SUPPORTING HIGHWAY STATEMENT

This Technical Supporting Highway Statement has been prepared by Beam Consulting Engineers following KMC HDC comments in relation to the planning submission, ref 2019/90190, for 3No properties with parking.

The application site is located between Low Town to the east, Low Gate to the south, and B6116 George Street to the north. The B6116 links A629 Penistone Road with Kirkburton, Skelmanthorpe and the A636 Wakefield Road to Scissett.

1 The level difference between George Street and Low Town

It is noted that there is a significant level difference. The detailed design of the proposed scheme will incorporate structural engineering measures which will a) ensure the stability of the highway retaining wall is maintained and b) will effectively reduce the retained height of the wall by constructing significant building structures with engineering fill between the wall and the structures. Such engineering works can be incorporated into the detailed design of the works without the need for an easement by following the KMC "Approval In Principle" process for structures in close proximity to public highways and KMC's statutory powers under The Highways Act 1980 applies in any case. This matter can be dealt with by planning condition.

2 The proposal for off street parking

Off street parking is now provided to all plots and the size has been altered to around 6m x 3m as per KMC standards which requires 3 vehicles parking spaces for the 4 bed plots and 2 spaces for the 2 bed plot. 8No parking spaces are provided in total.

3 The footway to the Low Gate frontage

The footway runs from Low Town to a point on Low Gate where there is no existing footway provision. The scheme has been amended to provide a footway to match that of the Low Town frontage where the footway width will be in excess of the existing 1.1m width. In addition the stone walled block of steps at the foot of the public footpath to the west boundary of the application site will be removed and a redesigned improved footpath termination will be provided to give an additional length of footway on Low Gate. This will greatly improve the safety of the crossing of Low Gate for pedestrians using the public footpath and significantly increase visibility at the junction as a clear beneficial effect.

4 Existing Highway and Footway Arrangements

The existing highway and footway arrangements are not compliant, nor would they be expected to be, with current standards because they have effectively devolved, partly controlled, partly not over time. In addition various well established footway crossing points and other accesses to the application site or thereabouts are either visible today on site or can be evidenced on historic maps. The presence of such highway arrangements in such a densely populated area is commonplace and forms the character of the area. For example there is well established track running up from Low Town to approximately mid height of the application site. Historic maps indicate that this track was likely an access to the rear of buildings essentially on the site of the proposed properties.

5 Access across the Low Gate/Low Town Junction

KMC HDC previously stated in Planning approval 2016/93522 that Low Town which is an adopted highway has an observed estimated vehicle speed of 15-20mph. The application site is within 60m of that site fronting both Low Town and Low Gate as well as the junction of Low Gate/Low Town. The speed within the junction will be less than the speed along the dominant/priority highway and it would be quite reasonable to estimate vehicle speeds immediately along the frontage of the application site to be less than 15-20mph and likely to be in the range 10-15mph, or less at the Give Way lines. The justification for reduced forward visibility is advocated in Manual for Streets and MfS states at para 7.2.2 and others, that design speeds of maximum of 20mph ("or less") should be used. Para 7.8.2 indicates that "there will be situations where it is desirable to reduce forward visibility to control traffic on bends particularly in Home Zones where approach speeds are already low". Although this site is not a new estate road, in such situations many Councils take a pragmatic view and often accept this by the application of sound engineering judgement, as it is illogical to provide a forward visibility around a tight bend for a higher design speed than can actually be ever achieved in such a location as this, particularly if it is not occurring prior to development. Manual for Streets 2 para 10.5.2 does allow a reduced "X" distance of 2m where speeds are extremely low and whilst this is of interest to the site is not presented on the drawings. This opinion is not of recent origin and has been recognised in the past as in Design Bulletin 32 where a graph indicating the design speed around a bend existed, an extract of which is included in Appendix 1. In our view the justification for the reduced vehicle speed stated above is justified. It is of course acknowledged the local highway network in this area is not ideal for new development but substandard access has been permitted on a number of occasions near to the application site and it cannot be argued that this site is worse than others because it improves the demonstrably poor current arrangements to all sides of the application site. The parking and footway arrangements proposed here are a significant improvement on the current situation. This is illustrated on the drawings.

