

INSTITUTION OF GAS ENGINEERS AND MANAGERS IGEM/TSP/25/111

IGEM/G/8 Edition 2 Communication xxxx Founded 1863 Royal Charter 1929 His Majesty the King

Handling, transport and storage of PE pipes and fittings

DRAFT FOR COMMENT

- 1 This draft Standard IGEM/G/8 Edition 2 has been prepared by a Panel chaired by Duncan Lawton.
- 2 This Draft for Comment is presented to Industry for comments which are required by 23 July 2025, and in accordance with the attached Reply Form.
- 3 This is a draft document and should not be regarded or used as a fully approved and published Standard. It is anticipated that amendments will be made prior to publication.

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Attached is the Draft for Comment of IGEM/G/8 Edition 2 – "Handling, transport and storage of PE pipes and fittings" and the associated comment form.

We wish to make it as easy as possible for those of you representing industry bodies to issue the draft to your Members. You can either forward this email with attachment complete or forward it without the attachment and invite them to visit our website via https://www.igem.org.uk/resource-library-search.html?information_type=out-for-comment where the Draft and Comment Form are posted.

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IGEM/G/8 Edition 2 Communication XXXX

Handling, transport and storage of PE pipes and fittings

Draft For Comment



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IGEM/G/8 Edition 2 Communication XXXX

Handling, transport and storage of PE pipes and fittings

Draft For Comment



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SECTION 1: INTRODUCTION

- 1.1 This Standard supersedes IGEM/G/8 Communication 1749 which is obsolete.
- 1.2 This Standard has been drafted by the Institution of Gas Engineers and Managers (IGEM) Panel, appointed by IGEM's Gas Utilisation Committee and has been approved by IGEM's Technical Co-ordinating Committee on behalf of the Council of IGEM.
- 1.3 This Standard may be used in the handling, transport and storage of polyethylene (PE) components to be used in any fuel gas installation, such as those designed and installed in accordance with IGEM/TD/3, IGE/TD/4, IGEM/TD/13, IGEM/TD/19 IGEM/UP/2, etc.
- 1.4 The UK Polyethylene Pipe Industry has a free to download publication "Guidelines for the safe delivery and unloading of polyethylene pipes" (see A2.7) which has the written support of the Head of Injuries Reduction Programme, Health and Safety Executive (HSE) in the introduction. This Standard embraces the content of the Guidelines in terms of risk assessment, order placement, and receiving and unloading pipe deliveries. The opportunity has also been taken to update the Standard in terms of references, definitions, and prescription.

There is a common misconception that PE pipe products are lightweight and thus do not require the same stringent health and safety controls that are adopted for the handling of steel pipes.

This Standard highlights precautions to control PE pipe products being delivered, off-loaded and stored safely at customers' sites. The underlying theme is that PE pipe products be treated with a similar level of caution as perceived heavier steel pipe products and be unloaded in a controlled manner.

A risk-based matrix has been developed below to describe the general dynamic nature of delivery and offloading at customers' sites and the recommended control measures.

RISK	SITUATION	CONTROL MEASURES
Low	Delivering and offloading to a customer's known main material handling location.	Supplier / Haulier to carry out a site visit to review and agree their specific provisions and control measures with customer.
Medium	Delivering and offloading to customers local operational depots/stores.	Supplier / Haulier carry out an initial and frequent site visits to review provisions and control measures with customer.
High	Delivering and offloading to customers' transient work sites, which could be within the public highway.	Customer completes pre delivery site assessment review with supplier, so that hazards can be discussed and controlled with haulier.

TABLE 1 – RISK-BASED MATRIX FOR DELIVERY AND OFFLOADING

1.5

It is now widely accepted that the majority of accidents in industry generally are in some measure attributable to human as well as technical factors. People who initiated actions that caused or contributed to accidents might have acted in a more appropriate manner to prevent them.

To assist in the control of risk and proper management of these human factors, due cognisance should be taken of HSG48 – Reducing error and influencing behaviour.

- 1.6 The primary responsibility for compliance with legal duties relating to health and safety at work rests with the employer. The fact that certain employees, for example "responsible engineers" are allowed to exercise their professional judgement does not allow employers to abrogate their primary responsibilities. Employers are required to:
 - have done everything to ensure, so far as is reasonably practicable, that there are no better protective measures that can be taken other than relying on the exercise of professional judgement by "responsible engineers"
 - have done everything to ensure, so far as is reasonably practicable, that "responsible engineers" have the skills, training, experience and personal qualities necessary for the proper exercise of professional judgement
 - have systems and procedures in place to ensure that the exercise of professional judgement by "responsible engineers" is subject to appropriate monitoring and review
 - *Note:* The responsible engineer is a suitably qualified, competent and experienced engineer appointed to be responsible for the execution and for approval of activities designated by their employer.
 - not require "responsible engineers" to undertake tasks which would necessitate the exercise of professional judgement that is not within their competence. There should be written procedures defining the extent to which "responsible engineers" can exercise their professional judgement. When "responsible engineers" are asked to undertake tasks which deviate from this they are to refer the matter for higher review.
- 1.8 This Standard makes use of the terms "must", "shall" and "should" when prescribing particular requirements. Notwithstanding Sub-Section 1.8:
 - the term "must" identifies a requirement by law in Great Britain (GB) at the time of publication
 - the term "shall" prescribes a procedure which, it is intended, will be complied with in full and without deviation
 - the term "should" prescribes a procedure which, it is intended, will be complied with unless, after prior consideration, deviation is considered to be acceptable.

Such terms may have different meanings when used in legislation, or HSE Approved Code of Practice (ACoPs) or guidance, and reference needs to be made to such statutory legislation or official guidance for information on legal obligations.

- 1.8. Notwithstanding Section 1.7, this Standard does not attempt to make the use of any method of specification obligatory against the judgement of the responsible engineer. Where new and better techniques are developed and proved, they should be adopted without waiting for modification of this Standard. Amendments to this Standard will be published when necessary and their publication will be announced in the journal of IGEM.
- 1.9 Requests for interpretation of this Standard in relation to matters within their scope, but not precisely covered by the current text, are to be either:
 - addressed to Technical Services, IGEM, IGEM House, 26 & 28 High Street, Kegworth, Derbyshire, DE74 2DA; or
 - emailed to technical@igem.org.uk.

These will be submitted to the relevant Committee for consideration and advice, but in the context that the final responsibility is that of the engineer concerned. If any advice is given by or on behalf of IGEM, this does not imply acceptance of liability for the consequences and does not relieve the responsible engineer of any of their obligations.

1.10 This Standard was published in XXXX.

SECTION 2 : SCOPE

- 2.1 This Standard covers the handling, transport and storage of PE pipe and fittings in commercially available sizes.
- 2.2 This Standard considers PE pipe in coils, on drums and as straight lengths supplied either individually or as bundled packs.
- 2.3 This Standard is of a general nature to provide the minimum requirements for short term storage and the additional measures to be taken when components and assemblies are held for extended periods of time. The specific application will, therefore, need to take account of the particular circumstances involved and the components and assemblies that are being handled.
- 2.4 This Standard assumes the use of a metric PE pipe system and the term "diameter" refers to the nominal outside diameter of the pipe.
- 2.5 Italicised text is informative and does not represent formal requirements.
- 2.6 Appendices are informative and do not represent formal requirements unless specifically referenced in the main sections via the prescriptive terms "must", "shall" and "should".

SECTION 3 : LEGAL AND ALLIED CONSIDERATIONS

This Standard is set out against a background of legislation in force in GB at the time of publication. Similar considerations are likely to apply in other countries where reference to the appropriate national legislation will be necessary.

Relevant legislation, Standards and other publications are listed in Appendix 2.

Where Standards are quoted, equivalent national and international Standards etc. equally may be appropriate.

3.1 **COMPETENCY**

All personnel involved in the handling, transportation and storage of PE pipework and fittings shall have the appropriate competence. Particular attention is drawn to the need for the appropriate qualification of fork lift truck, crane and side loader operators, delivery drivers and slingers. Others involved in the transport and handling of PE pipes and fittings should be competent persons.

3.2 **PRIMARY LEGISLATION**

3.2.1 HEALTH AND SAFETY

The requirements of the Health and Safety at Work etc. Act (HSWA) must be observed. Attention is drawn to the duties of employers to their employees and to members of the public who may be affected by acts or omissions at work.

3.2.2 **THE OCCUPIERS' LIABILITY ACT**

This places duties on occupiers of premises, or any persons having effective control of them, to take such care as is reasonably practicable to see that visitors shall be safe in using the premises.

3.3 SECONDARY LEGISLATION

3.3.1 ELECTRICITY AT WORK REGULATIONS

- 3.3.1.1 These Regulations apply to a wide range of electrical work, from overhead power lines to the use of office computers and batteries and include work on gas equipment using electrical energy.
- 3.3.1.2 They are concerned with the prevention of danger from electric shock, electric burn, electrical explosion or arcing or from fire or explosion initiated by electrical energy.
- 3.3.1.3 They impose duties on every employer, employee and self-employed person and require that persons engaged in electrical work be competent or be supervised by competent persons.
 - *Note:* A "Memorandum of Guidance on the Electricity at Work Regulations, 1989" is available from HMSO and gives useful information on the Regulations. Further advice is contained in HSR25 The electricity at work Regulations 1989.

3.3.2 **OPERATION AND CONTROL OF LIFTING EQUIPMENT**

Adequate means should be established to ensure that only lifting equipment which is under a proper system of control is used. This system should extend to cover the selection, purchase, certification, issue and return, thorough examination, maintenance and the keeping of records for all lifting equipment.

3.4 MANAGEMENT OF HEALTH AND SAFETY AT WORK REGULATIONS (MHSWR)

Linked closely with specific duties under GS(I&U)R, MHSWR impose a duty on employers and the self-employed to make assessments of risks to the health and safety of employees, and non-employees affected by their work. They also require effective planning and review of protective measures.

