# NORTHUMBERLAND COUNTY COUNCIL

# RISK ASSESSMENT FOR THE STORAGE OF PETROLEUM SPIRIT

# HS(G).146

REG PET 12

## DELIVERY (and venting)

This element deals with the delivery area of the site, the delivery process itself and access by tankers, and includes **example control measures for venting of tanks during deliveries.**

## Weighting factor

The first task is to determine the individual characteristics of the site. Consider the following descriptors and select the one which applies to your site. Then multiply your total score from the next section by the factor shown.

(a) A site with a throughput of more than 5 million litres per year* **OR** over 100 people at any one time within the area potentially affected by the delivery operation**: Motorway service areas, hypermarket sites and sites in built-up areas of cities or large towns would **usually** fall into this category.

MULTIPLY TOTAL SCORE FOR DELIVERY BY A WEIGHTING FACTOR OF 5.

(b) A site with a throughput of between 500 000 and 5 million litres per year* **OR** between 10 and 100 people at any one point in time within the area potentially affected by the delivery operation**: Average-size service stations and some non-retail sites in towns and suburban areas would **usually** fall into this category.

MULTIPLY TOTAL SCORE FOR DELIVERY BY A WEIGHTING FACTOR OF 3

(c) A site with a throughput of less than 500 000 litres per year* **OR** less than ten people at any one time within the area potentially affected by the delivery operation**: Small rural filling-stations, farm sites, stately homes and some other non-retail facilities not in built-up areas, **may** fall into this category.

MULTIPLY TOTAL SCORE FOR DELIVERY BY A WEIGHTING FACTOR OF I

**When calculating the throughput of the site the most recently completed twelve-month period should be used. For sites in the design stage this figure should be based on the projected volume of the site when fully established.*

***When calculating the number of people potentially affected, as a rough guide you should include people in buildings up to 12 metres from the delivery area, including the tanker stand and areas where the tanker has to manoeuvre; and a minimum of 30 metres distance for those not protected by a building. Where spilt petrol can travel some distance off-site, more people could be affected. Don't forget to include such things as pedestrians visiting a busy site shop and/or residential accommodation above or in the vicinity of the delivery area. Count the maximum number of people that could be affected at times when deliveries usually take place. For example, normal pedestrian traffic within 30 metres of the delivery area of a site is approximately eight people. However, this figure increases in the afternoon to around 50 when customers queue for sessions in a bingo hall nearby. As deliveries take place in the afternoon and those in the queue are in an area where they could be affected, the higher figure should be used.*

**DELIVERY (and venting)** From the following table select **one** descriptor for each aspect which best fits your site.

| *Aspect* | *Descriptor* | *Score* |
|---|---|---|
| Location of the fill points (Don't forget to include any off-set fill) | – Fill point located within a building | **4** |
| | – Fill point located within approximately 4 metres of a public thoroughfare (pavements, short cuts, paths etc.) | **3** |
| **Petrol vapours may accumulate in the area of the fill point, during the delivery operation. The likelihood of an incident is increased if ignition sources are not controlled. People near the fill point are at risk if not protected** | – Fill point located within 6 metres of a building (12 metres if residential accommodation) which has doors, windows or other openings or is not suitably protected to allow at least half an hour or more for escape | **2** |
| | – Fill point located more than 6 metres from a building (12 metres if residential accommodation) or within 6 metres of a building which has not doors, windows or other openings or is suitably protected to allow at least half an hour or more for escape | **1** |
| Tanker access/exit (including the road tanker standing area) | | |
| **The likelihood of an incident involving the tanker is increased if there are difficulties manoeuvring it or if it off loads from a position where it could be hit by other vehicles. The tanker may need to exit the site quickly in the event of an emergency** | – Tanker wholly or partly off site when unloading | **4** |
| | – Entry and/or exit to the site is difficult for the tanker | **3** |
| | – Tanker wholly on site when unloading but has to reverse of manoeuvre within the site | **2** |
| | – Tanker wholly on site when unloading and driver able to drive on, and off site without reversing | **1** |
| Site features in respect of spillage | – Spill readily escapes from site to area where it may be a danger to people | **4** |
| **The greater the extent to which spilt petrol can escape from the site the more likely it is to come into contact with a source of ignition or present a risk to people** | – Spill escapes to place where it will not present a danger to people | **2** |
| | – Spill retained in drainage system on site | **1** |

