Management of Insulating Oil

HSEQ Operational Procedure

What this procedure describes

This procedure covers the following topics:

- Procurement of new oil
- Labelling and identification
- Transport and disposal of oil and oil filled assets
- PCB management
- Responsibilities

Why it is required

To manage insulating oil in such a way to ensure that risk to our employees, other persons and the environment is minimised. To meet our legal obligations under the *Environmental Management and Pollution Control Act 1994* and the *Dangerous Goods (Road and Rail Transport) Act 2010*.

Who it applies to and when

All TasNetworks team members and leaders involved in the management of insulating oil.

Authorisation

Issue date	14/8/17
Authorised by	HSE&TC Leader
Review Cycle	3 years

Revision History

Date	Revision Details
14/8/17	Original issue
11/07/18	Added oil record system login details

Contents

1. Procurement

Contracts for the purchase of any oil or oil filled equipment must specify that the oil is certified as being free of polychlorinated biphenyls (PCBs)) and that certificates are supplied to this effect.

A copy of the Safety Data Sheet (SDS) must be requested from the supplier when a new type of oil is acquired, i.e. prior to delivery or upon delivery. Any new type of oil will be entered into ChemWatch. Refer to the Hazardous Substances procedure for instruction on how this is done.

Etel transformers will not be purchased unless a system is in place that guarantees that the transformers are PCB free.

2. Labelling and identification

2.1 Identifying PCB containing assets

Transformers previously owned by the distribution business, have oil testing results saved in our Transcare oil record system.

http://www.transcare.com.au/

Name: aurora

Password: aurora456

These records need to be used when planning to remove/maintain/transport/dispose of an PCB containing asset.

2.2 Large tanks at oil farms

Large tanks (>1000L) at the oil farms will be labelled with the elements listed in Table 1. The sign and text will be large and clearly visible.

Table 1. Labelling of Large Tanks at Oil Farms

Oil Type	Label
New Oil	Tank Number New Oil PCB less than 2 ppm
Waste Oil (No PCB)	Tank Number Waste Oil PCB less than 2 ppm
Waste Oil (PCB Non-scheduled)	Tank Number PCB Non-Scheduled 2 – 50 ppm Miscellaneous Dangerous Goods 9 Label

Waste Oil (PCB Scheduled)	Stored in black and yellow drums with the following labels: PCB Non-Scheduled >50 ppm Miscellaneous Dangerous Goods 9 Label

