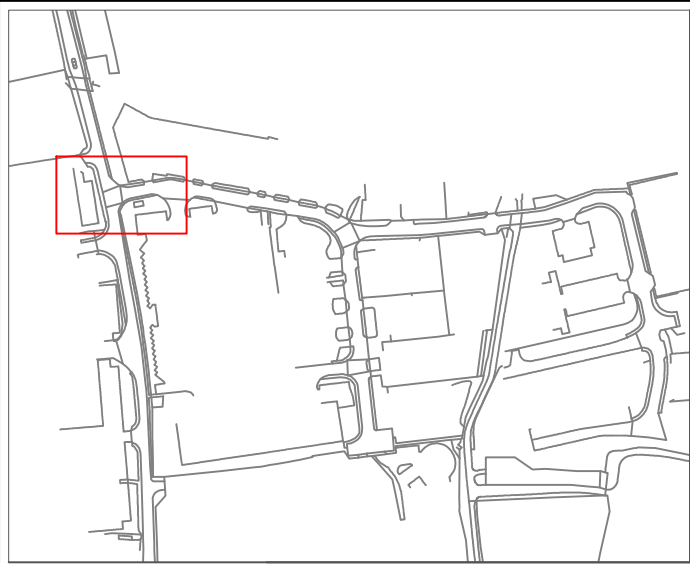
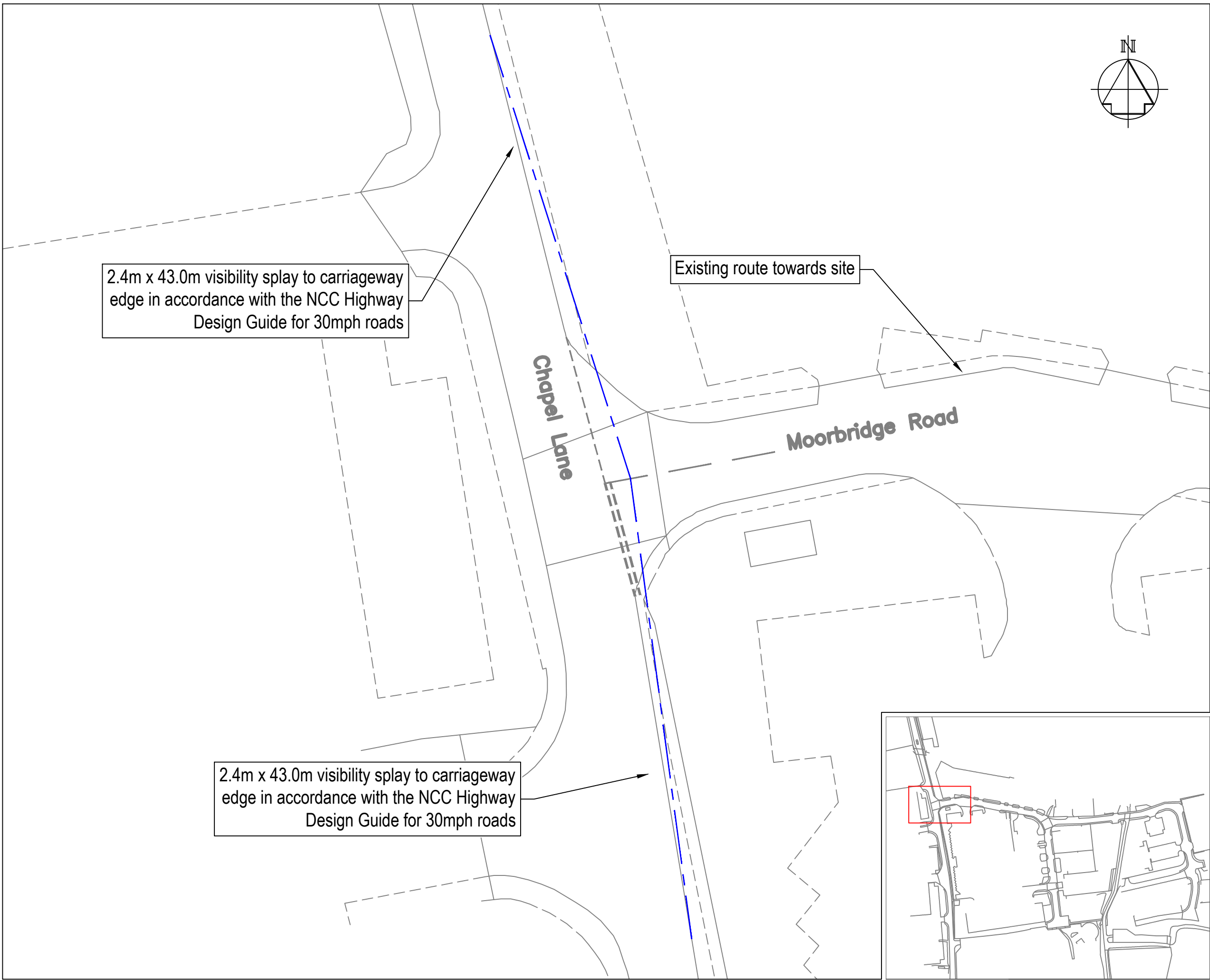
10.52m Phoenix 2-23W (with Elite 2 6x4 chassis) Refuse Vehicle turning into Site via Parsons Hill Court Scale as shown