**Weighting factor from previous page is (.....) X total for all three aspects (.....) = (.....)**

| **Overall rating:** | **Group A, 3-10 points** | **Group B, 11-24 points** | **Group C, 25-60 points** |
|---|---|---|---|
| Increasing hazard |  | | |

## DELIVERY (and venting) - SELECTING APPROPRIATE CONTROL MEASURES.

You now need to consider what, if anything, needs to be done to control the hazards and/or risks

## EXAMPLE CONTROL MEASURES FOR DELIVERY and VENTING

| | GROUP 'A' SITES | GROUP 'B' SITES | GROUP 'C' SITES |
|---|---|---|---|
| **SYSTEMS OF WORK** | **See Appendix** | **1 for further details** | |
| **LOCATION OF FILL POINT** | **Consider locating fill point to a distance of between 6 to 12 metres from building/s and over 4 metres from the public thoroughfare** | **Consider locating fill point to a distance of between 6 to 12 metres from building/s and over 4 metres from the public thoroughfare** | **Consider location fill point to a distance of over 12 metres from building/s and over 4 metres from the public thoroughfare** |
| **LOCATION OF ROAD TANKER STANDING AREA** | | **Consider providing a level road tanker standing area wholly within the confines of the site** | **Consider providing a level road tanker standing area wholly within the confines of the site** |
| **ACCESS FOR TANKER** | **Consider adopting a system of supervision for any manoeuvring of the tanker onto or within the site** | **Consider adopting a system of supervision for any manoeuvring of the tanker on to or within the site including the provision of adequate warning equipment (cones etc.)** | **Consider locating fill point and/or tanker standing area or entrance to site to afford tanker clear and full access to site and so that forward exit by the tanker can be achieved in an emergency** |
| **SPILLAGE CONTROL** | **Consider providing bunding for tank/s or adequate drainage system, e.g. impervious surface, slopes, channels, grids, retaining walls adequate to contain spillage or direct it to a safe place.** | **Consider installing an interceptor and suitable drainage system** | **Consider installing a full retention interceptor and suitable drainage system** |
| **WARNING DEVICES** | **Consider fitting an overfill alarm or introduce a strict and appropriate system of work for delivery** | **Consider fitting an overfill prevention device plus system of work to respond to device being activated** | **Consider fitting a fail-safe overfill prevention device to respond to device being activated** |
| **VENTING** | **When a storage tank is filled from a road tanker, flammable vapour is displaced from the storage tank through the vent pipe into the atmosphere. Vent should be positioned to reduce the risk of a build-up of vapour and possible ignition. Stage 1b vapour balancing systems are designed to return vapour displaced from the storage tank during delivery back to the road tanker; this reduces the quantity of flammable vapours released from vent pipes.** | | |

| | | | |
|---|---|---|---|
| **HEIGHT OF VENT PIPE OUTLET ABOVE GROUND** | ***Sites with a throughput of*** **Vent pipes should be at given to the fitting of a amount of flammable** | ***more than 500,000 litres per*** **least 5 metres in height and stage 1b vapour recovery vapour emitted** | **annum consideration should be system to reduce the** |
| | ***Sites with a throughput o*** **Normally acceptable for tanker** | ***less than 500,000 litres per*** **vent pipes to be more than** | ***annum*** **the height of the delivery** |

## DELIVERY (and venting)

The following are control measures normally required at all sites:

**DELIVERY**

- Adequate illumination for fill area for safe working and security;
- Maintenance of interceptor (where applicable) including frequent removal of spillage and its safe disposal;
- Work systems plus emergency procedures;
- Training of competent persons on work systems, including off-loading procedures;

*Note: Training should include the correct procedure for connecting any tanker vapour recovering system as errors in this area represent a significant fire risk*