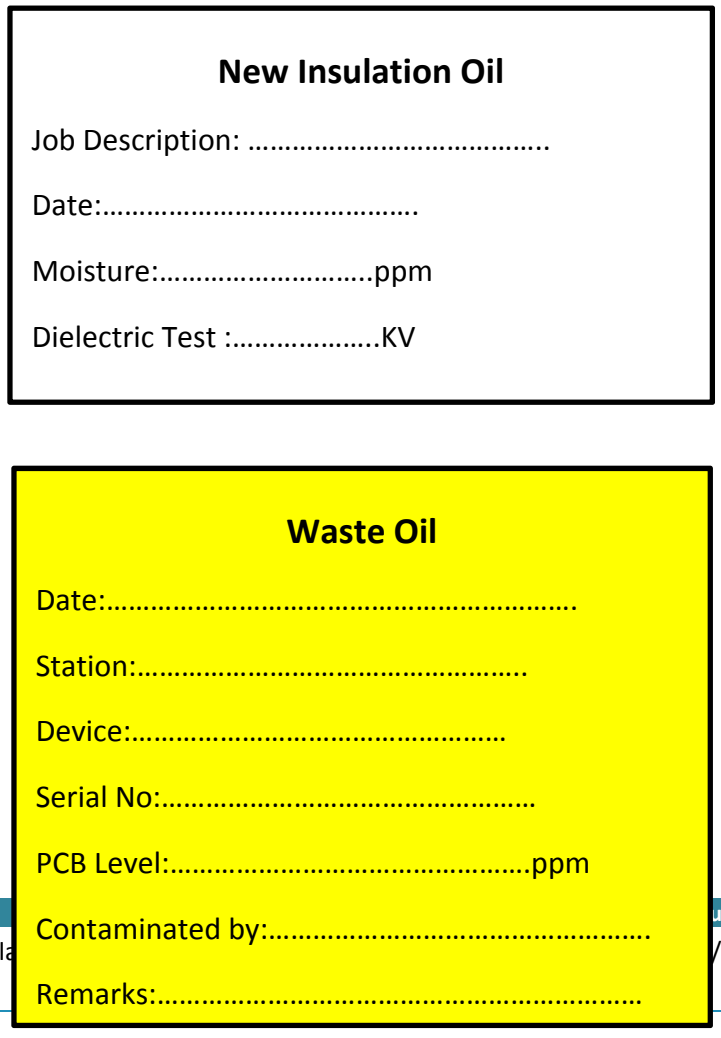
2.3 205 litre drums

205 litre drums will be colour coded and labelled as shown in Table 2.

Table 2. Labelling and colour coding of 205 Litre Drums

Oil Type	Colour Coding	Labelling
New Oil	No requirement. Keep in the supplier's drum.	White label as shown in Figure 1.
Waste Oil (of any type)	Green with yellow band	Yellow label as shown in Figure 1.
Waste Oil (Scheduled PCB ie. >50ppm)	Black with yellow band	Yellow label as shown in Figure 1.

Figure 1. Labels for oil drums and isopods.



2.4 Intermediate Bulk Containers (IBCs)

IBCs will be labelled as shown in Table 3.

Table 3. Labelling of IBCs

Oil Type	Labelling
New Oil	White label as shown in Figure 1.
Waste Oil (of any type)	Yellow label as shown in Figure 1.

2.5 Labelling of oil filled assets in substations and zone substations

Assets in substations and zone substations or in storage (used assets awaiting redeployment) are labelled with plastic colour tags that indicated their PCB status as described in Table 4.

Table 4. Labelling of substation assets

PCB Status	Label
PCB free (<2ppm)	Green tag or labelled “PCB Free”
PCB non- scheduled (2-50ppm) or equipment that hasn’t been tested	Yellow tag with the level of PCB written on it where it is known or yellow tag only where it is not known.
PCB scheduled (>50ppm)	Red tag with the level of PCB written on it

2.6 Identification of oil handling equipment (pipes and pumps)

Pipes and pumps used to transfer oil are identified by colour as per Table 5.

Table 5. Colour coding of pipes and pumps

Oil Type	Colour
New	Green
Used	Yellow

3. Controlled waste and dangerous goods

Once used oil has been permanently removed from a piece of equipment it becomes a controlled waste. If the oil has greater than 2ppm of PCB it is both a controlled waste and a dangerous good.

If an oil filled asset (eg. transformer) is deemed to be decommissioned, the oil in that asset and the asset itself immediately becomes controlled waste. If the oil in the asset contains PCB (>2ppm), the oil is also a dangerous good. If the PCB status of the oil is unknown, but it could be PCB contaminated (ie. the asset is older than 1998), it must be treated as PCB contaminated until a test at a NATA accredited laboratory determines otherwise.

3.1 Transport of controlled waste

In Tasmania, the transport and disposal of controlled waste is governed by the *Environmental Management and Pollution Control Act 1994* and *Environmental Management and Pollution Control (Waste Management) Regulations 2010*. Each controlled waste has its own code. Relevant examples are listed in Table 6.

Table 6. Controlled waste codes relevant to oil management at TasNetworks

Code	Description
J100	Waste mineral oils unfit for their original intended use
J120	Waste oil/water, hydrocarbons/water mixtures or emulsions
M100	Waste substances and articles containing or contaminated with polychlorinated biphenyls (PCBs), polychlorinated naphthalenes (PCNs), polychlorinated terphenyls (PCTs) and/or polybrominated biphenyls (PBBs)
N100	Containers which are contaminated with residues of substances referred to in this list
N120	Soils contaminated with a controlled waste

It should be noted that the codes can vary from state to state. This becomes relevant when transporting PCB waste to Victoria.