3.5 **PROVISION AND USE OF WORK EQUIPMENT REGULATIONS (PUWER)**

- 3.5.1 Work equipment has a wide meaning and includes tools such as hammers, laboratory apparatus, for example Bunsen burners, ladders, photocopiers, lifting equipment and machinery for use at work.
- 3.5.2 PUWER place duties on employers in relation to selection, suitability, maintenance, inspection, installation, instruction and training, prevention of danger and control of equipment.
- 3.5.3 More information on PUWER is given in L22. Free leaflets include INDG 291 and INDG 229.

3.6 **LIFTING OPERATIONS AND LIFTING EQUIPMENT REGULATIONS**

- 3.6.1 These Regulations (often abbreviated to LOLER) place duties on people and companies who own, operate or have control over lifting equipment. This includes all businesses and organisations whose employees use lifting equipment, whether owned by them or not. In most cases, lifting equipment is also work equipment so the Provision and Use of Work Equipment Regulations (PUWER) will also apply (including inspection and maintenance). All lifting operations involving lifting equipment must be properly planned by a competent person, appropriately supervised and carried out in a safe manner.
- 3.6.2 LOLER also requires that all equipment used for lifting is fit for purpose, appropriate for the task, suitably marked and, in many cases, subject to statutory periodic 'thorough examination'. Records must be kept of all thorough examinations and any defects found must be reported to both the person responsible for the equipment and the relevant enforcing authority.

3.7 **REPORTING OF INJURIES, DISEASES AND DANGEROUS OCCURRENCES REGULATIONS (RIDDOR)**

RIDDOR require employers, self-employed people or those in control of work premises to report certain work related accidents, diseases and dangerous occurrences.

- 3.7.1 Major injuries, death and dangerous occurrences are to be notified immediately, for example by telephone, to the enforcing authority by the "responsible person" as defined by RIDDOR. Report can be made to the Incident Contact Centre:
 - for fatal and specified incidents only, telephone on 0345 300 9923 (opening hours Monday to Friday 8.30 am to 5 pm) and complete appropriate on-line form
 - all other reports at HSE website <u>www.hse.gov.uk</u>

Complete the appropriate online report form listed below:

- report of an injury
- report of a dangerous occurrence
- report of an injury offshore
- report of a dangerous occurrence offshore
- report of a case of disease
- report of flammable gas incident
- report of a dangerous gas fitting.

The form will then be submitted directly to the RIDDOR database and a copy issued to the person making the report.

On-line written reports are to be submitted within the required timescale (10 days, or 14 days for dangerous gas fittings). Other reports need to be made as soon as practicable and within 10 days of the incident.

INDG 453 Reporting accidents and incidents at work contains detailed guidance on RIDDOR, including a full list of injuries etc. that need reporting.

SECTION 4 : ADDRESSING THE PROPERTIES OF PE

4.1 STRENGTH, IMPACT AND CREEP

- 4.1.1 PE is a lightweight, highly ductile material compared with steel but is of lower strength. Scoring, impact damage or abrasion damage may occur during handling and storage, unless appropriate precautions are taken. Although PE is relatively tolerant to scoring and abrasion defects, in severe cases (greater than 10% wall thickness affected) the pipe shall not be used.
- 4.1.2 PE has a low modulus of elasticity and, hence, relatively low forces can cause large deflections if a pipe or fitting is poorly supported. When subjected to loads at ambient temperature, PE will creep, and the amount of permanent distortion will depend on the load and the time for which the load is applied. Susceptibility to distortion increases as ambient temperature rises. Pipe exhibiting signs of deformation, kinking or collapse, shall not be used.

4.2 CHEMICAL RESISTANCE

Although resistant to a wide range of inorganic substances, PE can be attacked by certain aromatic and aliphatic hydrocarbon compounds. Most lubricating and hydraulic oils, chemical solvents and certain gas conditioning fluids fall into this category. The mechanism of attack is one of absorption of the chemical leading to a softening of the PE and a subsequent adverse effect on properties such as strength and stiffness. PE pipe and fittings affected in this way shall not be used.

4.3 **ELECTRICAL**

PE has a high electrical resistivity, hence its use as an electrical insulator. In dry conditions, it is capable of storing a charge of static electricity. The charge can accumulate through wiping with a cloth or through contact with slings manufactured from man-made fibres.

Note: Static charges may be dissipated by placing a damp cloth which is in direct contact with the ground, around the PE pipe, to effect earthing.

It should be recognised that the removal of shrink-wrap (which can be used on PE coils) is a potential source of static electricity which is capable of igniting flammable gas/air mixtures and other flammable atmospheres. Although the risk to gas distribution operations is considered to be very small because the two activities very rarely occur together, shrink wrap shall not be removed if the presence of gas is suspected, especially in confined spaces.

4.4 **FIRE, IGNITION AND BURNING**

4.4.1 General

When PE 80 or PE 100 is heated in air, softening will occur at 120°C to 135°C and decomposition will commence at approximately 350°C. Above this temperature, PE will pyrolyse oxidatively to produce carbon dioxide, carbon monoxide, water and various hydrocarbons. These gases may ignite and provide heat which may accelerate the pyrolysis of more PE in the vicinity. In burning, molten droplets of material may be released which could ignite adjacent flammable materials. Actual conditions in a fire will be influenced by many factors, such as location and oxygen availability, which will determine the rate of progress and the nature of combustion products of the fire.

Combustion products from additives present in pipe and fittings may be toxic. Inhalation of smoke and fumes shall be avoided and, as any residual ash may contain toxic heavy metals such as cadmium, appropriate precautions shall be taken. Gloves, overalls and a respirator shall be worn and the ash placed in, and contained in, sealed bags.

4.4.2 **Fire prevention and fire fighting**

- 4.4.2.1 Stacks of pipe shall be sited to allow adequate access for emergency services vehicles in the event of a fire and also to prevent a fire from spreading to adjacent stacks.
- 4.4.2.2 Good housekeeping is essential, and the site should be kept clear of flammable waste materials, grass, weeds, etc. which could create a potential fire risk.
- 4.4.2.3 Consideration shall be given to the siting of any operational equipment that could be a potential source of ignition; for example, equipment for welding, cutting, grinding, etc., and other electrical equipment.
- 4.4.2.4 Consideration shall be given to the provision of instruction and training in first aid and firefighting. However, trained personnel should only attempt to extinguish a fire if they are confident of doing so without putting themselves at increased risk.
- 4.4.2.5 For a PE fire, any type of fire extinguisher is suitable. Dry powder is considered to be the most effective for quenching PE which is burning. Water sprays are especially effective in rapid cooling and damping down a fire. At permanent storage sites, an adequate water supply should be available for this purpose. The local fire authority should be consulted for advice on the adequacy of the water supply. Care shall be taken to avoid spreading the flames when using high pressure water jets. Water must not be used in close proximity to live electrical apparatus.

4.5 **EFFECT OF SUNLIGHT**

PE80/100 (PE) materials will degrade (bleaching) and become brittle if subjected to long-term exposure to sunlight radiation (ultraviolet rays). See Figure 1 for examples of sunlight bleached pipe compared to new. As part of the manufacturing process, stabilising compounds are added to the PE material that will reduce the degradation process, but this is time and intensity dependent. Within the United Kingdom, external storage of pipe and fabricated fittings in direct sunlight should not exceed a period of 24 months from the date of manufacture. Where possible all pipes and fittings should be stored inside or protected by suitable UV resistant cover to reduce aging effect of sunlight on PE material. When storing pipe outside, it is important that good stock rotation measures are in place to keep, for example first-in, first-out inventory process to keep sunlight exposure to a minimum. If PE is showing signs of bleaching, then an assessment of the pipe must be made by a PE Specialist to ensure that pipe has not become brittle.

For reasons of time and temperature, special care and attention should be taken to ensure that 180mm coils are protected from sunlight (such as a covering roof or natural shade) during sustained periods of high temperature in order to prevent kinking of the coil. 180mm coils should also spend a limited time in stores during very warm periods and should be installed at the earliest opportunity to minimise this risk.



FIGURE 1 - EFFECTS OF EXTENDED EXPOSURE TO UV LIGHT

4.6 **ADVERSE WEATHER CONDITIONS**

4.6.1 Greater care and consideration should be taken with regards to adverse weather conditions (cold, wet, windy, frost or hot weather) when handling PE pipe.

PE pipe is extruded to give smooth inner and outer surfaces. Frictional resistance is low especially when wet, which may lead to slippage so adequate care shall be taken in pipe handling and load securing.

SECTION 5 : ORDERING AND SUPPLYING OF PE PIPE AND FITTINGS

PE pipe is supplied in straight lengths and as coils.

The approximate weight of PE 100 pipe, of various diameters, is given in Tables 1 and 2.

5.1 ORDERING PE PIPE AND FITTINGS

- 5.1.1 When placing orders for PE pipe and fittings, the following information should be communicated to the supplier:
 - product requirements
 - any known obstacles along the route a recognised TMS system should be used
 - off-loading method
 - specific arrival instructions if they exist
 - full delivery address and postcode (site map/photos where possible)
 - site/depot contact name and telephone number plus alternative contact
 - named responsible person for the site/depot (if different from contact name)
 - any specific health and safety requirements (personal protective equipment (PPE) reporting procedures etc.)
 - access/egress constraints, for example low bridge; narrow lane, etc.
 - overhead obstructions, including localised height restrictions
 - specific times to avoid, including peak traffic; school times etc.
 - relevant road closure details
 - multi-drop requirements, indicated in a site plan if possible (for stringing out pipe lengths).
 - *Note:* The order may be made by filling in a pre-delivery check sheet attached to an Agreement. For more complex problem sites or where the customer is unsure, a physical site check from the supplier may be requested.

