

**Shaw Laithe Farm, Land off Lower Edge Road, Elland
Proposed Residential Land Allocation including
Educational Land Provision**




Access Appraisal and Transport Assessment

**In Support of Calderdale Initial Draft Local Plan
Allocation LP0978**

September 2017 (Rev 2)

Prepared on behalf of
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Quality Management

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Contents

1. Introduction	1
2. Existing Site Conditions.....	3
3. Accessibility.....	7
4. Development Proposals & Access Strategy	11
5. Traffic Impact Assessment.....	14
6. Summary and Conclusions.....	22

IMAGES

Image 2.1 Site Location Plan	3
Image 5.1 Calderdale 024 Super Output Area	14

TABLES

Table 2.1 Vehicle Speed Survey.....	5
Table 2.2 Personal Injury Accident Analysis – Severity	5
Table 2.3 Personal Injury Accident Analysis – Severity by year	5
Table 2.4 Personal Injury Accident Analysis – Lighting Conditions	5
Table 2.5 Personal Injury Accident Analysis – Road Surface.....	6
Table 2.6 Personal Injury Accident Analysis – Vulnerable Road Users	6
Table 2.7 Personal Injury Accident Analysis – Causation	6
Table 3.1 Accessibility by Foot	7
Table 3.2 Bus service Summary – 450 21668 eastbound.....	8
Table 3.3 Bus service Summary – Lower Edge Road westbound.....	9
Table 3.4 Main Destinations Served.....	9
Table 4.1 Car Parking Survey Summary.....	13
Table 5.1 Proposed Traffic Distribution	15
Table 5.2 TRICS Trip Rates - Residential	17
Table 5.3 TRICS Trip Rates - School	17
Table 5.4 Traffic Generation - Residential.....	17
Table 5.5 Traffic Generation – School Extension	17
Table 5.6 Traffic Generation – 667 Pupil School	18
Table 5.7 Site Access AM and PM 2022 Design.....	18
Table 5.8 A629 Elland Bypass Grade Separated Roundabout – Survey 2017	19
Table 5.9 A629 Elland Bypass Grade Separated Roundabout – Base 2022	19
Table 5.10 A629 Elland Bypass Grade Separated Roundabout – Design 2022	20
Table 5.11 Materiality Assessment (PCU's).....	20

FIGURES - GENERAL

Figure 1 Site Location – Strategic	
Figure 2 Site Location – Local	
Figure 3 Pedestrian Accessibility	
Figure 4 Cycle Accessibility	
Figure 5 Not Used	
Figure 6 Parking Beat Survey Scope	



FIGURES – TRAFFIC FLOWS

Figure 101 AM 2016 Survey Flows
Figure 102 PM 2016 Survey Flows
Figure 103 AM Traffic Distribution
Figure 104 PM Traffic Distribution
Figure 105 AM 2021 Base
Figure 106 PM 2021 Base
Figure 107 AM Residential Traffic Generation
Figure 108 PM Residential Traffic Generation
Figure 109 AM School Traffic Generation
Figure 110 PM School Traffic Generation
Figure 111 AM 2021 Design
Figure 112 PM 2021 Design

APPENDICES

Appendix A Highway Adoption
Appendix B PRoW Extract
Appendix C Vehicle Speed Survey
Appendix D Personal Injury Accident Data
Appendix E Illustrative Masterplan
Appendix F Drawing 165015/GA/01 – Proposed Access Arrangements
Appendix G Parking Beat Survey
Appendix H Distribution
Appendix I TRICS Outputs
Appendix J Modelling Outputs



1. Introduction

1.1.1 This Access Appraisal and Transport Assessment report supports the Calderdale Initial Draft Local Plan Allocation ref LP0978 on land to the north of Lower Edge Road, Elland for residential and educational purposes. The Site has an area of circa 8.3 hectares (20.5 acres) and an estimated capacity of 222 dwellings together with land for the classroom etc expansion of the Old Earth Primary School.

1.1.2 The Site is located on land immediately adjacent to Old Earth Primary School and offers the potential to deliver an extension to the School and its facilities to create capacity for up to 105 additional full time pupils within 3 new classrooms and 26 part time pupils. Discussions between the School and the site owners are ongoing and there is a collaborative approach to delivery.

1.1.3 The Calderdale Initial Draft Local Plan Site Assessment Report for site LP0978 'Land off Lower Edge Road/Shaw Lane Elland HD6 3JN' states the following with regard to Highways/Transport Related issues:

- Strategic Road Network RAG: No Significant impact on the road network;
- Site Access: Limited frontage onto Lower Ede Road although may be sufficient to provide the required splays subject to results of speed surveys. Access will need to be considered in conjunction with the 0220 opposite and the adjacent large employment site 1447;
- Mitigation: Creation of an acceptable new access road to adoptable standards. Consideration to be given to interaction of access for site 1447. TRO's required to remove on-street parking adjacent to access;
- Conclusion: Developable;
- Technical Information Required: Design of Feasible access layout for the three sites;
- Site Access RAG: Potential access issues which are resolvable;
- Local Road Network: Impact on the road network requiring mitigation.

1.1.4 This report considers the items raised above and focuses on accessing the Site's potential for development in relation to the surrounding highway network as well as reviewing the possible Site access opportunities.

1.1.5 In arriving at our finding we have:

- Undertaken a Site visit and obtained photographic record;
- Obtained measurements of the local highway network;
- Observed the operation of the existing highway network during peak periods, including the school peak periods;
- Obtained details of personal injury accident data;
- Undertaken volumetric and speed surveys along the Site frontage; and
- Obtained highway adoption information for the local highway network.

