Title	**Transport bulk flammable liquids by road**		
Level	**4**	**Credits**	**15**

Purpose	This unit standard is for drivers of road tank wagons who load, transport, and unload bulk liquids that are classified as flammable under the Hazardous Substances and New Organisms (HSNO) Act 1996. People credited with this unit standard are able to: describe the properties and hazards of the flammable liquid being transported and the features of the tank wagons that transport flammable liquids; carry out a pre-trip inspection; position vehicle and prepare to load; load a vehicle with bulk flammable liquid; transport a load safely and efficiently to a customer site; deliver a load to a customer site; and describe procedures for emergencies.

Classification	Commercial Road Transport > Goods Service

Available grade	Achieved

Prerequisites	Drivers must hold a current full driver licence appropriate to the class vehicle being driven, and a current D endorsement.

Guidance Information

1 Legislation, regulations, references and/or industry standards relevant to this unit standard include but are not limited to the:

- Hazardous Substances and New Organisms Act 1996;
- Health and Safety at Work Act (HSWA) 2015;
- Land Transport Act 1998;
- Resource Management Act 1991;
- Health and Safety at Work (Hazardous Substances) [HSW(HS)] Regulations 2017;
- Health and Safety in Employment (Pressure Equipment, Cranes, and Passenger Ropeways) Regulations 1999;
- Land Transport Rule: Dangerous Goods 2005;
- Land Transport (Driver Licensing) Rule 1999;
- Land Transport Rule: Heavy Vehicles 2004;
- Land Transport (Road User) Rule 2004;
- Environment Protection Authority (EPA) Notice. Hazardous Substances (Hazard Classification) Notice 2020. Available from: https://www.epa.govt.nz/;

- Environment Protection Authority Notice. Hazardous Substances (Hazardous Property Controls) Notice 2017. Available from: https://www.epa.govt.nz/;
- NZS 5433:2020 *Transport of dangerous goods on land* and associated handbook, SNZ HB 5433:2021 *New Zealand Handbook, UN Dangerous Goods List*. Available from: https://www.standards.govt.nz/*;*
- Worksafe New Zealand (2017). *Health and Safety at Work (Hazardous Substances—Filling of Below Ground Stationary Tanks by Pumping) Safe Work Instrument.* Available from: https://www.worksafe.govt.nz/;
- Worksafe New Zealand (2019). Approved Code of Practice for *Flammable Liquids Road Tank Wagons*. Available from: https://www.worksafe.govt.nz/.

Any new, amended or replacement Acts, regulations, Rules, standards, codes of practice, or authority requirements or conditions affecting this unit standard will take precedence for assessment purposes, pending review of this unit standard.

2 Definitions

Compliance certificates refer to certificates issued by a compliance certifier.
Compliance certifier refers to a person approved to certify that the requirements of the HSW (HS) Regulations have been met.
Delivery documentation may include hand-held electronic data processing devices.
Driving conditions refer to any of the six conditions (road, weather, vehicle, traffic, light, driver) from which driving hazards will arise.
Emergency response documentation may include the SDS (Safety Data Sheet) for the product, an EPG (Emergency Procedure Guide), or the *Australian & New Zealand Emergency Response Guide Book (2021)*.
Tank refers to an enclosed vessel exceeding 450 litres, permanently fixed to the chassis of a tank wagon used for the transport or storage of liquids with flammable liquids Category 1, Category 2, Category 3, or Category 4 HSNO Classification.
Tank wagon refers to a road transport vehicle constructed to transport bulk hazardous liquids or gases. Tank wagons include tank trucks, tank trailers, tank semi-trailers, and vehicles carrying transportable containers which are loaded and unloaded while mounted on the vehicle.
Vehicle dynamic effects refers to the influences of physics (kinetic energy, centrifugal force, gravity etc) on a heavy motor vehicle, that a driver must manage to maintain stability and control.
Workplace procedures refers to organisation policies and procedures that are documented in memo, electronic, or manual format and available in the workplace. They may include but are not limited to – standard operating procedures, site specific procedures, site safety procedures, equipment operating procedures, quality assurance procedures, product quality specifications, manufacturer's requirements, references, approved codes of practice, housekeeping standards, environmental considerations, on-site briefings, supervisor's instructions, and procedures to comply with legislative and local body requirements relevant to the commercial road transport sector.

3 Assessment information

Competency for this unit standard must be demonstrated on-job.
If the candidate is transporting more than one bulk flammable liquid in the same trip, they must be able to demonstrate the appropriate knowledge and skills for each flammable liquid.

The candidate must also be able to demonstrate competence with all of the delivery systems fitted to the vehicle – ie drivers of bulk delivery vehicles fitted with pumping equipment must demonstrate competence for both gravity and pumping delivery systems.

Evidence presented for assessment against this unit standard must be consistent with safe working practices and be in accordance with applicable service information, workplace procedures and legislative requirements.

Outcomes and performance criteria

Outcome 1

Describe the properties and hazards of the flammable liquid being transported and the features of tank wagons that transport flammable liquids.

