Use of Passively Safe Street Furniture **Revision 0 (October 2018)**

GENERAL REQUIREMENTS

Purpose

- **The purpose of this procedure is to ensure optimum use of Passively Safe Street furniture on Warwickshire County Council roads for the safety of road users whilst ensuring best use of resources and minimising environmental degradation.**

- In April 2010, guidelines were published by Passive Safety UK to assist Local Authorities in employing passively safe street furniture to make roadsides safer ("Passive Safety UK Guidelines for Specification and Use of Passively Safe Street Furniture on the UK Road Network"). Passive Safety UK's aim is to promote safer, more forgiving, roadsides on non-trunk roads where most road casualties are now occurring. The Guidelines have been endorsed by both the Chartered Institution of Highways and Transportation (CIHT) and the Institute of Highway Engineers (IHE). They aim to improve understanding of standards, current advice and issues that relate to promoting better roadside safety. The Guidelines advise Local Highway Authorities to take conscious decisions on whether to adopt the guidelines in full or in part.

- The key issues identified within the Passive Safety UK (PSUK) Guidelines are that passively safe street furniture should be prioritised for all new and replacement items on A and B class roads. Roads that are lower risk and therefore unlikely to require passively safe street furniture are as follows :–

  Roads with a speed limit of 20mph or less

  Roads usually lined with parked vehicles

  Residential/Industrial estate roads where speeds are unlikely to exceed 25mph

  Country lanes and roads with low traffic volumes.

- This Warwickshire C.C. procedure takes the PSUK Guidelines and adapts them to provide a more detailed framework of sequential priorities for designers to assess where passively safe street furniture should be provided on Warwickshire's roads.

- Information supporting local guidance for the provision of VRS can be found at attached Annex A, and in the UK Roads Liaison Group document "Design & Maintenance Guidance for Local Authority Roads : Provision of Road Restraint Systems on Local Authority Roads" published in October 2011.

Responsibilities

- Delivery of the procedure is the responsibility of the appropriate Team Manager :-

  Team Managers:

Development Management, Design Services, Highways Projects, Bridges (design and maintenance), Highways Maintenance, Street Lighting, Transport Planning, Road Safety Unit.

METHOD & SPECIFIC REQUIREMENTS

1. Introduction

1.1 New highway schemes

1.1.1 For County Roads, the provision of passively safe street furniture should be prioritised based on speed limit of the road and route hierarchy status. This applies to all new and replacement sign posts, traffic signal poles and lighting columns etc. positioned within 4.5m of the carriageway edge as detailed in the table below :-

Table 1

Road Type	Recommendation
Rural A class roads ≥ 50mph speed limit	Always use passively safe street furniture
Rural B class roads ≥ 50mph speed limit (excl. minor category roads)	Always use passively safe street furniture
Urban and Rural A class roads, 40mph speed limit	Always use passively safe street furniture
A class roads, 30mph speed limit Major B class roads, 40mph speed limit	Use appropriate risk assessment procedure (consult Traffic & Road Safety for advice)
Other A class roads, Major B class roads ≤ 30mph speed limit, all Minor B class roads and all C, D, E & U Class roads	Passively safe street furniture not required

* In Warwickshire Major B class roads are roads (generally rural) which have traffic flows greater than roughly 5,000 vehicles AADT and serve a major connectivity function or have been subject to some improvement within the past five years and with consideration of Personal Injury Collision(PIC) record.

Warwickshire Major B class roads are:-

- B5000 – Staffordshire border (Tamworth) to Leicestershire border (Grendon)
- B4111 – Atherstone to Camp Hill
- B4114 – Coleshill to Nuneaton
- B4114 - Nuneaton to A5
- B4112 – southwest Nuneaton

- B4455/B4112/B4027 – Brinklow to Lutterworth
- B4455 (Fosse Way) – Brinklow to Halford
- B4113 - Leamington to Coventry
- B4453 – Princethorpe to A45
- B4429 – south Rugby
- B4463 – A46 (Sherbourne) to A4189
- B4100 – M40 Jn. 13 (Bishop's Tachbrook) to Oxfordshire border (Banbury)
- B4451 – Gaydon to Southam
- B439 – A46 (Salford Priors) to Stratford-upon-Avon
- B4086 – Stratford-upon-Avon to Wellesbourne
- B4632 – Stratford-upon-Avon to Gloucestershire border
- B4035 – A429 (Portobello crossroads on Fosse Way) to Shipston-on-Stour to Oxfordshire border.

