

Kirklees Council  
Bradley Park Local Plan Support

## Transport Scoping Report

31 January 2018  
Version 1.0  
Issue





## Document Control

Client: Kirklees Council  
Project Title: Bradley Park Local Plan Support  
Job Number: 3627  
Report Title: Transport Scoping Report

Date	Version	Status	Author	Checked	Approved
19/01/2018	0.1	Draft	Emma Roberts	Paul Irwin	Jonathan Spruce
31/01/2018	1.0	Issue	Emma Roberts	Paul Irwin	Jonathan Spruce

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# 1 Introduction

Fore Consulting Ltd (Fore) was commissioned by Kirklees Council to provide transport advice in relation to the strategy required to bring forward development on a site at Bradley Park Golf Course, on the northern fringes of Huddersfield through the Local Plan process.

This report is the Transport Scoping Report which has been prepared to ensure that the transport strategy for the site is supportable and deliverable. The overall objective is to, through evidence, illustrate that there are no barriers in transport and highways terms to the future allocation of the site for residential use.

The primary focus of this report is to demonstrate the predicted vehicular trip generations and distributions for the site and interrogate the locations where the development may give rise to a material traffic impact where further detailed assessment would be required. The report also identifies the preferred access arrangements to the site.

This report is structured as follows:

- Section 2 describes the existing situation, including the local highway network and the current opportunities to access the site by sustainable modes of travel including walking, cycling and public transport.
- Section 3 provides an overview of the development proposals and provides details of the proposed access arrangements for all modes of transport.
- Section 4 determines the predicted vehicle trip generation and mode share associated with the proposed development.
- Section 5 shows how the vehicle trip distribution associated with the proposed development has been calculated.
- Section 6 details the existing and future traffic flows, and the assessment scenarios used.
- Section 7 demonstrates the predicted impact on the study highway network including junction capacity assessments.
- Section 8 summarises the outcomes of the Transport Scoping Report.

## 2 Existing Situation

This section provides a general overview of the site, with a detailed description of the existing situation on the local transport network provided, including a review of the most recent accident data.

### 2.1 Existing Land Uses

The site is 68.4 hectares in size with the majority allocated as green belt within the previous Unitary Development Plan. Within the draft Local Plan, two areas within the site (H351 and H1474) are identified as potential housing allocations.

The site is predominantly formed of the Bradley Park Golf Course. The land is wholly in the ownership of Kirklees Council except for site area H351, which is in separate private ownership.

### 2.2 Existing Highway Network

The existing highway network in the vicinity of the site is identified in Figure 1.

#### 2.2.1 Strategic Highway Network

The M62 is close to the northern boundary of the site. No traffic flow data is currently available from the Highway England TRADS database for locations in the vicinity of the site. However, the high traffic flows on this strategic route will mean it will be necessary to consider how the impacts of road noise, and air quality, from the M62 on the development, can be mitigated through the site masterplanning process.

#### 2.2.2 Local Highway Network

The **A641 Bradford Road** runs along the western boundary of the site and connects Huddersfield town centre with Brighouse within the district of Calderdale. It crosses the M62 motorway to the north west of the site. In the vicinity of the site the road is a dual carriageway with a speed limit of 40mph. There are footways either side of the carriageway.

Department for Transport (DfT) count data for 2016 indicated the section of the A641 between the Kirklees district boundary and the A6107 Bradley Road has an Annual Average Daily Flow (AADF) of 18,628 vehicles. The A641 intersects with the A6107 Bradley Road at a 4-arm uncontrolled roundabout, Bradley Bar.

The A641 has been designated as a core road and bus route under Policy DLP23 of the draft Local Plan.



The **A6107 Bradley Road** runs east-west to the south of the site and is the road from which access is currently provided to the golf course. It links the A641 and the A62 Leeds Road. The majority of the road is subject to a 40mph speed limit except for the section close to the All Saints Catholic College which is a 30mph school zone. Most of the side road accesses are uncontrolled priority junctions, save for a traffic signal junction that provides access to the business park on Dyson Wood Way.

There are mandatory cycle lanes on either side of the carriageway between 7.30am and 9am and 4.30pm and 6.00pm. Footways are provided along either side of the carriageway and street lighting is present along the entire length of the link.

DfT count data for 2016 indicated the section of the A6107 between the A641 and the A62 has an AADF of 19,741 vehicles. The A6107 intersects with the A62 at a signalised junction, at which there is a designated Air Quality Management Area (AQMA).

## 2.3 Public Transport

### 2.3.1 Bus Services

Bus stops in the vicinity of the site are located on the A641 Bradford Road and Alandale Road as shown in Figure 2. There are additional bus stops located on Bradley Road that are for school services only. Table 1 summarises existing frequencies and destinations of services that operate in the vicinity of the site. The routes of these services are also illustrated on Figure 2.

**Table 1: Summary of Existing Bus Services**

Stop	Service	Route	Operator	Hourly Frequency (approx)				
				Mon-Fri		Sat		Sun
				Day	Eve	Day	Eve	
A641	360	Huddersfield - Brackenhall Huddersfield Royal Infirmary - Brackenhall	First/ Yorkshire Tiger	30	60	30	60	60
A641	363/X63	Bradford - Huddersfield	First	20	60	20	60	30
A641	X6	Leeds - Huddersfield	First	20	-	20	-	-
Alandale Road	328	Balmoral Avenue - Bradley	First	10	60	10	60	30
A641	384	Huddersfield - Asda Circular	Stotts Coaches	Every 2 hours	-	Every 2 hours	-	-
A641	385	Huddersfield - Asda Circular	Stotts Coaches	Every 2 hours	-	Every 2 hours	-	-



There will be a need to ensure the masterplan and phasing of the development is cognisant of access and internal circulation for bus services to ensure the development can be served adequately by commercial bus services at the appropriate time.

### 2.3.2 Rail Services

The nearest rail stations to the proposed development site are Deighton, Brighouse and Huddersfield being 2km, 3.2km and 4.8km respectively from the site. Table 2 provides further details on these rail stations and the important train connections.

**Table 2: Nearest Rail Stations and Facilities**

Station	Rail Line	Frequency of service to & <i>duration of journey</i>				Car Parking Spaces	Cycle Parking Spaces	Walk time from centre of Bradley site
		Huddersfield	Leeds	Wakefield	Manchester			
Deighton	Huddersfield Line	2/hour 6 mins	1/hour 32 mins	1/hour 35 mins	-	0	4	23 mins
Brighouse	Calder Valley Line, Huddersfield Line	1/hour 13 mins	2/hour 33-52 mins	-	1/hour 1 hr 3mins	65	3	39 mins
Huddersfield	Trans Pennine, Huddersfield and Penistone Lines	-	7/hour 19 mins to 1hr 5 mins	4/hour 38 mins to 1 hr 1 min	6/hour 31-50 mins	28	35	59 mins

## 2.4 Pedestrian and Cycle Infrastructure

### 2.4.1 Public Rights of Way

There are several Public Rights of Way (PRoW) that traverse the site. These are illustrated in Figure 3. The main PRoW that crosses the site is the Kirklees Way. From the A6107 Bradley Road the Kirklees Way goes along Shepherds Thorn Lane before heading east and north across the site towards the M62 before coming back south to connect with Park Hill and Park Lea. An additional PRoW also exists along the driveway for the golf course and this intersects with the Kirklees Way.

## 2.4.2 Local Cycle Routes

There are some cycle routes in the vicinity of the site and also some that traverse the site. These are illustrated in Figure 4. A local traffic free cycle route goes along Shepherds Thorn Lane and crosses the site in a north-south direction from the M62 to Bradley Road and carries on to Tenter Hill Lane. To the east of the site a further traffic free route links Lower Quarry Road to Park Lea, across Bradley Road to St Thomas Gardens. There are also some very small sections of traffic free cycle routes that link Bradley Road and the business parks located off Dyson Wood Way. The quality of the cycle routes is variable. The one which traverses the sites (Shepherds Thorn Lane) is an unmade road which is heavily potholed.

## 2.5 Road Safety

Accident data between January 2010 and January 2015 have been obtained from Kirklees Council. The data indicate that on Bradley Road between the A641 and the A62, there have been 18 accidents in the last five years. Of these, four were serious and the remainder slight in severity. No fatal accidents were recorded. Two of the accidents involved pedestrians and four involved motorcyclists. Only one accident involved a cyclist.

The data show there is no established pattern of accidents along the route. The accidents are not clustered in specific places along Bradley Road and occurred under a variety of differing circumstances. Six of the accidents involved rear-shunt type incidents in part due to drivers not paying enough attention and in part due to traffic congestion. A further three were related to overtaking manoeuvres. Four accidents related to access to properties on Bradley Road or the side roads off it.

## 2.6 Local Facilities and Services

The following local facilities and services are in reasonably close proximity to the site and are identified on Figure 5:

- All Saints Catholic College;
- St Thomas Primary School;
- Bradley Bar Private Day Nursery;
- Woodland Glade Playgroup;
- Villa Farm Shop;
- Bradley Sub Post Office;

- 
- Asda Superstore;
  - High Park Public House; and
  - GC's Coffee House - Pennine Business Park.

Many of these facilities will be used by residents of any new development, and so promoting good links from the site to and from these facilities will be an important part of the masterplanning process.

## 3 Development Proposals

This section presents an outline of the proposed development and describes in detail how the development will be accessed by sustainable travel modes and by car.

### 3.1 Proposed Land Use

The preferred urban design strategy is set out in an accompanying document and illustrated in the diagram in Appendix A. The design strategy seeks to create a new urban village with a new community park ('Central Park') at its centre. The Park will run east-west taking advantage of the existing mature tree belts. The Park will create a green link through the community extending to the open space at the east end which could accommodate a range of recreational facilities. The setting of the new landscaped amenity space integrates with the existing landform and landscape. Together with the Park, three major elements form the urban design structure - the South Park Housing Clusters, the North Park Woodland Housing, and the Central Village Green.

### 3.2 Sustainable Transport

An extensive multi-user internal network is proposed as part of the green infrastructure provision within the site. This network, that includes a separate central pedestrian/cycle/bus spine at the mid-point in the South Housing Clusters, will enable future residents to make journeys to key locations on-site by foot or by cycle, including the local commercial centre and the on-site primary school, whilst also providing convenient access to off-site routes and nearby locations.

The Pedestrian Spine will be designed to give hierarchy and territory to groups of uses, be it people on foot, cycles or buses. Its position centrally in the south housing will enhance the permeability and accessibility of the neighbourhoods and key places within the Village e.g. The Central Green, Central Park. It will also link easily north-south through the Green Links with the North Park Housing (2 minute walk time) and to Bradley Road residential and business districts via its crossing points with north-south connectors of Lamb Cote Road, Shepherds Thorn Lane and Tithe House Way.

The masterplan also suggests at least one new point of access for pedestrians and cyclists from Bradley Road into the Pedestrian Spine and up to Central Park. This will be between Lamb Cote Road and Tithe House Way due to the distance between these two points of access. The retention and enhancement of existing PRow through the site is also achieved.

The development will therefore be designed to capitalise on existing bus services, ensuring that pedestrian connections to bus stops are direct and attractive, and supporting new bus stops and upgraded bus stop facilities where appropriate. Within the site, the bus services are supported by keeping the bus route close to the centre of residential areas and in the

form of a double loop configuration so as to be more attractive to bus operating companies as it minimises additional mileage. This configuration will allow priority for buses and bus stops can be provided at regular intervals (approximately every 400m), conveniently located in relation to the development plots, local centre and other key attractors.

### 3.3 Vehicular Access

A number of site accesses will be required as the site builds out given the total number of dwellings anticipated.