- Emergency equipment provided to include, for example:
  - sand or other means to contain spill;
  - fire extinguishers;
- Fill-pipe connection caps secure against vandalism etc.;
- Warning notices provided, i.e. 'No Smoking' sign'
- Fill-pipe connections should be clearly marked to show to which tank they relate (and therefore its working capacity) and the type of liquid being stored, e.g. leaded, unleaded etc.;
- Appropriate drainage to capture spilt petrol
- **Segregation of the site.** Consider closing all or part of the site to visitors when delivery is taking place or arranging deliveries for times when other people will not be about, e.g. night deliveries. All activities with the potential to create an ignition source should be excluded from around both the delivery and vent areas;
- **Fire separation measures and reducing ignition sources**. Consider fire separation for occupied buildings and/or public thoroughfares, e.g. construction of building to be such as to allow occupants at least half an hour for escape or the construction of an imperforate protective wall (local fire authority or local authority building control inspection can advise).

**VENTING**

- **Siting of vent pipes**. For all categories of site it is essential that vent pipe outlets are positioned 3 metres or more (2m if a vapour recovery system is fitted) from potential ignition sources or from openings in buildings where vapours could

enter and accumulate. Where this is not the case consideration should be given to resiting the pipe or redesigning its upper section to achieve this. All ignition sources must be excluded from the hazardous area around the pipe while tanker deliveries are taking place. If resiting of vent pipes is impracticable a strict system of work must be adopted to exclude ignition sources from around the vent pipes while delivery is taking place;

- Flame arresters should be fitted to all vent outlets and vapour return lines (where fitted);
- All above-ground vent pipes should be constructed of metal;
- Warning notices should be provided, i.e. “No Smoking”, signs;
- **Segregation of the site.** See above under ‘Delivery’

## STORAGE

This element deals with the storage of petrol in below-ground tanks and the likelihood that they could leak, and if so the risk that such a leak may go undetected and affect others.

### Weighting factor

The first task is to determine the individual characteristics of the site. Consider the following descriptors and select the one which applies to your site. Then multiply your total score from the next section by the factor shown.

(a) A site with: residential accommodation within 6 metres of the tank area **OR** tank(s) located within or under a building **OR** within 30 metres of an underground road/rail tunnel/basement or cellar.

MULTIPLY TOTAL SCORE FOR STOPPAGE BY A WEIGHTING FACTOR OF 5.

(b) Tank(s) located between 6 and 30 metres from residential accommodation.

MULTIPLY TOTAL SCORE FOR STORAGE BY A WEIGHTING FACTOR OF 3.

(c) Tank(s) located more than 30 metres from:

- residential accommodation;
- a basement/cellar;
- an underground road or rail tunnel.

MULTIPLY TOTAL SCORE FOR STORAGE BY A WEIGHTING FACTOR OF 1.

*For underground tanks, the ability for leaking petrol to enter chambers such as cellars, basements, tunnels, drains and sewers increases the risk that an undetected build-up of petrol, and more importantly its vapours, can occur.* ***In circumstances where petrol can easily travel further off the site than the distances indicated above****, e.g. via nearby water courses which act as a vehicle for carrying petrol,* ***a higher weighting factor category may be necessary****.*

**STORAGE**

Consider the following table and select **one** descriptor for each aspect which most closely describes your site.

| *Aspect* | *Descriptor* | *Score* |
|---|---|---|
| Age of tank(s) | – Over 30 years | **3** |
| **The changes that the tank will leak increase with its age** | – 20-30 years | **2** |
| | – Less than 20 years | **1** |
| Construction of tank(s) | – single skin metallic | **3** |
| **The risk that corrosion will occur and result in a leak is especially high for single skin steel tanks. Experience has shown that the potential for a leak increases significantly for steel tanks over 30 years old** | – single skin non-metallic e.g. GRP or equivalent, or double skin without a constant monitoring device fitted between the skins | **2** |
| | – double skin with constant monitoring device fitted between the skins | **1** |
| **Weighting factor from previous page is (.....) X total for both aspects (.....) = (.....)** | | |

| **Overall rating:** | **Group A, 2-11 points** | **Group B, 12-21 points** | **Group C, 22-30 points** |
|---|---|---|---|
| Increasing hazard |  | | |