It may be noted that steel posts up to 89mm in diameter that have a wall thickness of no more than 3.2mm are deemed to be passively safe providing post spacing is not below 1.5m (76mm diameter posts can be used with a reduced post spacing of 750mm) and there is no bracing between posts.

Where street lighting is to be provided, the 5-second rule for conflict areas is to be applied.

Warwickshire C.C. "Passive Safety – Risk Assessment Form", see Annex E, should be used to record that risk assessments have been carried out where new roadside street furniture is under consideration.

1.2 Existing highway equipment

1.2.1 Where passively safe highway equipment such as street lights, traffic signs, traffic signals etc. needs to be replaced then this is to be done with passively safe equipment.

2. Passively Safe Street Furniture assessment process for Warwickshire roads (see Flowchart at attached Annex B)

2.1 Process – need for new or replacement street furniture already identified

An existing site or new scheme has an identified need for new or replacement street furniture - follow the flow chart in Annex B as described below.

2.2 Process – need for new or replacement street furniture not yet identified

To identify whether there is a need for passive safety follow the flow chart in Annex B to identify the correct procedure for that particular road/carriageway type.

If the road type falls into the 'automatic' passive safety requirement then provide passively safe equipment.

If the road type falls into the risk assessment criteria follow the 3 step process set out below :-

Step 1 – Identify likelihood and consequences (use the factors found at attached Annex C).

In Annex C tables of key factors have been produced which include :–

- Alignment/Characteristics
- Vehicle Manoeuvres
- Hazard combinations
- Collision consequences factors

A simple points-based system has been developed to improve objectivity and allow a consistent approach to the application of passively safe street furniture.

A table of hazards (at attached Annex D) (ref. DfT "Reported Road Casualties Great Britain : 2015 Annual Report" Table RAS 10010) as used in Annex C has been identified and rated by :–

- Type of road
- Likelihood of Fatal or Serious injury resulting from collision

N.B. in the vast majority of cases passive safety will only apply to signs, signal poles and lighting columns. The local VRS policy should be considered for other hazards.

Step 2 – Use Risk Scoring Process (see attached Annex C)

Use the identified factors, consequences and likelihoods found in the tables in Annex C to give a risk score.

Step 3 – Identified Risk Scores (ref. Flowchart at attached Annex B)

If a high or medium risk score is identified leading to passive safety, first undertake an engineering judgement check of the location.

If other hazards are present in front, behind or adjacent to the identified/proposed posts/signs assembly then reconsider the need for passively safe posts.

Examples of such other hazards may be :–

- Regularly parked vehicles
- Boundary/property walls
- Individual or lines of trees
- Embankments/Watercourses

Vehicles that are regularly parked in front of an identified hazard location will prevent an errant vehicle reaching, for example, a signs assembly (passive or otherwise).

Substantial hazards behind or adjacent to an identified location mean there is little or no point in providing a passively safe post in front of them. In such instance provision of a Vehicle Restraint System (VRS) should be considered using the guidance found in the UK Roads Liaison Group document "Design & Maintenance Guidance for Local Authority Roads : Provision of Road Restraint Systems on Local Authority Roads" (or DMRB RRAP assessment in the case of high traffic volume, high speed roads), or other mitigating measures, for example relocating the hazard.

If the above situations do not occur at the location in question then follow the guidance below and contained within attached Annexes A to C.

High Risk –Provide a passive solution by following the published Guidelines from Passive Safety UK.

Medium Risk – Consider the following factors and make a professional judgement :-

- 5 Year PIC history – use data available on the KeyACCIDENT system for Warwickshire. Have there been other run-off collisions at that location or adjacent stretch of road ?
- 5 Year maintenance history – has the (existing) sign/item been replaced in the last 5 years due to a vehicle strike ?