From a traffic impact perspective, dissipating the additional trips arising from the development across the existing network would be beneficial, pointing towards access locations across a number of directions and feeding into a number of routes. The fact that there is a designated AQMA at the A62 Leeds Road/Bradley Road junction is a further reason to avoid loading large amounts of additional traffic at this location.

Ensuring effective bus penetration of the site will also be crucial, and so access points that allow the diversion of existing services through the site without adding significant extra mileage would also be preferable.

The preferred site access options are as follows:

- A new priority controlled junction on Bradford Road, including a ghost island to accommodate right-turning traffic. Exiting vehicles would be permitted to only turn left towards the Bradford Bar roundabout. The proposal is demonstrated on Fore Consulting Drawing No 3627/SK001/08.
- Improvements to the existing Lamb Cote Road/Bradley Road junction, including a widening of the Lamb Cote Road carriageway to 5.5m and a ghost island to accommodate right-turning traffic. The proposal is demonstrated on Fore Consulting Drawing No 3627/SK001/11.
- Improvements to the Tithe House Way/Bradley Road junction, including a ghost island to accommodate right-turning traffic. The proposal is demonstrated on Fore Consulting Drawing No 3627/SK001/09.

Beyond these junction, a further site access can be provided from the proposed Cooper Bridge Link Road scheme, as set out in Section 7.3.

### 3.4 Internal Highway Layout

The masterplan has been designed to provide vehicular links between the different development zones and to individual car stores to homes and parking areas to apartment

buildings. It also makes provision for service vehicle, fire, taxi and blue badge accessibility. Linking the accesses within the site also provides greater flexibility and increases the number of dwellings that the site can support.

In the South Park Housing car access is achieved by two parallel access roads north and south of the clusters which feed into the Garden Squares North and South giving car access to individual homes terraces and parking bays to apartments.

The North Park Housing is accessed by a serpentine road running east to west set into the edge of the woodland belt. This will access all the terraces of homes and apartment buildings along the north side and by finger roads designed as car paths (slow moving) to individual homes in detached and semi-detached form to the parkland edge.

## 4 Trip Generation

This section sets out an estimate of the likely traffic generation and vehicle trip distribution associated with the proposed development, and details the methodology adopted.

### 4.1 Development Peak Hour

The development peak hour has been selected based on the hour in the AM peak and the hour in the PM peak where the cumulative impacts of the separate elements of the development are greatest. These are as follows:

- Weekday AM peak hour: 08:00 to 09:00 hours.
- Weekday PM peak hour: 17:00 to 18:00 hours.

### 4.2 Trip Generation

Traffic generation for the proposed development has been estimated based on the assumption that around 2,000 residential dwellings could be built upon the site. Scenarios with fewer dwellings have been tested and reported later, but to explain the methodology used, only the scenario with 2,000 houses is shown in this section.

#### 4.2.1 Person Trip Rates

Weekday AM peak hour and PM peak hour average person trip rates for the land use proposed have been derived from the TRICS database, following interrogation for sites based on the criteria identified in Table 3.

**Table 3: TRICS Search Criteria**

Proposed Land Use	TRICS Land Use	TRICS Sub-Category	Location
Residential	Residential (03)	Houses Privately Owned (A)	Edge of Town / Suburban Area/Neighbourhood Centre

The resulting outputs from the TRICS database are summarised in

Table 4 for the weekday AM and PM peak hours (08:00-09:00 and 17:00-18:00 respectively).

**Table 4: Weekday Peak Hour Person Trip Rates**

Land Use	Unit	Trip Rates (Person Trips/Per Unit)			
		AM Peak (08:00-09:00)		PM Peak (17:00-18:00)	
		Arrivals	Departures	Arrivals	Departures
Residential	1 Dwelling	0.216	0.768	0.557	0.292

The estimated person trip generation for the weekday AM and PM peak hours has been calculated by applying the trip rates in

Table 4 to the proposed number of residential dwellings. The results are summarised in Table 5.

**Table 5: Weekday Peak Hour Person Trip Generation**

Land Use	Unit	Traffic Generation (Person)			
		AM Peak (08:00-09:00)		PM Peak (17:00-18:00)	
		Arrivals	Departures	Arrivals	Departures
Residential	2,000 Dwellings	505	1,794	1,301	682

#### 4.2.2 Mode Share

The 2011 Census dataset ‘*QS701EW - Method of travel to work*’ was used to derive an estimate of the mode share for the residential development. The mode share for Lower Super Output Area Kirklees 022D has been used, as this is the area adjacent to the site that covers a residential area. In this way, the mode share considered accurately represents the likely travel characteristics of the site, with regards to the existing accessibility of the site by public transport and the configuration of the local highway network.

The resulting mode share is summarised in Table 6. The dataset includes all usual residents aged 16-74, whilst the categories ‘Not in employment’, ‘Work mainly at or from home’ and ‘Other method of travel to work’ have been removed for the purpose of this assessment. In addition, the category ‘Underground, metro, light rail, tram’ has been removed, due to an absence of these types of facilities within the vicinity of the site.



**Table 6: Baseline Mode Share**

Mode	Baseline Mode Share (% of journeys by mode)
Train	2.4%
Bus, minibus or coach	8.2%
Taxi or minicab	0.4%
Motorcycle, scooter or moped	0.6%
Driving a car or van	73.3%
Passenger in a car or van	8.7%
Bicycle	1.3%
On foot	5.2%
<b>Total</b>	<b>100.0</b>

Note: Totals may not add up to sum of components due to rounding

Considering the mode share set out in Table 6, and the person trip generation presented in Table 5, the person trip generation by mode has then been calculated. This is set out in Table 7 for the weekday peak hours.

**Table 7: Baseline Person Trip Generation by Mode**

Mode	Baseline Person Trip Generation (Trips)			
	AM Peak (08:00-09:00)		PM Peak (17:00-18:00)	
	Arrivals	Departures	Arrivals	Departures
Train	12	43	31	16
Bus, minibus or coach	41	147	107	56
Taxi or minicab	2	7	5	3
Motorcycle, scooter or moped	3	10	7	4
Driving a car or van	370	1,315	954	500
Passenger in a car or van	44	156	113	59
Bicycle	7	23	17	9
On foot	26	93	68	35
<b>Total</b>	<b>505</b>	<b>1,794</b>	<b>1,301</b>	<b>682</b>

Note: Totals may not add up to sum of components due to rounding

## 5 Development Traffic Flows

This section sets out an estimate of the traffic flows associated with the proposed development during the weekday AM and PM hours.

### 5.1 Vehicle Trip Generation

The vehicle trip generation associated with the proposed development has been estimated by applying the vehicle mode share set out in Table 7 to the person trip generation presented in Table 6. The vehicle mode share is considered to be the sum of the “Driving a car or van”, “Taxi” and “Motorcycle, scooter or moped” categories, which equates to 75.0%. The vehicle trip generation has been presented in Passenger Car Unit (PCU) values, using DfT recommended factors from Traffic Advisory Leaflet (TAL) 1/0616.

The vehicle trip generation associated with the proposed development is set out in Table 8, for the weekday AM and PM peak hours.

**Table 8: Average Weekday Vehicle Trip Generation – Proposed Development**

Mode	Vehicle Trip Generation (PCUs)			
	AM Peak (08:00-09:00)		PM Peak (17:00-18:00)	
	Arrivals	Departures	Arrivals	Departures
Driving a car or van	370	1,315	954	500
Taxi or minicab	2	7	5	3
Motorcycle, scooter or moped	1	4	3	2
<b>Total</b>	<b>373</b>	<b>1,326</b>	<b>962</b>	<b>504</b>

### 5.2 Vehicle Trip Distribution

The vehicle trip distribution associated with the proposed development has been estimated using the 2011 Census dataset, “WU03EW - Location of usual residence and place of work by method of travel to work (MSOA level)”. The destination of travel to work for people who live in Kirklees 022 middle layer super output area (MSOA) has been considered. This MSOA represents the area within which the site is located and therefore represents a reasonable proxy for the proposed development.

Destinations have been broken down in to MSOAs for the district Kirklees; for all other destinations, the local authority district has been used.

The number of vehicle trips to each destination has been expressed as a percentage of the total and then assigned to routes on the highway network to give the vehicle trip distribution to and from the site. Where a choice of routes is available, the proportion of trips using each route has been split to reflect the likely preferred choice of travel time and distance during the weekday AM and PM peak hours.

The vehicle trip distribution for the proposed development is summarised in Table 9, and illustrated on Figure 6. The vehicle trip distribution applies equally to the weekday AM and PM peak hours.

**Table 9: Average Weekday Vehicle Trip Distribution – Proposed Development**

Route	Percentage of trips
A641 North	9%
A62 Leeds Road North East	31%
B6118 South East	11%
A62 Leeds Road South West	8%
A641 South	16%
Fixby Road	18%
Local Trips*	8%

\* Local Trips within Kirklees 022 MSOA

## 6 Existing and Future Traffic Flows

This section describes the approach undertaken to confirm the existing traffic flows on the highway network surrounding the site and to predict the future traffic flows.

### 6.1 Traffic Surveys

Traffic surveys were carried out at the following locations within the vicinity of the site on in November 2017:

- Bradley Bar roundabout;
- Lamb Cote Road/Bradley Road; and
- Tithe House Way/Bradley Road.

The traffic surveys were undertaken by independent specialist survey companies with no recorded incidents or disruptions likely to affect the results. Data was collected in 15-minute intervals and classified to the COBA 11 classification.

Base traffic flows are shown on Figure 7 and Figure 8 for the AM and PM peak hours, respectively.

### 6.2 Assessment Periods

The weekday AM and PM peak hours are considered within this Transport Scoping Report. These peak hours represent the maximum possible combination of existing traffic flows on the highway network and future traffic flows as a result of the proposed development and any committed developments in the local area.

The weekday AM and PM peak hours have been identified as follows:

- The peak hours associated with the highway network have been identified from the traffic surveys undertaken, based on the busiest periods recorded at each of the junctions surveyed.
- The peaks hours associated with the proposed development have previously been identified in Section 4.2 of this report.

## 6.3 Assessment Years and Background Traffic Growth

Assessments within this report have been undertaken which include an allowance for background traffic growth, with TEMPro 7.2 used to derive local traffic growth factors for the Kirklees District for the period between 2017 and 2025.

The outputs from TEMPro 7.2 are summarised in Table 10.

**Table 10: TEMPro Traffic Growth Factors – (2017 to 2025)**

Time Period	Growth Factor
AM Peak Hour	1.1108
PM Peak Hour	1.1122

## 6.4 Assessment Scenarios

Within this report, a “Base” scenario is presented to accurately reflect current conditions and to serve as a benchmark for future year assessment scenarios. The impact of the proposed development was then considered in the context of alternative future year scenarios – a “Do Minimum” scenario and two “With Development” scenarios, one comprised of the construction of Zones 1, 3, and 5 by 2025 as identified in the Bradley Park Delivery Statement (January 2018), and one comprised of Zones 1, 2, 3, 4, and 5 by 2025. In total the former represents 520 houses, and the latter represents 780 houses. The assessment scenarios are described in detail below:

- **Scenario 1: 2017 Base** – This scenario represents the existing situation on the highway network surrounding the site. The traffic flows have been derived from the traffic survey data, with the weekday AM and PM peak hours identified for each of the junctions in the study area. The fully classified survey data has been converted into equivalent PCU values, using DfT recommended factors from TAL 1/0621. The 2017 Base traffic flows can be seen on Figure 7 and Figure 8 for the weekday AM and PM peak hour, respectively.
- **Scenario 2: 2025 Do Minimum (With Growth)** – This scenario represents a future year situation on the highway network surrounding the site without the proposed development taking place and substantial background traffic growth occurring. The traffic flows have been derived by applying locally-adjusted traffic growth factors from TEMPro 7.2 to the traffic flows in the 2017 Base scenario. These traffic flows can be seen on Figure 9 and Figure 10 for the weekday AM and PM peak hour, respectively.
- **Scenario 3: 2025 With Development (Zones 1, 3, and 5)** – This scenario represents a future year situation on the highway network surrounding the site with the delivery of Zones 1, 3, and 5 by 2025 as outlined in the Bradley Park Delivery Statement and

with substantial background traffic growth also occurring. The traffic flows have been derived by adding the traffic flows associated with the proposed development to the traffic flows in the 2025 Do Minimum (With Growth) scenario. The traffic associated with Zones 1, 3, and 5 has been assigned to access the site via Tithe House Way, Lamb Cote Road, and the Bradford Road Accesses respectively. These traffic flows can be seen on Figure 11 and Figure 12 for the weekday AM and PM peak hour.