1.1.6 The document structure is as follows:

- Chapter 2 – describes the Site and existing transport conditions;
- Chapter 3 – describes the accessibility of the Site by non-car modes including accessibility to local facilities/services;



- Chapter 4 – defines the development proposals including the access strategy;
- Chapter 5 – sets out the trip generation methodologies; and
- Chapter 6 – summarises and concludes the report.



2. Existing Site Conditions

2.1 LOCAL HIGHWAY NETWORK

2.1.1 The Site has an overall area of approximately 8.3 hectares (20.5 acres) and is located within Elland some 5.0km southeast of Halifax and 2.8km southwest of Brighouse.

2.1.2 The Site in relation to the strategic and local transport networks is shown on Figures 1 and 2 (see extract in Image 2.1 below) respectively.

Image 2.1 Site Location Plan



2.1.3 The Site is capable of accommodating 222 residential dwellings and the School expansion and incorporates several fields which are currently in agricultural use. The Site is bound by Lower Edge Road to the south, Old Earth Primary School and existing housing to the west, the railway line to the north (with the Industrial Estate beyond) and Shaw Lane to the east.

2.1.4 The Site slopes down gradually from Lower Edge Road towards the railway line and forms a 50m frontage onto Lower Edge Road and is flanked by Shaw Lane along its entire eastern boundary

2.1.5 Lower Edge Road runs west to east for approximately 1.8km from its junction with Whitwell Green Lane where it becomes Tofts Grove at Delf Hill, Rastrick. Beyond Whitwell Green Lane to the west, Lower Edge Road becomes Elland Road and the Elland Riorges Link between Spire Elland Hospital and Lowfields Business Park before meeting the A629 Elland Bypass at a grade separated roundabout.



2.1.6 Along the frontage of the Site, Lower Edge Road is subject to a 20mph speed limit which commences at a priority give way system some 100m east of the Lower Edge Road/Shaw Lane junction. Vehicle speed restraint measures in the form of speed cushions are provided along the Site frontage in the vicinity of Old Earth Primary School.

2.1.7 School 'Keep Clear' markings and associated parking restrictions are in place at sensitive locations on the surrounding highway network preventing parking, waiting and loading between the hours of 08:15 – 09:15 and 14:30 – 16:00 (Monday to Friday) to coincide with the peak times of the school. To the east of Shaw Lane, Lower Edge Road is also subject to a 7.5t weight limit (except for access).

2.1.8 Lower Edge Road is a residential collector road with a width of some 5.9m along the Site frontage. Footways of circa 1.5m are provided along each flank.

2.1.9 Traffic flows along Lower Edge Road, adjacent to the Site are typically:

- AM Peak Hour (07:00-08:00) two way - 490
- PM Peak hour (17:00-18:00) two way - 605
- Annual Average Daily Traffic (7 day) - 2,386
- Annual Average Weekday Traffic (5 day) - 2,708

2.1.10 Shaw Lane meets Lower Edge Road at a priority controlled T junction to the south east of the Site boundary. Shaw Lane is 8.0m wide with a 1.8m wide footway along its western flank. Shaw Lane forms part of public footpath 19 which continues in a northerly direction and crosses beneath the nearby railway line.

2.1.11 To the west of the Site, Lower Edge Road becomes Elland Road and the Elland Riorges Link before meeting the A629 Elland Bypass at a grade separated roundabout junction which also facilitates access to Lowfields Business Park. The recently construction Morrison's foodstore is located immediately to the west of this junction.

2.1.12 To the east of the Site, Lower Edge Road climbs up towards Elland Edge Quarry at Delph Hill, Rastrick.

2.1.13 Public footpath 19 runs midway through the Site between Grassmere Drive and Shaw Lane. Footpath 19 continues beneath the railway line connecting to footpath 14 which continues within Strangstry Wood and Reins Wood before joining Lillands Lane within Oaklands. Bridleway 42 meets footpath 19 within the nearby nature reserve and eventually meets the A6025 Elland Road at Cromwell Bottom.

2.1.14 A plan identifying the limit of adopted highway maintainable at public expense is contained at Appendix A and an extract of local public rights of way is contained at Appendix B.

2.2 VEHICLE SPEED SURVEY

2.2.1 A vehicle speed survey following the guidance contained in the Departmental Advice Note TA 22/81 'Vehicle Speed Measurements on All Purpose Roads' has been undertaken along the Site frontage on Lower Edge Road on Tuesday 9th February 2016 when the road surface was dry.

2.2.2 Full details of the speed survey are contained within Appendix C with a summary given in Table 2.1.



Table 2.1 Vehicle Speed Survey

Lower Edge Road	Eastbound 214 readings	Westbound 230 readings
Mean Speed	17 mph	22 mph
85 th percentile speed	21 mph	26 mph
85 th percentile speed	19 mph	23 mph

2.2.3 As can be seen from the results contained within Table 2.1, vehicle speeds in the vicinity of the Site are low and generally in accordance with the speed limit.

2.3 PERSONAL INJURY ACCIDENT DATA

2.3.1 Personal injury accident data has been obtained for the highway network in the vicinity of the Site for the most recently available five year period between 2011 and 2016. The study area includes a 1.5km length of Lower Edge Road from its junction with the A629 and beyond its junction with Shaw Lane.

2.3.2 For the five year period there have been a total of 9 accidents, of which 6 were classified as being slight in severity and 3 were serious. No fatal accidents have been recorded. Full details of the accident can be found at Appendix D and an analysis of the accidents can be found within Tables 2.2 to 2.7.