If the answer to one or both of the above is yes then consider whether installation of passively safe street furniture will be cost effective at that location.

This should be calculated using a simple cost/benefit analysis –

Average Annual Accident Cost*

*AAAC = £67,924 ≤ 40mph or £139,961 ≥ 50mph (per 'accident')

ref. DfT "Reported road casualties Great Britain annual report 2016

(c.f. RoSPA "Road Safety Factsheet 2018" average cost per PIC 'accident' of £82,893 at 2016 prices)

and/or

Average Annual Maintenance Cost[a]

[a]AAMC = Number of maintenance visits in the last 5 years x Damage only accident cost

In lieu of actual maintenance-visit-related costs

assume AAMC = £2,093 ≤ 40mph or £3,060 ≥ 50mph

ref. DfT "Reported road casualties Great Britain annual report 2016

(c.f. RoSPA "Road Safety Factsheet 2018" average cost per damage only 'accident' of £2,211 at 2016 prices)

Providing passively safe sign posts and other street furniture will always be more expensive than traditional steel. However, design advances have lowered unit costs and increased the service life of many products and appropriate combinations of smaller-sized posts can also fall into the category of passively safe arrangements.

If passively safe street furniture is cost effective then provide as necessary.

If not, consider other mitigating measures –

- Removal of hazard
- Relocation of hazard (a minimum setback of 4.5m from vehicular carriageway edge should be achieved)
- Smaller size
- Additional lining, yellow backing boards for warning signs, VAS (as speed reduction tool)

Low Risk – No need for passively safe solution unless recommended as part of a Local Safety Scheme or identified within the Safety Audit process.

2.3 If passively safe street furniture is not to be provided, the decision-making process should be documented stating the reasons for non-provision and what, if any, additional/alternative mitigating measures are to be implemented. See also Warwickshire C.C. Passive Safety – Risk Assessment Form at Annex E.

2.4 If the result is unclear from the overall process, then specialist advice from the Traffic & Road Safety Team should be sought.

Records

- Completed Risk Scoring matrix documenting decision or completed Warwickshire C.C. Passive Safety – Risk Assessment Form recording considerations/decision.

Exceptions

None.

Referenced Forms

None.

Annex A

1.0 Background

1.1 The Department for Transport first introduced guidance on the use of passively safe street furniture in 2004 via DMRB standard TD19/04. This was superseded in 2006 by TD19/06 - *Requirement for Road Restraint Systems*.

Though this document is primarily concerned with risk-based assessment for the identification of need and extent of safety barrier provision it also sets out a list of hazards (para. 3.12) that require consideration as part of any risk assessment procedure. This list includes signs posts/supports, large signs, gantry supports and street light columns and these structures can be protected or of a passively safe design (para 3.14).

1.2 TD 89/08 was a companion standard to TD 19/06 and set out the requirements for the use of passively safe posts, poles and street lighting columns. TD 89/08 was subsequently superseded by BS EN12767:2007- *Passive safety of support structures for road equipment – Requirements, classification and test methods.* This B.S. document contains a National Annex (informative) – *Recommendations for passively safe support structures for road equipment.* The National Annex (NA) extends advice to all roads and to all speed limits; although it is not mandatory for local roads it advises that a Local Highway Authority has the responsibility to decide on whether to use passively safe street furniture.

1.3 In April 2010 Guidelines were published by Passive Safety UK to assist appropriate bodies in employing passively safe street furniture to make roadsides safer. Passive Safety UK's aim is to promote safer, more forgiving, roadsides on non-trunk roads where most road casualties are now occurring. The Guidelines have been endorsed by both the Chartered Institution of Highways and Transportation (CIHT) and the Institute of Highway Engineers (IHE) and are intended to improve understanding of standards, current advice and issues that relate to promotion of better roadside safety. The Guidelines advise Highway Authorities to take conscious decisions on whether to adopt the guidelines in full or in part.

1.4 Whilst the use of TD19/06 is mandatory on Trunk Roads, concern was raised that it would be too onerous for implementation on local roads given the sometimes vastly different traffic conditions found on them. This Policy details the approach to be taken for risk-based assessment of local roads in Warwickshire.