- Scenario 4: 2025 With Development (Zones 1, 2, 3, 4, and 5) – This scenario represents a future year situation on the highway network surrounding the site with the delivery of Zones 1, 2, 3, 4, and 5 by 2025 as outlined in the Bradley Park Delivery Statement and substantial background traffic growth also occurring. The traffic flows have been derived by adding the traffic flows associated with the proposed development to the traffic flows in the 2025 Do Minimum (With Growth) scenario. The traffic associated with Zones 1 and 2 has been assigned to the Tithe House Way Access, Zones 3 and 4 to the Lamb Cote Road access, and Zone 5 to the Bradford Road Access. These traffic flows can be seen on Figure 13 and Figure 14 for the weekday AM and PM peak hour, respectively.

## 7 Impacts on the Local Highway Network

### 7.1 Site Access Junction Modelling

A series of Junctions9 models were developed to assess the operational performance of the site access junctions described in Section 3.3 for each of the assessment scenarios.

Junctions9 calculates the Ratio of Flow to Capacity (RFC) and average queues experienced by all vehicles on each arm of a junction. The RFC is a key indicator of the likely performance of a turning movement at a junction under a given set of traffic flows. It is normal practice to consider junctions with RFC values greater than 0.85 to operate in excess of practical capacity, although in some cases such values may be acceptable.

#### 7.1.1 Bradford Road Access Junction

The operation of the proposed priority junction on Bradford Road, including a ghost island to accommodate right-turning traffic, has been assessed using the Junctions9 program.

**Table 11: Bradford Road Access Junction 9 Model Results**

Turning Movement	AM		PM	
	Queue (PCU)	RFC	Queue (PCU)	RFC
<b>2017 Base</b>				
Access - Bradford Road	0.00	0.00	0.00	0.00
Bradford Road - Access	0.00	0.00	0.00	0.00
<b>2025 Do Min</b>				
Access - Bradford Road	0.00	0.00	0.00	0.00
Bradford Road - Access	0.00	0.00	0.00	0.00
<b>2025 Z135</b>				
Access - Bradford Road	0.40	0.30	0.10	0.12
Bradford Road - Access	0.10	0.08	0.20	0.20
<b>2025 Z12345</b>				
Access - Bradford Road	0.40	0.30	0.10	0.12
Bradford Road - Access	0.10	0.08	0.20	0.20

In the base year and “Do Minimum” scenario, there are no turning movements at the junction as it currently provides access only to a field and two houses. In the “With Development” scenarios (both equivalent to the provision of 240 dwellings from this access), the assessment demonstrates that in both scenarios the junction operates well within its operating capacity.

## 7.1.2 Lamb Cote Road Junction

Lamb Cote Road is currently a narrow single-carriageway road providing access to the Bradley Park Golf Course. It is recognised that within the current known constraints that a junction form of a suitable standard cannot be provided in this location for use by a significant number of vehicles. This access location would be most appropriate for a greenway connection or a road access for a small number of properties. Kirklees Council own a small piece of land adjacent to the east side of Lamb Cote Road which will permit the road to be upgraded to a 5.5m carriageway with associated pedestrian provision if required. The Junctions9 model has been conducted on the assumption that these improvements will take place.

**Table 12: Lamb Cote Road Junction 9 Model Results**

Turning Movement	AM		PM	
	Queue (PCU)	RFC	Queue (PCU)	RFC
2017 Base				
Access - Bradley Road	0.00	0.00	0.10	0.09
Bradley Road - Access	0.00	0.00	0.00	0.03
2025 Do Min				
Access - Bradley Road	0.00	0.00	0.10	0.12
Bradley Road - Access	0.00	0.00	0.00	0.03
2025 Z135				
Access - Bradley Road	0.30	0.22	0.40	0.28
Bradley Road - Access	0.00	0.01	0.10	0.07
2025 Z12345				
Access - Bradley Road	1.20	0.55	0.90	0.49
Bradley Road - Access	0.00	0.03	0.10	0.12

In the base year and “Do Minimum” scenarios there are a small number of turning movements at the junction as it provides access to the Bradley Park Golf Course. In the “With Development” scenarios (Z135 equivalent to 60 dwellings, Z12345 equivalent to 140 dwellings), the assessment demonstrates the junction operates well within its operating capacity. However, it is recommended that this access does not serve more than 60 dwellings so as to provide a high quality greenway connection between the site and the Bradley Road corridor.



### 7.1.3 Tithe House Way Junction

**Table 13: Tithe House Way Junction 9 Model Results**

Turning Movement	AM		PM	
	Queue (PCU)	RFC	Queue (PCU)	RFC
2017 Base				
Access - Bradley Road	0.20	0.18	0.00	0.04
Bradley Road - Access	0.00	0.00	0.00	0.02
2025 Do Min				
Access - Bradley Road	0.30	0.23	0.10	0.05
Bradley Road - Access	0.00	0.00	0.00	0.03
2025 Z135				
Access - Bradley Road	5.50	0.90	0.50	0.36
Bradley Road - Access	0.00	0.04	0.20	0.15
2025 Z12345				
Access - Bradley Road	56.30	1.52	13.20	1.09
Bradley Road - Access	0.10	0.08	0.20	0.19

In the base year and “Do Minimum” scenarios there are a small number of turning movements at the junction as it provides access to an existing residential area. In the first “With Development” scenario of Zones 1, 3, and 5 (associated with 220 dwellings), the assessment demonstrates that the junction would operate largely within its practical capacity, although with some queuing of traffic attempting to turn out of Tithe House Way during the AM peak hour. With the inclusion of traffic associated with Zones 2 and 4 (associated with an additional 180 dwellings), the junction exceeds capacity resulting in significant queues of vehicles waiting to turn onto Bradley Road in both the AM and PM Peak Hours.

A potential mitigation for this situation is to add a right-turn lane on Tithe House Way. The impact of this mitigation is outlined in

---

Table 14 for both “With Development” scenarios.



**Table 14: Tithe House Way (with right-turn lane) Junctions9 Model Results**

Turning Movement	AM		PM	
	Queue (PCU)	RFC	Queue (PCU)	RFC
<b>2025 Z135</b>				
Access - Bradley Road East	0.30	0.23	0.10	0.08
Access - Bradley Road West	2.40	0.74	0.40	0.30
Bradley Road - Access	0.00	0.04	0.20	0.15
<b>2025 Z12345</b>				
Access - Bradley Road East	0.70	0.43	0.40	0.29
Access - Bradley Road West	20.20	1.24	4.50	0.91
Bradley Road - Access	0.10	0.08	0.20	0.19

This mitigation significantly reduces the average queue length at the junction and permits it to operate within capacity in the Z135 scenario, although it remains in excess of its operating capacity during Z12345 scenario.

A separate model scenario was run to determine the maximum number of extra houses from Zone 2 that could be brought forward on top of the 220 associated with Zone 1 by 2025 assuming that the right-turn lane is also added. Table 15 shows the results of adding an extra 40 houses, bringing the total to 260, and demonstrates that in this scenario, the improved junction operates within capacity.

**Table 15: Tithe House Way (with right-turn lane including 40 Houses from Zone 2) Junctions9 Model Results**

Turning Movement	AM		PM	
	Queue (PCU)	RFC	Queue (PCU)	RFC
<b>2025 Z135 (+40 of Z2)</b>				
Access - Bradley Road East	0.50	0.32	0.10	0.12
Access - Bradley Road West	3.40	0.82	0.80	0.45
Bradley Road - Access	0.10	0.07	0.20	0.18

## 7.2 Impacts on the Wider Local Highway Network

### 7.2.1 Bradley Road

The base two-way traffic flows along Bradley Road as well as the additional development traffic flows which would route along Bradley Road in each assessment scenario are outlined in Table 16.

**Table 16: Two-way Traffic Flows on Bradley Road in 2025**

Assessment Scenario	Development flow (two-way)				Total flow (two-way)			
	West Bradley Road <sup>1</sup>		East Bradley Road <sup>2</sup>		West Bradley Road <sup>1</sup>		East Bradley Road <sup>2</sup>	
	AM	PM	AM	PM	AM	PM	AM	PM
Do Minimum	-	-	-	-	1,760	1,923	1,560	1,642
With Development (Zones 1, 3, and 5)	187	162	184	159	1,948	2,085	1,744	1,801
With Development (Zones 1, 2, 3, 4, and 5)	269	240	276	247	2,030	2,163	1,836	1,889

1 – immediately east of A641 Bradford Road/A6017 Bradley Road Roundabout

2 - immediately east of Tithe House Way

This assessment demonstrates that two-way flows in the 2025 Do Minimum and With Development (Z135) scenarios will be lower than the capacity of Bradley Road which, with a width of 6.75m, is likely to be 2,100 vehicles/hour, as defined by TA79/99 of DMRB for a UAP2 class road. The road is broadly within capacity in the With Development (Z12345) scenario too, although slightly exceeds this in the PM Peak Hour on the western side.

### 7.2.2 Bradley Bar Roundabout

A further Junctions9 model was developed to assess the operational performance of the Bradley Bar Roundabout in each assessment scenario. The results are presented in Table 17.

The assessment demonstrates that the Fixby Road arm of the roundabout will be operating marginally above capacity in 2025 regardless of the development taking place. In the Z135 scenario, several arms of the roundabout would be operating marginally above capacity, although it should be noted that the roundabout operates within capacity during the PM peak hour and that queueing on the northern arm of the roundabout during the AM peak hour would not impact the proposed site access arrangements on Bradford Road. In the Z12345 scenario, several arms of the roundabout would operate above capacity in both the AM and PM peak hours.

Table 17: Bradley Bar Roundabout Junctions9 Model Results

Roundabout Arm	AM		PM	
	Queue (PCU)	RFC	Queue (PCU)	RFC
2017 Base				
1 - Bradley Road	2.10	0.68	1.90	0.65
2 - Bradford Road South	1.80	0.64	1.40	0.59
3 - Fixby Road	2.90	0.75	1.50	0.60
4 - Bradford Road North	2.00	0.67	1.50	0.61
2025 Do Min				
1 - Bradley Road	3.70	0.79	3.20	0.77
2 - Bradford Road South	2.70	0.73	2.00	0.67
3 - Fixby Road	9.50	0.93	2.50	0.72
4 - Bradford Road North	3.80	0.80	2.40	0.71
2025 Z135				
1 - Bradley Road	7.60	0.90	5.20	0.85
2 - Bradford Road South	3.30	0.77	2.50	0.72
3 - Fixby Road	17.80	0.99	4.20	0.82
4 - Bradford Road North	8.50	0.91	3.30	0.77
2025 Z12345				
1 - Bradley Road	13.00	0.95	7.40	0.89
2 - Bradford Road South	3.70	0.79	2.70	0.73
3 - Fixby Road	22.60	1.01	4.80	0.84
4 - Bradford Road North	9.00	0.92	3.60	0.79

### 7.3 Future Highway Network Changes

Beyond the appraisals described above, it is necessary to take account of the proposed changes to the highway network that could help deliver additional dwellings beyond the numbers considered above.