6 Visibility

In terms of the frontage to the development onto the Low Gate/Low Town junction this is formed by a curve with minimum kerb line radius about 20m. Estimating the centreline radii to be say 30m which is less than might applied to a traditional adopted estate road it is not unusual for smaller radii to be accepted if the highway is acceptable for Refuse Vehicles which is clearly the case here. KMC HDC have expressed concern about sightlines and forward visibility around the bend and within the existing junction. In reality the introduction of the new footway along the development frontage provides improved forward visibility and the sightlines from the car parking positions are all acceptable based on a sightline of 15m. Manual for Streets para 7.5.8 advocates the introduction of speed reducing features and as the junction is in close proximity to the development there is little doubt that this is will have the desired effect. Drawing numbers 186-31-001 and 186-31-002 illustrate possible sightlines which can be achieved in the positioning of vehicles at an "X" distance of the standard 2.4m and also at the kerb line. In reality many of the most recently developed sites on Low Gate have substandard access by any recognised past standard whereas the application site will take account of current trends and standards which will have a beneficial effect to the local highway network. The application site is clearly of a standard that is no worse than any existing site access.

7 Overall Highways Justification

This scheme represents the addition of a maximum of 6No cars on to the local highway network. Based on the number of houses and cars that already exist in the area this is a very small and inconsequential increase by any established measurement technique. It is not at all reasonable to consider that 6No cars can in any way be detrimental to the local area or local highway network when all recent development does not comply with recent highway standards and all traffic measures introduced as part of the application scheme have a clear beneficial highway and pedestrian impact.

The appendices noted below follow:

Appendix 1: Design Bulletin 32 Extract
Appendix 2: Manual for Streets Table 7.1, para 7.5.8
Appendix 3: KMC HDG page 31 bottom table as per MfS Table 7.1
Appendix 4: Drawing numbers 186-31-001 and 186-31-002

Appendix 1: Design Bulletin 32 Extract

APPENDIX 3: METHOD OF CONSTRUCTING FORWARD VISIBILITY CURVES ON BENDS.
(See paragraphs 8.43-8.44)

1. To construct a forward visibility curve around a bend as shown in Figure 1:

(a) a line should be drawn parallel to the inside kerb, 1.5m into the carriageway to represent the path of the vehicle;

(b) the required stopping distance commensurate with the expected speed of the vehicle should be ascertained from Figure 2 and measured back along the vehicle path from tangent point A;

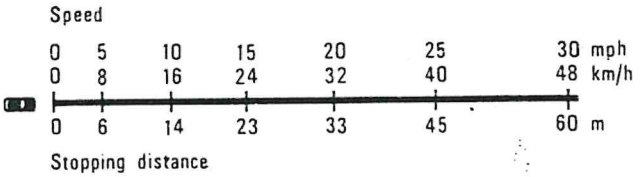
(c) the stopping distance should then be divided into equal increments of approximately 3m, and the increment points numbered in sequence;

(d) the same stopping distance with the same number of increments should then be repeated around the curve, finishing at a full stopping distance beyond the tangent point B;

(e) the area which has to be kept clear of obstruction should then be constructed by joining increments of the same number together, i.e. 1 to 1, 2 to 2 etc.

2. The effects of horizontal curvature on vehicle speed in residential areas are presently being investigated, but as interim guidance the results of previous studies are shown below.[20] These studies comprised measurements of the speed of cars on two-lane roads in rural areas and the choice of site and method of observation were such that the observed speeds of vehicles reflected only changes in horizontal curvature, i.e. the sites had more than adequate forward visibility and the roads were clear of any obstacles to speed such as junctions.

3. As shown in Figure 3 these results indicate that very substantial reductions in mean vehicle speeds occur with successive reductions in curve radii below 100m. It is suggested however that this data be used only as guidance to the likely speeds on bends of 90° or tighter. It should also be noted that Figure 3 represents mean vehicle speeds only and as an additional safety factor it is recommended that 20% be added to these speeds when considering the stopping distances and the forward visibility which should be provided.