	Predeliver	y check she	eet
Customer Details:			
Driver Name:	Haulier:		Date:
Is an articulated vel	nicle suitable to mal	ke this delivery?	Y/N. If no give details.
Are there any heigh [;] details	t or weight restriction	ons en-route to c	customer? Y/N. If yes give
Are there any hazar	d/s associated with	the actual offloa	ad? Y/N. If yes give details.
During offload do yc	ou have to park acro	oss pedestrian wa	alkways? Y/N
Do you have to reve Y/N	rse to offload point?	?	
Do you have to man	oeuvre over uneven	ı ground? Y/N	
Are pedestrians in t Y/N	he vicinity of your v	ehicle during off	load?
Do you believe that	the area of offload i	is sufficiently illu	minated? Y/N
Are there any areas details.	that you believe saf	fety can be impro	oved on site? Y/N. If yes give
You are requin when you believ be handed to y copy a	red as a delivery /e one or more h /our Transport M nd send the orig	/ driver to cor hazards are p lanager imme jinal to the su	nplete the above report resent. This report should diately who should then pplier for action.

5.1.2 The customer should appoint a site responsible person to oversee the delivery process and to acknowledge receipt of the goods, once safely off-loaded and confirmed as acceptable.

It is a key safety element that the site responsible person and the driver assess the unloading area and the local environment conditions prior to the load being unsecured.

5.2 **METHODS OF SUPPLYING PE PIPE AND FITTINGS**

5.2.1 **Coils**

5.2.1.1 Coils of pipe of diameter up to 63 mm can be restrained using an outer covering of "shrink wrap" or equivalent material (see Figure 2).



FIGURE 2 - EXAMPLE OF "SHRINK WRAPPED" COILS

5.2.1.3 Coiled pipe greater than 16 mm in diameter shall be suitably constrained in a stable configuration by applying a minimum of 2 bands per layer for pipes \leq 125 mm, and 3 bands per layer for pipes > 125 mm.

The bands shall be equally spaced and staggered on each layer.

5.2.1.4 For all pipe diameters \geq 75 mm, a minimum of 2 security bands shall be applied to the coil, one to retain the inner tail and one to retain the outer tail (see Figure 3). These shall be positioned not less than 2 pipe diameters, and no greater than 1 m, from each end. The security bands shall be a minimum of 12.5 mm wide and shall be either plastic coated steel or steel covered in a protective sleeve.





Gas coil banding sequencing below 1.8m



Gas coil sequencing above 2.5m

FIGURE 3 - HANDLING OF INDIVIDUAL LAYERS OF COILS AND SECURITY BAND

- Note: Coils in diameters of 63-180mm contain a considerable amount of stored energy, which could potentially cause injury to personnel if the coils are not handled or dispensed correctly (See Appendix 3).
- 5.2.1.5 When palletised, the stack of coils should have additional strapping in at least two equi-spaced locations around the circumference, to ensure stability during handling (see Figure 4).



Note: Banding needs to be of sufficient strength and be applied such that it remains in position without slippage, i.e. retain its relative position on the coil.

FIGURE 4 - PALLETISED COILS

5.2.1.6 For coils of pipe exceeding 32 mm diameter, all coils should have a visible label, indicating the information detailed in Figure 5.

FRONT	REVERSE
Weight: Length: Diameter: Sequential start number: Sequential finish number:	WARNING Before unstrapping, ensure both pipe ends and coil/drum are firmly and mechanically restrained.

FIGURE 5 - INFORMATION FOR LABELS FOR COILS

5.2.2 STRAIGHT LENGTHS

Pipe in straight lengths should be either independent or bundled together and secured by restraining batons and bands.

5.2.3 **FITTINGS**

Normally, smaller sized fittings are supplied individually wrapped in polythene bags. Small quantities are often boxed together. Normally, larger sized fittings are packed individually either in boxes or on pallets.

Electrofusion fittings shall be stored in a cool, dry covered area in their original packaging (bag and box or carton).

PIPE DIAMETER	SDR	MAXIMUM	MAXIMUM	MAXIMUM
(mm)		WEIGHT	WEIGHT OF 6	WEIGHT OF
		(KG/M)	METRE STICK	12 METRE
				STICK
16	11(7.4)	0.12	0.72	1.44
20	11(9)	0.15	0.90	1.80
25	11	0.19	1.14	2.28
32	11	0.31	1.86	3.72
40	11	0.48	2.88	5.76
50	11	0.74	4.44	8.88
55	11	0.90	5.40	10.80
63	11	1.16	6.96	13.92
63	13.6	1.0	6.00	12.00
75	11	1.62	9.72	19.44
75	13.6	1.40	8.40	16.80
90	11	2.35	14.10	28.20
90	17.6	1.57	9.42	18.84
125	11	4.51	27.06	54.12
125	17.6	2.96	17.76	35.52
140	11	5.62	33.72	67.44
140	17.6	3.69	22.14	44.28
180	11	9.31	55.86	111.72
180	17.6	6.31	37.86	75.72
200	11	11.03	66.18	132.36
200	17.6	12.69	76.14	152.28
200	26	5.41	32.46	64.92
213	21	7.43	44.58	89.16
213	26	6.17	37.02	74.04
225	17.6	9.09	54.54	109.08
225	21	8.34	50.04	100.08
225	26	6.80	40.80	81.60
250	11	17.14	102.84	205.68
250	17.6	11.23	67.38	134.76
250	21	10.56	63.36	126.72
250	26	8.42	50.52	101.04
268	26	9.70	58.20	116.40
280	11	21.49	128.94	257.88
280	17.6	14.02	84.12	168.24
280	21	13.12	78.72	157.44
280	26	10.49	62.94	125.88
315	11	27.19	163.14	326.28
315	17.6	19.09	114.54	229.08
315	21	16.38	98.28	196.56
315	26	13.38	80.28	160.56
355	11	34.62	207.72	415.44
355	17.6	22.62	135.72	271.44
355	21	20.68	124.08	248.16
355	26	16.98	101.88	203.76
400	11	43.91	263.46	526.92

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400	17.6	28.69	172.14	344.28
400	21	26.17	157.02	314.04
400	26	21.53	129.18	258.36
450	11	55.44	332.64	665.26
450	21	33.22	199.32	398.64
450	26	27.19	163.14	326.28
469	21	36.08	216.48	432.96
469	26	30.23	181.38	362.76
500	11	68.55	411.30	822.60
500	17.6	56.02	336.12	672.24
500	21	40.96	254.76	491.52
500	26	33.52	201.12	402.24
560	11	85.83	514.98	1029.96
560	21	51.42	308.52	617.04
560	26	42.10	252.60	505.20
630	11	108.76	652.56	1305.12
630	21	64.96	389.76	779.52
630	26	53.15	318.90	637.80
710	21	79.78	478.68	957.36
710	26	64.90	389.40	778.80
800	21	101.19	607.14	1214.28
800	26	82.12	492.72	985.44

Note: PE 80 pipes will be marginally lighter than indicated for PE 100.

TABLE 2 - WEIGHT OF PE 100 PIPE (STRAIGHT LENGTHS)

PIPE	SDR	MAXIMUM	APPROXIMATE WEIGHT (KG)			
(mm)		(kg/m)	50m COIL	100m COIL	150m COIL	500m COIL
16	11(7.4)	0.12	6.0	12.0	18.0	60.0
20	11(9)	0.15	7.5	15.0	22.5	75.0
25	11	0.19	9.5	19.0	28.5	95.0
32	11	0.31	15.5	31.0	46.5	155.0
40	11	0.48	24.0	48.0	72.0	240.0
50	11	0.74	37.0	74.0	111.0	370.0
55	11	0.90	45.0	90.0	135.0	450.0
63	11	1.16	58.0	116.0	174.0	580.0
63	13.6	1.0	50.0	100.0	150.0	500.0
75	11	1.62	81.0	162.0	243.0	810.0
75	13.6	1.40	70.0	140.0	210.0	700.0
90	11	2.35	117.50	235.0	352.5	1175.0
90	17.6	1.57	78.5	157.0	235.5	785.0
125	11	4.51	225.5	451.0	676.5	-
125	17.6	2.96	148.0	296.0	444.0	-
140	11	5.62	281.0	562.0	843.0	-
140	17.6	3.69	198.0	396.0	594.0	-
180	11	9.31	465.5	931.0	1396.5	-
180	17.6	6.31	315.5	631.0	946.5	-

Note: PE 80 pipes will be marginally lighter than indicated for PE 100.

TABLE 3 - WEIGHT OF PE 100 PIPE (COILS)

SECTION 6 : GENERAL HANDLING CONSIDERATIONS

The following common aspects apply to pipe and fittings. They apply irrespective of whether the pipe is supplied in coil form, or as straight lengths.

6.1 **RISK ASSESSMENT**

A suitable and sufficient assessment of the risk of handling and transporting of the pipe and fittings must be undertaken and suitable control measures implemented.

6.2 **PROTECTIVE CLOTHING**

All personnel involved in transporting and handling operations shall wear suitable PPE, including safety footwear, gloves, safety helmets, eye protection and luminescent or high visibility clothing.

6.3 **LIFTING**

Adequate means shall be established to ensure that only lifting equipment which is under a proper system of control as per the requirements of LOLER is used (see also Sub-Section 3.6 and Appendix 3).