A controlled waste can only be transported by somebody who is licenced to transport that particular controlled waste. Similarly, a controlled waste can only be disposed of at a facility

that is licenced to take that particular controlled waste. There are no facilities in Tasmania that are licenced to accept PCB contaminated oil or PCB contaminated assets.

TasNetworks has Controlled Waste Handler Certificate of Registration for J100, J120, M100, N100 and N120. The certificate can be found here. There are a number of conditions that must be met as part of the certificate, and they can be found here. The certificate states which vehicles are registered to transport the controlled waste, and that certificate can be found here. In addition to TasNetworks' certificate, the driver must also be licenced.

TasNetworks also has an exemption under the Environmental Management and Pollution Control (Controlled Waste Tracking) Regulations 2010 which allows TasNetworks to transport and temporarily store the following oil wastes:

- No more than 5 m3 of contaminated soil per vehicle per occasion
- No more than 1,000 litres of waste transformer oil per vehicle per occasion
- No more than 1,000 litres of oil or 1 tonne of equipment containing PCBs

The intent of the exemption is to allow TasNetworks to respond quickly to incidents and to minimise environmental risk. There are a number of conditions attached to the exemption which can be found here.

3.2 Transport of dangerous goods

The transport, handling and storage of dangerous goods is governed by the following legislation, standards and codes:

- Dangerous Goods (Road and Rail Transport) Act 2010
- Dangerous Goods (Road and Rail Transport) Regulations 2010,
- National Standard for the Storage and Handling of Workplace Dangerous Goods [NOHSC:1015(2001)]'
- The Australian Dangerous Goods Code Edition 7.4

Both the driver and vehicle must be licensed by WorkSafe Tasmania when the quantities of dangerous goods transported by road exceed:

- 500 litres or kilograms for a container, or
- 3000 litres for an IBC (Intermediate Bulk Container), not filled or emptied on the vehicle.

Any transformer (or oil containing asset) that has a capacity greater than 500 litres and is older than 1st January 1998 will be tested for PCBs prior to transport. If PCBs are present (>2ppm PCB), the driver and vehicle transporting the transformer must be registered to transport dangerous goods.

3.3 Disposal of controlled waste

3.3.1 Waste oil (non PCB)

Waste oil (non PCB) is currently disposed of in Tasmania. The process for disposal of waste oil (non PCB) is as follows:

- Have the oil in the tank/IBC/drum tested by a NATA accredited laboratory to confirm that the level of PCB is below 2ppm.
- Confirm that the facility is licenced to receive waste oil (J100) and agrees to take the waste oil. This should be done during the establishment of the contract if a contract exists.
- Make an application for Regulation 12 approval for handling a controlled waste to the Director of the EPA. This application can be made at the following address http://epa.tas.gov.au/regulation/regulation-12-approval-form.
- Once approval is granted, file the approval on the ZoNe.
- Transport the oil using a vehicle and driver that are licence to transport that controlled waste (J100).
- Arrange for the provision of a waste disposal certificate from the receiving facility.
- File the waste disposal certificate on the Zone.
- Update the controlled waste disposal register.

3.3.2 Waste oil (PCB non-scheduled)

Waste oil (PCB non-scheduled) is currently disposed of in Victoria as there is no facility in Tasmania that is licenced to receive this waste. The process for disposal of waste oil (non PCB) is as follows:

- Have the oil in the tank/IBC/drum tested by a NATA accredited laboratory to confirm the level of PCB.
- Confirm that the facility is licenced to receive the PCB non-scheduled waste oil. This should be done during the establishment of the contract if a contract exists.
- Apply for a "Consignment Authorisation" from EPA Victoria. Note that the waste code for PCB non-scheduled waste oil in Victoria is M120. Use the Victorian waste code not the Tasmanian waste code.
- Receive "Consignment Authorisation" from EPA Victoria (normally takes 7 to 10 days). File the application and the authorisation on the Zone.
- Fill out Part 1 of the Waste Transport Certificate (Interstate Movements). Retain the green copy and pass the rest of the form on to the waste transporter or agent. Waste Transport Certificates can be obtained from the Waste Tracking Officer of EPA Tasmania.
- Transport the oil using a vehicle and driver that are licence to transport that controlled waste (M100/M120) and licenced to carry dangerous goods (assuming that the quantity being transported is greater than 500L or 3000L for IBCs).
- Arrange for the provision of a waste disposal certificate and a copy of the completed waste transport certificate from the receiving facility. File both these documents on the Zone.
- Update the controlled waste disposal register.