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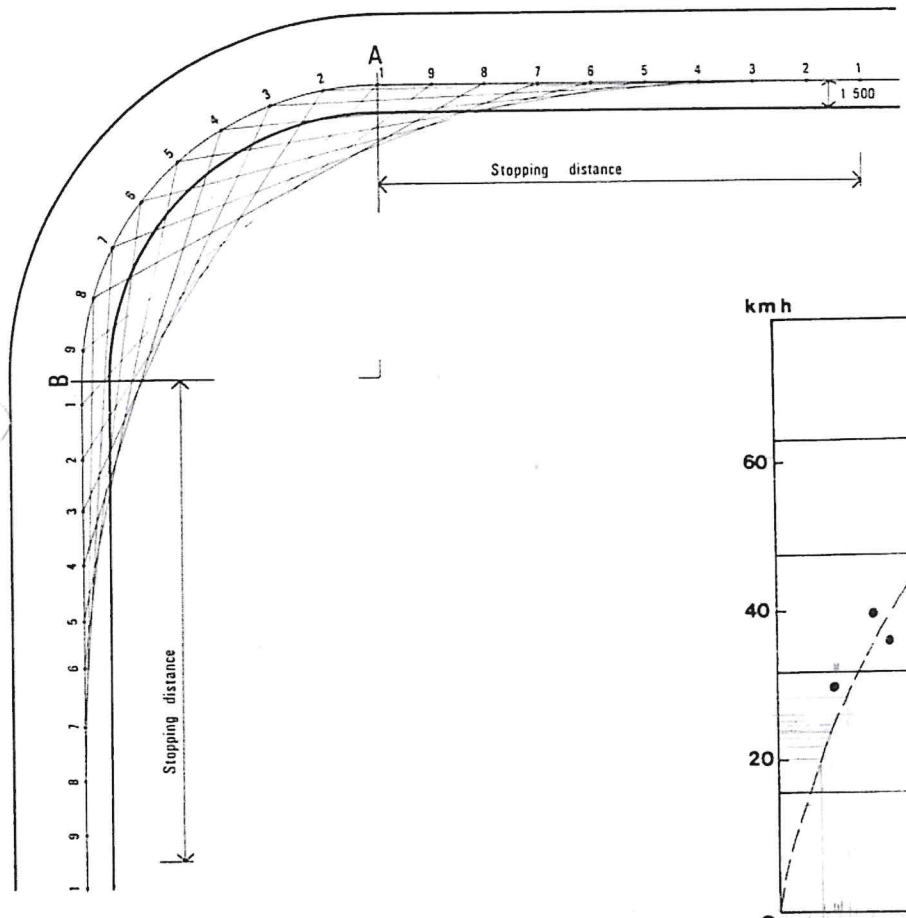

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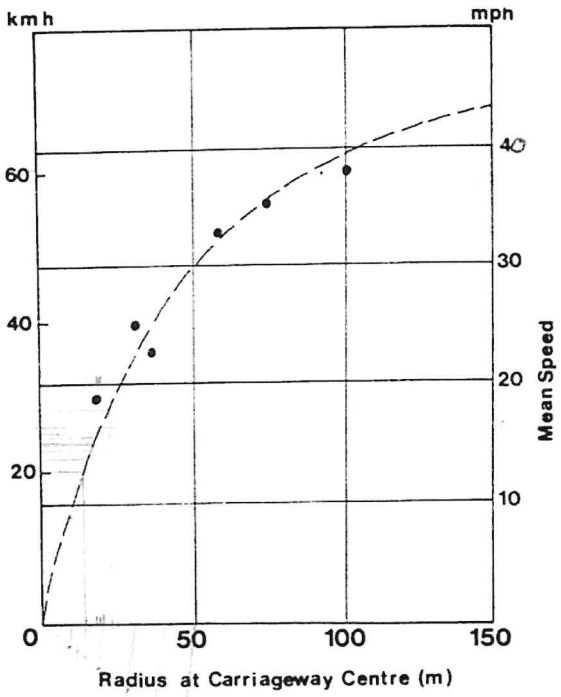

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Table 7.1 Derived SSDs for streets (figures rounded).

Speed	Kilometres per hour	16	20	24	25	30	32	40	45	48	50	60
	Miles per hour	10	12	15	16	19	20	25	28	30	31	37
SSD (metres)		9	12	15	16	20	22	31	36	40	43	56
SSD adjusted for bonnet length. See 7.6.4		11	14	17	18	23	25	33	39	43	45	59
		Additional features will be needed to achieve low speeds										

7.5.7 The SSD values used in MfS are based on a perception–reaction time of 1.5 seconds and a deceleration rate of 0.45*g* (4.41 m/s²). Table 7.1 uses these values to show the effect of speed on SSD.

7.5.8 Below around 20 m, shorter SSDs themselves will not achieve low vehicle speeds: speed-reducing features will be needed. For higher speed roads, i.e. with an 85th percentile speed over 60 km/h, it may be appropriate to use longer SSDs, as set out in the *Design Manual for Roads and Bridges*.

7.5.9 Gradients affect stopping distances. The deceleration rate of 0.45g used to calculate the figures in Table 7.1 is for a level road. A 10% gradient will increase (or decrease) the rate by around 0.1g.