6.3.1 All manual lifting should be undertaken as per L 23

6.4 **STORAGE**

- 6.4.1 Pipe and fittings should not at any time be placed where contact is possible with aggressive chemicals, such as lubricating and hydraulic oils, chemical solvents and certain gas conditioning fluids. Where pipe or fittings have been heavily contaminated with such chemicals, they shall be disposed of (see also Sub-Section 4.2).
- 6.4.2 Pipe should be stored in such a manner that it is not damaged by direct contact with the ground.
 - *Note:* This may be achieved by the use of wooden batons or other suitable means, placed to give uniform support.
- 6.4.3 Consideration shall be given to the provision of covered storage if prolonged exposure to direct sunlight is envisaged (see Sub-Section 4.5). Consideration shall also be given to the provision of storage away from sources of direct heat or fire.
- 6.4.4 No other materials which may damage or affect the dimensional stability of pipe or fittings should be placed on top of them during transport and storage.
- 6.4.5 Actions that have the potential to damage pipe, pipe ends and fittings shall be avoided. Particular attention should be paid where pre-fabricated fittings are used.
- 6.4.6 PE pipe and fittings shall not, at any time, be in contact with hot surfaces, for example vehicle exhausts, other than when using the fusion jointing processes.
- 6.4.7 Bundled packs should be stacked with the restraining battens coincident, if possible (see Figure 6). These battens should allow easy access by the forks of a forklift truck or side loader. Where the battens are not coincident, additional rigid packing should be placed between packs. On site, unbundled packs should not be stacked at greater than 1m height.



bundled packs stored on clear level ground

Timber or concrete support

Restraining battens coincident

FIGURE 6 - STACKING BUNDLED PACKS

6.5 **UNPACKING AND MOVEMENT**

- 6.5.1 Pipes shall not be pushed or pulled over rough or sharp edges. Protection shall be provided against contact with sharp or angular objects.
- 6.5.2 Pipe and fittings shall not be rolled, dropped or thrown, from a delivery vehicle, and particular care shall be taken when handling at temperatures significantly below freezing.
- 6.5.3 Bundled packs and coils are secured by strapping under tension. A robust procedure shall be adopted when cutting the strapping, to eliminate the risk of the pipe or strapping springing back and causing serious personal injury (refer to L23 or manufacturer's instructions for further guidance).
- 6.5.4 Fittings shall not be removed from their packaging until they are about to be installed. If fittings are delivered without their original packaging, they shall not be used. Where manufacturers provide protective wrapping on fittings, such wrapping should be kept intact until immediately prior to use.
- 6.5.5 The preferred method for moving is by webbing or rope slings. Crane hooks, chains, forklift forks and wire ropes shall not be used in direct contact with pipe coils or bundled packs. The restraining battens and/or the strapping are not designed for lifting and should not be used as attachment points.
- 6.5.6 One or more slinging points maybe required depending on the length or diameter of the pipe and should be centrally positioned to balance the load during the lifting and unloading process.
- 6.5.7 Where loads are to be lifted by crane, certified lifting sling appropriate for the load must be used. A safe system of work should be developed and implemented for specialist lifts (see Figure 15). Care shall be taken when lifting coils for dispensing, to ensure that correct orientation has been achieved.

- 6.5.8 Cranes and fork lift trucks should not be used in combination.
- 6.5.9 Where long loads are to be lifted by fork lift truck or side loader, the forks, fitted with a suitable protective sleeve, should be positioned such that the amount of bending is reduced to a minimum, alternatively a spreader attachment should be used.
 - *Note:* It is not recommended that pipe(s) of length greater than 6 metres be lifted by (front lifting) fork lift trucks (see Figure 7).

The operator shall exercise care when handling long loads, paying particular attention to obstacles enroute and the swing on the load when turning and the effect on the lateral stability of the truck and load.



Note: Movement is limited to one bundle at a time.

FIGURE 7 - USE OF A SIDE LOADER FOR MOVING BUNDLED PACKS (PIPE NOT EXCEEDING 6 METRES IN LENGTH)

6.6 **STATIC CHARGE**

Persons handling pipe shall be made aware that, in extreme cases, it is possible to receive a mild electric shock from the build-up of static electricity (refer to subsection 4.3 for guidance).

6.7 **INSPECTION**

All components should be subjected to a visual inspection on receipt from the manufacturer or supplier. Any items found with unacceptable damage at the time of delivery, shall be withdrawn from the consignment, the manufacturer - supplier notified immediately prior to return. If a pipe is subsequently damaged or "kinked", or if unacceptable ovality has occurred due to unsatisfactory storage or handling, the pipe shall not be used.

Note: Advice on what constitutes "unacceptable ovality" is given in the GIS/PL2 series of specifications on PE pipe and fittings.

6.8 **CAPPING**

Coiled pipe ends should be temporarily capped using a means which totally encloses the ends, for example by a lipped cap, to avoid ingress of foreign bodies.

SECTION 7 : LOADING AND TRANSPORTATION

7.1 **GENERAL**

- 7.1.1 Liaison shall be established between the supply and delivery points to ensure that adequate arrangements are made for the delivery including a suitable off-loading area (see Sub-Section 5.1).
 - *Note:* The safety of the delivery operation is dependent on the consigner loading the pipes and haulier securing them properly in accordance with the Code of Practice "Safety of Loads on Vehicles" published by the Department of Transport.

Despatch To	Invoice To :	
Del Contact Del Number	Telephone : Customer ID :	

Customer Ref	Sales Order	Order date	Salesperson	Customer Contact	Telephone

FIGURE 8 - DELIVERY NOTE

- 7.1.2 Deliveries to unmanned sites should not be permitted.
- 7.1.3 Consideration shall be given to the location of overhead power lines, communication lines and other overhead obstructions, prior to undertaking the loading and transportation of pipes.

Specific attention shall be paid to the use of cranes in the vicinity of overhead power lines. Consequently, the electricity supplier shall be consulted to determine the precautions to be taken. Ideally, similar precautions should be taken for any other overhead apparatus.

Note: Further information is provided in GS6.

- 7.1.4 Vehicles should have a flatbed adequate for the length of the load and be free from nails or other projections (which could damage pipe and fittings).
- 7.1.5 Attention shall be paid to the effectiveness of load securing methods, especially in icy, windy and/or wet conditions (see also Sub-Section 4.6) when it may be necessary to restrict the size of the load.
- 7.1.6 The height of vehicle loads shall be such that the load can be safely handled with the facilities available, and in any event, heights shall not exceed those given in clauses 9.2.2.1, 9.2.3 and 9.2.4.2 respectively.

Where the overall height exceeds 3.66 m, a notice in the driver's cab, detailing the overall height of the vehicle with its load, should be provided.

7.1.7 A suitable means of access to sheet and de-sheet the load shall be provided, including a secure footing at the top of the load.

7.1.8 The supplier, when loading the vehicle, should take into consideration the type of product (safe stacking) and the delivery drop sequence, to avoid any unnecessary reloading by the driver.

7.2 **COILS**

7.2.1 **Individual coils**

7.2.1.1 These may be transported vertically in caged vehicles. For pipe of diameter 90 mm and above, and for pipe of diameter 63 mm and above where the length exceeds 100 m, individual retention should be provided.

Note: Proprietary "*cargo straps*" *are considered a suitable method of restraining the coils to the framework of the vehicle.*

- 7.2.1.2 For pipes not transported vertically, a suitable securing method of retention shall be used.
- 7.2.1.3 Coils should be protected from scuffing.
- 7.2.1.4 Vehicles used to deliver coils vertically should embody a base which prevents scuffing and provides suitable support to prevent point loading and distortion of the pipe.

7.2.2Bulk supplies

7.2.2.1 Coils may be supplied in bulk, secured on pallets or loaded horizontally in sausages, as well as individually. Coils of pipe of diameter not exceeding 63 mm will be wrapped in packs and may be stacked directly on top of each other.

All larger and longer coils should be loaded vertically so that there is provision to individually remove each coil by slinging.



FIGURE 9 - TYPICAL SECURED LOAD

7.2.3Large coils

7.2.3.1 Individual coils of pipe of diameter 90 mm diameter and above and of 63 mm and above of length exceeding 100 m may be loaded using a fork lift truck fitted with a special coil handling boom (see Figure 10).

For bulk supplies, delivery vehicles should incorporate both appropriate crane facilities and all necessary lifting equipment, if possible. This will avoid the need for additional lifting equipment. All coils to be handled by the crane shall be less than the maximum lifting capacity of the crane. The coils should be slung individually, using a suitable certified lifting sling.

7.2.3.2 Where required, the police shall be notified in respect of wide loads (for requirements refer to Appendix 1 Definition abnormal load).



FIGURE 10 - LOADING OF INDIVIDUAL COILS

7.3 STRAIGHT LENGTHS

7.3.1 Bundled packs

Bundled packs may be stacked on a vehicle. Attention shall be given to the stability and security of the packs, as well as the polyethylene pipe coil trailer headboard height. It may be necessary to use adequate strapping and additional vertical support such as side or centre posts in some cases. Consideration shall be given to the probable method of unloading at the destination. For example, it may be necessary to deliberately provide adequate access for slings (see Figure 11).

7.3.2 Individual straight lengths

Individual straight lengths of pipe shall be supported along their length and be adequately secured.

7.4 **FITTINGS**

Boxed fittings may be stacked on and secured to pallets for transport. Similarly, prefabricated fittings may be supplied on and secured to a pallet. They should be stacked, secured and transported such that no load is imparted to any joint.

SECTION 8 : OFF-LOADING



FIGURE 11 - EXAMPLE OF OFF-LOADING OF BUNDLED STRAIGHT LENGTHS TO A SAFE AREA

8.1 GENERAL

- 8.1.1 Depot, site and haulier risk assessments which comply with the requirements of LOLER must be documented prior to accepting deliveries. Every Driver must carry current and valid LOLER certificate and Crane Licence at all times. Hazards and factors to be considered should include:
 - access to, and egress from, site
 - access to the trailer to remove load securing devices
 - safe working load (SWL) and fitness for purpose of slings used in the lifting process including valid certification
 - traffic management one way system
 - pedestrian management
 - overhead obstructions and height constraints (see clause 8.1.3)
 - provision of barriers to clearly mark the safe zone for off-loading
 - location for unloading/storage to be on firm, level ground, free from damaging material
 - suitability of the off-loading method to the task
 - ensuring that the off-loading area is of hard standing (vehicle)
 - ensuring there is a clearly marked safe zone on the off-side of the vehicle wide enough to protect any offloading staff and prevent the product being offloaded coming into contact with pedestrians or other vehicles, e.g. 12 m lengths of pipe could swing into a live traffic lane
 - outrigger legs of the offloading crane are deployed in accordance with legislation and manufacturer's instructions
 - PPE requirements
 - site inductions, to include sharing of risk assessments
 - named site responsible person
 - safe storage provisions
 - emergency procedures
 - fire assembly point
 - first aid representatives
 - adverse weather conditions
 - lighting provision for offloading in poor light conditions.