Table 2.2 Personal Injury Accident Analysis – Severity

Severity	No of accidents	Percentage
Slight	6	67%
Serious	3	33%
Fatal	0	0%
Total	9	100%

Table 2.3 Personal Injury Accident Analysis – Severity by year

Severity	2011	2012	2013	2014	2015	2016	Total
Slight	0	1	3	1	1	0	6
Serious	2	0	0	1	0	0	3
Fatal	0	0	0	0	0	0	0
Total	2	1	3	2	1	0	9

Table 2.4 Personal Injury Accident Analysis – Lighting Conditions

Lighting	No of accidents	Percentage
Dark	3	33%
Light	6	67%



Table 2.5 Personal Injury Accident Analysis – Road Surface

Surface	No of accidents	Percentage
Dry	4	44%
Wet	5	56%

Table 2.6 Personal Injury Accident Analysis – Vulnerable Road Users

VRU	No of accidents	Percentage
Pedestrian	0	0%
Cyclist	2	22%
Motorcycle	0	0%

Table 2.7 Personal Injury Accident Analysis – Causation

Causation	2011	2012	2013	2014	2015	2016	Total
Rear shunt	-	-	1	-	1	-	2
Loss of control	1	-	1	1	-	-	3
Cyclist	-	-	1	1	-	-	2
Impaired by alcohol	1	-	-	-	-	-	1
Driver error	-	1	-	-	-	-	1
Total	2	1	3	2	1	0	9

2.3.3 The following conclusions can be made:

- Total of 9 accidents over 5 years;
- Average of 1.8 accidents per year;
- 6 slight accidents (67%), 3 serious accidents (33%) and 0 fatal accidents (0%);
- No accidents have been recorded at the Lower Edge Road/Shaw Lane junction;
- No accidents have been recorded along Shaw Lane;
- No accident have been recorded along the Site frontages;
- No accidents have been recorded in 2016 at the time of writing;
- No accident clusters have been identified; and
- No accident trends have been identified.

2.3.4 Whilst any accident is regrettable, having reviewed the accidents in detail there is no evidence to suggest that any of the accidents can be attributed to problems with junction or highway layout based upon the information available. The proposed development will not exacerbate the existing situation.



3. Accessibility

3.1 PEDESTRIAN FACILITIES

3.1.1 The IHT document 'Guidelines for Providing for Journeys on Foot' (published in 2000) recommends various thresholds for desired, acceptable and preferred maximum distances to various services as shown in Table 3.1.

Table 3.1 Accessibility by Foot

	Town Centres (m)	School/Work (m)	Elsewhere (m)
Desirable	200	500	400
Acceptable	400	1,000	800
Preferred Maximum	800	2,000	1,200

Source – Table 3.2 'Guidelines for Providing for Journey on Foot' published by IHT

3.1.2 The Site benefits from substantial pedestrian infrastructure in the immediate vicinity providing access to a range of amenities and complementary destinations that are likely to generate numerous walking trips to and from the development Site.

3.1.3 The pedestrian provision in the immediate vicinity of the Site is in a good state of repair. Lit footways are provided along both flanks of Lower Edge Road which are well maintained and incorporate frequent drop kerb crossings.

3.1.4 Figure 3 illustrates a 2km (25 minute) walk distance produced using Network Analyst 10.0 software which demonstrates that there are numerous facilities within an acceptable journey time from the Site.

3.1.5 The following key facilities can be accessed on foot:

- Old Earth Primary School can be walked in less than 5 minutes;
- Field Lane Primary School (1.6km) can be walked within 25 minutes;
- Elland Church of England School (1.9km) can be walked within 25 minutes;
- Low Fields Business Centre (1.5km) can be walked within 20 minutes;
- Convenience store located along Lower Edge Road (850m) can be walked within 10 minutes;
- Elland recreation ground (950m) can be walked within 11 minutes;
- Morrison's Foodstore (1.4km) can be walked within 17 minutes;
- Elland Dental Practice (1.9km) can be walked within 25 minutes; and
- Bankfield Surgery (1.6km) can be walked within 20 minutes.

3.1.6 It is therefore concluded that the proposed Site is accessible on foot with good links to local schools, employment, retail and leisure facilities.

3.2 CYCLING FACILITIES

3.2.1 An acceptable and comfortable distance for general cycling trips is considered to be up to 5km as referred to in Local Transport Note 2/08 (published in October 2008 by the DfT). However, the same guidance also refers to commuting cycle trips up to 8km. From the Site, an 8km



catchment area encompasses the whole of Elland including surrounding areas of Rastrick, Brighouse, Lindley, Lightcliffe, Halifax, Sowerby Bridge and Huddersfield.

3.2.2 Figure 4 illustrates an 8km (30 minute) cycle distance produced using Network Analyst 10.0 software which demonstrates that there are numerous facilities within Elland Town Centre within a 5-10 minute cycle from the Site.

3.2.3 The following key facilities can be accessed by bicycle:

- Shops and facilities within Elland can be cycled within 5-10 minutes;
- Halifax and Huddersfield Town Centres can be cycled within 30 minutes; and
- Low Fields Business Park can be cycled within 5 minutes.

3.2.4 It is therefore concluded that the proposed Site is accessible by cycle with good links to local schools, employment, retail and leisure facilities.