7.6 Visibility requirements

7.6.1 Visibility should be checked at junctions and along the street. Visibility is measured horizontally and vertically.

7.6.2 Using plan views of proposed layouts, checks for visibility in the horizontal plane ensure that views are not obscured by vertical obstructions.

7.6.3 Checking visibility in the vertical plane is then carried out to ensure that views in the horizontal plane are not compromised by obstructions such as the crest of a hill, or a bridge at a dip in the road ahead. It also takes into account the variation in driver eye height and the height range of obstructions. Eye height is assumed to range from 1.05 m (for car drivers) to 2 m (for lorry drivers). Drivers need to be able to see obstructions 2 m high down to a point 600 mm above the carriageway. The latter dimension is used to ensure small children can be seen (Fig. 7.17).

7.6.4 The SSD figure relates to the position of the driver. However, the distance between the driver and the front of the vehicle is typically up to 2.4 m, which is a significant proportion of shorter stopping distances. It is therefore recommended that an allowance is made by adding 2.4 m to the SSD.

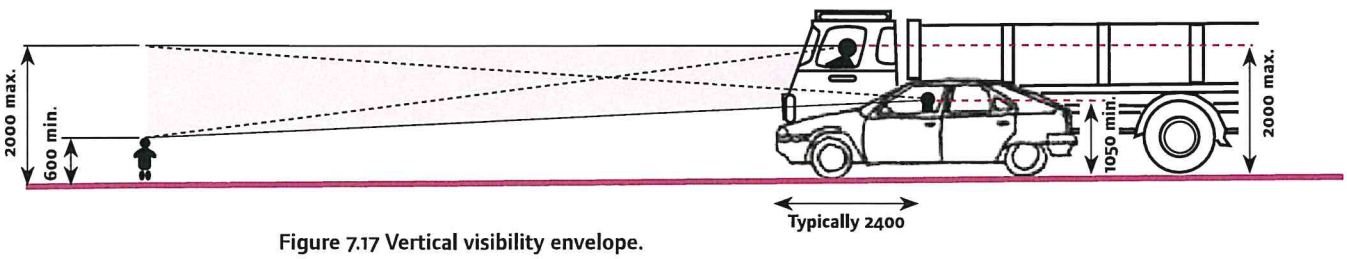
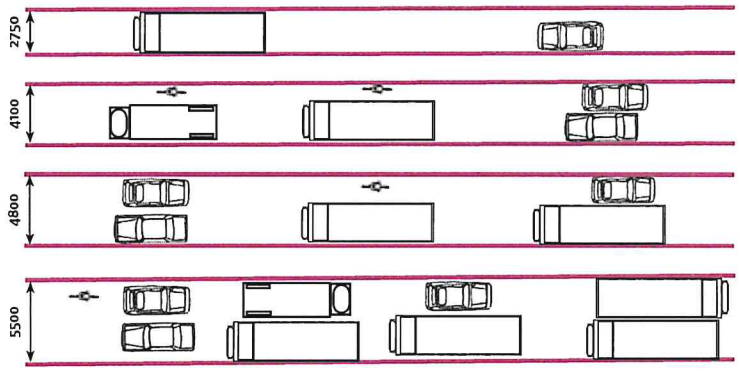


Figure 7.17 Vertical visibility envelope.

Appendix 3: KMC HDG page 31 bottom table as per MfS Table 7.1



Junction Spacing:

3.31

8 KEY DESIGN DRIVER

The geometry of new junctions (either onto the existing external highway network or within a development itself) must take into account both the type of traffic on the minor route, and also the existing (or likely future) traffic flows and speeds on the major route. The number of new accesses, junctions, and private means of access will be restricted in the vicinity of sites that generate high pedestrian flows (e.g. schools).

3.32 As a general principle junctions should be avoided near the crest of a street, or on a bend, unless adequate visibility, sightlines and other safety features can be achieved. The need for and provision of junctions on new highways, and additional junctions on existing routes, should be assessed in the context of a wide range of factors such as the need for access at particular locations, the impact on the size of development parcels, the potential for interaction between adjacent junctions, and the consequent effect on user delay and road safety. A minor route should ideally meet the major route perpendicular for the first 10m.

Table 4: Junction spacing recommendations

	Consecutive	Staggered (see notes)
Major road network – 40 mph limit	120 metres	60 metres
Major road network – 30 mph limit	90 metres	45 metres
Type A (Residential Connector)	45 metres	22.5 metres
Type B Street (Local Residential)	33 metres	16.5 metres
Type C (Shared Surface)	Design dependent	Design dependent
Type CA (Major Industrial)	60 metres	30 metres
Type CB (Minor Industrial)	60 metres	30 metres

Notes: Right-left staggered junctions are preferred, as they generate fewer conflicting movements. Crossroads would be considered on Type C streets.