3900-3999 / 3977 Bingham Car Park Feasibility / Project Files / 09 ACAD / Drawings			
REVISIONS	REV	Auth	DATE
<div>Key:</div> <div><div></div>Base mapping</div> <div><div></div>Proposed site access adjustments</div> <div><div></div>Vehicle body at widest point</div> <div><div></div>Vehicle wheelbase at widest point</div> <div><div><div></div><div>10.52</div><div></div></div><div><div></div><div>4.215</div><div></div></div><div><div></div><div>4.908</div><div></div></div></div> <div>Phoenix 2-23W (with Elite 2 6x4 chassis) Overall Length10.520m Overall Width2.530m Overall Body Height3.211m Min Body Ground Clearance0.416m Track Width2.530m Lock-to-lock time4.00s Curb to Curb Turning Radius9.950m</div> <div>Note: Background satellite imagery taken from Google Maps Vehicle dimensions comply with local SPDs</div>			
Client Submission	-	BD	161122
PURPOSE OF ISSUE	REV	Auth	DATE
<div><div><div>itp</div><div>integrated transport planning</div></div><div>Integrated Transport Planning Ltd 1 Broadway Nottingham NG1 1PR <div>Tel: 0115 824 8250 http://www.itpworld.net</div></div></div>			
CLIENT Rushcliffe Borough Council			
PROJECT Bingham Car Park			
DRAWING TITLE Swept Path Analysis of Refuse Vehicle on Route to Proposed Car Park			
BASE SCALE 1:500 @ A3			DATE Nov 2022
DRAWING NUMBER DWG/3977/008			REV