3.3.3 Waste oil (PCB scheduled)

Waste oil that is PCB scheduled (>50ppm) is becoming increasingly rare and only relatively small quantities of this type of waste are being disposed. For disposal options, contact the Health, Safety and Environment Leader. Under no circumstance will the level of PCB contamination be decreased (to <50ppm) by diluting with cleaner oil.

3.3.4 PCB free assets

The process of disposal of PCB free transformers and other oil filled assets is as follows:

- If the asset is older than 1 January 1998 (or an Etel transformer), oil from the asset will be tested by a NATA accredited laboratory to confirm that the level of PCB. Results of the tests will be stored on the database.
- Assuming that the oil is PCB free, drain the asset of oil and transfer this oil to the Waste Oil (No PCB) tank.
- Confirm that the facility is licenced to receive N100 waste. Where there is a contract in place, proof that the licence is in place will be confirmed during the establishment of the contract.
- Transport the empty equipment using a vehicle and driver that are licenced to transport that controlled waste (N100). Where there is a contract in place, proof that the licence is in place will be confirmed during the establishment of the contract.
- Arrange for the provision of a waste disposal certificate from the receiving facility.
- File the waste disposal certificate on the Zone.
- Update the controlled waste disposal register.

3.3.5 PCB contaminated assets

PCB contaminated assets are currently disposed of in Victoria as there is no facility in Tasmania that is licenced to receive this waste. The process for disposal is as follows:

- If the asset is older than 1 January 1998 (or an Etel transformer), oil from the asset will be tested by a NATA accredited laboratory to confirm that the level of PCB. Results of the tests will be stored on the database.
- Assuming that the oil is contaminated with PCB, drain the asset of oil and transfer to the relevant tank. If the asset cannot be drained it will need to be transported full oil to a contractor that has the capability (and licences) to drain and dispose of the oil.
- Confirm that the facility is licenced to receive the PCB contaminated assets. Where there is a contract in place, proof that the licence is in place will be confirmed during the establishment of the contract.
- Apply for a “Consignment Authorisation” from EPA Victoria.
- Receive “Consignment Authorisation” from EPA Victoria. File the application and the authorisation on the Zone.
- Fill out Part 1 of the Waste Transport Certificate (Interstate Movements). Retain the green copy and pass the rest of the form on to the waste transporter or agent. Waste Transport Certificates can be obtained from the Waste Tracking Officer of EPA Tasmania.
- Transport the assets using a vehicle and driver that are licence to transport that controlled waste.
- Arrange for the provision of a waste disposal certificate and a copy of the completed waste transport certificate from the receiving facility. File both these documents on the Zone.
- Update the controlled waste disposal register.

3.3.6 Soil contaminated with oil

The requirements for the management of soil contaminated with oil and/or PCB is detailed in the EPA Information Bulletin No. 105 "Classification and management of contaminated soil for disposal – November 2012", herein referred to as Bulletin 105. The EPA uses four categories to classify contaminated soil. These categories determine where and how the soil can be disposed. The process for managing soil contaminated with oil is as follows:

- Contaminated soil needs to be tested for hydrocarbons and PCB in accordance with Bulletin 105. The results of the test then need to be compared with Table 2 of Bulletin 105 and this will determine the category of the contaminated soil and where it can be disposed.
- Contaminated soil that is being stored prior to testing and disposal will be stored in a watertight container that is protected from rainfall so that oil will not leach into the surrounding environment. Contaminated soil will be stored separately until the results of the soil test is known. After the test results have been obtained the soil can be grouped with other soil of the same category, ready for disposal.
- For Categories 2 to 4, approval from the EPA and the landfill operator is required prior to the disposal of the soil. Approval from the EPA can be obtained by making an application for Regulation 12 approval for handling a controlled waste. This application can be made at the following address http://epa.tas.gov.au/regulation/regulation-12-approval-form.
- Once approval is granted, file the approval on the ZoNe.
- Transport the oil using a vehicle and driver that are licence to transport that controlled waste (N120).
- Arrange for the provision of a waste disposal certificate from the receiving facility.
- File the waste disposal certificate on the Zone.
- Update the controlled waste disposal register.