Speed	Kilometres per hour	16	20	24	25	30	32	40	45	48	50	60
	Miles per hour	10	12	15	16	19	20	25	28	30	31	37
SSD (metres)		9	12	15	16	20	22	31	36	40	43	56
SSD adjusted for bonnet length. See 7.6.4		11	14	17	18	23	25	33	39	43	45	59

3.33 Manual for Streets (MfS) introduced amended visibility guidelines (above) on routes within built-up areas having vehicle speeds of 37 mph or less. For the purposes of this SPD, the MfS recommended visibilities are considered appropriate in the following circumstances:

Appendix 4: Drawing numbers 186-31-001 and 186-31-002

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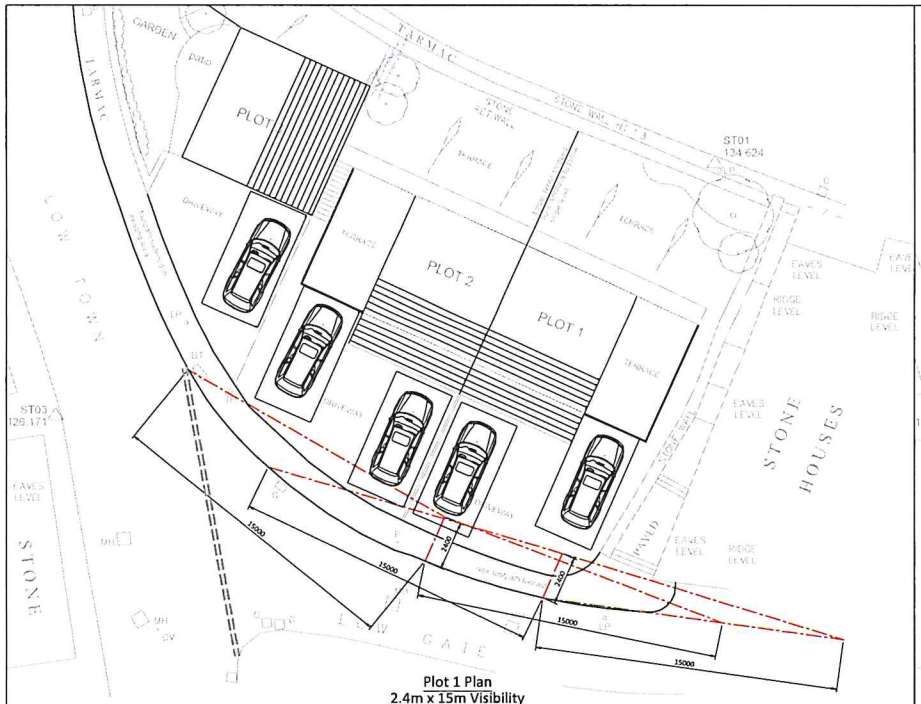
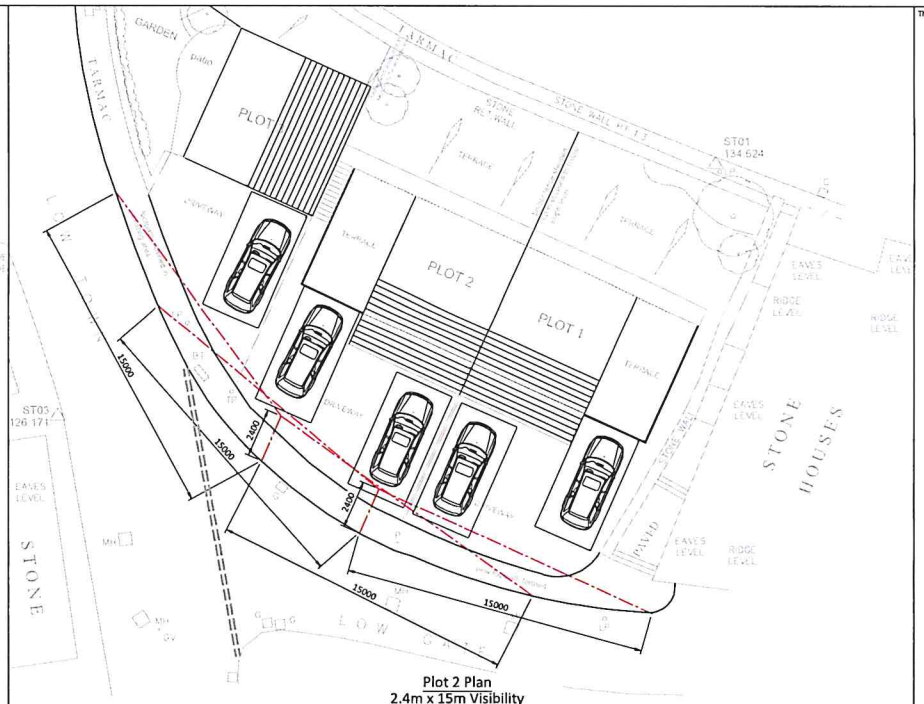
A1