Performance criteria

1.1 UN class and UN number of the flammable liquid being transported are identified in accordance with emergency response documentation.

1.2 Driver requirements for the flammable liquid being transported are identified in accordance with the HSW(HS) regulations 2017.

1.3 Flammable liquid properties are described in terms of flash point, density, flammability range, and effects of heat on flammable liquids in containment.

1.4 Hazards associated with the flammable liquid being transported are described in accordance with emergency response documentation.

Range personal, public, environmental.

1.5 Hazardous atmosphere zones are described.

1.6 Circumstances in which a flammable liquid tank wagon may be left unattended are described.

1.7 The functions of equipment fitted to a typical flammable liquid tank wagon are described in relation to the safe transport and transfer of the product.

Range may include – pumping equipment, valve systems and controls, overfill protection, bonding points, master switch, vapour recovery, safety rails, pressure release and vacuum relief, valance, brake interlock system, minimum safety distances.

1.8 Factors that cause static electricity and other ignition sources, and how to minimise the risks associated with static electricity are described.

Range may include but not limited to – flashlights, head torches, mobile phones, key fobs.

Outcome 2

Carry out a pre-trip inspection.

Performance criteria

2.1 An inspection of truck and trailer is carried out to determine whether the Certificate of Fitness for the vehicle and any trailers, Hazardous Substances compliance certificates, and the Safe Loading Pass (if applicable) are current, and whether the vehicle systems and equipment comply with organisational requirements. Non-complying vehicles or trailers are repaired or reported.

Range includes but is not limited to – fuel, fluids, wheels and tyres, steering, brakes, lights and indicators, warning devices, vehicle documentation;
may include – trailer couplings.

2.2 An inspection of vehicle load transfer equipment is carried out to determine whether security and state of repair are compliant with organisational requirements. Non-complying equipment is repaired or reported.

Range includes but is not limited to – hoses, nozzles, standpipes, valves, tank top caps and lids, dipsticks, ladders, dustcaps, storage lockers;
may include – pumping equipment.

2.3 An inspection is carried out to determine whether safety equipment is compliant with organisational requirements, is accessible and properly maintained, stowed and secured. Any unserviceable items or items with expired test dates are replaced or reported.

Range includes but is not limited to – fire extinguishers, warning signs, first aid kit, spill kit, cones, approved torch.

2.4 An inspection is carried out to determine whether personal protective equipment is available, ready for use, and is compliant with organisational requirements.

Range includes but is not limited to – approved gloves, neck to toe clothing, safety visor or glasses, safety footwear, high visibility clothing;
may include – hard hat and hearing protection.

2.5 An inspection is carried out to determine whether the dangerous goods placards are correct for the load being carried, and are correctly displayed in accordance with the Dangerous Goods Rule.

Outcome 3

Position vehicle and prepare to load.

Performance criteria

3.1 The vehicle is driven into the loading site in accordance with site procedures and is stopped in the designated position before entering the loading bay.

3.2 The vehicle is driven into the loading bay safely and positioned correctly for loading.

3.3 The park brake is applied, the engine switched off and the unit isolated using the master switch. All cab doors and windows are closed.

3.4 Personal protective equipment is used.

3.5 The locations of emergency equipment and emergency procedures are identified prior to loading.

Range includes but not limited to – fire extinguishers, emergency shutdown controls, fire alarms, deluge shower, eye bath, evacuation procedures;
may include – emergency call points.

3.6 Load distribution and volume calculations are checked against planned deliveries and are within the vehicle's safe carrying capacity and gross weight limitations. Any discrepancies are dealt with in accordance with workplace procedures.

3.7 The product type, volume, and compartments to be loaded are checked to determine whether they are in accordance with delivery documentation. Any discrepancies are dealt with in accordance with workplace procedures.

3.8 The bonding and overfill protection cables are attached, master and foot valves opened, compartments drained, and product identification tumblers adjusted.

3.9 Loading arms or hoses are connected securely to compartments to be filled and, where applicable, the vapour recovery hose is connected to the tank wagon.

Outcome 4

Load a vehicle with bulk flammable liquid.

Performance criteria

4.1 Loading site procedures are followed for the input of information into load controllers and input data and loading arms or hoses are checked for each compartment before loading commences.

4.2 The loading process and fill levels are monitored by the driver.

4.3 The vehicle compartments are loaded with bulk flammable liquid, without spillage or incident, using only approved equipment.

4.4 At the completion of loading each compartment, the foot valve is closed, the loading arm or hose disconnected and repositioned or stowed, and dust caps replaced.

4.5 At the completion of the loading process all transfer equipment is disconnected and stowed, and all valves are closed.

Range transfer equipment includes but is not limited to – loading arms or hoses, bonding and overfill protection devices;
may include – vapour recovery hoses.

4.6 Pre-departure inspection of the loaded vehicle is conducted to ensure all hoses and cables are disconnected, and that the vehicle meets legal requirements for load security.