## **STORAGE** - SELECTING APPROPRIATE CONTROL MEASURES

You now need to consider what, if anything, needs to be done to control the hazards and/or risks

### EXAMPLE CONTROL MEASURES FOR STORAGE SYSTEMS

| | GROUP 'A' SITES | GROUP 'B' SITES | GROUP 'C' SITES |
|---|---|---|---|
| **SYSTEMS OF WORK** | See Appendix | 1 for further details | |
| **CONSTRUCTION OF TANKS** | | Consider replacing single skin steel tank with single skin non-metallic or double skin tank | Consider replacing single skin steel tank with double skin tank with interstitial monitoring system |
| **SITING OF TANKS** (consideration normally reserved for situations of particular concern or at the design/redesign stage) | Consider siting the tank/s over 15 metres away from:<br>- buildings<br>- road/rail tunnel<br>- basement/cellar | Consider siting the tank/s over 15 metres away from:<br>- building<br>- road/rail tunnel<br>- basement/cellar | Consider siting the tank/s over 30 metres away from:<br>- building<br>- road/rail tunnel<br>- basement/cellar |
| **MONITORING FOR LEAKS** | Consider means of monitoring tank contents to detect leaks at an early stage:<br>- frequency of dipping<br>- need for constant monitoring system<br>- leak alarm system<br>- frequency of testing<br>- the fitting of observation wells | Consider precision testing of tanks or other test methods (and frequency) including the fitting of observation wells which will afford easy access for monitoring equipment at frequent intervals | Consider installing a continuous monitoring device or an ASIR leak detection system (which include the fitting of observation wells) or precision testing of tanks at intervals agreed with the Petroleum Licensing Authority |
| **RELINING OF TANKS** | As an alternative to circumstances a leak a consideration should | replacing tanks they may detection system fitted as be fully discussed with | be relined and in some part of the process. Such your Petroleum Officer |
| **CONTROL MEASURES NORMALLY REQUIRED AT ALL SITES** | - Where constant maintained and<br>- All sites should have system to check and investigate any for all sites | monitoring devices are tested at intervals<br>some form of inventory record the contents of unexplained losses is an | fitted they need to be<br>control. As an effective tanks and to fully essential system of work |

**NOTE:** Guidance on the controls necessary for above-ground tanks can be found in *The Storage of Flammable Liquids in Fixed Tanks (up to 10,000m³ total capacity)* (See Appendix 5)

## PIPEWORK SYSTEMS

This element deals with all the pipe systems (lines) which are mainly situated underground from the delivery area to the storage facility and then to the dispensing facility. It includes off-set fill pipes, suction lines, pressure lines, siphon lines and vent pipes.

### Weighting factor

The first task is to determine the individual characteristics of the site. Consider the following deseriptors and select the one which applies to your site. Then multiply your total score from the next section by the factor shown:

(a) A site with: residential accommodation within 6 metres of the line(s) **OR** line(s) located within or under a building **OR** within 30 metres of an underground road/rail tunnel/basement or cellar.

MULTIPLY TOTAL SCOPE FOR PIPEWORK SYSTEMS BY A WEIGHTING FACTOR OF 5.

(b) Line(s) located between 6 and 30 metres from residential accommodation**.**

MULTIPLY TOTAL SCORE-E FOR PIPEWOPK SYSTEMS BY A WEIGHTING FACTOR OF 3.

(c) Lines located more than 30 metres from: residential accommodation;

- a basement/cellar;
- an underground road or rail tunnel.

MULTIPLY TOTAL SCORE FOR PIPEWOR-K SYSTEMS BY A WEIGHTING FACTOR OF 1.