3.3 BUS SERVICES

3.3.1 There are a number of bus services within the vicinity of the Site, with the nearest bus stops located on Lower Edge Road within 100m of the Site frontage (eastbound and westbound). A summary of the existing bus stop provision in the immediate vicinity of the Site can be found below:

Bus stop Ref: 450 21668

Bus stop Ref: 450 21667

Location: Lower Edge Road

Location: Lower Edge Road

Buses towards: serves both sides of the road **Buses towards:** serves both sides of the road

Services: 257, 258, 278, E3, P5

Services: 257, 258, 278, P5, R2

Facilities: Bus Shelter, timetable information **Facilities:** Pole, bus timetable information

3.3.2 Tables 3.2 and 3.3 provide a summary of the services routing to/from these stops.

Table 3.2 Bus service Summary – 450 21668 eastbound

Service	Route	Operator	Days of Operation	Approximate Frequency	Time of Operation
257	Elland - Brighouse	The Halifax Bus Company	Monday – Friday	120 mins	09:59-15:59
			Saturday	120 mins	09:59-15:59
			Sunday	No service	-
258	Elland - Brighouse	The Halifax Bus Company	Monday – Friday	2 services	11:02, 13:02
			Saturday	No service	-
			Sunday	No service	-
278	Halifax - Dewsbury	Arriva	Monday – Friday	60 mins	06:12-21:48
			Saturday	60 mins	08:42-21:48
			Sunday	60 mins	09:33-19:48



Table 3.3 Bus service Summary – Lower Edge Road westbound

Service	Route	Operator	Days of Operation	Approximate Frequency	Time of Operation
257	Brighouse - Elland	The Halifax Bus Company	Monday – Friday	120 mins	10:50-16:50
			Saturday	120 mins	09:49-15:49
			Sunday	No service	-
258	Brighouse - Elland	The Halifax Bus Company	Monday – Friday	2 services	11:43, 13:43
			Saturday	No service	-
			Sunday	No service	-
278	Dewsbury - Halifax	Arriva	Monday – Friday	60 mins	06:22-21:02
			Saturday	60 mins	07:32-21:02
			Sunday	60 mins	08:47-18:47

3.3.4 A summary of the main destinations served and indicative journey times can be found in Table 3.4.

Table 3.4 Main Destinations Served

Destination	Service	Estimated Journey Time
Brighouse Bus Station	257, 258, 278	11 mins
Dewsbury	278	40 mins
Mirfield	278	25 mins
Rastrick	257, 258	8 mins
Rastrick High School	E3	5 mins
Ravensthorpe	278	32 mins
Brooksbank School	278	10 mins
Calderdale Royal Hospital	278	15 mins
Elland	257, 258	3 mins
Halifax Town Centre	278	21 minutes

3.3.5 As can be seen from Tables 2.2, 2.3 and 2.4 the existing bus services provide regular journeys to major employment, retail, health, leisure and education facilities.

3.3.6 The Site is considered to be well served by bus services.

3.4 RAIL SERVICES

3.4.1 It is understood that funding has been secured by the West Yorkshire Combined Authority for a new railway in Elland which would be located on the Calder Valley line. The new station would provide direct trains to Leeds, Huddersfield, Bradford, Halifax and Manchester.

3.4.2 It is understood that the proposed station will be operational by 2022 and will be situated adjacent to the Lowfields Business Park some 0.8km to the west of the development.



3.5 SUMMARY

3.5.1 It is concluded that the proposed development Site provides good accessibility by foot, cycle and public transport and as such is in a sustainable location.



4. Development Proposals & Access Strategy

4.1 PROPOSED DEVELOPMENT

4.1.1 The preliminary development proposals are shown on the Illustrative Masterplan by STEN Architects at Appendix E, which comprises of the following:

- 222 residential dwellings;
- Extension to Old Earth Primary School to create classroom capacity for approximately 105 full time and 26 part time pupils;
- Enhanced car parking and drop off facilities for Old Earth Primary School; and
- Associated access, parking, landscaping and infrastructure works.

4.1.2 The following section describes how access to the Site can be achieved.

4.2 PROPOSED ACCESS STRATEGY

4.2.1 The Site is bound by Lower Edge Road along its southern boundary which provides appropriate opportunities to access the development Site.

4.2.2 Drawing 16015/GA/01 rev A contained at Appendix F illustrates a proposed access arrangement which comprises of a 6.75m carriageway, 6m radii and 2.0m footways to each flank. The access has been designed to an adoptable standard in accordance with the former West Yorkshire Metropolitan County Council Highway Design Guide.

4.2.3 Visibility splays in full accordance with Manual for Street (MfS - 2007 & MfS2 - 2010) have been accommodated based upon the 85th percentile wet weather vehicle speeds recorded within Table 2.1. Drawing 16015/GA/01 rev A contained at Appendix F demonstrates that the required visibility splays of 2.4m x 23m to the west and 2.4m x 30m to the east can be achieved.

4.2.4 With regard to junction spacing MfS2 states:

“In the past, guidance on minimum junction spacing has often been based on recommended stopping sight distances (SSD) for 85th percentile speeds. The reductions in SSD compared to previous practice means that junction spacing criteria determined on this basis should be reduced. However, in any event there appears to be little evidence that spacing criteria based on SSD are justified on safety or other grounds”.

4.2.5 The proposed access has been located some 53m (centreline to centreline) from Shaw Lane, which significantly exceeds the SSD distance and therefore provides ample junction spacing to allow the access to be used safely. This junction spacing demonstrates that appropriate access can be provided to both the residential allocation and the former brickworks site to the east, which can be accessed from Shaw Lane. It is acknowledged that an allocation of the former brickworks site is not preferred by the LPA.

4.2.6 The proposed access design also takes into account a currently proposed housing allocation of Site Ref: LP0220 opposite. A new access to serve Site LP0220 on land to the south of Lower Edge Road has been shown which provides a junction separation of 52m again significantly exceeding the recommended SSD value for junction spacing. The access which is located on the southern flank of Lower Edge Road has also been situated over 50m to the west of the existing priority give way feature to provide appropriate separation.