1.5 The key issues identified within the Passive Safety UK Guidelines are :–

- Passively safe street furniture should be prioritised for all new and replacement items on A and B class roads as shown in Table 2 below.

Table 2 – Prioritising roads for the specification of passively safe street furniture

Priority 1	Rural A class roads
Priority 2	Urban A class roads with 40mph speed limit
Priority 3	Rural B class roads
Priority 4	Urban B class roads with a 40mph speed limit
Priority 5	Urban A class roads with a 30mph speed limit
Priority 6	Urban B class roads with a 30mph speed limit

(Note; for the purposes of the above table, rural roads are simply defined as having a speed limit of 50mph or more)

- Roads that are lower risk and therefore unlikely to require passively safe street furniture are :

  Roads with a speed limit of 20mph or less

  Roads usually lined with parked vehicles

  Residential/industrial estate roads and roads where traffic speeds are unlikely to exceed 25mph

  Country Lanes and roads with low traffic volume (unless there is a pertinent PIC history or obvious high-risk feature(s).

  Note - steel posts up to 89mm in diameter that have a wall thickness of no more than 3.2mm are deemed to be passively safe providing post spacing is not below 1.5m (76mm diameter posts with wall thickness of no more than 3.2mm can be used with a reduced post spacing of 750mm) and there is no bracing between posts.

2.0 Recommendations for Warwickshire Roads

2.1 Rural A class roads with a speed limit greater than or equal to 50mph

Follow the guidance published by Passive Safety UK: - this is that all new and replacement sign posts, traffic signal poles and lighting columns positioned within 4.5m of the carriageway edge should be passively safe.

2.2 Rural Major B class roads with a speed limit greater than or equal to 50mph

Follow the guidance published by Passive Safety UK: - this is that all new and replacement sign posts, traffic signal poles and lighting columns positioned within 4.5m of the carriageway edge should be passively safe.

2.3 Urban and Rural A class roads with a speed limit of 40mph

All new and replacement sign posts, traffic signal poles and lighting columns positioned within 4.5m of the carriageway edge on A class roads should be passively safe.

2.4 A class roads with a speed limit of 30mph and Major B class roads with a speed limit of 40mph

These tend to be busy radial routes within urban areas. These environments are generally of a reasonably high standard, carry higher flows, are lit and could have a relatively high inherent risk where passive safety is likely to be appropriate.

It is therefore recommended that the procedure contained within section 3 and Annexes A to C are applied to all new and replacement posts/columns in these highway environments. This will help identify those localities where risk is highest and indicate where passively safe street furniture or other mitigating measures are justified. If multiple hazards in one location/length are being assessed it is recommended that Vehicle Restraint Systems should be considered

Passively safe street furniture can also be recommended in these situations as a result of a Local Safety Scheme or Safety Audit. However, if regular on street parking occurs then the benefit of providing passively safe street furniture becomes limited.

2.5 Other A class roads, Major B class roads with a speed limit of 30mph, all Minor B class roads and all C class, D class, E class and unclassified roads

The remainder of Warwickshire's A and B class roads and lower designation roads are likely to carry lower traffic volumes or slower traffic. They are largely unimproved, meaning that they often have narrow verges and which contain or abut various unprotected roadside hazards such as trees and property walls. It is considered that there would be only limited benefit to wide-scale provision of passively safe street furniture in these environments.

It is recommended that passively safe street furniture is not introduced on these roads unless specifically recommended as the result of a Local Safety Scheme or identified during the Safety Audit process.

Another approach would be to consider removal of non-passively safe items at end of life (Maintenance Managers' considerations as appropriate), relocate if practical, or down-size.