In particular, the West Yorkshire plus Transport Fund Cooper Bridge Link Road scheme is designed to relieve congestion at the A62/Bradley Road junction and improve conditions associated with the current AQMA. The scheme includes:

- Amendments to the existing highway to unlock congestion on the A62;
- An amendment to the existing Cooper Bridge roundabout junction; and

- A new length of highway to relieve and improve traffic flow in the vicinity of the Bradley Road/A62 junction.

Once these improvements have been implemented, traffic flows on Bradley Road will be reduced and conditions at the junction are likely to change. In particular, providing a connection from the site to the new link road envisaged as part of the Cooper Bridge scheme would significantly raise the number of dwellings possible as development traffic would be largely removed from the A62/Bradley Road junction. Implementation of the Cooper Bridge Link Road scheme and a connection from the site to the new link road would provide some relief at the A62/Bradley Road junction and, based on the projected traffic generation and the likely link capacity of the new route, would allow the 2,000 dwellings planned to be delivered in highway capacity terms. The Cooper Bridge scheme is due for completion by 2023. Development of a new Junction 24a on the M62 could also provide further opportunities to dissipate traffic away from Bradley Road, although this possible scheme is far less advanced than the Cooper Bridge Link Road proposal.

Both of these potential highway schemes have been studied using the Kirklees strategic SATURN model, as part of a wider piece of work that is reported separately.

## 8 Summary and Conclusions

This report has summarised the transport issues considered as part of an examination of the potential to bring forward development on a site at Bradley Park Golf Course, on the northern fringes of Huddersfield. Within the draft Local Plan, two areas within the site (H351 and H1474) are identified as potential housing allocations.

Much of the site is bounded by the A6107 Bradley Road running east-west to the south of the site and from which access is currently provided to the golf course. It links the A641 and the A62 Leeds Road, and the majority of the road is subject to a 40mph speed limit. There are mandatory cycle lanes on either side of the carriageway between the 7.30am and 9am and 4.30pm and 6.00pm. Footways are provided along either side of the carriageway and street lighting is present along the entire length of the link. There is no evidence from recent accident data to suggest that road layout, inadequate or masked signs were contributory factors in any of the accidents recorded.

The A641 Bradford Road runs along the western boundary of the site and connects Huddersfield town centre with Brighouse within the district of Calderdale. In the vicinity of the site the road is a dual carriageway with a speed limit of 40mph. There are footways either side of the carriageway.

Bus stops in the vicinity of the site are located on the A641 Bradford Road and Alandale Road, with Bradford, Huddersfield and Leeds as the primary destinations. There are additional bus stops located on Bradley Road that are for school services only.

There are several Public Rights of Way that traverse the site, the main one being the Kirklees Way. There are some cycle routes in the vicinity of the site and also some that traverse the site.

A review of possible site access options produced four that are seen as suitable, for the reasons described below.

- An access to the western portion of the site and would allow the frequent bus services along the A641 to divert into the site with minimum diversion. It could also provide a link (either direct or indirect) to the M62 Junction 24a proposal.
- Two locations on Bradley Road - the first would utilise the existing access to the Golf Club and be fairly central in relation to the development site. The second would provide direct access to the site and would be an extension of an existing estate road.
- An access to the east onto the new link road being developed as part of the Cooper Bridge Link Road scheme.

Having undertaken some initial estimates of trip generation and distribution, some preliminary junction modelling was also undertaken. The results indicate that:

- Upgrading of the existing priority junctions at Lamb Cote Road and Tithe House Way and delivering a third access from Bradford Road to the west would provide access for the initial phases (up to 2025) of development for in the region of 560 dwellings, with some minor improvements to the priority junction at Tithe House Way.

Implementation of the Cooper Bridge Link Road scheme and a connection from the site to the new link road would provide some relief at the A62/Bradley Road junction and, based on the projected traffic generation and the likely link capacity of the new route, would allow the 2,000 dwellings planned to be delivered in highway capacity terms. The Cooper Bridge scheme is due for completion by 2023. Development of a new Junction 24a on the M62 could also provide further opportunities to dissipate traffic away from Bradley Road, although this possible scheme is far less advanced than the Cooper Bridge Link Road proposal. The Cooper Bridge scheme is due for completion by 2023.

It should be noted that the social infrastructure requirements of the site will also need to be met through provision of facilities and services in a phased and planned manner to avoid periods of time where residents would have to leave the site, potentially by car, to access facilities and services.

Existing public transport connections could be extended through the site and will need to be explored in more detail in future work regarding the site. The site offers the long-term prospect of supporting commercial services at a reasonable frequency, as well as potentially enhancing the existing public transport provision for neighbouring communities. This could include commercial bus services running along Bradley Road as well as through the site itself.

High quality walking and cycling infrastructure will be provided within the site and beyond the site boundary new links will need to be made with existing infrastructure, potentially including new crossings and environmental improvements on Bradley Road. In this way, the site has a role to play in enhancing the wider walking and cycling networks and encouraging greater use of these modes of transport.

Finally, effective management and promotion of sustainable travel options through a comprehensive, well-funded travel plan will be required to increase the sustainability of the site.



## Figures

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Key:



Site Location

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Client:  
 Kirklees Council

Project:  
 Bradley Masterplan

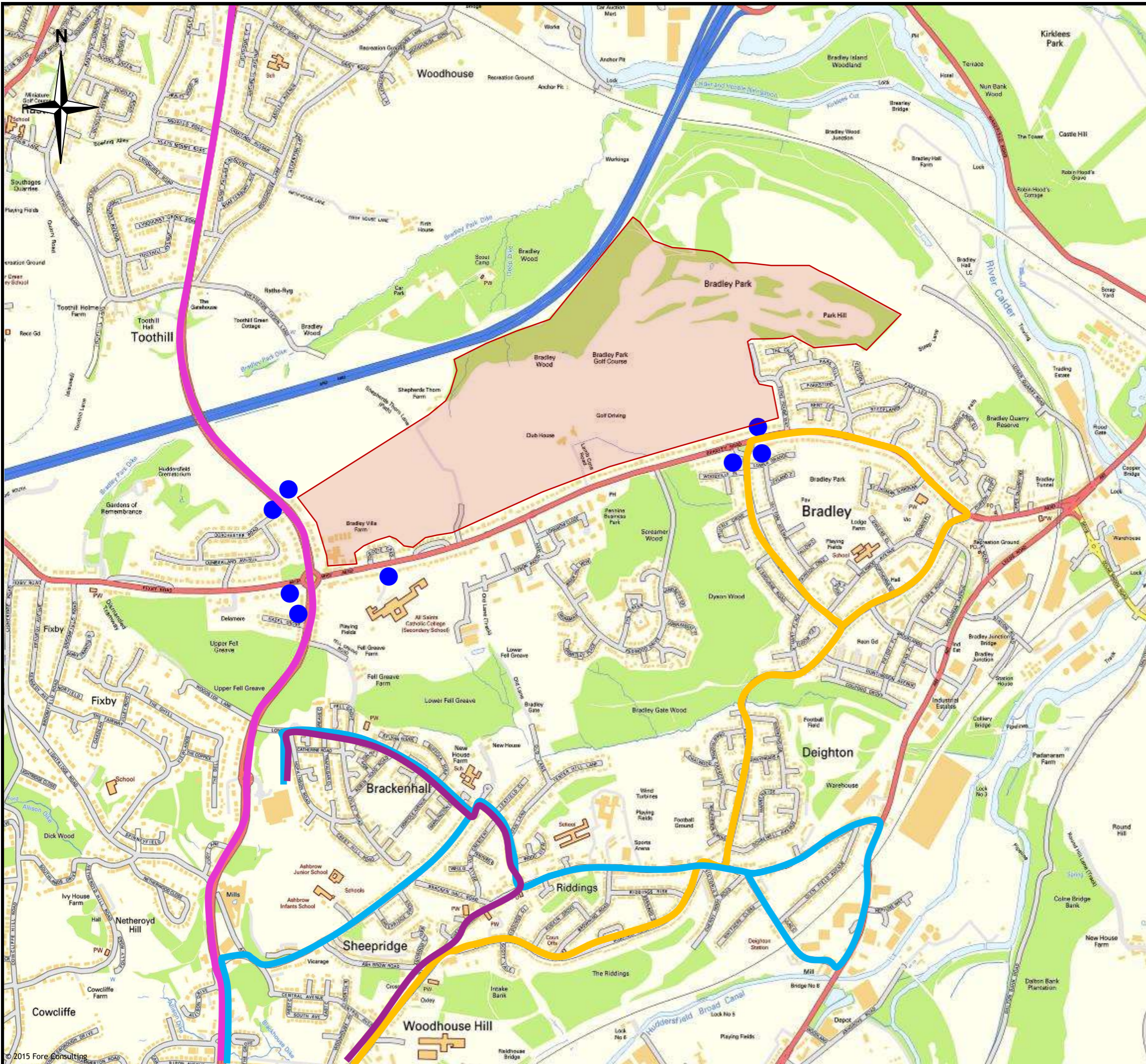
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 Existing Highway Network

Scale: Not to Scale






Figure Status: Issue

Job Number: 3367

Figure Number: 1



**Key:**

-  Site Location
-  Bus Routes 363/X63/X6
-  Bus Route 328
-  Bus Route 360
-  Bus Route 384/385