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- 8.1.1.1 Where unloaded by haulier driver, on-board crane the driver is responsible for the load until secured on firm level ground.
- 8.1.1.2 Where unloaded by site-based personnel via side-loader / telescopic / fork-lift the responsible site operative accepts responsibility once the load leaves the vehicle / trailer.
- 8.1.2 The site responsible person shall ensure that the site/depot is safe to accept pipe deliveries.
- 8.1.2.1 The area where the delivery vehicle is to travel/stop shall be safe (see Figure 11). The area shall be flat, free from potholes and be of hard road specification. The location for unloading/storage shall be on firm, level ground, free from damaging material, with suitable access for vehicles and site unloading equipment. Consideration shall be given to vehicle turning/egress from the site, to minimise vehicle reversing.
- 8.1.2.2 All personnel and vehicular traffic shall be kept at a safe distance from the unloading area. All off-loading equipment shall be suitably rated (SWL) and must comply with relevant statutory regulations (see Section 3).
- 8.1.3 Consideration shall be given to the location of overhead power lines, communication lines, and other overhead obstructions prior to undertaking the off-loading of pipes.
- 8.1.3.1 Specific attention should be paid to the use of cranes in the vicinity of overhead power lines and consequently it should be emphasised that the electricity suppliers should be consulted to determine the precautions to be taken.

Further information is provided in GS6 Avoiding danger from overhead power lines.

- 8.1.4 Off-loading shall not take place until the exact location of the storage position has been determined.
- 8.1.5 Pipes and fittings must not be pushed or rolled off the transporter.

If the pipes or fittings cannot be lifted manually in accordance with L23, appropriate lifting devices must be used, such that a controlled lift is performed for any loading or unloading operation. When using appropriate lifting devices, pipes must :

- be secured to the lifting device using appropriate slings, positioned on the pipe to balance the load
- not be lifted using grab buckets that directly bite into the pipe material.
- 8.1.6 The safe working load (including any attachments) of any lifting equipment must not be exceeded. All lifting equipment must have been examined, with up-to-date test certificates available (see Sub-Section 3.2).
- 8.1.7 Care should be taken not to damage the pipe and/or fittings, especially when handling bulk loads in wet or icy conditions.
- 8.1.8 Any party involved in the unloading process must stop unloading if they believe there is a risk to safety. Such intervention must be immediately reported to the site responsible person and the haulier. The haulier must report any systemic risk to the supplier.

8.1.9 The delivery personnel are the only people authorised to access the trailer. This may be necessary to undo securing devices and to place straps on the products. Mounting the back of the vehicle shall be minimised where possible and shall be in accordance with the haulier's/the employers risk assessment and safe system of work. The haulier shall provide a safe means of access to the trailer bed.

Note: It is essential that all site specific PPE is worn.

- 8.1.10 The delivery driver shall be responsible for undoing load securing devices. The securing devices should only be removed from the product that is to be imminently off-loaded.
- 8.1.11 Before off-loading commences, the delivery personnel should be escorted to a safe zone away from the off-loading area (unless they are operating the on-board crane) and should be able to observe the offloading operation. There must not be any person on the bed of the vehicle immediately prior to and during loading/unloading operations.



FIGURE 12 - OFFLOADING

8.2 **OFF-LOADING METHODS**

8.2.1 Manual

Manual off-loading should be limited to small packages of fittings. Pipes should be off-loaded mechanically. (For guidance refer to manual Handling regulations 1992 and associated guidance L23)

8.2.2 Fork lift truck, side loader and telescopic all terrain truck

Correctly sized forks should be used and consideration shall be given to the use of purpose-built coil handling booms (see Figures, 10 and 13). For further guidance refer to LOLER.



FIGURE 13 - OFFLOADING COILS WITH A TELESCOPIC ALL TERRAIN TRUCK

8.2.3 Cranage

- 8.2.3.1 All personnel involved in the off-loading by crane must be competent.
- 8.2.3.2 At no time shall any person be allowed underneath a slung load.
- 8.2.3.3 Only non-metallic certified slings shall be used.
- 8.2.3.4 Not less than 2 persons (including the slinger) should be employed in the offloading when using a crane. One of these should be provided by the receiving centre.
- 8.2.3.5 The driver and the Site Responsible Person should check, using the Pre-delivery check list, to ensure the offload is safe to commence.
- 8.2.3.6 It is the responsibility of the on-board crane operator to unload the PE pipe products in a safe and controlled manner. In adverse weather conditions, it may be necessary for a competent person to stabilise the product that is being off-loaded, using a guide rope(s). This is only permitted if the operation can be carried out safely. The person(s) holding the guide rope(s) shall always maintain a safe distance from the product that is being stabilised. All lifting slings and guide ropes shall be supplied and secured by the delivery driver. Guide rope(s) may be required for coils as well as pipe lengths.

It is important to maintain an exclusion zone. All personnel and vehicular traffic not involved in the loading/offloading operation must be kept at a safe distance from the unloading area.

- 8.2.3.7 When using a crane to handle long or potentially unstable loads, the lift points shall be spread along the length of the load, to support the pipe. (see Figure 16).
 - Note: Guide ropes may be used to control pipe bundles/coils during off-loading.

8.3 **OFF-LOADING AT DEPOTS AND STORAGE SITES**

8.3.1 **Fittings**

Smaller fittings may be off-loaded manually but should be unloaded with care.

8.3.2 Palleted loads and straight lengths not exceeding 6 m

These may be off-loaded using a fork lift truck. Due account should be taken of the flexing of pipe contained in bulk packs.

8.3.3 Straight lengths exceeding 6 m

These should be off-loaded using a side loader or a crane.

8.3.4 Individual coils

- 8.3.4.1 Individual coils of pipe should be off-loaded as single units using a fork lift truck fitted with suitable fork protection or a crane.
- 8.3.4.2 When using a crane, each coil should be slung individually.
- 8.3.4.3 The lifting equipment shall have control of the load, but such that the sling is not under tension, before the transport restraining straps are removed.
- 8.3.4.4 The person removing the transport restraining straps shall be outside of the coil, and on a firm footing.

8.4 **OFF-LOADING AT PROJECT SITES**

8.4.1 **Fittings**

Smaller fittings may be off-loaded manually but should be off-loaded with care.

8.4.2 Palleted loads

These should be off-loaded by slinging the pallet.

8.4.3 Straight lengths not exceeding 6 m

Where suitable risk assessment has been carried out, individual straight lengths of pipe not exceeding 180 mm diameter may be off-loaded manually.

Straight lengths of larger diameter pipe and/or bundled packs should be offloaded by slinging. A suitable spread on the slings shall be used to support the pipe.

8.4.4 Straight lengths exceeding 6 m

To avoid double handling, it is preferable to transport these to the project site by a supplier's vehicle (see clause 8.2.3.5 and Figure 15).

8.4.5 Individual coils

- 8.4.5.1 The lifting equipment shall always have control of the load but such that the sling is not under tension before the transport restraining straps are removed.
- 8.4.5.2 The person removing the transport restraining straps shall be outside of the coil, and on a firm footing.

8.4.5.3 When using a crane, each coil should be slung individually.

Note: Consideration may be given to avoid double handling where practicable.

8.4.6 **Palletised Fittings**

8.4.5.4 Fittings should be securely strapped to the pallet (see figure 14).



FIGURE 14 - PALLETISED FITTINGS





FIGURE 15 - OFF-LOADING LONG STRAIGHT LENGTHS AT A PROJECT SITE

SECTION 9 : STORAGE

When considering storage on a public highway, the requirements of the New Roads and Street Works Act Code of Practice - Safety at Street Works and Road Works will be applied.

9.1 **GENERAL**

- 9.1.1 Unauthorised access to site shall be prohibited. Sites shall be properly secured, particularly after working hours (see also A2.2).
- 9.1.2 Suitable and safe means of access and egress, from the storage area must be provided. Access between stacks should be appropriate to the means of handling.
- 9.1.3 Consideration shall be given to the proximity of trenches when positioning material for storage, to avoid excessive ground loads being transmitted.
- 9.1.4 Pipes shall be adequately secured or restrained to prevent their accidental movement and, in general, should not be stored in an unsupported, unrestrained upright position.
- 9.1.5 Precautions should be taken to prevent debris and water from contaminating pipes and fittings. Pipe protection caps, where fitted, shall remain in-place during site storage, to ensure both cleanliness of pipe bore and in the case of larger diameter pipes, preventing access for minors that could lead to fatal consequences.
- 9.1.6 Care should be taken to prevent damage to, and distortion of, pipe ends and fittings.

9.2 STORAGE DEPOTS

9.2.1 General

- 9.2.1.1 Stock should be located in such a manner as to ensure adequate stock rotation on a "first-in – first-out" basis. Pipe and fittings should be stamped with the date of manufacture or, alternatively, coded. This should be checked periodically to ensure that stocks are being rotated in accordance with agreed procedures.
- 9.2.1.2 Precautions shall be taken to ensure that pipes and fittings are adequately supported and secured. Pipe and prefabricated fittings should be stored for a maximum of 24 months from the date of manufacture (which can be found on the side of the pipe) (see also Sub-Section 4.5).