4.2.7 The proposed access arrangements demonstrate that access can be achieved to the proposed allocation (LP0978) and also does not impact on the potential delivery of other sites.



4.3 INTERNAL LAYOUT

4.3.1 The Illustrative Masterplan by STEN Architects at Appendix E includes the new access onto Lower Edge Road, which would provide access to the residential development and the Old Earth Primary School expansion site.

4.3.2 The initial shared section of the spine road has been designed with a 6.75m carriageway to cater for School coaches, minimise any potential for a blockage (coupled with associated Traffic Regulation Orders along the spine road and along Lower Edge Road), whilst also providing suitable emergency vehicle access.

4.3.3 The new access to the School enables a one way system to be implemented to provide significant efficiency benefits during both school drop off and pick up times. School related traffic would be able to access via the new access onto Lower Edge Road and utilise a new drop off parking area and exit via the existing School access.

4.3.4 The new drop off has been shown with 70 car parking spaces including 5 disabled spaces which coupled with suitable traffic regulation orders in the vicinity of the school would relieve significant on street parking along Lower Edge Road (as detailed within section 4.4) which contributes towards both highway safety and efficiency issues along this route.

4.4 SCHOOL PARKING SURVEY

4.4.1 In order to identify the current level of on street parking which occurs in the vicinity of the School and help inform the size of the proposed drop off facility, car parking surveys have been undertaken by an independent survey company on Tuesday 12th September 2017 between the hours of 08:00-10:00 and 14:00-16:00

4.4.2 Full details of the survey can be found at Appendix G. The parking survey highlighted areas of on and off street parking within approximately 400m of the school. The scope of the parking survey is illustrated on Figure 6 with a summary of the results contained within Table 4.1.



Table 4.1 Car Parking Survey Summary

Time	No. of vehicles parked	Time	No. of vehicles parked
08:00	16	14:00	19
08:10	13	14:10	19
08:20	16	14:20	20
08:30	35	14:30	26
08:40	99	14:40	66
08:50	60	14:50	90
09:00	23	15:00	105
09:10	21	15:10	61
09:20	21	15:20	17
09:30	21	15:30	15
09:40	21	15:40	14
09:50	22	15:50	19
Max	99	Max	105

4.4.3 The following conclusions can be made:

- 16 vehicles were parked on street at 08:00 when the morning survey began which were also present at the end of the survey and therefore have been assumed to be existing residents;
- The peak parking occupancy of 99 vehicles were recorded to park on street at 08:40 during the morning peak hour;
- When removing the existing resident parking, the school related parking in the morning equates to 83 vehicles;
- 19 vehicles were parked on street at 14:00 when the afternoon survey began which were also present at the end of the survey and therefore these have also been assumed to be existing residents;
- When removing the existing resident parking, the school related parking in the afternoon equates to some 86 vehicles;

4.4.4 The proposals include for a new school drop off facility incorporating approximately 70 vehicles. The level of car parking proposed has been reduced in order to complement school travelling planning initiatives. The precise level of off street car parking would be discussed and agreed with the Councils Sustainable Travel and Highway Officer as part of any forthcoming planning application.

4.4.5 The proposed drop off facility would be supplemented with appropriate Traffic Regulations Orders restricting parking along Lower Edge Road during school peak times to ensure parents utilise the new facility.

4.4.6 The proposed school drop off facility will result in significant highway safety and efficiency benefits in the local area.



5. Traffic Impact Assessment

5.1 EXISTING TRAFFIC COUNTS

5.1.1 An Automatic Traffic Count (ATC) survey has been undertaken along Lower Edge Road in February 2016 between Friday 5th February 2016 and Thursday 11th February 2016 in order to establish traffic volumes along the site frontage.

5.1.2 Fully classified counting counts have also been undertaken on Tuesday 12th September 2017 at the following key junctions:

- A629 Elland Bypass grade separated roundabout;
- A643 Crowtrees Lane/Jumble Dyke; and
- A643 Church Street/Thornhill Road/Ogden Lane.

5.1.3 The traffic surveys identified the existing weekday morning and evening network peak hour periods as follows:

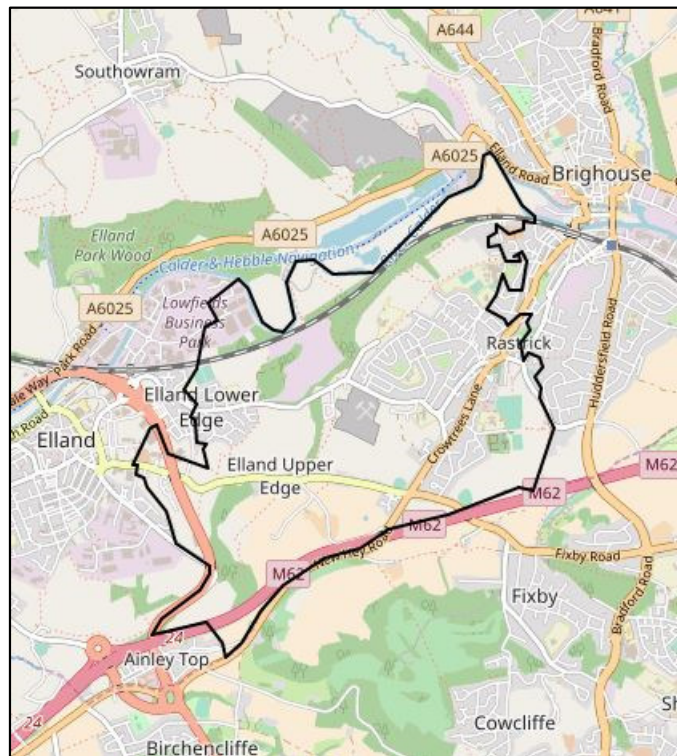
- Weekday AM Peak - 08:00 to 09:00; and
- Weekday PM Peak - 16:45 to 17:45.