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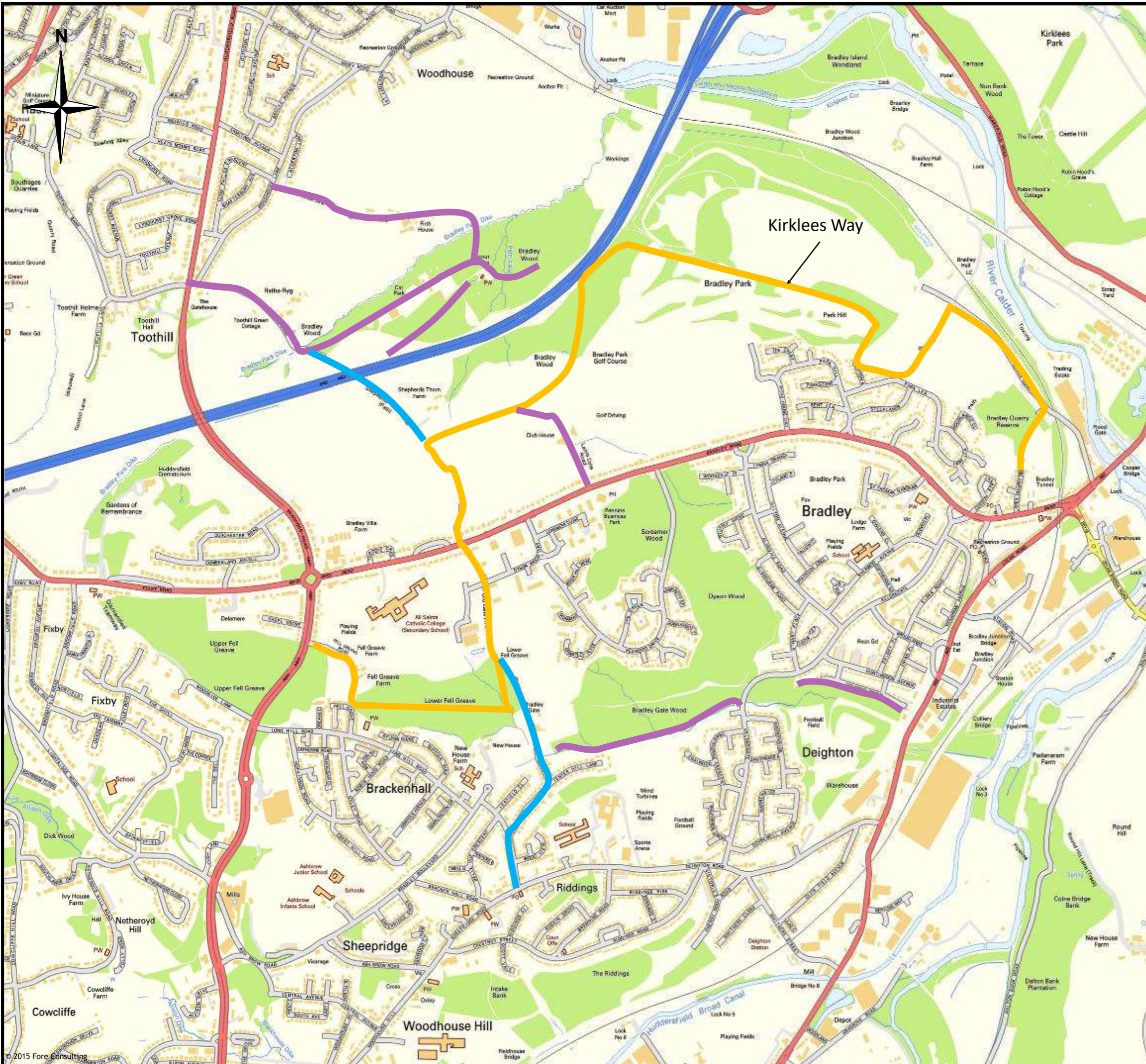
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**Kirklees Council**

Project:  
**Bradley Masterplan**




Figure Title:  
**Public Transport**

Scale: Not to Scale | Figure Status: Issue

Job Number: 3367 | Figure Number: 2



**Key:**

-  Site Location
-  Kirklees Way
-  Other Footpath
-  Non designated footpath

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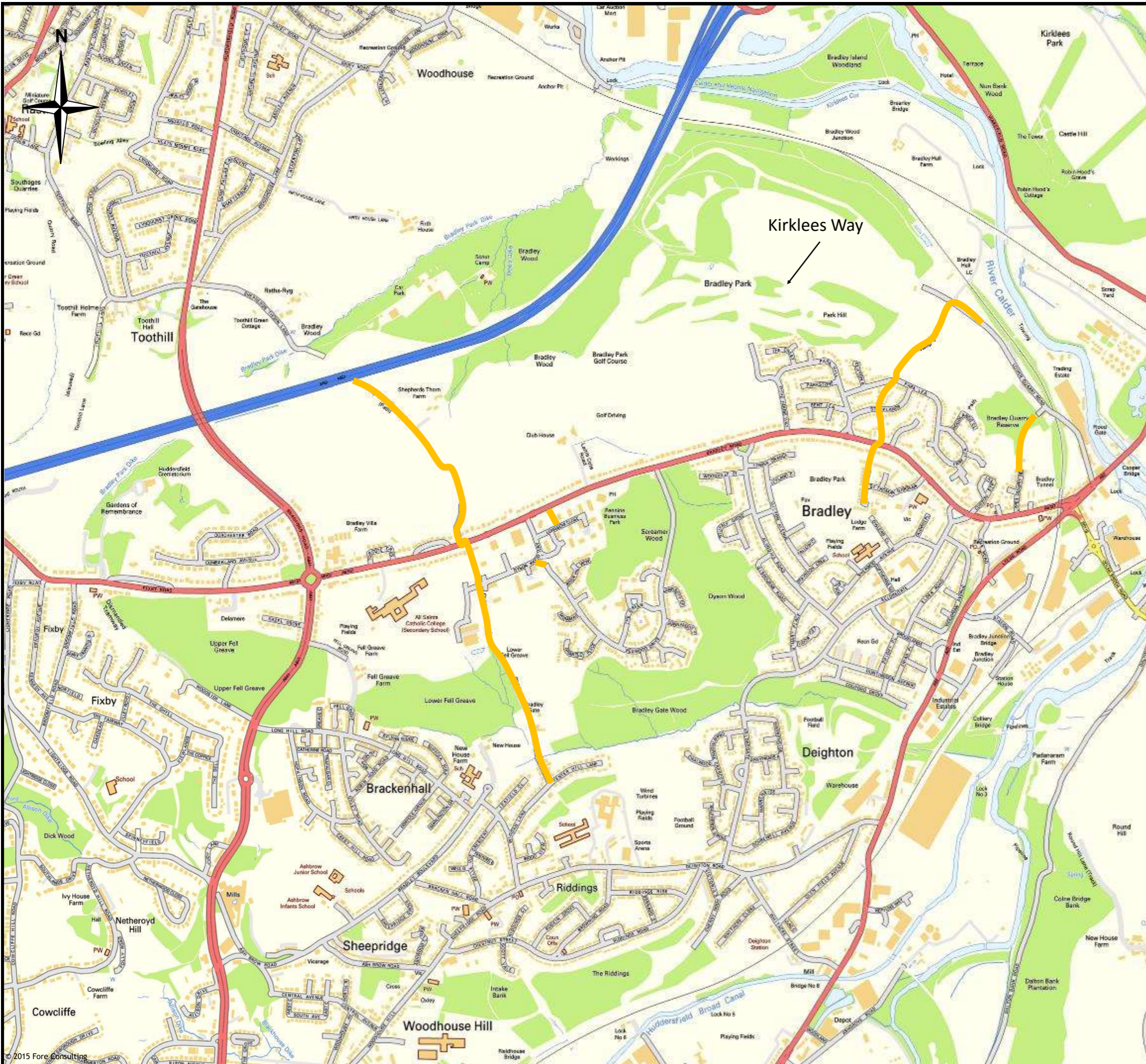
Client:  
**Kirklees Council**

Project:  
**Bradley Masterplan**



Figure Title:  
**Public Rights of Way**

Scale: Not to Scale | Figure Status: Issue

Job Number: 3367 | Figure Number: 3



Key:

-  Site Location
-  Local Cycle Routes

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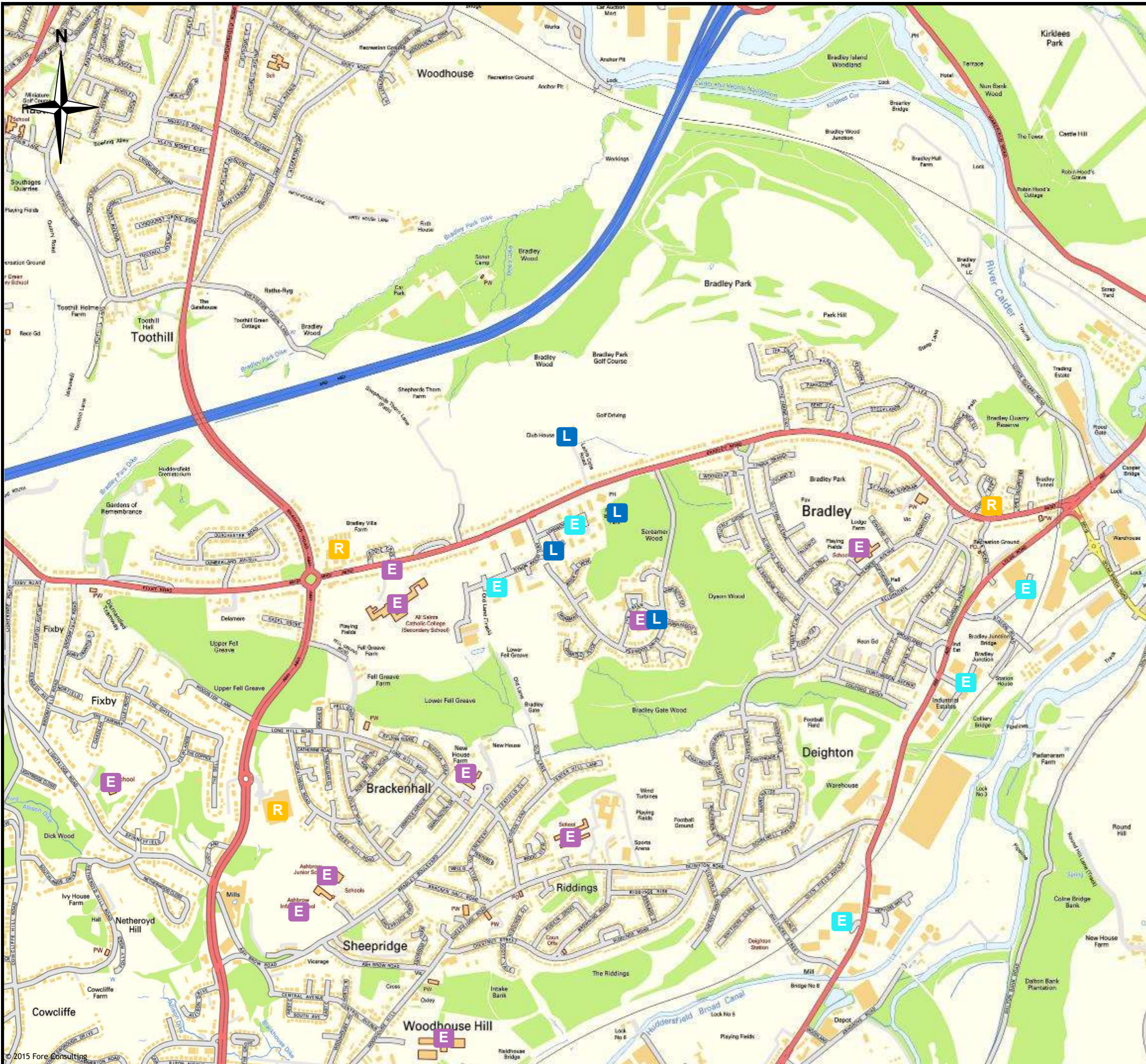
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Project:  
 Bradley Masterplan

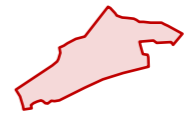
Figure Title:  
 Local Cycle Routes

Scale: Not to Scale | Figure Status: Issue

Job Number: 3367 | Figure Number: 4



Key:



Site Location



Leisure - Pub/Coffee Shop/Bar



Retail



Education - Schools/Nursery



Employment

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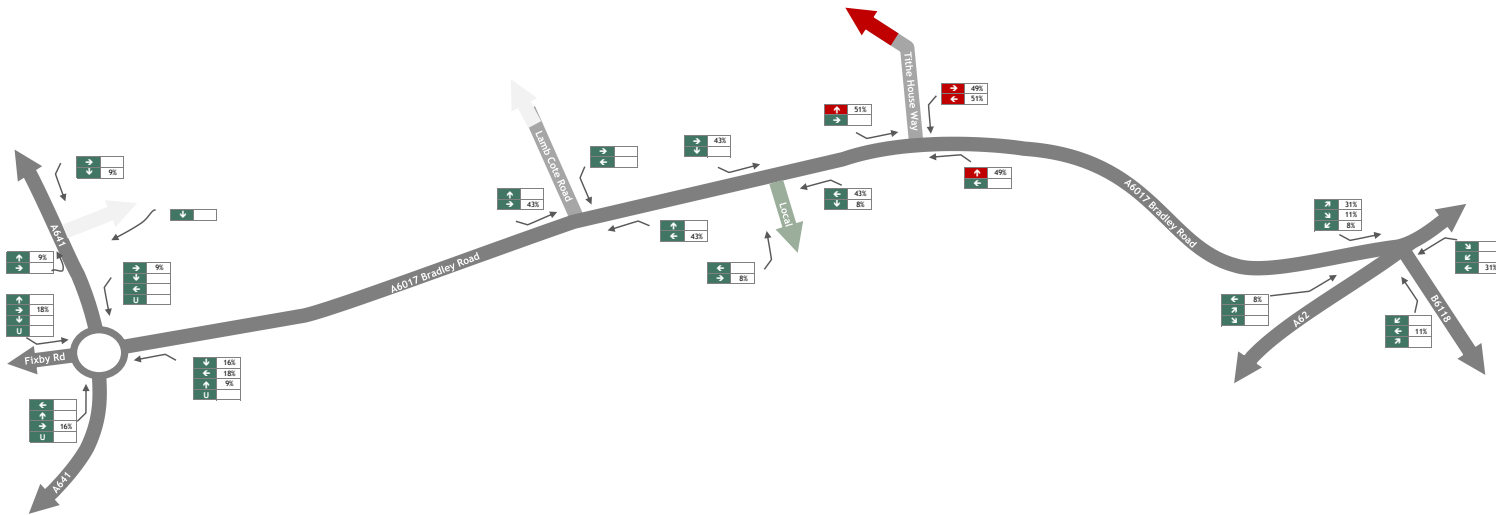
Figure Title:  
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Scale: Not to Scale





Figure Status: Issue

Job Number: 3367

Figure Number: 5



Key:

-  Primary Road
-  Secondary Road
-  Site Access
-  Additional traffic movements not explicitly represented in the network diagram (e.g. minor roads)

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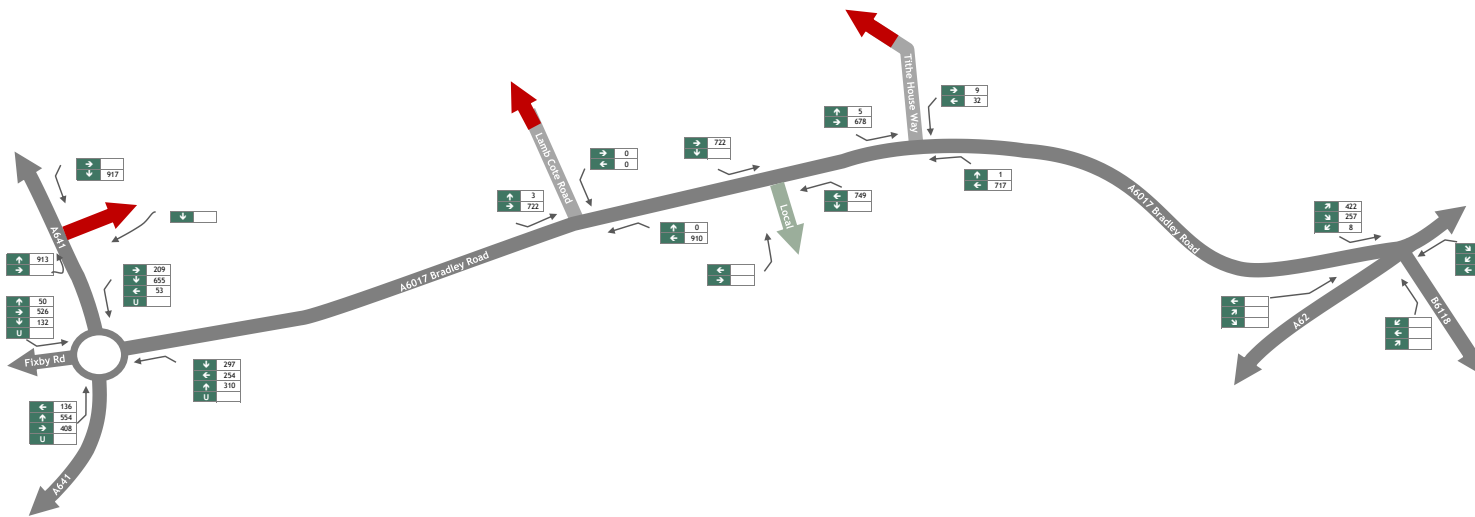
Figure Title:  
Vehicle Trip Distribution

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Figure Status:  
Issue

Job Number:  
3627

Figure Number:  
Figure 6



Key:

-  Primary Road
-  Secondary Road
-  Site Access
-  Additional traffic movements not explicitly represented in the network diagram (e.g. minor roads)

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Figure Title:

2017 Base Flows AM

Scale:

Not to scale

Figure Status:

Issue

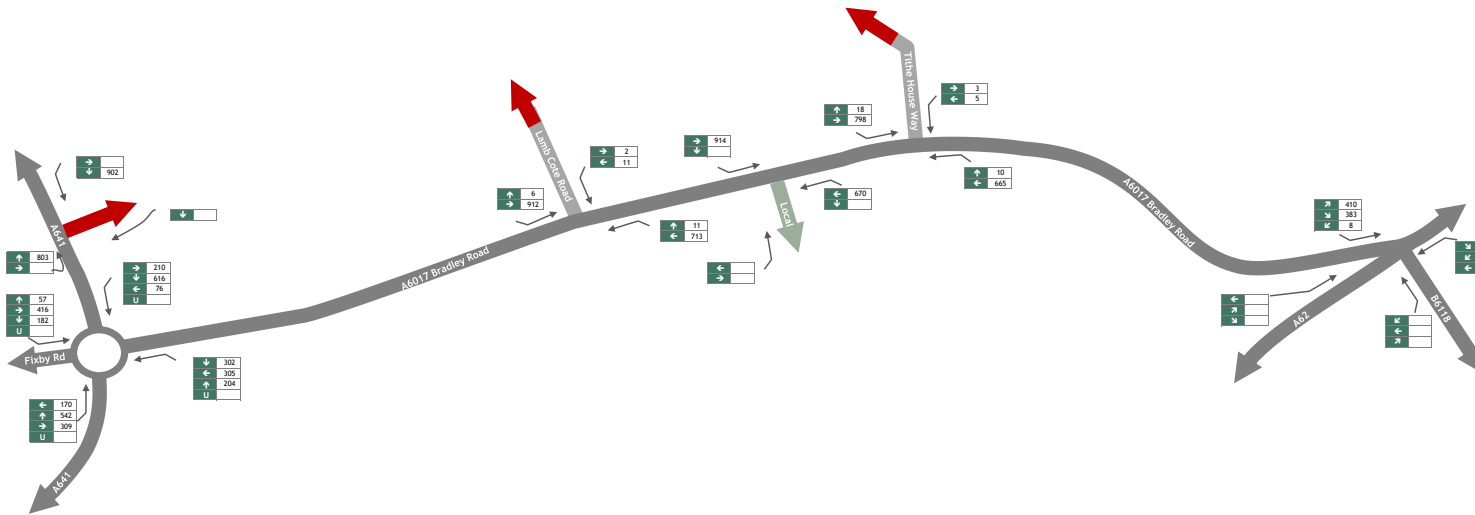
Job Number:

3627





Figure Number:

Figure 7





Key:

-  Primary Road
-  Secondary Road
-  Site Access
-  Additional traffic movements not explicitly represented in the network diagram (e.g. minor roads)

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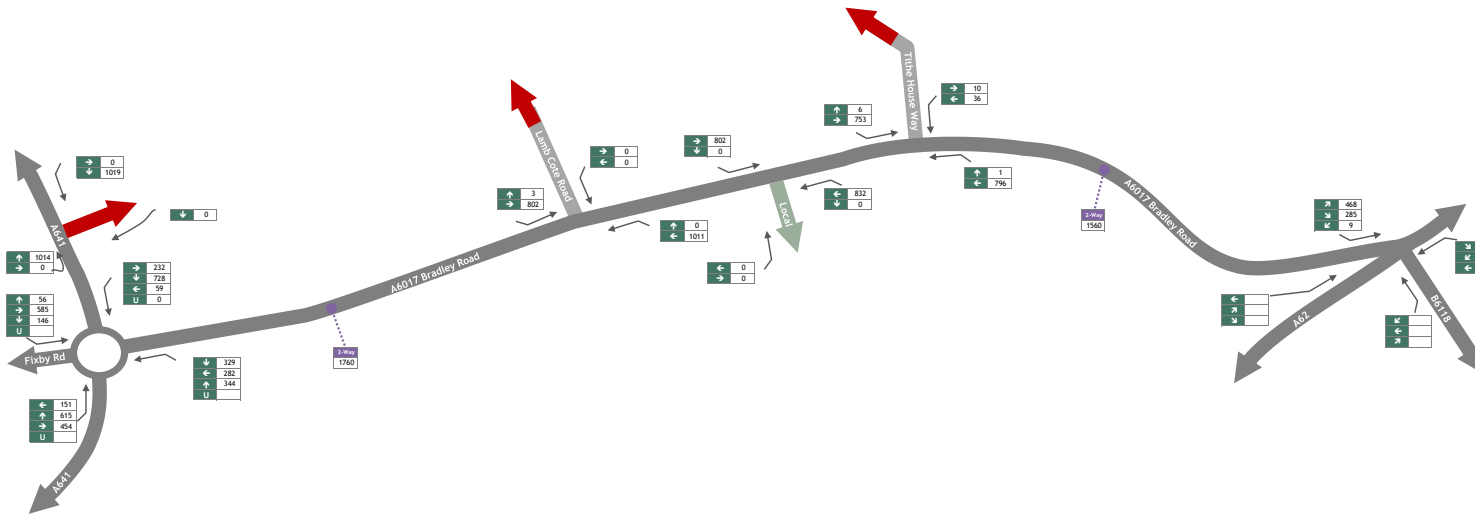
Figure Title:  
2017 Base Flows PM

Scale:  
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Figure Status:  
Issue

Job Number:  
3627

Figure Number:  
Figure 8



Key:

-  Primary Road
-  Secondary Road
-  Site Access
-  Additional traffic movements not explicitly represented in the network diagram (e.g. minor roads)

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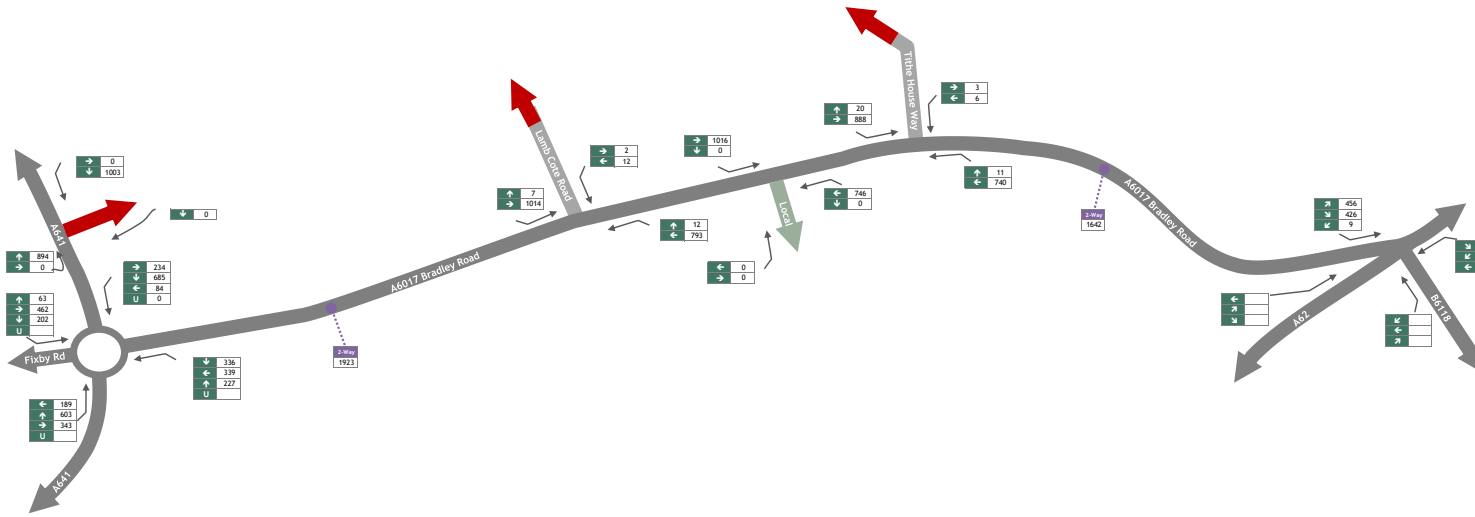
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2025 Do Minimum (With Growth) AM

