

Appendix 4.1 Motorway Services Area

Fuel Station

The fuel station shall be designed, constructed and operated to a standard that will allow the facility to have a licence for Class 1 petroleum at a retail store under the current Dangerous Substances Act. The Design and Operation of the retail fuelling facility is covered in detail by the following pieces of legislation:

- Dangerous Substances (Retail & Private Petroleum Stored) Regulations 1979. (S.I. 311 of 1979) and amendments in 1998 and 2006;

In addition to the above the following legislation also applied:

- Air Pollution Act 1978 (Petroleum Vapour Emissions) Regulations 1997 (S.I. 375 of 1997);
- Safety Health & Welfare at Work Act 2005 (S.I.10 of 2005);
- Safety Health & Welfare at Work (General Applications) Regulations 2007 (S.I. 299 of 2007).

The above regulations are to be generally adhered to except where current " Best Practice" within the petroleum industry is accepted by the relevant Licensing Authority. Considerations in the design shall also be given to the following publications and draft regulations:

- "Design, Construction Modification Maintenance and Decommissioning of Filling Stations" by the Association for Petroleum and Explosives Administration (APEA) and the Energy Institute, London ("Blue Book");
- Draft Dangerous Substances (Petroleum Stations) Regulations;
- Draft Code of Practice for the Design Construction and Operations of Petrol Stations: Parts 1 to 5.

Underground Storage

Tank Design and Layout

The fuel storage tanks will be underground double-skinned steel tanks with capacities more than likely ranging from 10,000 litres to 60,000 litres. The tanks will comply with the following standards, EN 12285-1, EN 12285-2, EN 976-1, EN 978, and LIL 2085. The tank array located within the HCV forecourt area is indicated on the layout drawings and will contain up to 9 tanks varying in size from 10,000 litres to 60,000 litres. The final configuration, size and number of tanks will be determined at detailed design stage and will depend on storage capacity, delivery period and product selection.

The tanks will be protected from "Corrosion" in accordance with the requirements of S.I. 311 and the guidelines outlines in the "Blue Book". Minimum groundcover above the tanks will be 0.9m. Minimum separation between tanks will be 0.15m. The tanks will be installed in such a manner so as to prevent uplift, due to the presence of ground water. The above ground offset filling points, vents and vapour recovery pipework for the fuel storage system will be located within the fuel delivery area. Vent pipes will be a minimum of 5m in height.

Underground Storage Chamber

Underground Tank Access Chambers shall be installed in accordance with S.I. 311 of 1979 and "Best Practice" as outlines in the "Blue Book". Chambers and the covers will be designed for a dynamic load of 400kN. The manholes will be watertight and constructed of concrete. The manhole design will ensure there will be no load transfer onto the tanks. The covers are to be watertight and fixed in such a way that access by unauthorised persons is prevented. The pipe entries will allow free setting of pipes and will be watertight. The weight of the covers will be such that handling can be done without the need for lifting equipment.

Overfill Protection

Overfilling tanks is prevented by an overfill protection installation. The overfill protector will allow a maximum fill of 97% of the tank capacity. It will be provided with an alarm facility for the operator and a bypass drain so that the hoses can be emptied. The audible alarm will sound when the tank is filled to 95% of capacity.

Tank Contents Gauge System

Each underground tank will be linked to a tank gauging system. The tank gauges should conform to the requirements of EN 13352, "Specification for the performance of Automatic Tank contents gauges". The system provides the following information:

- Present product volume;
- Remaining volume available;
- Fuel height;
- Water height;
- Temperature of the product.

The system will be able to communicate with the pump control systems and other filling station management systems.

Leak Containment and Leak Detection System

The double-skinned tanks will be equipped with leak-monitoring devices. The device detects changes in the level of the monitoring fluid and this measures any leak in the inner or outer shell of the tank. Level changes are indicated by way of a visible and audible alarm.

There is a sump under each dispenser and also one over each tank pipe inlet manhole on top of the tanks, which forms part of the double skin system. Monitors are installed in both sumps to detect the presence of petroleum product and are connected to the alarm system.

The alarm unit will be located in the amenity building and will be accessible to the attendant at all times.

Cathodic Protection System

A cathodic protection system may be required for the protection of tanks and pipework. The necessity of the application of the cathodic protection is determined by the soil electrical resistance, the acidity and the redox (oxygen reduction) potential and the interaction with other systems. The necessity of a cathodic protection system will be determined at detailed design stage.

Pipework

The underground pipework system shall be double skinned and meet the requirements of S.I. 311 of 1979 and guidelines in the "Blue Book". The final underground piping system to be used will be agreed with the relevant Local Authority Licensing Body. A specialist petroleum company will undertake the final design, construction and installation of the petroleum pipelines.

Vapour Recovery System

Vapour Recovery Stage 1b will be installed at the Fuelling Facility. This system will collect vapour displaced from the underground tanks during a fuel delivery and pump it into the delivery vehicle during a delivery to the site. The installation and testing of the system shall comply with S.I. 375 of 1997. Provisional pipework will be installed for accommodation of Vapour Recovery Stage 11 at a future date.

Dispensing Equipment

There is a wide range of dispensing equipment on the market. The proposed system to be used will be a submersible pump operation system. The submersible pump is located in the underground tank and the product is pumped to the dispenser under pressure.

The system and equipment must comply with the requirements of S.I. 311 of 1979 and current "Best Practice".