9.2.2 **Coils**

9.2.2.1 Individual coils should be stored on pallets or on firm level ground which has suitable protection for the bottom coil. The stack height shall not exceed 2.5 m (see Figure 4). Battens or spacers should be provided between coils to facilitate lifting.

Coils delivered by suppliers already palletised may have been secured by shrink wrap or retaining straps; such coils should remain secured to their respective pallets during storage with the stack only being broken at the time of issue.

- 9.2.2.2 The height of stacked individual coils not secured to a pallet shall be such that the stack is stable, and the uppermost coil can be safely handled. Individual coils of pipe of diameter not exceeding 32 mm should be hand stacked flat.
- 9.2.2.3 Major stores should have permanent coil handling equipment. The operation of such equipment should be the responsibility of a competent person for loading vehicle/coil dispensing trailers.

Note: At such stores, the method of storage utilised for coils may be either vertical or horizontal.

9.2.2.4 When coils are stored vertically, they should be in, and secured to, a purpose-built storage frame or stillage (see the example in Figure 16 below). These should incorporate securing positions for pipe locations and have built-in apparatus for direct loading to polyethylene pipe coil trailers. Consideration shall be given to facilities being available to avoid single point contact of the coils.



FIGURE 16 - TYPICAL STORAGE FRAME (PROPRIETARY DESIGN)

9.2.3 Bundled packs

Bundled packs should be stored on clear, level ground and the restraining battens supported by load bearing timber battens or concrete blocks (see Figure 6). For reasons of safety and stability, bundled packs shall not be stacked more than 2.5 m high for general storage although, when a properly constructed hard-standing area is provided, the height may be increased to 3.0 m.

9.2.4 Individual straight lengths (see Figure 17)

- 9.2.4.1 These shall be stored horizontally in specifically designed load bearing racks, and should have adequate support along their length. Alternatively, individual lengths can be stacked on clear level ground. The bottom layer should rest on an adequate number of timber battens or pallets for support.
- 9.2.4.2 Stacks of individual pipes should not exceed a height of 1 m. For larger diameter pipes, consideration shall be given to the SDR value which may further limit the height to prevent dimensional distortion (ovality).



FIGURE 17 - STACKING OF INDIVIDUAL STRAIGHT LENGTHS

9.2.5 **Fittings**

- 9.2.5.1 Electrofusion fittings should be stored internally away from direct sunlight and heat, in a clean, dry, dust and contamination free environment, preferably on racking. They shall remain in the manufacturers (undamaged) original packaging until the point of use. Where fittings are supplied in boxes, they should be stored and issued in the supplied box and only removed from the packaging at the point of use. Where electrofusion fittings are supplied for use without their original packaging or where the packaging is damaged the fitting shall not be used. Wherever possible fittings shall be selected for use on a 'first in-first out' basis. All packaging materials used for fitting delivery, storage and protection, shall be collected for recycling.
- 9.2.5.2 Where manufacturers provide protective wrapping on fittings, such wrapping should be kept intact until immediately prior to use.
 - *Note:* For large diameter spigoted fittings, these may be stored outdoors in a secure location provided they are adequately protected against damage and the deleterious effects of direct sunlight (see Sub-Section 4.5).

9.3 **PROJECT SITE**

9.3.1 General

9.3.1.1 On certain projects, it may be necessary to store materials at selected points close to the laying operations. These selected sites should be level and should have, or be provided with, sufficient hard standing area to support the materials to be stored as well as the vehicles and mechanical plant associated with such storage.

Sites should have ease of access and should offer adequate security.

9.3.1.2 Where it is necessary to store pipes on the public highway, all such pipes must be adequately fenced off in accordance with the Code of Practice - Safety at Street Works and Road Works. Additional protective measures such as the use of security fencing warning lamps and signage should be considered in areas of higher risk.

9.3.2 **Coils**

- 9.3.2.1 Coils delivered direct to a secure project site, or an operational depot should be stored in the horizontal position, unless racks are provided. Each coil should be protected from surface contact by using either wooden battens or wooden pallets.
- 9.3.2.2 Individual coils of pipe not exceeding 32 mm diameter are generally capable of being manually handled on site. For larger sizes, mechanical handling should be carried out using a vehicle mounted crane utilising non-metallic slings and ropes.
- 9.3.2.3 Individual coils of pipe of diameter 90 mm and above should, when stacked horizontally, be not more than two coils high with battens between coils to facilitate lifting.
- 9.3.2.4 Due attention should be paid to minimise the risk of vandalism.

9.3.3 Bundled packs

Bundled packs should be stored on site as described in clause 9.2.3 but limited to two packs high or a maximum pack height of 1m.

9.3.4 Individual straight lengths

Individual straight lengths should be stacked on site in accordance with clause 9.2.4. The bottom layer should be fully supported on a level surface and restrained by the use of wide wooden wedges.

SECTION 10 : HANDLING OF PIPE AND FITTINGS AT THE PROJECT SITE

10.1 **GENERAL**

- 10.1.1 The general handling considerations outlined in Section 6 shall be taken into account.
 - Note: The incorrect handling of loads causes large numbers of injuries and can result in pain, lost time and, on occasions, permanent disablement. In GB, The Manual Handling Operations Regulations apply to any manual handling operations which may cause injury at work. Those operations are identified by the risk assessment carried out under the Management of Health and Safety at Work Regulations. They include not only the lifting of loads, but also lowering, pushing, pulling, carrying or moving them, whether by hand or other bodily force. For further guidance refer to L23 Manual Handling, Manual Handling Operations Regulations 1992. Guidance on Regulations
- 10.1.1.1 A suitable and sufficient risk assessment should be undertaken, and appropriate control measures be in place, prior to any manual handling of products on site.
- 10.1.1.2 Suitable PPE as identified by the risk assessment shall be worn throughout the operation.
- 10.1.2 Pipe and fittings shall be inspected prior to installation to ensure that damage has not taken place during storage and subsequent handling on the job site.
- 10.1.3 Consideration shall be given to the location of overhead power lines, communication lines, and other overhead obstructions prior to undertaking the off-loading of pipes.
- 10.1.3.1 Specific attention shall be paid to the use of cranes in the vicinity of overhead power lines. The electricity supplier shall be consulted to determine the precautions to be taken.

Further information is provided in GS6 - Avoiding danger from overhead power lines.

- 10.1.3.2 Similar precautions should be applied for any other overhead apparatus.
- 10.1.4 If it is unavoidable to work in the vicinity of overhead power lines, the work shall proceed only once the precautions to be taken have been agreed with the electricity supplier; refer to GS6 for further guidance.
- 10.1.5 Attention shall be paid to the effectiveness of load security, especially in icy, windy and wet conditions when it may be necessary to restrict the size of the load or delay its handling.

10.2 **STRAIGHT LENGTHS**

- 10.2.1 Mechanical lifting equipment, for example a vehicle-mounted crane, shall be considered when handling large diameter individual lengths of pipe considered too heavy to be lifted manually. Lifting operations shall be carried out in accordance with Section 8 and the requirements of LOLER.
- 10.2.2 Bundled packs shall be restrained when the strapping is removed to prevent the pipe rolling and, as an additional precaution, personnel shall stand to the side of the bundle away from the strapping and the path of any rolling pipe, This can be achieved by firstly removing the central baton, followed by the baton/s at either end (see Figure 18). Care shall be taken to ensure that strapping does not damage the pipe.



FIGURE 18 - REMOVAL OF STRAPPING FROM BUNDLED PACKS

10.2.3 Care shall be taken when moving single pipes or pipe strings about the site to ensure that the pipe is not damaged. Pipe rollers should be used to prevent pipe strings being dragged over sharp objects and edges. Pipe strings shall be located on site so as not to impede pedestrians and road users or be a potential hazard to members of the public.

10.3 **COILS**

- 10.3.1 For coils of pipe of diameter not exceeding 32 mm, individual coils are generally capable of being manually handled on site. For larger diameters and lengths mechanical handling shall be carried out using a vehicle-mounted crane utilising non-metallic slings or ropes.
- 10.3.2 For pipe coils greater than 32 mm diameter and less than 50 kg a 2-person lifting operation can be considered following a suitable and sufficient risk assessment in accordance with L23.
- 10.3.3 Coils shall be transported either on suitably designed vehicles/trailers or within a trailer mounted coil dispenser.
- 10.3.4 Only purpose-designed equipment shall be used to handle coils. In these circumstances, a trained and competent driver/plant operator shall be nominated as the person for loading the vehicle or coil dispensing trailer.
- 10.3.5 If cranage is to be used to manoeuvre a coil, not less than three persons (including the lifting equipment operator) should be employed in the operation of loading the dispensing trailer.
- 10.3.6 Loading of the coil dispenser shall not commence until the lifting equipment (lorry mounted crane or similar) is properly stabilised and positioned to ensure that safe working load capacity is adequate at the required working radius.
- 10.3.7 The operator of the lifting equipment shall be competent in lifting and slinging and should be the person responsible for the loading operation.

10.3.8 Coil pipe up to and including 32mm can also be dispensed by means of a dispensing bag. The free end of the pipe shall be taken from the inside of the coil (see figure 19).

Coiled pipe exceeding 32 mm diameter should be dispensed from a suitably designed dispensing trailer which has been checked by a competent person to ensure it is fit for purpose.



FIGURE 19 - COIL DISPENSING BAG

- 10.3.9 Only suitably competent operators shall be allowed to dispense pipe coils from pipe trailers following the manufacturer's instructions in the use of the coil dispensing trailers and current industry guidelines. Further guidance can be found in Appendix 3.
- 10.3.10 Dispensing shall take place only under the directions of an employee who is a trained and competent person, utilizing a minimum of 3 persons when dispensing pipe of 90 mm diameter and above and a minimum of 2 persons when dispensing smaller sizes.
- 10.3.11 A reliable method of communication, tested before operations commence, such as mobile phone should be used by the persons in charge of the dispenser and the winch (or mechanical aid) to facilitate control of the unloading operation.