5.1.4 The recorded traffic flows are shown on Figures 101 and 102 for the AM and PM peak hour periods respectively.

5.2 TRIP DISTRIBUTION AND ASSIGNMENT

5.2.1 The 2011 census data has been used to establish the journey to work destinations for all car driver trips within super output area Calderdale 024 as shown on Image 5.1.

Image 5.1 Calderdale 024 Super Output Area



5.2.2 Full details of the distribution exercise can be found at Appendix H.

5.2.3 Application of the journey to work data from the census is considered appropriate to determine the peak hour distribution, on the basis that the majority of residential morning and evening peak hour trips will be journeys to and from work.

5.2.4 The residential traffic has been distributed on the local highway network using the routes to/from the Site shown in Table 5.1.

Table 5.1 Proposed Traffic Distribution

Route/Destination	Distribution
M62 West	1.9%
M62 East	11.4%
Bradley Road	0.8%
Lightridge Rd A641 (s)	0.6%
B6114 Saddleworth Rd	0.1%
A643 West	0.0%
A643 Northeast	0.5%
Rochdale Road	2.0%
A6026	3.1%
A641 North	5.8%
A643 North	10.3%
A629 Huddersfield Rd	12.0%
A644 Wakefield Road	1.8%
A646 Skicoat Moor Rd	6.0%
Elland Riorges Link	10.7%
Park Road	2.2%
A641 Cliffe Road	2.7%
Delf Hill	1.3%
A6107 Clough Lane	14.0%
A629 South	7.6%
B6118	1.4%
Local (Lowfields)	3.8%
Total	100%

5.2.5 The proposed traffic distribution is illustrated on Figure 103.

5.3 FUTURE ASSESSMENT YEAR AND TRAFFIC GROWTH

5.3.1 At an anticipated build out rate of 45 dwellings per year, the development could be completed and occupied within a 5 year period. As such a design year of 2022 has been assumed for the purpose of this assessment.

5.3.2 Traffic growth rates, between 2016/2017 and 2022, have been obtained from TEMPRO v7.2 using the Calderdale 024 area and these values are as follows:

- 2016 – 2022 AM growth rate of 1.866 (8.7%);
- 2016 – 2022 PM growth rate of 1.890 (8.9%);
- 2017 – 2022 AM growth rate of 1.072 (7.2%);
- 2017 – 2022 PM growth rate of 1.074 (7.4%);



5.3.3 Figures 105 and 106 illustrates the 2022 Base Flows for the AM and PM peak hours.

5.3.4 The planning assumptions have not been adjusted within Tempro to remove the proposal for 222 dwellings and therefore the growth applied is extremely robust.

5.4 TRAFFIC GENERATION

5.4.1 The TRICS 7.2.4 online database has been utilised in order to calculate representative and appropriate vehicular trip rates for the proposed residential use and school expansion. The following time periods have been selected:

- Morning peak hour of 08:00-09:00; and
- Evening peak hour of 17:00-18:00.

5.4.2 Survey sites within the database for have been chosen using the following parameters:

Residential Dwellings

- Land use: 03 Residential A Houses Privately Owned
- Calculation options: Vehicular trip rates selected;
- Regions: Greater London, Scottish, Irish and Welsh sites excluded;
- Trip Rate Parameters: Number of dwellings;
- Parameter range: 100 - 500 selected (calculating an average of 192 dwellings);
- Date range: 1st January 2007 and 11th December 2014 (latest 8 years);
- Days included: Monday to Friday; and
- Location Type: Edge of Town and Suburban locations.

Primary School Extension

- Land use: 04 Education A Primary
- Calculation options: Vehicular trip rates selected;
- Regions: Greater London, Scottish, Irish and Welsh sites excluded;
- Trip Rate Parameters: Number of pupils
- Parameter range: 147 - 657 selected;
- Date range: 1st January 2007 and 10th December 2014 (latest 8 years);
- Days included: Monday to Friday; and
- Location Type: Edge of Town and Suburban locations.

5.4.3 The TRICS outputs are contained at Appendix I with a summary of the trip rates shown in Tables 5.2 and 5.3.



Table 5.2 TRICS Trip Rates - Residential

Time Period	Total Vehicular Trip Rates (per dwelling)		
	Arrivals	Departures	Total
AM Peak 08:00-09:00	0.148	0.403	0.551
PM Peak 17:00-18:00	0.357	0.219	0.576

Table 5.3 TRICS Trip Rates - School

Time Period	Total Vehicular Trip Rates (per pupil)		
	Arrivals	Departures	Total
AM Peak 08:00-09:00	0.270	0.184	0.454
AFT Peak 15:00-16:00	0.179	0.213	0.392
PM Peak 17:00-18:00	0.031	0.044	0.075

5.4.4 The level of traffic generated by 222 residential dwellings is summarised within Table 5.4 and shown on Figures 107 and 108 for the AM and PM peak hours.

Table 5.4 Traffic Generation - Residential

Time Period	Total Vehicular Traffic Generation (217 dwellings)		
	Arrivals	Departures	Total
AM Peak 08:00-09:00	33	89	122
PM Peak 17:00-18:00	79	49	128

5.4.5 Old Earth Primary school currently accommodates 536 places. The proposed extension to the school is likely to create additional capacity for 131 pupils (667 pupil total capacity) and the level of traffic generated by the school extension is summarised within Table 5.5.