*Experience suggests that underground pipework systems are the source of the majority of petrol leaks. For underground lines the ability for leaks to enter chambers such as cellars, basements, tunnels, drains and sewers increases the risk that an undetected build-up of petrol, and more importantly its vapours, can occur.* ***In circumstances where petrol can easily travel further off the site than the distances indicated above****, e.g. via nearby water courses which act as a vehicle for carrying petrol,* ***a higher weighting factor category may be necessary****.*

## PIPEWORK SYSTEMS

Consider the following table and select one descriptor for each aspect which most closely describes your site

| *Aspect* | *Descriptor* | *Score* |
|---|---|---|
| Age of lines | – Over 30 years | **3** |
| **The likelihood that the lines will leak increases with age** | – 20-30 years | **2** |
| | – Less than 20 years | **1** |
| **(Don't forget to include any offset fill lines in your assessment)** | | |
| Construction | | |
| **The risk of corrosion is especially high for steel lines. Experience has shown that the potential for leaks increase significant for steel pipework over 30 years of age** | – single skin metallic | **3** |
| | – single skin non-metallic | **2** |
| | double skin with constant monitoring between the skins | **1** |
| | **(Metallic includes galvanised steel)** | |
| Type of system | | |
| **Systems which rely on pressure to force petrol through the lines pose a particular hazard as the amount of petrol which will be lost over a very short period, if a leak occurs, can be considerable** | – Pressure | **3** |
| | – Suction or siphon | **1** |
| **Weighting factor from previous page is (.....) X total for all three aspects (.....) = (.....)** | | |

| | | | |
|---|---|---|---|
| **Overall rating:** | **Group A, 3-17 points** | **Group B, 18-31 points** | **Group C, 32-45 points** |
| Increasing hazard |  | | |

## **PIPEWORK SYSTEMS** - SELECTING APPROPRIATE CONTROL MEASURES

You now need to consider what, if anything, needs to be done to control the hazards and/or risks

## EXAMPLE CONTROL MEASURES FOR PIPEWORK SYSTEMS

| | GROUP 'A' SITES | GROUP 'B' SITES | GROUP 'C' SITES |
|---|---|---|---|
| **SYSTEMS OF WORK** | **See Appendix** | **1 for further details** | |
| **CONSTRUCTION OF LINES (including any off-set fill)** | | **Consider replacing corrodible single skin pipework with non-corrodible or secondary contained pipework** | **Consider replacing corrodible single skin pipework with non-corrodible or secondary contained pipework** |
| **LEAK MONITORING** | **Consider precision testing of pipework or other test methods. Also consider means of monitoring contents of system to detect leaks at an early stage:**<br>**- inventory control**<br>**- frequency of dipping**<br>**- need for constant monitoring device**<br>**- leak alarm system**<br>**- frequency of testing** | **Consider installing an ASIR leak detection system (which includes the installation of monitoring wells) or precision testing at intervals agreed with the Petroleum Licensing Authority** | **Consider installing a continuous monitoring device** |
| **CHECK VALVES** | | **For suction system consider relocating the check valve(s) to under each pump or fit new valve(s) under pump(s) where none are fitted** | **For suction systems consider relocating the check valve(s) to under each pump or fit new valve(s) under pump(s) where none are fitted** |
| **CONTROL MEASURES NORMALLY REQUIRED AT ALL SITES** | – **Where constant monitoring maintained and tested at**<br>– **All sites should have some**<br>– **All lines should be clearly**<br>– **All valves should be purpose etc** | **devices are fitted they need to intervals**<br>**form of inventory control. marked to show which pump/ clearly marked to show** | **be**<br>**tank they relate to method of operation and.** |

## DISPENSING

This element deals with dispensing, i.e. the transfer of the petrol from its storage vessel to the fuel tank of a motor vehicle, or suitable petrol container. It considers the possibility that an incident could occur during dispensing or to the dispensing equipment.

### Weighting factor

The first task is to determine the individual characteristics of the site. Consider the following descriptors and select the one which applies to your site. Then multiply your total score from the next section by the factor shown:

(a) A site with a throughput of more than 5 million litres per year* **OR** over l00 people at any one point in time within the area potentially affected by the dispensing operation**: Motorway service areas, hypermarket sites and sites in the built-up areas of cities or large towns would **usually** fall into this category.

MULTIPLY TOTAL SCORE FOR DISPENSING BY A WEIGHTING FACTOR OF 5.