4. PCB management

4.1 Health impacts and history

Polychlorinated biphenyls (PCBs) are a group of man-made compounds that were widely used in the past, mainly in electrical equipment. In total, 209 different PCBs can be formed. Chronic (long-term) exposure to some PCB formulations by inhalation in humans results in respiratory tract symptoms, gastrointestinal effects, mild liver effects, and effects on the skin and eyes such as chloracne, skin rashes, and eye irritation. Epidemiological studies indicate an association between dietary PCB exposures and developmental effects. Human studies provide inconclusive, yet suggestive, evidence of an association between PCBs exposure and cancer. Animal studies have reported an increase in liver tumors in rats and mice exposed orally to all tested PCB formulations.

Australia banned the importation of PCBs in 1975. In 2001, the Stockholm Convention was signed which aimed to cease the production of PCBs worldwide effective from May 2004. Unfortunately, not all countries were signatories to the treaty.

TasNetworks assumes that transformers and oil purchased after 1 Jan 1998 are PCB free. This date aligns with the closure of the Moonah workshops. It is understood that the Moonah workshops reused oil that could have been PCB contaminated. The exception to this rule is Etel transformers. There is credible evidence to suggest that some Etel transformers manufactured recently are contaminated with PCB. Until additional evidence proves otherwise, Etel transformers should be assumed to contain PCB and should be tested for PCB prior to disposal.

4.2 Reusing oil

To prevent the risk of PCB cross contamination of oil filled equipment, used oil can only go back into the equipment that it came from. Used oil cannot be used in any other equipment.

4.3 Handling of PCBs

For general information on the safe handling of PCBs, please refer to the work practice, Handling of Polychlorinated Biphenyls.

4.4 Managing PCBs in substations and zone substations

Prior to working on oil filled assets in substations and zone substations the PCB level of the oil must be known if there is any risk that workers could be exposed to the oil. Exceptions to this rule are:

- Distribution oil-filled switchgear and zone substation transformer tap changers, where the device has been maintained and there is a record that the oil has been replaced in the last 10 years.

After oil testing has occurred, assets will be labelled as per Clause 2.4 of this document. The PCB level will also be recorded in the following databases:

Asset	Database
Transmission assets	WASP
Distribution assets (zone substations, distribution substations, and distribution voltage regulators)	http://assetzone.tnad.tasnetworks.com.au/ds/documents/Transformer%20Oil%20Analysis%20Database%20(NW197528).XLS

Where oil is being disposed, PCB test certificates will be provided to the oil farm with the oil so that it can be transferred to the correct tank. Certificates are not required if records show definitively that the oil is PCB free.

5. General transport and storage requirements

A checklist for the transport of oil filled equipment and oil filled containers is provided in Appendix A. This appendix should be readily available (i.e. stuck on the wall) wherever workers are required to consign oil filled equipment or containers.

Any used oil filled assets or oil filled containers must be stored in a bunded area.

6. Oil spills

Information on the management of oil spills can be found in the procedure "Management of Oil Spills" and the work practice "Control and Clean Up Oil Spills". All oil spills shall be reported to the Team Leader within one hour. Reportable environmental incidents shall be reported to the EPA by the Health Safety and Environment Leader.

7. Responsibilities

7.1 Group Leader Field Operations

The Group Leader Field Operations has the following responsibilities:

- Maintain records relating to the disposal of oil and oil contaminated equipment in the Controlled Waste Disposal Register
- Maintain the database for PCB tests done as part of the oil farm operations and for overhead distribution assets (pole mounted transformers)
- Coordinate the disposal of waste oil and oil filled assets including:
    - Oversee applications for Regulation 12 approvals for handling a controlled waste in Tasmania (applications for disposal in Tasmania). File all approvals on the ZoNe.
    - Oversee applications for "Consignment Authorisation" to the Victorian EPA (or other state EPA). File all Consignment Authorisations on the ZoNe.
    - Oversee the completion of Waste Transport Certificate (Interstate Movements). Ensure completed certificates are filed in the ZoNe.
    - Ensure Controlled Waste Disposal Certificates are filed on the ZoNe and the Controlled Waste Disposal Register is updated.
- Conduct an inspection against this procedure at a frequency to be determined by Field Operations.
- Ensure that people involved in oil transport, storage and oil spill clean up have received adequate training.
- Facilitate the production of a spill management plan that meets the requirements of TasNetworks exemption under the Environmental Management and Pollution Control (Controlled Waste Tracking) Regulations 2010. Ensure that workers comply with the conditions of the exemption.
- Maintain the register of Controlled Waste and Dangerous Goods licences and ensure that the licences are current.

7.2 Contract Manager – Oil

The Contract Manager (Oil) has the following responsibilities:

- Contracts for the purchase of any oil or oil filled equipment must specify that the oil is certified as being free of polychlorinated biphenyls (PCBs) and that certificates are supplied to this effect.

- Contracts for the transport and or disposal of a particular controlled waste specify that the contractor is appropriately licenced to transport and dispose of that controlled waste. The Contract Manager – Oil will obtain proof that the licences are current.
- Contracts for the transport of dangerous goods specify that the contractor is appropriately licenced to transport dangerous goods. The Contract Manager – Oil will obtain proof that the licence is current.

7.3 TasNetworks' Workers

TasNetworks' workers have the following responsibilities:

- Report any oil spills or oil related incidents as per the Incident Management Procedure.
- Any pole mounted transformer that is removed from the field will be labelled with the "T" number.
- When transporting oil filled assets under the exemption to the Controlled Waste Tracking Regulations 2010, ensure that you comply with the conditions of the permit.

7.4 Team Leaders

Team Leaders have the following responsibilities:

- Ensure that people involved in oil transport, storage and oil spill clean up have received adequate training.

7.5 HSE&TC Group Leader

The HSE&TC Group Leader has the following responsibilities:

- Review this procedure at least once every 3 years or as required.
- Conduct and audit against this procedure at least once every two years.
- Report "Reportable Spills" to the EPA
- Provide input to the "Scope of Works" when contracts are being developed for the disposal of controlled waste.
- Establish a Controlled Waste Disposal Register
- Manage TasNetworks exemption under the Environmental Management and Pollution Control (Controlled Waste Tracking) Regulations 2010 to ensure that it remains current.
- Establish a database of all PCB tests done as part of the oil farm operations and for overhead distribution assets (pole mounted transformers)

8. Reference Documents

The following documents were reviewed as part of developing this procedure:

Legislation
• Environmental Management and Pollution Control Act 1994 • Environmental Management and Pollution Control (Waste Management) Regulations 2010 • Dangerous Goods (Road and Rail Transport) Act 2010 • Dangerous Goods (Road and Rail Transport) Regulations 2010,
Codes of Practice, Industry Codes, etc
• The Australian Dangerous Goods Code Edition 7.4 • National Standard for the Storage and Handling of Workplace Dangerous Goods [NOHSC:1015(2001)]'
TasNetworks Documents
• Handling of Polychlorinated Biphenyls •
Forms
• Waste Transport Certificate (Interstate Movements).
Other Documents/Resources
• None

9. Records Arising from this Procedure

Record	Storage Location
Controlled waste disposal certificates	ZoNe
Consignment authorisations	ZoNe
Waste Transport Certificates (Interstate Movements).	ZoNe
PCB results for transmission assets	WASP
PCB results for ground mounted distribution assets	http://assetzone.tnad.tasnetworks.com.au/ds/documents/Transformer%20Oil%20Analysis%20Database%20(NW197528).XLS
PCB results for oil farm operations and pole mounted distribution assets	ZoNe

10. Glossary

ADG Code – The Australian Code for the Transport of Dangerous Goods by Road and Rail.