Table 5.5 Traffic Generation – School Extension

Time Period	Total Vehicular Traffic Generation (131 pupils)		
	Arrivals	Departures	Total
AM Peak 08:00-09:00	35	24	59
AFT Peak 15:00-16:00	23	28	51
PM Peak 17:00-18:00	4	6	10

5.4.6 The proposed access onto Lower Edge Road has been tested to accommodate the existing and proposed school related trips. The level of traffic generated by a 667 place school has been assumed to utilise the proposed access onto Lower Edge Road as a worst case scenario. The assumed level of traffic associated with the 667 pupil school is within Table 5.6.



Table 5.6 Traffic Generation – 667 Pupil School

Time Period	Total Vehicular Traffic Generation (667 pupils)		
	Arrivals	Departures	Total
AM Peak 08:00-09:00	180	123	303
AFT Peak 15:00-16:00	119	142	261
PM Peak 17:00-18:00	21	29	50

5.4.7 It should be noted that no reduction of existing school related traffic already on the local highway network has been made therefore the assessments undertaken are extremely robust.

5.4.8 The vast majority of existing pupils of Old Earth School are located within the local residential areas and therefore the school extension is likely to accommodate additional children from this residential allocation and that opposite, serving the local area. As such the school extension is unlikely to generate significant additional trips on the wider highway network. Furthermore the residential trip rates applied will already include trips to/from schools and therefore no additional allowance on the offsite junctions is necessary.

5.5 DESIGN FLOWS

5.5.1 Adding the proposed development trips described in Section 5.4 to the 2022 base traffic flows produces the design traffic flows and these are shown diagrammatically on Figures 110 and 111 for the morning and evening peak hours respectively.

5.6 OPERATIONAL ASSESSMENT

Proposed Site Access

5.6.1 The latest JUNCTIONS 9 software has been used to assess the operation of the proposed site access in the 2022 Design scenario.

5.6.2 The PICADY outputs are contained within Appendix J with the results summarised in Table 5.5 which states the maximum RFC for each turning movement as well as the maximum predicted queue length (end queue) in vehicles.

Table 5.7 Site Access AM and PM 2022 Design

Movement	AM (07:00-08:00) Peak		PM (16:45-17:45) Peak	
	RFC	Q (PCU)	RFC	Q (PCU)
Arm B – AC (Site Access)	0.58	1.3	0.22	0.3
Arm C – AB (Lower Edge Road)	0.21	0.4	0.10	0.2

5.6.3 A Ratio of Flow to Capacity value (RFC) below 0.85 indicates that a junction or arm operates within its desirable practical capacity. An RFC value between 0.85 and 1.00 indicates that there may be occasions during the period modelled when queues will develop and delays will occur. An RFC value greater than 1.00 indicates that the junction or arm operates beyond its theoretical capacity.

5.6.4 The results shown in Table 5.7 demonstrate that the site access junction is predicted to operate well within capacity in both the AM and PM peak periods in the 2022 design year scenario incorporating both residential and school related traffic. All movements operate with significant spare capacity with minimal predicted queuing.



A629 Elland Bypass Grade Separated Roundabout

5.6.5 The existing layout of the A629 Elland Bypass Grade Separated Roundabout has been modelled using the ARCADY function in the JUNCTIONS 9 software. The ARCADY model agreed to test the impact of the recently constructed Morrison's foodstore (10/01491/FUL) within Elland has been utilised.

5.6.6 The junction has initially been modelled for the AM and PM peak hours with surveyed 2017 traffic flows and the results are summarised in Table 5.8.

Table 5.8 A629 Elland Bypass Grade Separated Roundabout – Survey 2017

Arm	AM (08:00-09:00) Peak		PM (16:45-17:45) Peak	
	RFC	Q (PCU)	RFC	Q (PCU)
1 Calderdale Way (S)	0.53	1.1	0.44	0.8
2 Elland Riorges Link (W)	0.41	0.7	0.34	0.5
3 Calderdale Way (N)	0.39	0.6	0.32	0.5
4 Lowfields Way	0.15	0.2	0.50	1.0
5 Elland Riorges Link (E)	0.25	0.3	0.23	0.3

5.6.7 The results in Table 5.8 demonstrate that the roundabout operates within capacity during both the AM and PM peak periods with maximum RFC values of 0.53 and 0.44 respectfully on the Calderdale Way (S) arm.

5.6.8 The junction has then been modelled using the 2022 Base traffic flows and the results are shown in Table 5.9.

Table 5.9 A629 Elland Bypass Grade Separated Roundabout – Base 2022

Arm	AM (08:00-09:00) Peak		PM (16:45-17:45) Peak	
	RFC	Q (PCU)	RFC	Q (PCU)
1 Calderdale Way (S)	0.59	1.1	0.49	0.9
2 Elland Riorges Link (W)	0.45	0.7	0.34	0.6
3 Calderdale Way (N)	0.44	0.6	0.35	0.5
4 Lowfields Way	0.16	0.2	0.55	1.2
5 Elland Riorges Link (E)	0.27	0.3	0.26	0.3

5.6.9 The results in Table 5.9 demonstrate that the roundabout continues to operate within capacity during both the AM and PM peak hours when allowing for background traffic growth to the base year of 2022.

5.6.10 The final assessment of the junction is for the 2022 (with development) design scenario. The development traffic has been predicted in the preceding sections of this report and has been added to the 2022 base traffic to calculate the total design traffic. The results for the 2022 Design scenario are shown in Table 5.10.



