

# Engineering Bulletin (Gas) EB/661 – Guidance for Vehicle Impact Assessment of New and Replacement $\leq 7$ barg Pressure Reduction Installations (PRIs)

Published: 09/06/2020

Review date: 09/06/2020

## Guidance for Vehicle Impact Assessment (VIA) of New and Replacement $\leq 7$ barg Pressure Reduction Installations (PRIs)

### Overview of Engineering Bulletin

This Bulletin has been released to give guidance for the design and protection of  $\leq 7$  barg PRIs with respect to the risks and potential consequences of vehicle impact. This is to support the application of IGEM/TD/13 for the design of PRIs with reference to clause 5.2.1.1 – “A risk assessment shall be carried out...”

This Bulletin shall be applied with immediate effect.

### Scope

This Bulletin applies to all  $\leq 7$  barg PRIs that are to be designed, installed and commissioned from the date of this Bulletin. This covers both new and replacement PRIs. This document is not to be applied retrospectively to existing PRIs.

### Vehicle Impact Assessment

The VIA form included within this Bulletin shall be used to assess the protection measures needed for PRIs at the design stage.

### General Guidance to Support Vehicle Impact Assessment

This general guidance given is to ensure no ambiguity in interpretation of the assessment and provide general guidance on given installation standards of vehicle restraint systems.

#### Definition of a Junction

- The definition for assessment will be where any vehicle is capable of leaving the main highway
  - Marked or unmarked roads
  - Adopted or private roads
  - A meeting of 2 or more roads
  - Includes entrances to industrial units
  - Smaller industrial units with low volumes of traffic may be excluded by agreement with the relevant Integrity Engineer
  - Roundabouts are classified as junctions for the purpose of this bulletin
  - Domestic driveways are excluded

#### Perceived highly unlikely to breach

Suitable for speeds up to 50mph with low volumes of HGV traffic by agreement with the relevant Integrity Engineer

- Heavily wooded Areas – Trees of greater than 500mm girth with spacing less than 2m
- Buildings on approach 450mm greater in thickness – Can be from multiple individual walls if individual walls all exceed 225mm thick

#### Perceived possibility of breach (High speed impacts/ Large vehicle impacts)

Suitable for speeds up to 30mph with no HGV traffic by agreement with the relevant Integrity Engineer

- Trees less than 500mm girth
- Brick masonry walls with minimum 225mm thickness in good condition – Singular Wall
-

# Engineering Bulletin (Gas) EB/661 – Guidance for Vehicle Impact Assessment of New and Replacement $\leq 7$ barg Pressure Reduction Installations (PRIs)

Published: 09/06/2020

Review date: 09/06/2020

- Several layers of protection, each inadequate on its own, but as a collective form a reasonable barrier. (e.g. combination of lampposts, Kerbs, Chain-link fencing, Palisade fencing, concrete posts)

Roads with speeds greater than 50mph and traffic flows greater than 500 vehicles daily

The below document gives further guidance,

- Highways agency CD 377 Requirements for road restraint systems
- <https://www.standardsforhighways.co.uk/prod/attachments/2030d8e5-9917-45fc-aad3-8ed7fbf73201>

**Roads with lower speed limits and/or traffic flows** The

below document gives further guidance,

- Design & Maintenance Guidance for Local Authority Roads. Provision of Road Restraint Systems on Local Authority Roads
- <http://www.ukroadsliaisongroup.org/en/utilities/document-summary.cfm?docid=5803F825-EFC0-4858B2A75D0DCE3382A9>

## Cadent CE suite

Further general civil guidance can be found in the Cadent CE suite

GD/SP/CE/1 – The Design, Construction and Testing of Civil and Structural Works - General

GD/SP/CE/2 – The Design, Construction and Testing of Civil and Structural Works – Geotechnical, Ground Works and Foundations

GD/SP/CE/3 – The Design, Construction and Testing of Civil and Structural Works - Fencing

## Outcomes of Vehicle Impact Assessment (VIA)

### VIA score of 30 or more

If a site scores 30 or greater the following actions shall be taken;

1 - Attempt to relocate the new/replacement PRI to a new location and complete a new VIA.

2 - If relocation of the new/replacement PRI is not possible one of the measures below shall be installed in line with the general guidance above.

- **Road side installations**
  - Barriers shall be designed in accordance with BS EN 1317
    - Speed limit < 50mph
      - N1 Barriers
    - Speed limit  $\geq$  50mph
      - N2 Barriers – Normal conditions
  - H1, H2 or H4a – High containment (Rigid/Articulated HGV)
  - **Installations in areas of sensitive aesthetics**

Wooden barriers may be designed in accordance with BS EN 1317 by agreement with the relevant Integrity Engineer. This shall only be implemented after assessment of volume of HGV traffic in area has been provided.