2.6 Summary Table

Table 3

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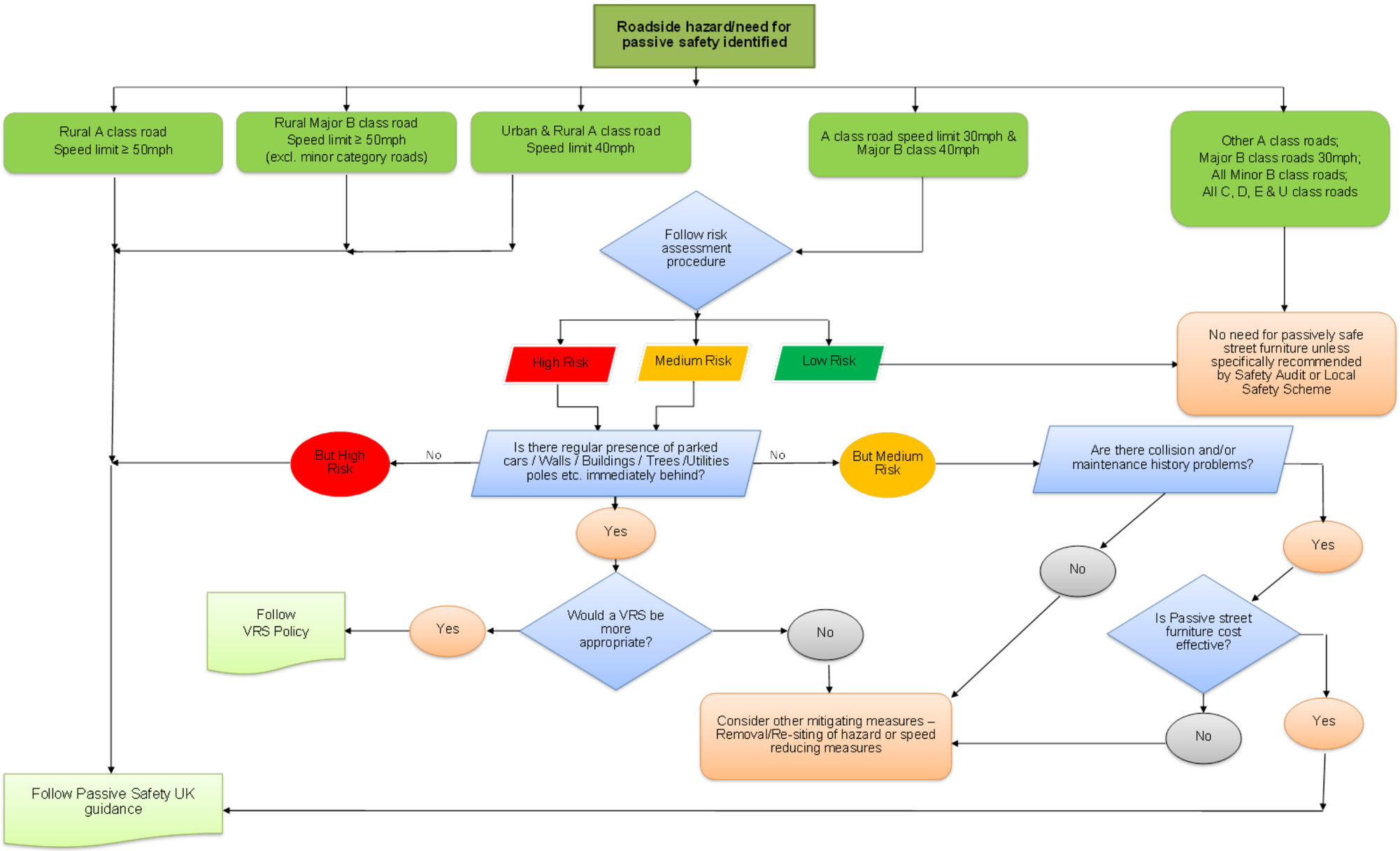
Road Type	Recommendation
Rural A class roads ≥ 50mph speed limit	Always use passively safe street furniture
Rural B class roads ≥ 50mph speed limit (excl. minor category roads)	Always use passively safe street furniture
Urban and Rural A class roads, 40mph speed limit	Always use passively safe street furniture
A class roads, 30mph speed limit Major B class roads, 40mph speed limit	Use appropriate risk assessment procedure (consult Traffic & Road Safety for advice)
Other A class roads, Major B class roads ≤ 30mph speed limit, all Minor B class roads and all C, D, E & U Class roads	Passively safe street furniture not required