Controlled waste - Controlled waste is the most hazardous category of waste and includes those wastes that exhibit toxicity, chemical or biological reactivity, environmental persistence, or the ability to bio-accumulate or enter the food chain. These wastes may be produced in a gaseous, liquid or solid state

Dangerous goods – Substances and articles that are listed in the ADG Code

EPA – Environment Protection Authority

Insulating oil - mineral oil or vegetable oil used for the immersion or filling of electrical equipment because of its insulation or heat transfer properties.

NATA - NATA stands for National Association of Testing Authorities, Australia and is Australia's Government-endorsed provider of accreditation for laboratories and similar testing facilities.

Reportable spill – An oil spill on land or water that causes or has the potential to cause material or serious environmental harm.

Appendix A –Checklist for the Transport of Oil Filled Equipment and Oil Filled Containers

	Question	Action
1	Is the load a complex or high risk load. For example, does it include: • Transmission CTs or VTs, • Other highly unstable loads, • Transmission transformers. If yes, refer to action. If no, read the next question.	Do not send the load on a general freight carrier (see definition below). A transportation plan may need to be developed. Consult with your team leader and the HSE team. Read the next question
2	Does the equipment meet the definition of an unstable load according to the Load Restraint Guide (refer to the extract below)? If yes, refer to action. If no, read next question.	Do not send the equipment on a general freight carrier. Ensure the load is secured as per the Load Restraint Guide (refer to extract below). Consider draining the equipment prior to transport or transporting with a bund in place. Read the next question
3	Is the equipment of a design that makes it prone to damage and subsequent oil leaks. For example, does it have a long drain pipe that could easily be knocked and cause an oil leak. Is the transformer in poor condition and could potentially leak as a result of cracking or receiving a knock during loading or transit. If yes, refer to action. If no, read next question.	Do not send the equipment on a general freight carrier. Consider draining the equipment prior to transport or transporting with a bund in place. Read the next question
4	Does the transformer/equipment contain greater than 500 litres of oil and could be contaminated with PCB? The oil could be contaminated with PCB if it is older than 1 Jan 1998 or an Etel transformer. If yes, refer to action. If no, read next question.	The equipment must be tested for PCB prior to transport. If it is found that the oil contains >2ppm PCB, the truck and driver must be licenced to carry dangerous goods. This requirement is irrespective of whether the equipment has been decommissioned or not. Read the next question
5	Has the equipment been decommissioned? That is, there is no likelihood that the equipment will be reused in the future. If yes, refer to action.	Once equipment containing oil (or remnants of oil) is decommissioned, both the oil and the transformer becomes Controlled Waste. Controlled waste must be transported by a truck and driver licenced to carry that particular controlled waste. The only exception is where it is subject to TasNetworks' exemption under the Controlled Waste Tracking Regulations (refer to Definitions)
The End		

General Requirements

The following are required whenever equipment/transformers are transported.

- Provide the driver with a manifest of what is being transported.
- The truck must be carrying a spill kit that is appropriate for the quantity of oil in the load.
- If the transformer/equipment is sitting on a pallet, the pallet must be in good condition. The pallet should sit directly on the tray of the truck. Metal strapping that assists in holding the transformer to the pallet should pass under the bearer of the pallet, not just the top boards.
- Do not let a load leave a TasNetworks site if you have any concerns about safety or the environment. For example, if you don't think a load has been adequately restrained, discuss your concerns with the driver. If the issue can't be resolved, ask the driver to leave the load at the site.
- Oil transported in 205L drums and IBCs will be bunded.

Definitions

Controlled Waste Tracking Regulations Exemption. TasNetworks has an exemption under the Controlled Waste Tracking Regulations 2010 which permits our workers to transport controlled wastes up to the following limits provided that certain conditions are met. The limits are:

- No more than 5m3 of contaminated soil per vehicle per occasion
- No more than 1,000 litres of oil per vehicle per occasion
- No more than 1,000 litres of oil or 1 tonne of equipment containing PCBs.

General Freight Carrier. In the context of this document, a general freight carrier refers to a business that typically carts mixed loads from various clients. The load may be transferred from one truck to the next and one driver to the next. Drivers may not know exactly what it is they are transporting and are often working to tight timeframes. If in this procedure it states "do not send on a general freight carrier" the person consigning the load should ensure the following:

- The load will be sent on a single truck from the origin to the destination.
- The driver will have the required skills, licences and equipment to cart the load safely.
- The driver will be informed in advance of the type of load and any risks or requirements that might be associated with it.