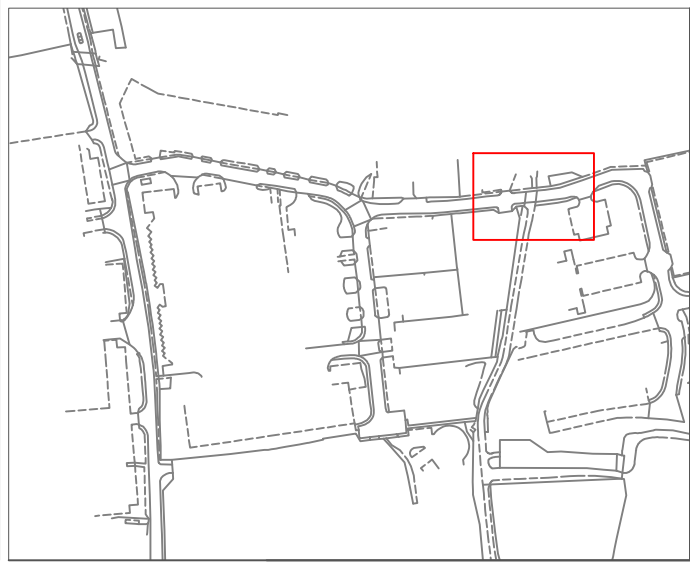
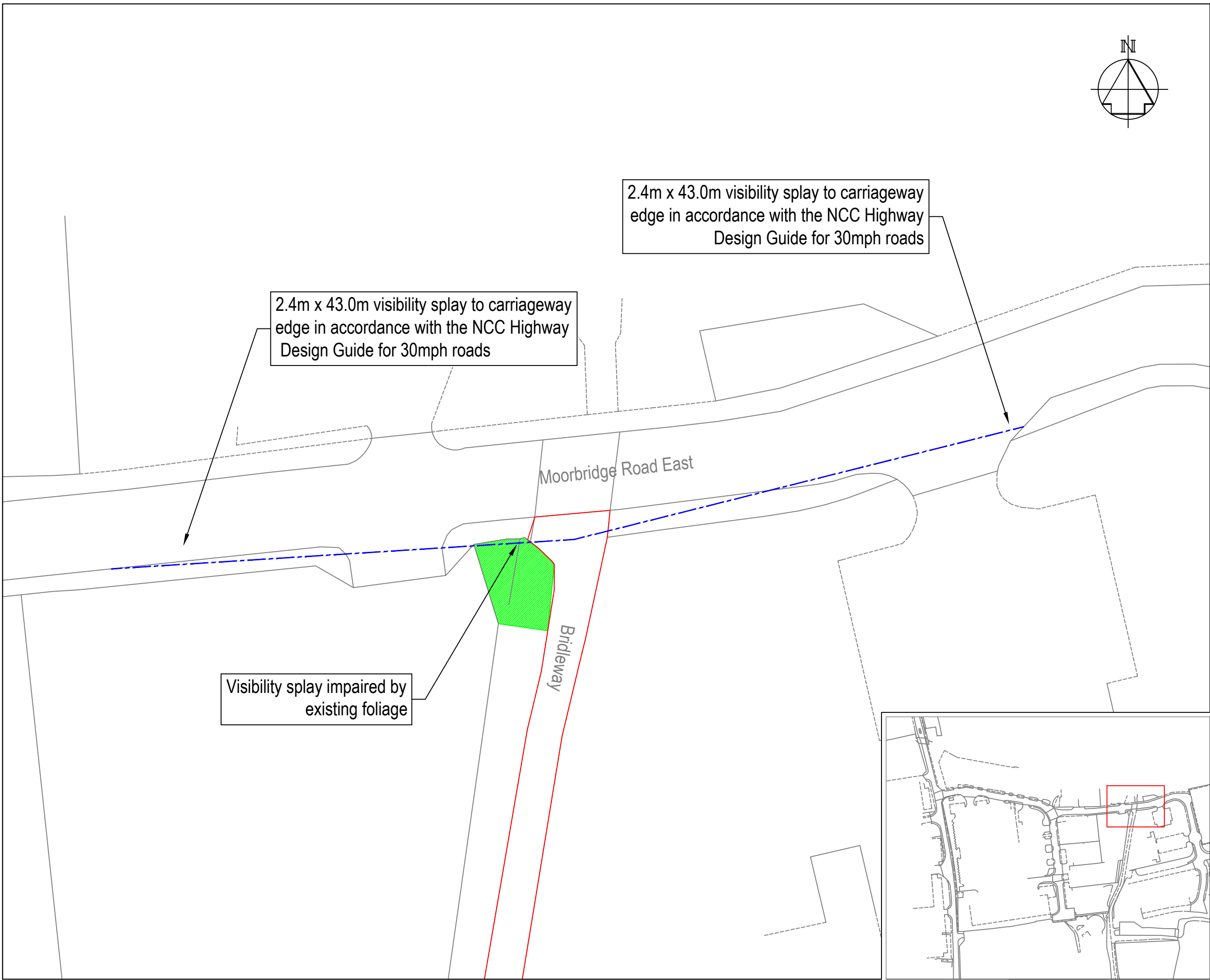
Appendix C

Visibility Splays



3900-3999 / 3977
Bingham Car Park
Feasibility / Project Files
/ 09 ACAD / Drawings

REVISIONS	REV	Auth	DATE
Legend			
<div><div></div> Existing Layout</div>			
<div><div></div> Visibility Splay</div>			
<small>Note: Visibility Splays taken to the nearside road edge in accordance with NCC Highway Design Guide</small>			
Client Submission	-	BD	031122
PURPOSE OF ISSUE	REV	Auth	DATE
<div><div><div>Integrated Transport Planning Ltd 1 Broadway Nottingham NG1 1PR</div><div>Tel: 0115 824 8250 http://www.itpworld.net</div></div></div>			
CLIENT			
Rushcliffe Borough Council			
PROJECT			
Bingham Car Park			
DRAWING TITLE			
Visibility Splay Analysis of Route to Proposed Car Park			
BASE SCALE		DATE	
1:300 @ A3		Nov 2022	
DRAWING NUMBER		REV	
DWG/3977/05			



3900-3999 / 3977
Bingham Car Park
Feasibility / Project Files
/ 09 ACAD / Drawings

REVISIONS	REV	Auth	DATE

Legend

Bridleway


Existing Layout

Visibility splay

Foliage

Note: Visibility Splays taken to the nearside road edge in accordance with NCC Highway Design Guide

Client Submission	-	BD	031122
PURPOSE OF ISSUE	REV	Auth	DATE



Integrated Transport Planning Ltd
1 Broadway
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NG1 1PR

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CLIENT

Rushcliffe Borough Council

DRAWING TITLE

Bingham Car Park

DRAWING TITLE

Visibility Splay Analysis of Route to Proposed Car Park

BASE SCALE 1:300 @ A3	DATE Nov 2022
DRAWING NUMBER DWG/3977/06	REV

Appendix D

Limit of Highway



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- Publicly Maintained - Publicly maintained section of road
- Not Publicly Maintained - Section of road not publicly maintained



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- Publicly Maintained - Publicly maintained section of road
- Not Publicly Maintained - Section of road not publicly maintained