4.7 The site is restored to a clean and tidy condition in accordance with site procedures.

4.8 The vehicle is moved from the loading area without damage to property or injury to people and in accordance with site procedures.

4.9 The delivery documentation is completed, checked, and secured in the vehicle.

Outcome 5

Transport a load safely and efficiently to a customer site.

Range vehicle must be driven over a distance of at least 25 km and be loaded to at least 50% of payload.

Performance criteria

5.1 The vehicle is driven and manoeuvred in accordance with legal requirements and consistent with efficient vehicle operation.

Range efficient vehicle operation includes but is not limited to – observance of speed limits, signs and controls, correct signalling; appropriate transmission use; fuel economy driving;
may include – observance of railway crossing obligations.

5.2 The driver interacts courteously and professionally with other road users and any prescribed routes are followed.

5.3 Procedures for safe temporary parking are followed in accordance with legal requirements.

5.4 Vehicle dynamic effects are managed using techniques that are consistent with the safe operation of the vehicle and reflect the prevailing driving conditions.

Range may include – corners, intersections, following distances, hills, steering control, use of auxiliary braking systems.

Outcome 6

Deliver a load to a customer site.

Performance criteria

6.1 A pre-delivery assessment is made before entering the delivery site, and site features that constitute a hazard and/or prevent delivery are rectified or reported.

Range may include – vehicle dimension restrictions, ground stability and surface conditions, room to manoeuvre, sources of ignition, other tank wagons (eg LPG), ease of access and egress without need to reverse, vehicle or pedestrian traffic, likelihood of electrical storms, wind direction.

6.2 Any site instructions and/or restrictions are complied with.

Range may include – speed, right of way, reporting, access restrictions, prohibited items, electronic restrictions, personal protective equipment, loading or unloading instructions, emergency procedures.

6.3 The vehicle is positioned and, where necessary, repositioned safely and in such a way that dips can be conducted on receiving tanks and the product can be delivered efficiently and safely without the need to reverse. The park brake is applied and the engine, unless required for pumping, is turned off.

6.4 Personal protective equipment is used and steps are taken to apply personal safety measures.

Range may include – manual lifting techniques, three points of contact when using ladders.

6.5 The work site, in public areas, is marked off with safety cones and the interceptor valve, if applicable, is located prior to the discharge of the load.

6.6 Customer tank(s), fill point(s) and dip point(s) are inspected for damage, cleanliness, product type, and compatibility with intended delivery.

6.7 Tank levels are checked by dipping to ensure sufficient ullage for the delivery and action is taken if there is insufficient capacity, any doubt exists as to tank product identification, or repairs are needed.

6.8 Actions to be taken when water or other product contamination is identified in customer tanks are described.

6.9 The delivery transfer hose(s) and equipment, and any vapour recovery hose, are connected to the vehicle and the correct receiving tank. Internal and external valves are opened, the pump (where applicable) set and engaged, flow is sighted, and the hoses and connections are checked for leaks.

6.10 The unloading process is monitored by the driver and potential hazards are managed.

Range potential hazards may include – pedestrians, vehicles, ignition sources, LPG tank wagons, weather.

6.11 The product type and quantity delivered are consistent with delivery documentation.

6.12 At the completion of the delivery, any pumping equipment is disengaged, valves are closed, hoses, (including vapour recovery if applicable) are disconnected and securely stowed without spillage, and dust caps are replaced.

6.13 Receiving tanks are dipped to confirm delivery quantities.

6.14 The site is restored to a clean and tidy condition in accordance with site procedures.

6.15 Delivery documentation is completed to reflect changes in the load and distributed in accordance with organisational requirements.

6.16 A pre-departure inspection of the vehicle and site is conducted to ensure all hoses and equipment have been recovered and are secure on the vehicle.

6.17 The vehicle is driven from the site safely in accordance with site procedures.

Outcome 7

Describe procedures for emergencies.

Performance criteria

7.1 Procedures for emergencies that may occur during loading and unloading are described in accordance with emergency response documentation.

Range spill or leak, fire, earthquake.

7.2 Procedures for emergencies that may occur in transit are described in accordance with emergency response documentation.

Range spill, fire, road crash, breakdown.

7.3 Initial responses to a person exposed to the flammable liquid being transported are described in accordance with the emergency response documentation.

Range high volume skin contamination, eye contamination, inhalation.

7.4 Contents and use of a spill kit are described in accordance with manufacturer’s instructions.

Planned review date	31 December 2028

Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	9 April 1996	31 December 2025
Review	2	25 May 1999	31 December 2025
Review	3	20 June 2001	31 December 2025
Review	4	27 October 2006	31 December 2025
Review	5	20 November 2009	31 December 2025
Review	6	30 November 2023	N/A

Consent and Moderation Requirements (CMR) reference	0014

This CMR can be accessed at http://www.nzqa.govt.nz/framework/search/index.do.

Comments on this unit standard

Please contact Hanga-Aro-Rau Manufacturing, Engineering and Logistics Workforce Development Council qualifications@hangaarorau.nz if you wish to suggest changes to the content of this unit standard.