Annex B


Roadside hazard/need for passive safety identified
Rural A class road Speed limit ≥ 50mph
Rural Major B class road Speed limit ≥ 50mph (excl. minor category roads)
Urban & Rural A class road Speed limit 40mph
A class road speed limit 30mph & Major B class 40mph
Other A class roads; Major B class roads 30mph; All Minor B class roads; All C, D, E & U class roads
Follow risk assessment procedure
High Risk
Medium Risk
Low Risk
No need for passively safe street furniture unless specifically recommended by Safety Audit or Local Safety Scheme
But High Risk
No
Is there regular presence of parked cars / Walls / Buildings / Trees /Utilities poles etc. immediately behind?
No
But Medium Risk
Are there collision and/or maintenance history problems?
Yes
No
Yes
Follow VRS Policy
Yes
Would a VRS be more appropriate?
No
Is Passive street furniture cost effective?
Consider other mitigating measures – Removal/Re-siting of hazard or speed reducing measures
No
Yes
Follow Passive Safety UK guidance

Annex C

RISK ASSESSMENT PROCESS : LIKELIHOOD AND CONSEQUENCE FACTORS

Figure C1- Layout Factors (physical characteristics)

LOCALISED SITE – passive safety

Physical Characteristics (ref. DMRB TD9 Table 2)	Risk Factor Score
0 – Straight alignment and/or fully compliant with TD9	0
1 – One step below desirable minimum for any parameter (either SSD, radius, superelevation, crest K, sag K (abs. min.)	1
2 – Aggregate two steps below minimum parameters at “1” above	2
3 - Aggregate three steps below minimum parameters at “1” above	3
4 – Aggregate four steps below minimum parameters at “1” above	4
5 – Aggregate five or more steps below minimum parameters at “1” above	5

ROUTE SITE (min. 2Km portion length) – passive safety

Physical Characteristics (ref. DMRB TD9)	Risk Factor Score
0 – Straight alignment and/or fully compliant with TD9	0
1 – Any single one of the following factors: Junctions, Accesses, Laybys more than 7 per Km or Single carriageway Bendiness greater than 150 degrees per Km or Hilliness greater than 30m/km or Harmonic Mean Visibility less than 200m	1
2– Any two of the factors at “1” above exceeded	2
3– Any three of the factors at “1” above exceeded	3
4– All four of the factors at “1” above exceeded	5

Figure C2 – Layout Factors (vehicle manoeuvres)

Vehicle Manoeuvre	Risk Factor Score
0 – No reason for lane changing/manoeuvres.	0
1 – Some potential for lane changing, overtaking, positioning manoeuvres or avoiding action.	1
2 – High likelihood of lane changing, overtaking, positioning manoeuvres or avoiding action.	2

Figure C3 – Collision Factors (hazard type)

Hazard Type	Risk Factor Score
0 – Individual spot hazard (i.e. single post)	0
1 – Series of individual hazards less than 50m apart (i.e. line of posts)	1
2 – Multiple hazards individual spot (i.e. large dia posts on 1 No sign/wide base posts)	2

Figure C4 – Collision Factors (Killed or Seriously injured (KSi) percentage)

KSI Percentage	Risk Factor Score
0 – Percentage of KSI for primary hazard < 20%.	0
1 – Percentage of KSI for primary hazard 20 – 30%.	1
2 – Percentage of KSI for primary hazard > 30%.	2

for % of KSI for primary hazard see ‘Table D1’ at Annex D.