(b) A site with a throughput of between 500 000 and five million litres per year* **OR** between ten and I 00 people at any one point in time within the area potentially affected by the dispensing operation**: Average-size service stations and some non-retail sites in towns and suburban areas would **usually** fall into this category.

MULTIPLY TOTAL SCORE FOR DISPENSING BY A WEIGHTING FACTOR OF 3

(c) A site with a throughput of less than 500 000 litres per year* **OR** less than ten people at any one point in time within the area potentially affected by the dispensing operation**: Small rural filling-stations, farm sites, stately homes and some other non-retail facilities not in built-up areas **may** fall into this category.

MULTIPLY TOTAL SCORE FOR DISPENSING BY A WEIGHTING FACTOR OF I

*When calculating the throughput of the site the most recently completed 12-month period should be used. For sites in the design stage this figure should be based on the projected volume of the site when fully established.

** When calculating the number of people potentially affected (see also paragraph 25), as a rough guide you should include people up to four metres from the dispensing area. Don't forget to include such things as pedestrian custom to a busy site shop. Count the maximum number of people that could be affected at peak times. For example, if pedestrian traffic to and from a school increases the number within the four-metre area at certain times of the day, you should use the higher figure.

**DISPENSING -** Consider the following table and select **one** descriptor for each aspect which most closely describes your site

| *Aspect* | *Descriptor* | *Score* |
|---|---|---|
| Standard dispenser certified to<br><br>**Modern dispensers contain safety features and should conform to a British Standard or equivalent. Older dispensers may be less reliable. A small plate should be on the side of the dispenser casing detailing its standard** | – Electric pump/s with no standard | **3** |
| | – SFA 3002 Standard | **2** |
| | – BS7117 or EN equivalent or hand operated | **1** |
| Siting of vehicles<br><br>**Vehicles being refuelled should be away from ignition sources and in the open air so that vapours can disperse easily. They should be protected from being struck by other vehicles and any spillage should be capable of being contained** | – Vehicles being refuelled partly or wholly on he public highway, or in a building or where there is a danger to people refuelling | **3** |
| | – Vehicles being refulled have to reverse or negotiate to get to pump | **2** |
| | – Vehicle being refuelled wholly on site and able to drive on and off site easily | **1** |
| Siting of dispensers<br><br>**Dispensers should be situated in a safe place, protected from the impact of vehicles. The clearer the access and exit for vehicles to and from dispensers, the less chance of collision will occur. The positioning of the dispensers within a site should aid their protection from other vehicles (not necessarily using the dispensers) and contain any spillage to within the site. The dispensers should be positioned away from ignition sources; and buildings in the immediate area should be protected in the even to fa fire or explosion** | – Within building or under living accommodation | **3** |
| | – Within approximately 4 metres of the public thoroughfare or site boundary<br><br>*or* within 6 metres of occupied buildings<br><br>*or* within 9 metres of residential accommodation | **2** |
| | – More than 4 metres from the public thoroughfare or site boundary and more than 6 metres from occupied buildings and more than 9 metres from living accommodation | |

**Weighting factor from previous page is (.....) X total for all three aspects (.....) = (.....)**

| **Overall rating:** | **Group A, 3-10 points** | **Group B, 11-24 points** | **Group C, 25-45 points** |
|---|---|---|---|
| Increasing hazard | → | | |

## **DISPENSING** - SELECTING APPROPRIATE CONTROL MEASURES

You now need to consider what, if anything, needs to be done to control the hazards and/or risks