Plot 1 Plan
2.4m x 15m Visibility
(Scale 1:125)



Plot 2 Plan
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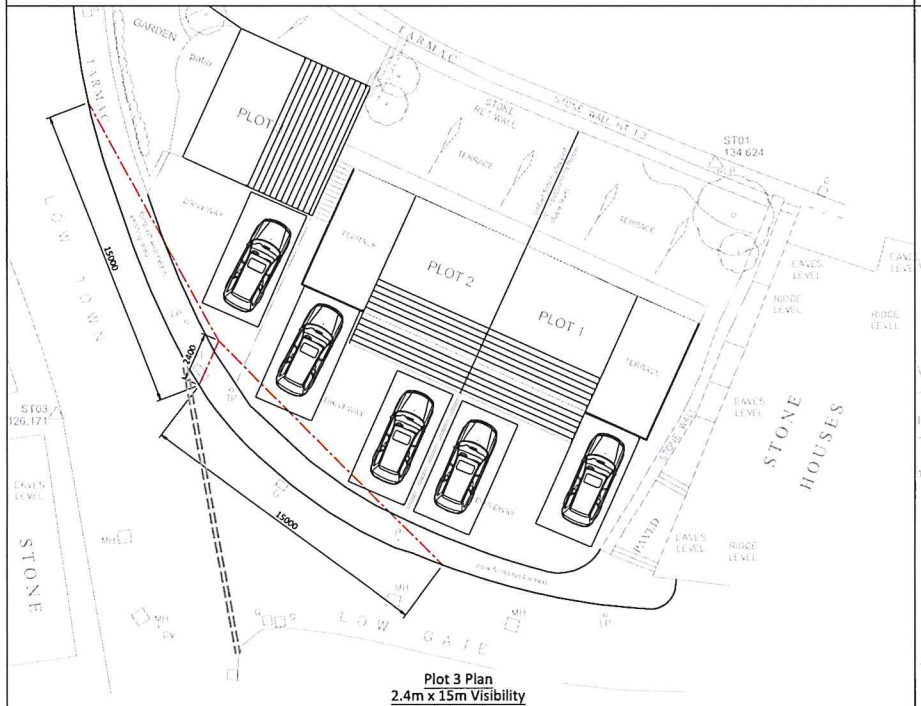
(Scale 1:125)



Plot 3 Plan
2.4m x 15m Visibility
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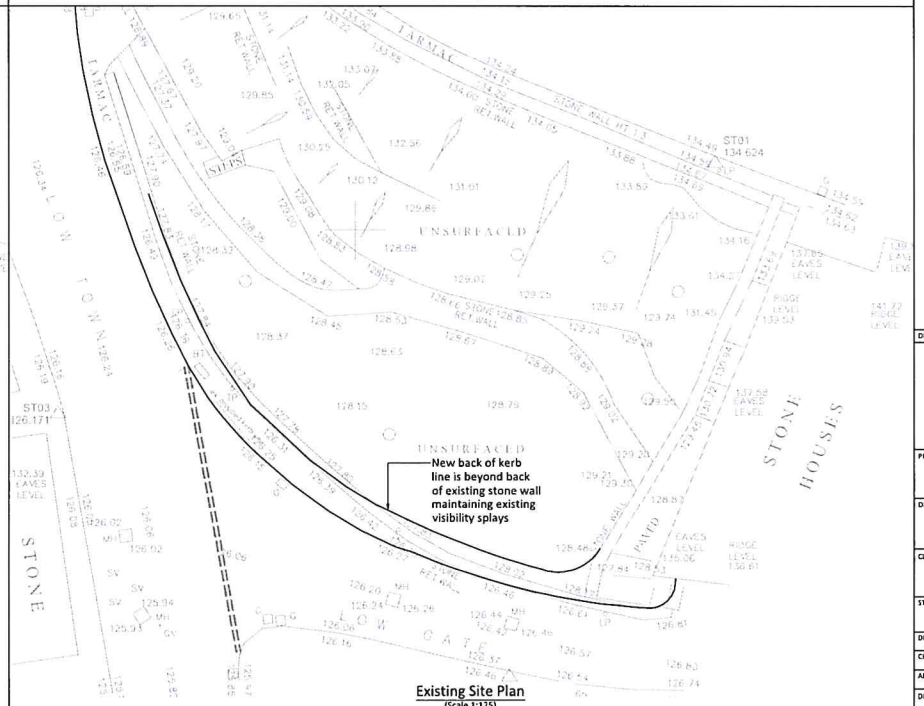