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Figure Status:  
Issue

Job Number:  
3627

Figure Number:  
Figure 9



Key:

- Primary Road
- Secondary Road
- Site Access
- Additional traffic movements not explicitly represented in the network diagram (e.g. minor roads)

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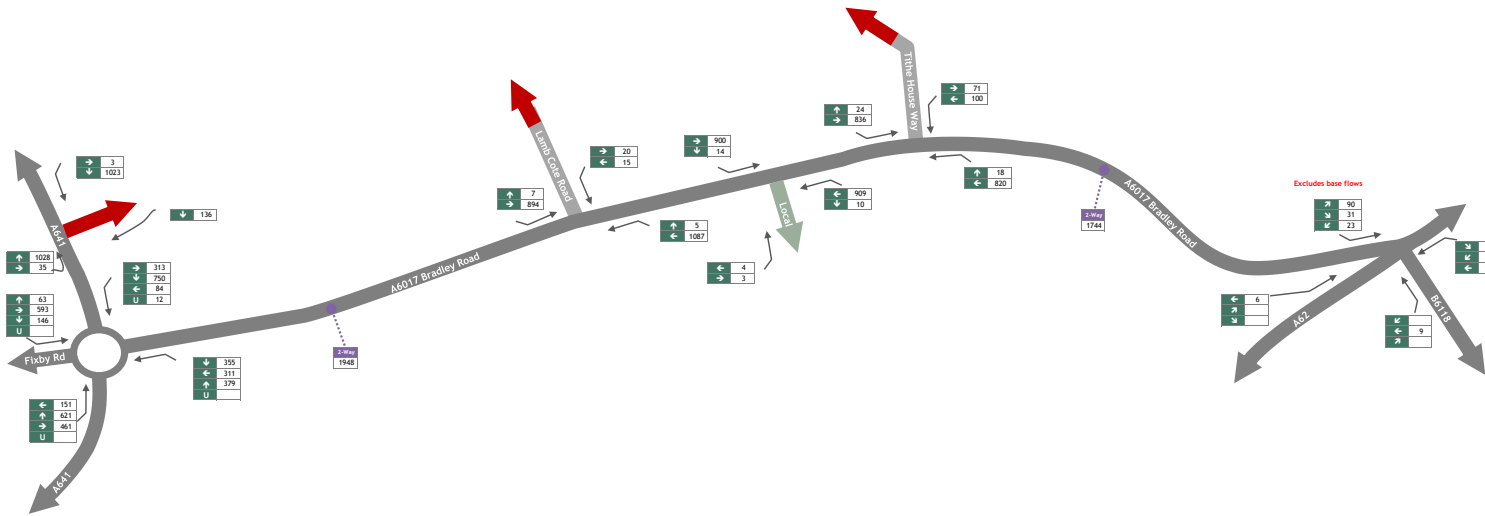
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Figure Status:  
Issue

Job Number:  
3627

Figure Number:  
Figure 10



Key:

-  Primary Road
-  Secondary Road
-  Site Access
-  Additional traffic movements not explicitly represented in the network diagram (e.g. minor roads)

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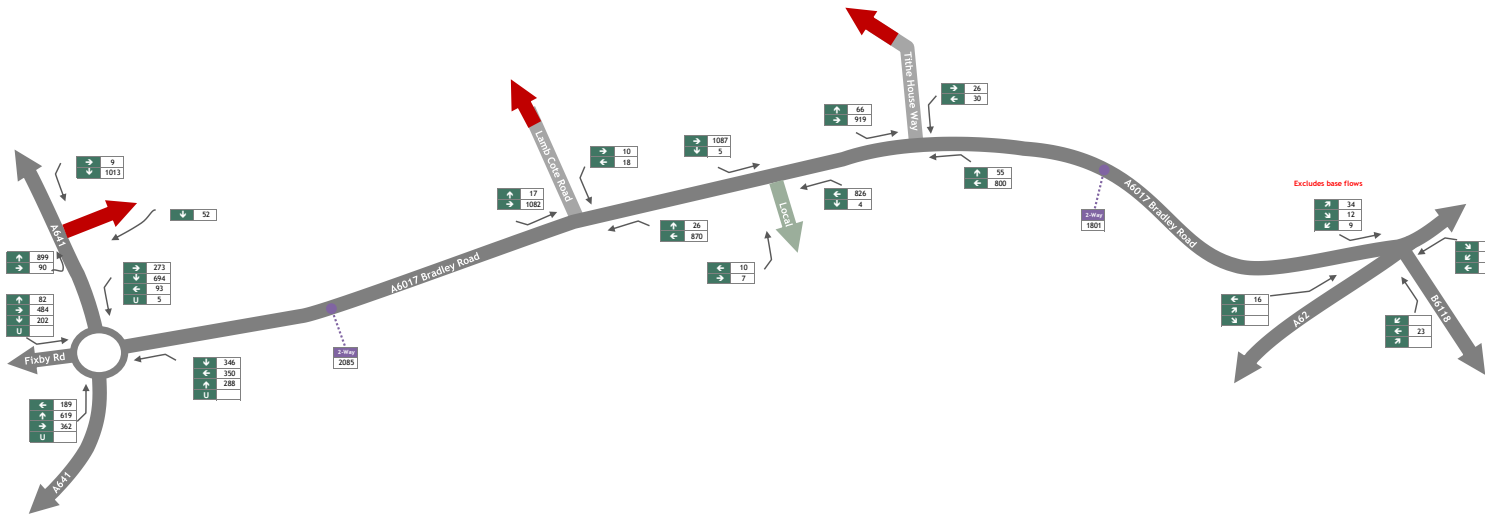
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2025 With Development (Zones 1, 3, and 5) AM

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Figure Status:  
Issue

Job Number:  
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Figure Number:  
Figure 11



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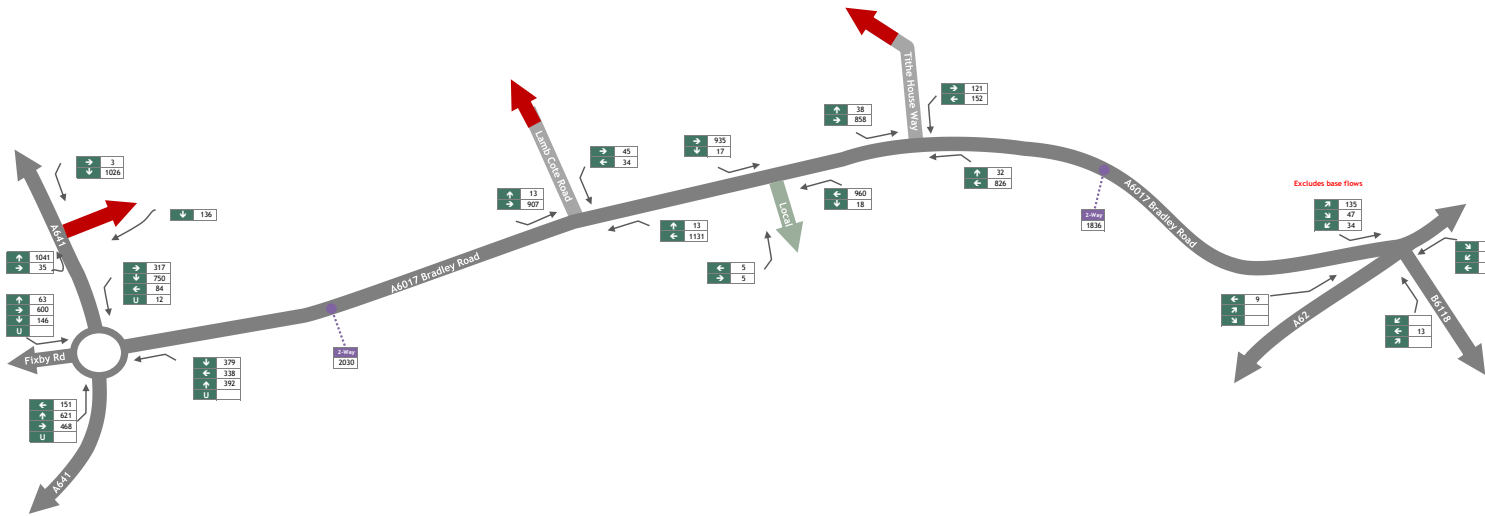
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Not to scale





Figure Status:  
Issue

Job Number:  
3627

Figure Number:  
Figure 12



Key:

-  Primary Road
-  Secondary Road
-  Site Access
-  Additional traffic movements not explicitly represented in the network diagram (e.g. minor roads)

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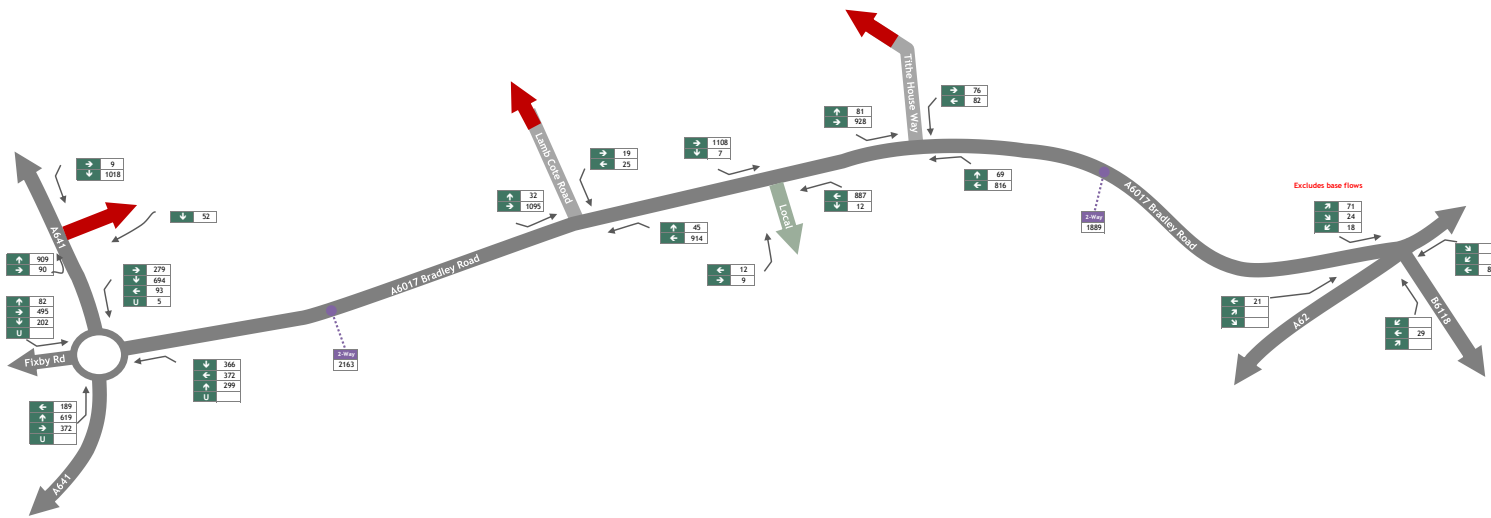
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Scale:  
Not to scale