10.3.12 In the case of winching operations, the lead end of the pipe shall be securely attached to a winch by means of a mechanical aid, for example towing head, to pull the pipe from the dispensing trailer.

Alternatively, other suitable mechanical dispensing aids can be used for example pushing machines.

- 10.3.13 Coils of pipe of diameter exceeding 63mm and above are secured by both outer and intermediate bands and layers of the coil are independently secured. No bands shall be removed until the material is located within a suitable coil dispenser. This includes the steel safety straps which shall only be removed when the coil is in position in the coil dispenser.
- 10.3.14 When the bands are to be released, the band securing the outer end of the pipe shall be removed first, followed by those securing successive layers and only sufficient bands shall be removed to release the length of pipe immediately required. No bands shall be cut from intermediate (in-board) layers, until they are exposed as part of the outside layer. Care shall be taken not to damage the pipe during the removal of the bands.

Note: Coils in diameters of 63-180 mm contain a considerable amount of stored energy, which could potentially cause injury to personnel if the coils are not handled or dispensed correctly.

- 10.3.15 The pipe should be inspected as it is being uncoiled to make sure no damage has occurred during transit and subsequent handling.
- 10.3.16 Care shall be exercised when dispensing coils and the movement of the tail end of the pipe shall be controlled to prevent whiplash.
- 10.3.17 Dispensing shall be carried out in such a way that the pipe does not leave the coil in a spiral form.
 - Note: It can be extremely difficult to straighten spiralled pipe without kinking.
- 10.3.18 Each layer of the coil will be banded in six different positions and these bands shall be cut in sequence starting with the outside layer to allow a safe and controlled lead-off of pipe from the dispenser.
- 10.3.19 When the tail end of the coil is approached, the pipe will exit from the dispenser and it shall be mechanically restrained to prevent it springing away from the dispenser.
 - *Note Expanding towing heads are available for securing the pipe end to the trailer using a suitable strip or wire band and shackles.*

The tail end of the pipe shall then be further mechanically restrained to allow the disconnection from the dispenser.

- *Note:* A schedule of design considerations, which should be used when assessing commercially available designs or modifying existing large diameter polyethylene pipe coil trailers, is presented in Appendix 3.
- 10.3.20 For a period after stringing out a coil, the pipe will tend to return to a coiled position and, therefore, it shall be properly restrained while the straightening process takes place.
- 10.3.21 Strung-out pipe should be allowed a minimum of 1 hour to reduce its ovality unless pipe re-rounding equipment is to be used. Any pipe ovality at the intended jointing location which falls outside of the GIS/PL2 parameters shall be corrected prior to jointing.
- 10.3.22 The pipe should be secured in position and protected from scuffing until such time as it is laid.

- 10.3.23 Due attention should be paid to protecting pipe strings from vandalism. The time that pipe is left on site prior to laying should be kept to a minimum. The pipe should be secured and not left unattended.
- 10.3.24 There will be occasions when a complete coil is not fully used on a particular project. Under these circumstances, consideration shall be given to accepting the part coil back into stock, provided its condition can be vouched for by the party returning it.
- 10.3.24.1 Part coils should be secured before being returned to stores or removed from the pipe dispenser. Pipe protection caps should be reinstalled on part coils. The banding should be checked for damage.
- 10.3.25 The length of pipe remaining should be clearly marked on part coils and end caps fitted.
- 10.3.26 The off-loading and storage of part coils should be in accordance with the process for the storage and handling of full coils.

10.4 **CONSTRUCTION WORKS**

During construction works, to avoid interference and vandalism, long strings and coils of pipe should be temporarily capped, where end caps are provided, when the pipe is to be left unattended, for example, overnight. End covers should be used to prevent debris and rain entering the pipe string.

10.5 **PIPE STRINGS**

Subject to a risk assessment, pipe strings should be fitted with a suitable towing head and attached to a towing hitch of a suitable vehicle. Towing speeds should be no more than walking pace. A free end of the pipe should be guided. Lookouts may be required at strategic locations.

APPENDIX 1 : GLOSSARY, ACRONYMS, ABBREVIATIONS AND UNITS

GLOSSARY

For the purpose of this Standard, the following definitions apply. The definitions are included as a general guide to terms used and are related to terms found in British standards etc.

All definitions are given in IGEM/G/4 which is freely available:

• by downloading a printable version from IGEM's website <u>www.igem.org.uk</u>.

Abnormal load

A vehicle that has any of the following:

- A weight of more than 44,000kg
- An axle load of more than 10,000kg for a single non-driving axle and 11,500kg for a single driving axle.
- A width of more than 2.9 metres
- A rigid length of more than 18.65 metres.

Note: other measure may apply if you are transporting a load abroad.

- Competent person The competent person (CP) is selected by the authorising engineer (AE) and is responsible for overall control of activities in an operation and should always have the written Safe Control of Operations Systems (SCOS) available during operation, but has no authority for deviation from the SCOS documentation and current engineering procedures. CPs will ensure all personnel under their control are aware of their individual roles and responsibilities and communicate operation status to all relevant operation status to all relevant operation status to all relevant operation status to all network controller (NC) in the event that a contingency plan is implemented. The CP also has on site conflict checking responsibilities including compliance with the Uniform Network Code (UNC).
- Responsible engineer The responsible engineer (RE) is appointed by the company to manage overall Safe Control of Operations (SCO) progress. REs are responsible for selecting the NC and defining of the Network. The RE ensures there is a process in place for AE/CP.

Outside working hours the RE will ensure that information regarding the status of the network, is available to emergency standby personnel and Network Analysis personnel, in an agreed accessible format and that all such persons within the REs Network are aware of how to access this information.

Recommended and legacy gas metering arrangements are given in IGEM/G/1 which is freely available:

- with the purchase of any IGEM Standard, upon request
- by downloading a printable version from IGEM's website.

Downloading from the website ensures access to the latest version.

ACRONYMS AND ABBREVIATIONS

ACoP	Approved Code of Practice
AE	Authorised Person
CP	Competent Person
GB	Great Britain
HSE	Health and Safety Executive
HSWA	Health and Safety at Work etc. Act
IGEM	Institution of Gas Engineers and Managers
MHAC	Manual Handling Assessment Chart
NE	Network Controller
PE	polyethylene
PPE	personal protective equipment
RE	Responsible Person
SCO	Safe Control of Operations
SCOS	Safe Control of Operations Systems
SDR	standard dimension ratio
SWL	safe working load
UNC	Uniform Network Controller.

UNITS

kg	kilogram
m	metre
mm	millimetre
°C	degree Celsius.

APPENDIX 2 : REFERENCES AND OTHER RELATED PUBLICATIONS

A2.1 **PRIMARY LEGISLATION**

- Health and Safety at Work etc. Act 1974
- Factories Act 1961-PRIMary
- Occupier's Liability Act 199-PRIMARY5
- New Roads and Street Works Act 1991-PRIMARY

SECONDARY LEGISATION

- Construction (Design and Management) Regulations 2015
- Construction (Health, Safety and Welfare) Regulations 1996
- Lifting Operations and Lifting Equipment Regulations 1998
- Management of Health and Safety at Work Regulations 1992
- Manual Handling Operations Regulations 1992
- Motor Vehicles (Construction and Use) Regulations 1978
- Personal Protective Equipment Regulations 1992
- Provision and Use of Work Equipment Regulations 1998
- Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 2013
- Road Vehicle Lighting (Amendment) Regulations 2017

A2.2 HSE APPROVED CODES OF PRACTICE AND GUIDANCE

- GS6 Avoiding danger from overhead power lines
- HSG48 Reducing error and influencing behaviour
- HSG65 Managing for health and safety
- L23 Manual Handling, Manual Handling Operations Regulations 1992. Guidance on Regulations
- L25 Personal Protective Equipment at Work Regulations 1992. Guidance on Regulations
- INDG453 Reporting accidents and incidents at work. A brief guide to the Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 2013 (RIDDOR)
- L113 Safe use of lifting equipment Lifting Operations and Lifting Equipment Regulations 1998 – Approved Code of Practice and Guidance.

A2.3 CODES OF PRACTICE

• Code of Practice for safety of loads on vehicles, issued by the Department of the Transport

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A2.4 BRITISH STANDARDS (abbreviated titles)

- BS EN 1492-4:2004+A1:2008 Textile slings. Safety. Lifting slings for general service made from natural and man-made fibre ropes
- BS 7121 _ 1:2006 Code of Practice Safe Use of Cranes. General

A2.5 **IGEM TECHNICAL PUBLICATIONS**

IGEM/TD/3

Edition 6

- IGEM/TD/1 Supplement 1 Handling, transport, and Edition 2 storage of steel pipe, bends and fittings
 - Steel and PE pipelines for gas distribution
- IGEM/TD/4 PE and steel gas services and service Edition 5 pipework

A2.6 **GIS SPECIFICATIONS**

- GIS/PL2 Specification for Polyethylene pipes and fittings for Natural Gas and suitable manufactured gas
 - GIS/E/49 Specification for Polyethylene Pipe Coil Trailers

Note: Details of all GIS Standards are available on the ENA Website

A2.7 UK PLASTIC PIPE INDUSTRY

 Recommended Guidelines for the Safe Delivery and Unloading of Polyethlene Pipes

APPENDIX 3 : CONSIDERATIONS FOR HANDLING AND DISPENSING PIPE COILS

A3.1 GENERAL

Pipe coils contain a considerable amount of stored energy, which could potentially cause injury to personnel if the coils are not handled or dispensed correctly. Operatives involved in the handling and dispensing of polyethylene pipe coils are to be suitably competent in the process. Before commencing operations, those involved are to familiarise themselves with the correct operation of the pipe coil trailer and are to adhere to the pipe coil trailer manufacturers instructions and other relevant guidance.