Figure C5 – Consequence Factors (secondary incidents)

Secondary Incidents	Risk Factor Score
0 – No secondary events likely	0

1 – When damaged or collapsed the feature could give rise to the risk of secondary vehicular collisions	1

Risk Ranking Score based on the sum of 5 factors (F):

F physical characteristic (F_{pc}) – 0 to 5
F vehicle manoeuvre (F_{vm}) – 0 to 2
F hazard type (F_{ht}) – 0 to 2
F killed or seriously injured percentage (F_{KSI}) – 0 to 2
F consequence (F_{cons}) – 0 to 1

$$F_{pc} + F_{vm} + F_{ht} + F_{KSI} + F_{cons} = \text{Risk Score}$$

Figure C6 – Resultant Risk Categories

Total Risk Score	Category	Outcome
8 - 12	High	Unacceptable risk, provision of passively safe street furniture is justified. Provide passively safe street furniture as per Passive Safety UK guidance
5-7	Medium	Some form of intervention may be required. Follow flow chart guidance in Annex B considering accident and knock down history at the site, cost effectiveness and alternatives (i.e. removal/relocation of hazard)
0-4	Low	Level of risk is generally acceptable. Passively safe street furniture would not normally be required.

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Annex D (based on : DfT "Reported Road Casualties Great Britain : 2015 Annual Report" Table RAS 10010)

Table D1 – Reported single vehicle accidents by hit object off carriageway and KSI %.

Object hit	Fatal	Serious	Slight	All	KSI	KSI %
None	282	5,244	20,884	26,410	5,526	20.9%
Road sign or traffic signal	7	71	373	451	78	17.3%
Lamp post	23	117	634	774	140	18.1%
Telegraph pole or electricity pole	4	39	146	189	43	22.8%
Tree	34	165	462	661	199	30.1%
Bus stop or shelter	2	8	52	62	10	16.1%
Crash barrier	4	48	177	229	52	22.7%
Submerged	0	2	3	5	2	40.0%
Entered ditch	2	32	115	149	34	22.8%
Wall or fence	17	190	672	879	207	23.5%
Other permanent objects	26	237	851	1,114	263	23.6%
Total	**401**	**6,153**	**24,370**	**30,924**	**6,554**	**21.2%**
Built-up Roads						

Object hit	Fatal	Serious	Slight	All	KSI	KSI %
None	87	846	2,439	3,372	933	27.7%
Road sign or traffic signal	12	86	331	429	98	22.8%
Lamp post	9	29	176	214	38	17.8%
Telegraph pole or electricity pole	3	25	181	209	28	13.4%
Tree	80	407	1,054	1,541	487	31.6%
Bus stop or shelter	0	0	7	7	0	0.0%
Crash barrier	10	115	482	607	125	20.6%
Submerged	3	1	5	9	4	44.4%
Entered ditch	10	150	682	842	160	19.0%
Wall or fence	27	169	677	873	196	22.5%
Other permanent objects	20	197	768	985	217	22.0%
Total	**261**	**2,025**	**6,802**	**9,088**	**2,286**	**25.2%**
Non built-up Roads						

Object hit	Fatal	Serious	Slight	All	KSI	KSI %
None	17	64	217	298	81	27.2%
Road sign or traffic signal	0	9	30	39	9	23.1%
Lamp post	0	2	10	12	2	16.7%
Telegraph pole or electricity pole	0	0	0	0	0	0.0%
Tree	8	19	55	82	27	32.9%
Bus stop or shelter	0	0	0	0	0	0.0%
Crash barrier	11	67	455	533	78	14.6%
Submerged	0	0	1	1	0	0.0%
Entered ditch	2	8	25	35	10	28.6%
Wall or fence	0	9	37	46	9	19.6%
Other permanent objects	1	21	36	58	22	37.9%
Total	**39**	**199**	**866**	**1,104**	**238**	**21.6%**
Motorways						

Object hit	Fatal	Serious	Slight	All	KSI	KSI %
None	386	6,154	23,540	30,080	6,540	21.7%
Road sign or traffic signal	19	166	734	919	185	20.1%
Lamp post	32	148	820	1,000	180	18.0%
Telegraph pole or electricity pole	7	64	327	398	71	17.8%
Tree	122	591	1,571	2,284	713	31.2%
Bus stop or shelter	2	8	59	69	10	14.5%
Crash barrier	25	230	1,114	1,369	255	18.6%
Submerged	3	3	9	15	6	40.0%
Entered ditch	14	190	822	1,026	204	19.9%
Wall or fence	44	368	1,386	1,798	412	22.9%
Other permanent objects	47	455	1,655	2,157	502	23.3%
Total	**701**	**8,377**	**32,038**	**41,116**	**9,078**	**22.1%**
All Roads						

(Note : "Other permanent objects" includes bridge parapet)

Annex E PASSIVE SAFETY - RISK ASSESSMENT FORM

Site Location	
Drawing no	

	Y/N	Comments
Is the site a non-built up all - purpose road or motorway with speed limit 40mph or greater?		
Is the site on a verge of a motorway, dual carriageway or single carriageway road?		
Is there major risk of items falling on other carriageways below?		