Figure Status:  
Issue

Job Number:  
3627

Figure Number:  
Figure 13



Key:

-  Primary Road
-  Secondary Road
-  Site Access
-  Additional traffic movements not explicitly represented in the network diagram (e.g. minor roads)

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Figure Title:  
 2025 With Development (Zones 1, 2, 3, 4, and 5) PM

Scale:  
 Not to scale

Figure Status:  
 Issue

Job Number:  
 3627

Figure Number:  
 Figure 14

Drawings

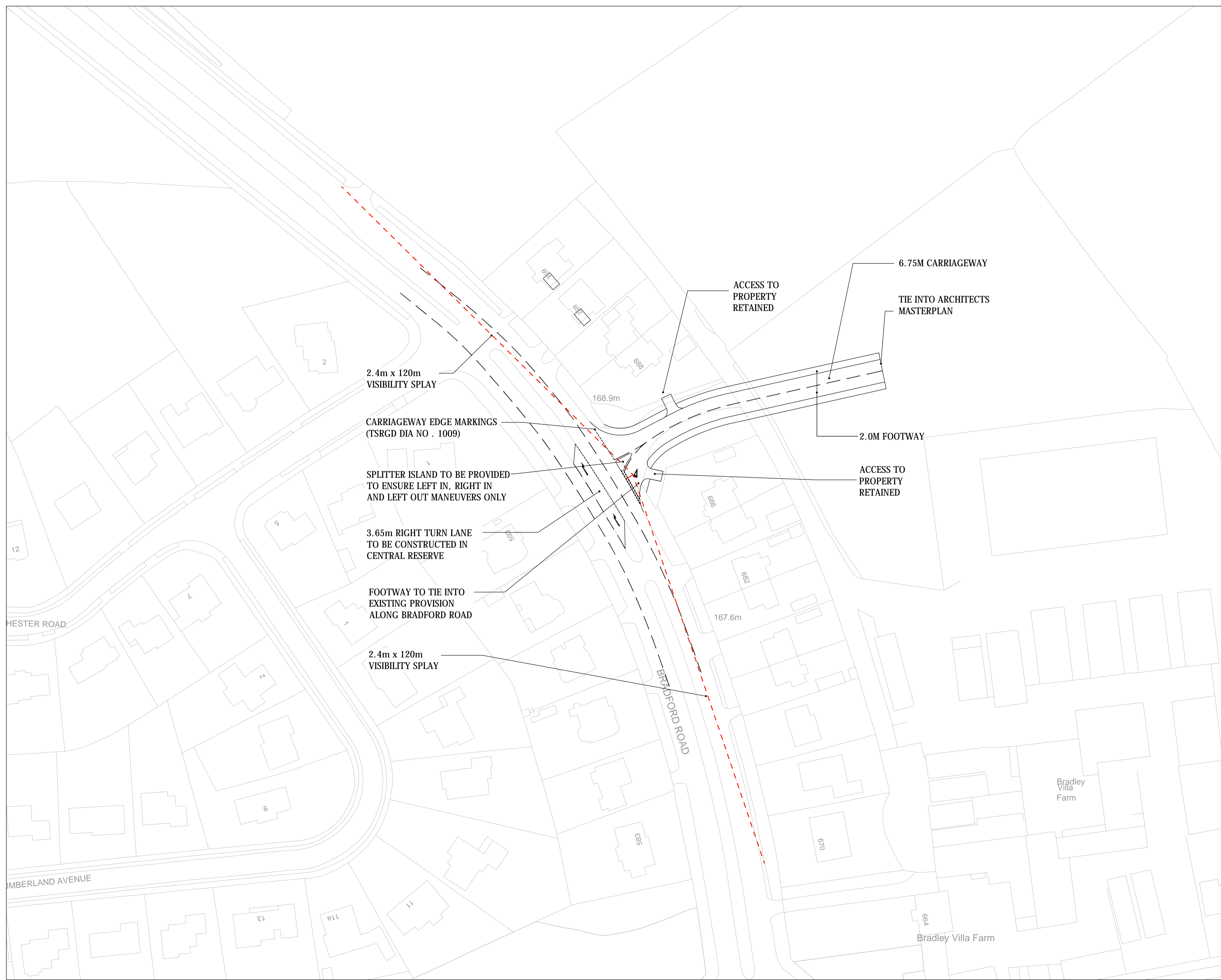
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**DO NOT SCALE**

**NOTES**

1. PRELIMINARY LAYOUT SUBJECT TO FULL TOPOGRAPHICAL SURVEY & DETAILED DESIGN INCLUDING CDM COMPLIANCE, STATUTORY UNDERTAKERS SEARCH, DIVERSION REQUIREMENTS, HIGHWAY DRAINAGE PROVISION, LAND AVAILABILITY AND LOCAL AUTHORITY APPROVAL.
2. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL ARCHITECTS, ENGINEERS & SPECIALISTS DRAWINGS AND SPECIFICATIONS.



REV	DESCRIPTION	DATE	BY

CLIENT:  
**KIRKLEES COUNCIL**

PROJECT:  
**BRADLEY MASTERPLANNING**

DRAWING TITLE:  
**POTENTIAL SITE ACCESS  
 BRADFORD ROAD  
 OPTION 2 INCLUDING RIGHT TURN LANE**

**PRELIMINARY**

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3367	3367 SK001 08	-		

**DO NOT SCALE**

**NOTES**

1. PRELIMINARY LAYOUT SUBJECT TO FULL TOPOGRAPHICAL SURVEY & DETAILED DESIGN INCLUDING CDM COMPLIANCE, STATUTORY UNDERTAKERS SEARCH, DIVERSION REQUIREMENTS, HIGHWAY DRAINAGE PROVISION, LAND AVAILABILITY AND LOCAL AUTHORITY APPROVAL.
2. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL ARCHITECTS, ENGINEERS & SPECIALISTS DRAWINGS AND SPECIFICATIONS.



REV	DESCRIPTION	DATE	BY

CLIENT:  
**KIRKLEES COUNCIL**

PROJECT:  
**BRADLEY MASTERPLANNING**

DRAWING TITLE:  
**POTENTIAL SITE ACCESS  
BRADLEY ROAD  
OPTION 2 - PRIORITY RIGHT TURN LANE**

**PRELIMINARY**

FORE CONSULTING LIMITED  
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34 WELLINGTON STREET  
LEEDS  
LS1 2DE  
0113 2460204  
ENQUIRIES@FORECONSULTING.CO.UK  
WWW.FORECONSULTING.CO.UK

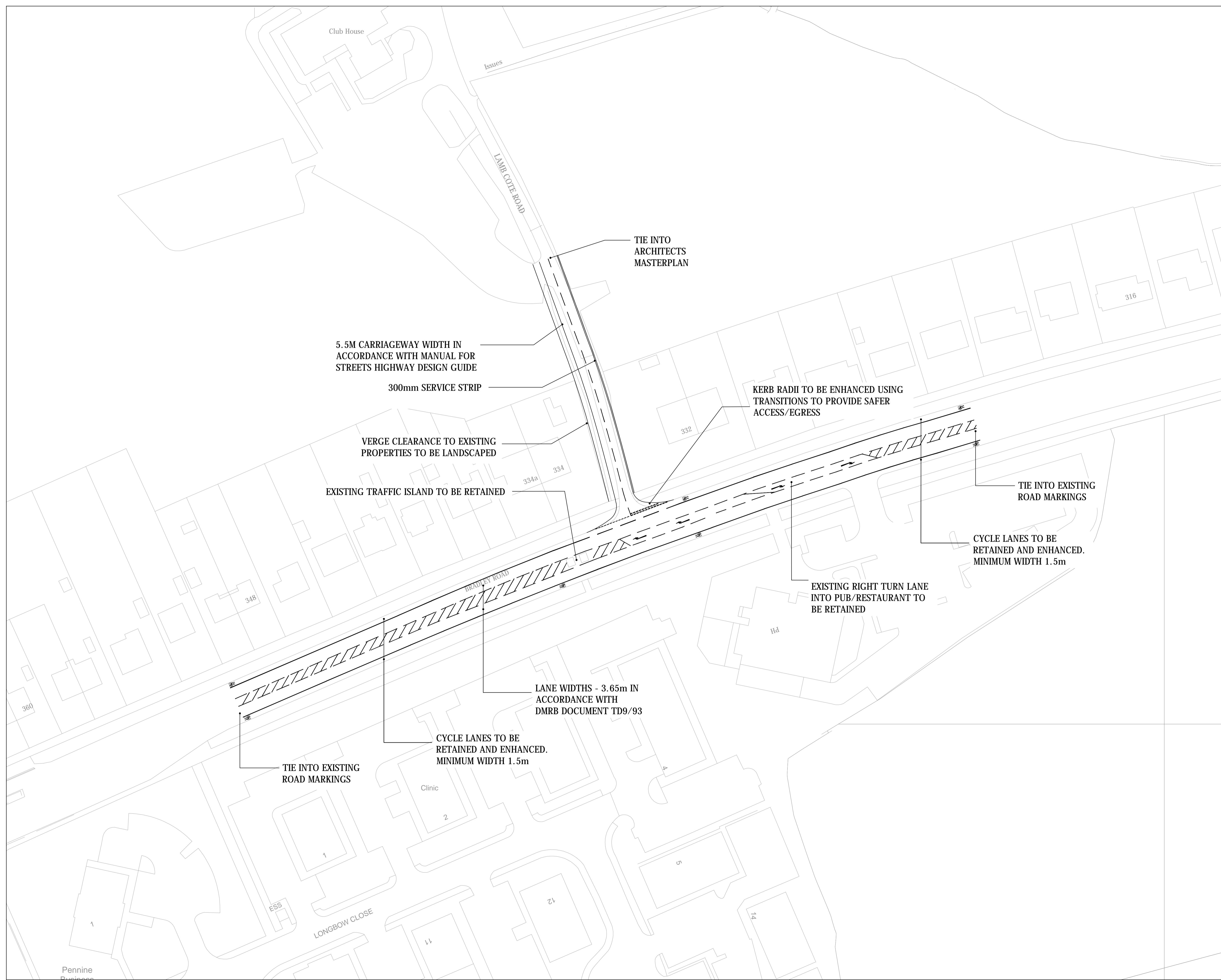


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1. PRELIMINARY LAYOUT SUBJECT TO FULL TOPOGRAPHICAL SURVEY & DETAILED DESIGN INCLUDING CDM COMPLIANCE, STATUTORY UNDERTAKERS SEARCH, DIVERSION REQUIREMENTS, HIGHWAY DRAINAGE PROVISION, LAND AVAILABILITY AND LOCAL AUTHORITY APPROVAL.
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REV	DESCRIPTION	DATE	BY

CLIENT:  
KIRKLEES COUNCIL

PROJECT:  
BRADLEY MASTERPLANNING

DRAWING TITLE:  
POTENTIAL SITE ACCESS  
BRADLEY ROAD  
OPTION 2 - RIGHT TURN LANE PRIORITY JUNCTION

**PRELIMINARY**

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## Appendix A

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Masterplan



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