Existing Site Plan
(Scale 1:125)

DESCRIPTION	REV	DATE	CHK	APR

beamconsulting
Beam Consulting
14 Bond Street
Wakefield
WF1 2QP
Tel: 01924 361653
Fax: 01924 364631

PROJECT
Site Off Low Gate, Kirkburton

DRAWING TITLE
Visibility Splays
Sheet 1 of 2

CLIENT
L'Arche Developments

STATUS
Information

DRAWN	JD	DATE	27/03/19
CHECKED	KGP	SCALE	
APPROVED	KGP		AS SHOWN @ A1

DRAWING NUMBER
186-31-001

REVISION
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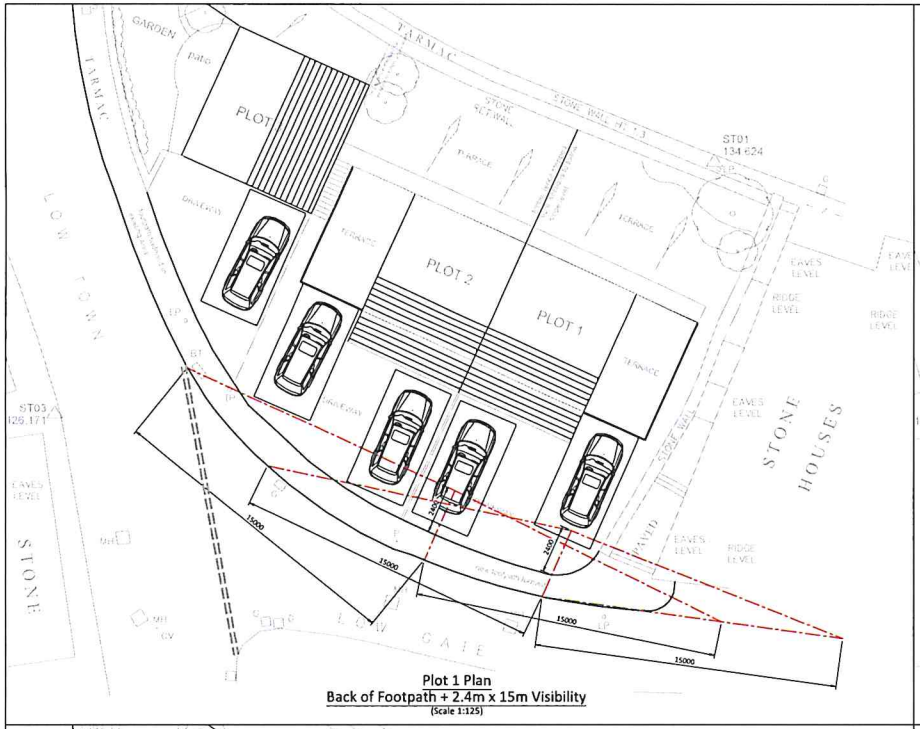
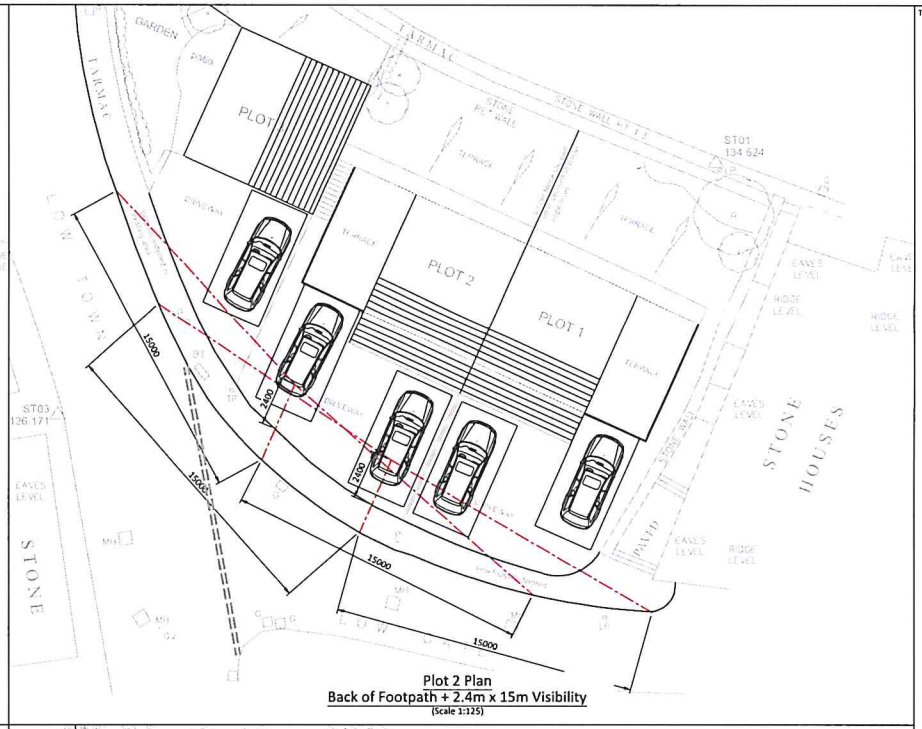
A1