Coiled polyethylene pipes of diameter greater than 32mm are to be dispensed using purpose designed and approved, pipe coil dispensing trailers. All pipe coil trailers, are to be approved to GIS/E49: Gas Industry Standard – Specification for Polyethylene Pipe Coil Trailers.

Ancillary equipment as identified by the pipe trailer manufacturer and the risk assessment are to be used to dispense the pipe coil, this may include for example, leading and trailing end clamp restraints, ratchet straps, coil trailer roller box, mechanical rotary winch and , round nose pliers.

Note: This list is not exhaustive.

Inspect all lifting equipment, including ratchet straps, hooks, 'D' shackles, for signs of wear and (or) damage, ensure all lifting equipment is within certification date.

A Risk Assessment and Method Statement (RAMS) shall be prepared for the coil handling and dispensing procedure, when preparing the risk assessment, consideration is to be given to the presence of overhead cables. Personal

Protective Equipment (PPE) as defined by the risk assessment is to be worn at all times during the handling and dispensing procedure.

Loading, unloading and dispensing of a coil is to be completed by a minimum of 2 personnel.

During the dispensing operation, at least one person is to always remain with the coil dispenser.

When loading or unloading the coil trailer, Operatives acting as Banks-person are to have the appropriate Utility Banks-person qualification.

It is a legal obligation for the driver of the vehicle to ensure the roadworthiness of any trailer taken onto the highway, confirming the safe operation of the trailer brakes is critical to this requirement.

Avoid entering the trailer wherever possible, prior to dispensing the pipe coil, there may be a need to enter the trailer to reposition the coil to attach the pipe end clamp and suitable ratchet strap to the central rotating disk, ready for transportation to site. Under no circumstance are operatives to enter the pipe coil dispensing trailer, nor reach or place body, limbs or head into the trailer during the dispensing process. Operatives are not climb onto the coil dispensing trailer.

A3.2 **PIPE COIL TRAILER INSPECTION**

It is the drivers' legal responsibility to inspect the pipe coil dispensing trailer prior to its transportation on the highway, the inspection is to include the following (list not exhaustive):

- general structural condition of the trailer
- all running gear
- condition of tyres, ensure that they are safe for legal use on the highway
- tow-hitch and eye, are in good working order
- safety breakaway cable is in good condition and fully operational
- hand brake is fully operational, correctly adjusted and in good working order, perform a roll back test to check functionality
- jockey wheel is fully operational
- lights, check operation, check all reflectors are in place, check plugs and cables
- number plates are in place and secure
- trailer capacity is suitable for the coil being transported
- the trailers chassis and frame are in sound condition and undamaged
- stabilising legs are securely attached and adjustable
- rear gate/door, can open and close freely
- drum bars, chute rollers are present, undamaged and in working order.
- every coil trailer shall be supplied with a pipe end clamp and ratchet strap
- depending on the coil trailer design, a winch may be supplied to rotate the coil within the dispensing trailer.

A3.3 LOADING THE PIPE COIL INTO THE COIL TRAILER

When loading the pipe coil into the dispensing trailer:

- the operator of the lifting equipment is to be competent in lifting and slinging and is to be the person responsible for the loading operation
- checks to be made to ensure that the lifting equipment, has the capability of lifting the maximum intended pipe coil weight
- identify the 'leading' and 'trailing' ends of the pipe coil, ensure that the coil is correctly orientated with respect to the coil dispensing trailer, inspect the pipe coil for damage before loading into the pipe coil dispensing trailer
- the "leading" end can be most easily identified by the "uncoil" direction arrows which are inkjet marked onto the pipe coils at regular intervals and will be pointing towards the leading end
- during the loading, unloading and dispensing operation a competent person is to be responsible for and in complete control of the activity and known to all persons involved
- refer to the GDN's procedures for the safe and correct method of loading the coil into the dispensing trailer.

A3.4 SECURE THE COIL INTO THE TRAILER

Fit the pipe end restraining clamp to the pipe and attach the ratchet strap between the central disc of the coil dispenser and the pipe end restraining clamp attachment point.



Ensure securing pins on the pipe restraining clamp are on the inside of the coil to ensure they do not catch on the trailer frame when rotating. It is important to use the opposite side to the tail end of the PE pipe as this will help to keep the tail end of the PE pipe away from the main frame of the trailer when dispensing.



Tensioning the ratchet strap will help centralise the coil and lift the trailing end clear and prevent it from striking the rollers of the coil dispenser during the dispensing operation.



With the pipe coil security bands intact, raise the rear coil trailer stabilising leg stands.

Only release the handbrake when connected to towing vehicle, the coil trailer is now ready for safe transportation to site.

Pipes of diameter not exceeding 32 mm and supplied in coiled format are generally capable of being manually handled on site

It is possible to use a pipe coil dispensing bag for pipes of diameter up to and including 32 mm in coil format. Once the pipe coil is securely placed in the dispensing bag, the coils packaging bands are cut and the pipe dispensed from the innermost winding of the pipe coil.

Pipes of diameter exceeding 32 mm, supplied in coiled format and exceeding 50 kg in weight, are to be mechanically handled.

Pipes of diameter exceeding 32mm, supplied in coiled format and weighing less than 50 kg, may following a risk assessment in accordance with L23, be suitable for a 2-person lift. (For example, a 40 mm diameter SDR11 pipe coil of 100 m length weighs approximately 45 kg).

To prevent damage to the polyethylene pipe, non-metallic slings or ropes are to be used.

Prior to dispensing the pipe coil, the coil trailer is to be be positioned in place and secured by applying the coil trailer handbrake, the trailer stabilising legs and jockey wheel are to be lowered and secured, where possible the coil trailer is to be left attached to the towing vehicle, where this is not possible the wheels are to be chocked to prevent movement during the dispensing procedure.

Recheck the pipe end restraining clamp is secured to the trailing end of coil.

Ensure that the correct signage and guarding is present around the working area and that it complies with NRSWA requirements.

A3.5 **PIPE COIL DISPENSING**

Dispensing the pipe coil is to only take place under the direction of a trained and competent person.

The number of persons involved in the dispensing process will be defined within the Site Specific Risk Assessment, with a minimum of two persons for all dispensing operations, a third person may be required to aid communication depending upon the Site Specific Risk Assessment.

Depending on the installation method, the Site Specific Risk Assessment is to identify the method of communication to be used.

The trailing end of the pipe coil is to be tethered to the central rotating disk of the pipe coil dispensing trailer, by use of a clamp and ratchet strap.

Depending on the method of dispensing, a suitable device is to be fitted to the leading end of the pipe coil to help facilitate the dispensation process, the device is to be fitted to the pipe with the end of the coil below head height.

Alternative mechanical dispensing equipment may be used to withdraw the pipe from the coil dispensing trailer.

When dispensing the pipe from the coil trailer, it is important to only cut the coil restraining bands that are required to dispense the required pipe length.

When commencing the dispensing process, the pipe coil is to be winched into position with the aid of the mechanical rotary winch (supplied with the pipe coil trailer), until the pipe enters into and through the guide rollers (where fitted), the roller box guide rollers is to be wound down to secure the pipe.

The coil packaging bands securing the leading end of the pipe coil is to be cut first, followed by those bands securing successive layers of the pipe coil, only those bands that surround the outer coil windings is to be cut to facilitate the immediate dispensation of the required pipe length. No bands are to be cut from inner layers, until they are exposed as part of the outside layer.

The bands are to be cut from a designated position of safety, this may be dependent on the coil trailer type.

Only cut the packaging bands at the required time, the rotation of the pipe coil are to momentarily be paused to enable the safe cutting of the packaging bands, (Do Not cut the packaging bands when the coil is rotating).

When cutting the packing bands, care is to be taken to ensure that the pipe is not damaged, suitable round nose pliers rather than open bladed knives or saws are recommended, where required long reach round nose pliers may be used.

Dispensing is to be carried out in a controlled manner, stopping as necessary to safely cut the bands in sequence as the coil rotates. When cutting the bands the operative is to be at the rear of the trailer and at ground level, non-elevated position (wherever possible). When cutting the packaging bands. Operatives are not to enter into or place head or limbs inside the coil dispensing trailer during the dispensation procedure.

The pipe is to be visually inspected as it is being uncoiled to ensure that it has not sustained damage during transportation and handling

During the dispensing process, when the trailing end of the pipe coil is approaching the trailer exit position, it is to be restrained using the trailing end tether which is connected to the coil trailer centre rotating disk, this is important to prevent the trailing end of the pipe coil flailing in an uncontrolled manner from the dispensing trailer.

For a period after stringing out a coil, the pipe will naturally tend to return to a coiled format, it is to be properly restrained to prevent this in many cases the pipe will be dispensed directly into a metallic host main as such additional restraint will not be required, where however the pipe is dispensed directly into an open cut trench, it is to be adequately weighted to prevent movement.

A device for dissipating the stored energy as the pipe is dispensed from the trailer is to, wherever possible, be utilised.

Strung-out pipe is to be allowed a minimum of 1 hour to reduce its ovality unless pipe re-rounding equipment is to be used. Any pipe ovality at the intended jointing location which falls outside of the GIS/PL2 parameters is to be corrected, using suitable approved pipe re-rounding clamps prior to jointing.

A3.6 **PART USED COILS**

Part used coils, are required to be securely re-banded in multiple positions (as per the initial manufacturers banding positions). Bands are required to have adequate strength and not to be prone to failure if the coil is dropped, prior to removal from the coil dispensing trailer, consideration is to be given to the possibility of the bands moving on the pipe when it is lifted from the coil dispensing trailer (this may be achieved using a secure overwrap). The part used coil is to be inspected for signs of damage, the part coil is to be clearly marked with the remaining length of the coil.