### Installations in vehicle manoeuvre areas

If the PRI is to be situated in a vehicle manoeuvre area (Car parking bay/area/ HGV loading) the following actions shall be taken;

- **Installations in Car manoeuvre areas (car parking bay/area etc)**
  - Bollards shall be designed in accordance with BS 6180
    - Barriers or bollards shall be provided adjacent to all gas plant and equipment, where such apparatus is within:
      - ✦ 2m of a parking bay/area with raised kerb.

# Engineering Bulletin (Gas) EB/661 – Guidance for Vehicle Impact Assessment of New and Replacement $\leq 7$ barg Pressure Reduction Installations (PRIs)

Published: 09/06/2020

Review date: 09/06/2020

+ 3m of a parking bay/area without a raised kerb.

- **Installations in HGV manoeuvre areas (HGV Loading etc)** ○ Bollards shall be designed in accordance with PAS 1701-1:2017 and other provisions may be consulted with the relevant integrity Engineer (HGV Kerbs, HGV wheel stops etc) as additional measures.

## Returned Assessments

All assessments shall be included in the relevant PRI design pack for submission and approval at the relevant design approval group or approval system.

## Related documents

The below documents are referenced for support of this bulletin

### BSI

BS EN 1317 - Road restraint systems. Terminology and general criteria for test methods

BS 6180 - Barriers in and about buildings. Code of practice

PAS 170-1 - Vehicle security barriers. Low speed impact testing. Trolley impact test method for bollards

### IGEM Standards

IGE/TD/13 - Pressure regulating installations for Natural Gas, liquefied Petroleum Gas and Liquefied Petroleum Gas/Air

### Highways England Standards

CD 377 - Requirements for road restraint systems

### UK roads Liaison group

Design & Maintenance Guidance for Local Authority Roads. Provision of Road Restraint Systems on Local Authority Roads

### Cadent standards

GD/PR/MAINT/2003 - Maintenance Examination: Painting and External Risks Assessment

GD/SP/CE/1 - The Design, Construction and Testing of Civil and Structural Works – General

GD/SP/CE/2 - The Design, Construction and Testing of Civil and Structural Works – Geotechnical, Ground Works and Foundations

GD/SP/CE/3 - The Design, Construction and Testing of Civil and Structural Works - Fencing

### DNV.GL

Quantitative Risk Assessment (QRA) – External Vehicle Impact Assessment for  $\leq 7$  barg AGIs  
– Report No. 10166620-1, Rev. 2.0

# Engineering Bulletin (Gas) EB/661 – Guidance for Vehicle Impact Assessment of New and Replacement $\leq 7$ barg Pressure Reduction Installations (PRIs)

Published: 09/06/2020

Review date: 09/06/2020

## Vehicle Impact Assessment (VIA)

SITE DETAILS		Name:	Date:
Site Name:			
Address:			
SAP ID:			
Grid Reference (X,Y):			
Photographs of Installation, road, junctions and any supporting evidence must be taken Be mindful of all health and safety risks before gathering photographic evidence			
Hazard	Measure	Score	Site Score
Type of vehicles	Pedestrian / cycles only	N/A	
Speed limit	10mph or less	0	
Speed limit	11 to 30mph	5	
Speed limit	31 to 40mph	10	
Speed limit	41mph+	15	
Road alignment	Straight	0	
Road alignment	Not straight	10	
Junction proximity - within 20m	Yes	10	
Junction proximity - within 20m	No	0	
Distance from road / track	Greater than 5m	0	
Distance from road / track	Between 2m and 5m	5	
Distance from road / track	Less than 2m	10	
Location type	Rural (Open Countryside/Village)	0	
Location type	Suburban (Industrial)	5	
Location type	Urban (Town/City)	10	
HGV manoeuvring (Ind Est, loading bays, shops)	No	0	
HGV manoeuvring (Ind Est, loading bays, shops)	Yes	20	
Inlet pressure	2 bar or less	0	
Inlet pressure	Over 2 bar	10	
<b>Total Score:</b>			<b>0</b>
Is there existing protection?	Y/N		
If yes describe existing protection			
Is existing protection in good condition?	Y/N		
If no describe the condition of the protection			
Is there any other physical barrier between PRS and road?	Y/N		
If yes what type of barriers are in place			
Is surveyor aware of any previous vehicle impact on PRS?	Y/N		

<b>Are there other factors not listed in the RA that would require the site to have protection installed?</b>

# Engineering Bulletin (Gas) EB/661 – Guidance for Vehicle Impact Assessment of New and Replacement $\leq 7$ barg Pressure Reduction Installations (PRIs)

Published: 09/06/2020

Review date: 09/06/2020