3 RECOGNISING UNSTABLE LOADS

Tall loads can tip over under heavy braking or cornering. This can happen even if they are restrained properly at the base.

A load will be less stable if it is placed on a base such as timber dunnage that is narrower than the base of the load.

Tall loads are unstable in the forward direction, if the length (L) measured along the vehicle, is less than 80% of the height (H) (see Figure B.16). This applies to evenly shaped loads of the same material throughout such as paper rolls, 205 litre drums, or gas cylinders.

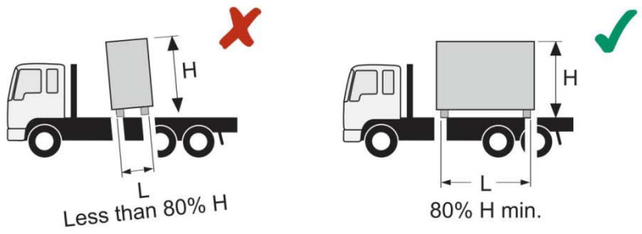


Fig. B.16 **UNSTABLE FORWARDS**

Tall loads are unstable sideways if the width (W) measured across the vehicle, is less than 50% of the height (H) (see Figure B.17).

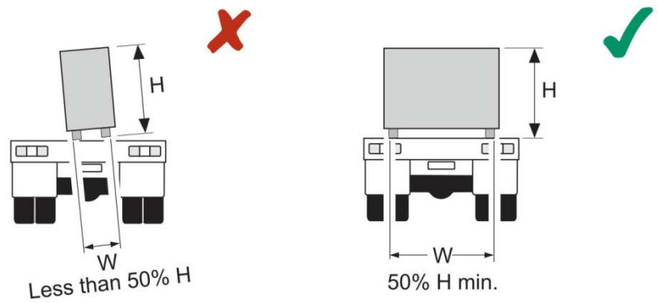


Fig. B.17 **UNSTABLE SIDEWAYS**

Fully tensioned tie-down lashings will increase the stability of the load. Care should be taken when using rope or webbing straps to stablise a load, because of the amount that these lashings can stretch. Ropes may stretch up to 20% and some webbing straps may stretch up to 13% of their length, before reaching their Lashing Capacity. This amount of stretch may allow the load to tip over. Chains are much more effective in preventing unstable loads tipping, because they don't stretch as much (about 1% of their length, up to their Lashing Capacity).

Lashings can be attached directly to the load to prevent tipping. These lashings are most effective if attached to the upper half of the load and angled no more than 60 degrees to the horizontal, in the opposite direction to tipping (see Figure B.18).

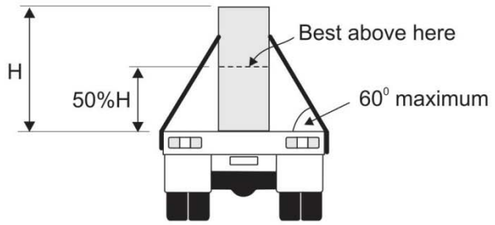


Fig. B.18 **ATTACHING DIRECT LASHINGS TO UNSTABLE LOADS**

Where a tall, unstable load is fragile or of uneven shape such as a transformer, it may not be possible to stabilise or prevent it tipping by attaching direct lashings. In such cases the load should be supported by a specially constructed frame and the frame restrained.

Unstable loads can be placed against a rigid structure, such as a headboard, to prevent them from tipping (see Figure B.19).

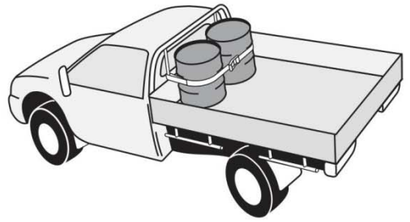


Fig. B.19 **STABILISED LOAD**

Alternatively, several unstable items of load can be strapped together to form a stable pack (see Figure B.20).

Fig. B.20 **STABLE PACK**