Is the site a built-up road or other road with speed limit below 40mph?		

Is there a history of road accidents with street furniture here? Is there visual evidence of damaged kerbs, guard rails or verges?		
Is this a high-risk area, e.g. bend crossroad, roundabout etc.?		
Are there barriers or supplementary restraining systems in place or planned?		
Can columns be situated 4.5m clear of the carriageway edge?		
Are the columns less than 40m apart? (If so they should be treated as a continuous solid object)		

Are the traffic flows less than 5000 Annual Average Daily Traffic (two-way for single carriageway roads)?		
Are there significant numbers of non-motorised users, e.g. pedestrians and cyclists? Consider through routes for hospitals, schools, large employers, retail areas etc.		
Are the road geometry and features likely to restrict speeds to less than or equal to 25mph?		
Are cars parked consistently on the road?		

Decision

Passively safe equipment is not required		
Passively safe equipment is required	NE	
	LE	
	HE	

Completed by

Name		Position	
Signature		Date	

See over for general principles for passively safe categories

PASSIVE SAFETY – SOME GENERAL PRINCIPLES

BS EN 12767 "… specifies performance requirements and defines levels in passive safety terms intended to reduce the severity of injury to the occupants of vehicles impacting with the permanent road equipment support structures. Consideration is also given to other traffic and pedestrians." The primary focus is clearly on the occupants of vehicles with a secondary consideration for other traffic and pedestrians.

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Passively safe equipment is not normally considered necessary:

- Where traffic speed is normally less than or equal to 25mph, e.g. due to geometry/nature of the road, traffic calming measures etc.
- Where the column is installed behind barriers or vehicles constantly park in front of the column
- On country lanes and roads with low traffic volumes, unless there is a history of accidents or there is a high risk feature

Passively safe equipment is required

- when there is a risk of collisions involving street furniture
- when the impact is likely to injure the occupant(s) of the vehicle
- when the speed and control of the vehicle following a collision is likely to contribute to secondary accidents
- where it is difficult to use a safety barrier in high risk locations

NE Non- energy absorbing	NE signposts, lighting columns and traffic signal posts deform relatively easily on being hit so that the errant vehicle will continue at roughly the same speed with only relatively light damage to the vehicle. This increases the chance of secondary accidents although the driver is likely to retain control of the vehicle. NE supports are likely to be the most appropriate product for areas without regular pedestrians or cyclists. The support will typically fold on impact and the vehicle will typically continue.
LE Low energy absorbing	LE supports will have some of the qualities of both HE and NE equipment. The errant vehicle speed will be reduced and damage to the vehicle (and driver) will be less than if it had hit a HE support structure. LE supports will be less likely to separate from the base and be thrown into the air on impact than NE equipment. Category LE and HE supports reduce the risk of secondary incidents and collision with Non-Motorised Users, as the vehicle exit speed is lower. LE supports can have advantages on built-up roads where there is a significant volume of regular pedestrians and cyclists
HE High energy absorbing	HE supports slow down and stop a vehicle with a short yet gradual retardation. HE columns are not a substitute for a barrier as it is likely that the vehicle will still be in motion 12m from the collision. Category LE and HE supports reduce the risk of secondary incidents and collision with NMUs, as the vehicle exit speed is lower, and thus can have advantages on built-up roads where there is a significant volume of Non-Motorised Users. However, the driver may suffer injuries and lose consciousness, and there is likely to be significant structural damage to the vehicle. This may result in the vehicle moving uncontrollably after the collision. Category HE supports are generally designed to yield in front of and under the impacting vehicle, and might sometimes wrap around the vehicle. These might straighten out again as the impact event proceeds.