Table 5.10 A629 Elland Bypass Grade Separated Roundabout – Design 2022

Arm	AM (08:00-09:00) Peak		PM (16:45-17:45) Peak	
	RFC	Q (PCU)	RFC	Q (PCU)
1 Calderdale Way (S)	0.60	1.5	0.51	1.0
2 Elland Riorges Link (W)	0.46	0.8	0.39	0.6
3 Calderdale Way (N)	0.45	0.8	0.37	0.6
4 Lowfields Way	0.16	0.2	0.56	1.3
5 Elland Riorges Link (E)	0.32	0.4	0.28	0.4

5.6.11 The results in Table 5.10 demonstrate that the roundabout continues to operate within capacity with the addition of the development traffic during both the AM and PM peak hours.

5.6.12 The modelling work undertaken confirms that the proposed development will not result in a material impact on the A629 Elland Bypass roundabout and the residual impact of the development traffic is certainly not considered to be severe (as referenced in paragraph 32 of the NPPF).

Furthermore it should be noted that the modelling work undertaken is considered to represent an absolute worst case for the following reasons:

- No discount has been applied to the development trip generations to allow for the effect of a Travel Plan;
- No reduction has been made to the trip rates to reflect the sites proximity to the existing Primary School;
- No reduction has been made to account for the effect of peak hour spreading; and
- No reduction in trip rate has been applied to allow for the 20% of affordable houses on Site.

Materiality Assessment

5.6.13 Based on the proposed distribution and assignment of the development traffic it is considered unlikely that the increases in traffic at a number of adjacent junctions would result in a material increase and therefore would not require any further detailed assessment or modelling.

5.6.14 This materiality assessment considers the impact of the development traffic at the two key junctions to the east of the site within Rastrick: - A643 Crowtrees Lane/Jumble Dyke priority T junction and the A643 Church Street/Thornhill Road/Ogden Lane mini roundabout.

5.6.15 Table 5.11 summarises the total two-way development generated trips and compares these against the 2022 Base flows. A percentage increase in traffic at the junction has then been calculated based on the additional development traffic.

Table 5.11 Materiality Assessment (PCU's)

Junction	AM Development Trips	AM 2022 Base Flows	Percentage	PM Development Trips	PM 2022 Base Flows	Percentage
A643 Crowtrees Lane/Jumble Dyke	26	1,256	2.1%	27	1,434	1.9%
A643 Church Street/Thornhill Road/Ogden Lane	26	1,548	1.7%	27	1,546	1.7%



5.6.16 As can be seen from Table 5.11 the proposed development results in an additional 26-27 two way vehicle trips at each of the junctions. This level of traffic will be unperceivable from day to day fluctuations and is below the 30 two way trip materiality figure typically applied by local authorities and Highways England.

5.6.17 With regard to the impact on the Strategic Road Network (SRN), the impact at the junctions to either side of Junction 24 of the M62 (Ainley Top Roundabout and the Blackley roundabout) has also been considered.

5.6.18 As confirmed within Figures 106 and 107 the development traffic equates to just 26 and 27 two way trips during the AM and PM peak hours respectively at Ainley Top and just 7 and 11 two way trips during the AM and PM peak hours respectfully at the Blackley roundabout. The level of traffic generation is therefore below the materiality measure of 30 two way trips threshold typically applied by Local Authorities and Highways England. Optima therefore agree with comments included within the Council's Site Assessment Report for Site ref LP0978 from Highways England which states that the development has '*No significant impact on the road network*'.



6. Summary and Conclusions

6.1.1 This Access Appraisal report supports the Calderdale Initial Draft Local Plan allocation LP0978 relating to land to the north of Lower Edge Road, Elland for residential development including educational land provision.

6.1.2 The preliminary and illustrative development proposals comprise of the following:

- 222 residential dwellings;
- Extension to Old Earth Primary School to create capacity for approximately 105 full time and 26 part time pupils;
- On site Public Open Space provision and accessibility through the site via the retention of the existing PROW network
- Enhanced car parking and drop off facilities for Old Earth Primary School; and
- Associated access, parking, landscaping and infrastructure works.

6.1.3 It has been concluded that a suitable access can be achieved onto Lower Edge Road to serve the Site which complies with the prevailing national guidance (Manual for Streets). The Site frontage onto Lower Edge Road provides flexibility on the precise access location, which can be designed as part of a Transport Assessment at the planning application stage. The proposed access solution also takes into account of the proposed allocation on land to the south of Lower Edge Road LP0220 and the land to the east of Shaw Lane

6.1.4 A review of the personal injury accident data has been undertaken for the study area, which has shown that there are no specific accident concerns.

6.1.5 This report has provided a commentary on the existing Site and its conditions. It has demonstrated that the Site is in a sustainable location that is easily accessible with appropriate public transport and pedestrian links. This provision provides future residents with opportunities to travel via alternative modes of transport and minimise trips by the private car.

6.1.6 A junction capacity assessment of the Site access and A629 Elland Bypass Grade Separated junction has been undertaken using industry standard software for a design year of 2022. The capacity assessments demonstrate that traffic generated by the development can be adequately accommodated with sufficient spare capacity.

6.1.7 A materiality assessment of the wider highway network including two junctions with Rastrick and J24 of the M62 (Ainley Top and Blackley roundabouts) has demonstrated that the development will not result in a material or detrimental impact on the wider highway network including the SRN.

6.1.8 From the extensive work undertaken it is concluded that there are no reasons on highways or transport grounds why the development Site should not be allocated for residential development and the School expansion.



Figures



Appendices



Appendix A Highway Adoption



Appendix B PRow Extract



Appendix C Vehicle Speed Survey



Appendix D Personal Injury Accident Data



Appendix E Illustrative Masterplan



Appendix F Drawing 165015/GA/01 – Proposed Access Arrangements



Appendix G Parking Beat Survey



Appendix H Distribution



Appendix I TRICS Outputs



Appendix J Modelling Outputs