Plot 1 Plan
Back of Footpath + 2.4m x 15m Visibility
(Scale 1:125)



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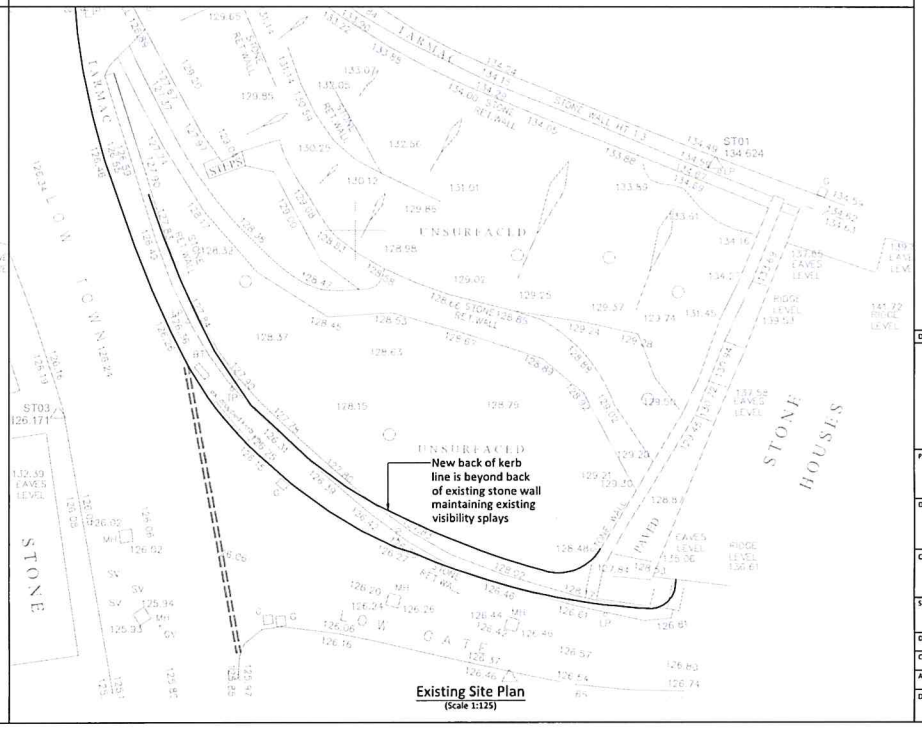
Back of Footpath + 2.4m x 15m Visibility
(Scale 1:125)



Plot 3 Plan
2.4m x 15m Visibility
(Scale 1:125)



Existing Site Plan
(Scale 1:125)

DESCRIPTION	REV	DATE	CHK	APR

beamconsulting
Beam Consulting
14 Bond Street
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Fax: 01924 364631

PROJECT
Site Off Low Gate, Kirkburton

DRAWING TITLE
Visibility Splays
Sheet 2 of 2

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L'Arche Developments

STATUS
Information

DRAWN	JD	DATE	27/03/19
CHECKED	KGP	SCALE	AS SHOWN @ A1
APPROVED	KGP		

DRAWING NUMBER
186-31-002

REVISION
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