**EXAMPLE CONTROL MEASURES FOR THE DISPENSING OPERATION**

| | GROUP 'A' SITES | GROUP 'B' SITES | GROUP 'C' SITES |
|---|---|---|---|
| **SYSTEMS OF WORK** | **See Appendix** | **1 for further details** | |
| **LOCATION OF DISPENSING EQUIPMENT)** | | | **Consider moving dispensing equipment to more than 4 metres away from buildings, the highway or other sources of ignition** |
| **IMPROVE VISIBILITY AND/OR SUPERVISION** | **Where supervision/ visibility is not constant consider methods to ensure that adequate provision is made against misuse of equipment, i.e.**<br>**- security**<br>**- instruction notices**<br>**- control of product to dispenser (remove switches)** | **Consider increasing supervision and/or visibility so that the dispensing operation is supervised/monitored directly or indirectly at all times (e.g. poor visibility supplemented by other means)** | **Consider increasing supervision and/or visibility so that the dispensing operation is directly supervised/monitored at all times** |
| **INCIDENT CONTROL MEASURES** | **Consider installing an impervious surface** | **Consider installing an interrupter and adequate drainage system** | **Consider installing an interceptor and adequate drainage system** |
| **FIRE SEPARATION MEASURES** | | **Consider fire separation for construction of building to be at least half an hour for escape imperforate protective wall authority building control** | **occupied buildings - e.g. such as to allow occupants or the construction of an (local fire authority or local inspector can advise)** |

## DISPENSING

The following are control measures normally required at all sites:-

- For all categories of site it is essential that ignition sources are strictly controlled within a 4 metre radius of the dispensers;

- Inspection/maintenance of dispensers and hoses on a regular basis for signs of wear and tear;

- To avoid danger from vehicle collision consider whether:-

  - there is sufficient room for vehicles to pass through;
  - there i.e. a need to protect dispensers;
  - the removal of other obstacles, such as vehicles parked for other site activities, is necessary;

- Adequate illumination of dispensing area;

- Electrical equipment inspected regularly

- Impervious surface and adequate drainage of spilt product to a safe place i.e. slops, channels, grids, retaining walls adequate to contain spillage or direct it to a safe place;

- Drainage system (where present) maintained on a regular basis;

- Instructions to and training of staff in all aspects of dispensing operation, including dealing with spills and other incidents;

- Adequate instruction and warning notices;

- Control of minor spills - availability of sand;

- Layout of dispensers to allow forward exit of vehicles in the event of fire

- Maintenance of dispensers carried out by competent persons;

- Materials used to clean dispensers have anti-static properties;

- Firefighting equipment.

**In addition, the following may be required for unattended sites**

- Emergency cut-off switch;

- Emergency telephone for summoning assistance;

- Limit on the amount served and time period a dispenser can operate during one transaction

- Use of unlatched safety nozzles

## EXAMPLES OF GENERAL CONTROL MEASURES FOR ALL SITES

The following control measures are examples of those required at all sites irrespective of the degree of hazard. They are not specific to any one area of a site.

### General considerations

Site maintenance scheme to reduce fire hazards such as:

- rubbish;
- overgrown grassed or planted areas;
- accumulation of flammable materials from other site activities; oily rags, cans etc;
- maintenance of essential warning signs.

The safe storage of saleable goods with the potential to create a fire hazard charcoal, paraffin etc and, in particular, liquid propane gas cylinders.

Management of the site will benefit from maintenance of clear, readily available records of key activities. Such records will ensure that safety performance can be monitored effectively, and maintenance and servicing needs can be identified. In addition, it is suggested that records of the type of plant and equipment be kept with details of when it was installed, modified, repaired, replaced, serviced or inspected. Details of inventory checks should be included along with written procedures for normal and emergency operations. Your Petroleum Officer can advise you on this and may be able to provide a specimen register for keeping such records.

### Electrical considerations

Consideration of electrical systems should cover the following:

- Does the installation meet the requirements of relevant regulations?
- Can the installation be isolated safely in the event of an emergency?
- Is there regular inspection of all electrical installations with regard to their siting and the hazards posed by electrical equipment as possible ignition sources?
- Is there protection from being struck by lightning?
- Are circuit labels correct?
- Are there dangers from ignition from overhead power lines?
- Can the installation be fully tested in safety?
- Is the frequency and extent of inspection and testing adequate to maintain safety?

- Is the electrical contractor used competent?
- Have deficiencies found in periodic test/inspection been rectified?
- Do any modifications to the system infringe safety requirements?
- Is the earthing system suitable?
- Is the installation adequately protected when unrelated civil work is, carried out (road works etc)?
- Is operation of unapproved equipment prevented in hazardous areas (see paragraph 21)?