

Lifecycle Strategy DISPOSAL AND DIVESTMENT

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Keeping the energy flowing



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EXECUTIVE SUMMARY

The role of disposal and divestment

Asset disposal activities are generally required when an asset is approaching the end of its useful life. There are a number of 'triggers' for disposal decisions, including the requirement to replace an asset due to asset health, changes to safety or environmental standards or changing demand for the asset.

While the decision to dispose of an asset is made during the planning stages of an asset's life, when it comes time to dispose, we consider all options such as re-using, selling, or recycling redundant assets

Divestment involves transferring ownership of operational assets *in situ*. The assets remain in service at the same location in the network and the assets are sold to a connected customer. In general, we will consider divesting non-core assets to its customers where it provides a net benefit to New Zealand.

Objectives and Strategies

We have developed asset management objectives across five areas, being safety, service performance, cost performance, New Zealand communities and asset management capability.

We have developed the objectives to reflect where we want to be by 2020. The strategies describe how we will achieve the objectives and we will use a number of improvement indicators to track our progress. A summary of the disposal objectives is shown in Table 1 below.

Area	Improvement Objectives
Safety	We can demonstrate that disposal improvements are reducing the risk of harm to our workforce and the public.
Service Performance	We can demonstrate we have assessed the network risk presented by disposal and divestment activities.
Cost Performance	We can demonstrate we have considered the cost of disposal of our assets in our investment decision making, including our fleet strategies.
New Zealand Communities	We can demonstrate that the impact of our disposal activities on communities is actively minimised.
Asset Management Capability	Top level asset management strategic objectives apply.

Table 1 Main Disposal Objectives

1 INTRODUCTION

This chapter introduces the purpose, scope, and strategic alignment of the disposal and divestment lifecycle strategy.

1.1 Purpose

The Disposal and Divestment Lifecycle Strategy forms part of our suite of asset management documentation. Its purpose is to describe our approach to asset disposal and divestment activities.

This document has been developed based on good practice guidance from internationally recognised sources, including relevant clauses of BSI PAS 55:2008.

1.2 Scope

The strategy describes our overall approach to disposal and divestment of assets that are no longer appropriate to retain on the transmission system. Generally, there are three main triggers for disposal and divestment. These triggers are:

- the removal of an asset that has been replaced
- the removal of an asset whose function is no longer required
- net benefits of third party ownership are identified
- the asset presents an unacceptable risk to our workforce, the public or the network”.

Disposal and divestment lifecycle activities relate to the re-use, recycling, scrap sale and landfill disposal, or ownership transfer of assets. These activities will overlap with other lifecycle stages, including the planning and delivery lifecycles.

1.3 Strategic Alignment

A good asset management system shows clear hierarchical connectivity or ‘line of sight’ between high-level organisation policy and daily asset management activities. This document forms part of that ‘line of sight’ as represented graphically in Figure 1. It indicates where this strategy fits within our asset management framework.



Figure 1: Position of this Strategy within the Transpower Asset Management Hierarchy

1.4 Document Structure

The rest of this document is structured as follows.

Chapter 2 discusses the context for the disposal and divestment of assets in New Zealand.

Chapter 3 describes at a high level the approach we use when disposing of or divesting assets.

Chapter 4 sets out disposal and divestment objectives and the strategies developed to support them.

2 CONTEXT

Our Asset Management Strategy provides an overview of the context in which it manages the New Zealand transmission system ('Grid'). This chapter expands the context discussion by focusing on issues directly relevant to disposal and divestment activities. These issues include safety and environmental considerations, historic network boundaries and the interaction between disposal and divestment activities and other asset lifecycle activities.

2.1 Safety and Environmental Considerations

We must take into account a number of statutory requirements¹ as part of the disposal lifecycle, including:

- Health and Safety in Employment Act 1992
- Resource Management Act 1991
- Hazardous Substances and New Organisms Act 1996
- Consumer Guarantees Act 1993

Disposal activities in particular have significant safety and environmental considerations. These include the potential impact of hazardous materials on people and the wider environment and the safe dismantling of high-voltage equipment. Minimising waste is also an important environmental consideration.

Although we are transferring ownership of some assets through divestment we must ensure either that the assets transferred and the terms and process used comply with relevant statutory requirements or advise the prospective owner of any non-compliance or risks. Likewise, we must clearly describe the state of equipment that is contracted to be taken by waste management services, such as the presence or risk of contamination via hazardous substances.

2.2 Network Boundaries

As a consequence of the historic development of the electricity industry in New Zealand, we have a large number of points of connection with electricity distribution businesses (EDBs). These points of connection typically operate at feeder voltage levels of 66 kV, 50 kV, 33 kV, 22 kV and 11 kV. When compared with Australian network companies, we could be considered a transmission company and a sub-transmission company.

The large number of points of connection, together with the diversity of equipment, is a driver for significant operational and maintenance costs and increases the complexity of asset management. In some cases, contingency spares must be held specifically for equipment at just a few points of service, because of the unusual voltage.

¹ For relevant policies and legislation, refer Appendix A.

Rationalisation

There is an opportunity for rationalisation and a change in the ownership boundary for some of these low-voltage connection assets. Given the voltages are more akin to distribution voltages; it is arguably more efficient to transfer ownership of these assets to the EDB.

Spur Assets

Some of the assets on the boundaries of the transmission network are spurs. In many of these cases, the transfer of ownership to the EDB will allow enhancements to the regional distribution network delivering benefits to that region.

The current regulatory framework supports transfers of ownership to the EDB by allowing the EDB to recover charges equivalent to the avoided transmission costs.

2.3 Interaction with other Lifecycle Stages

We take a whole-of-life approach when managing assets. We have identified five lifecycle stages, including disposal. A whole-of-life approach requires that decisions and activities are undertaken with the full lifecycle in mind. For example, planning considers not only the initial capital costs but also the end-of-life costs involved in disposal and dismantling. Therefore we must understand and manage the interactions between activities in the various stages. The high-level interactions between disposal and the other lifecycle stages (planning, delivery, maintenance and operations) are briefly described below.

Planning

We plan the majority of asset-related activities as part of the planning stage. In general the decision to dispose of an asset is made as part of a wider project or programme during the planning phase for those larger works, such as replacement programmes. The required disposal activities, both immediate and future, should be taken into account and included in planning decisions. This is described in further detail in Section 3.1.1 and also in the planning lifecycle strategy.

Disposal costs and requirements shall also be considered in whole-of-life based decisions for new or replacement assets. This is becoming particularly important because the costs of disposal are generally increasing as a proportion of whole-of-life asset costs due to increasing environmental considerations and waste disposal costs.

Divestments are initiated in consultation with customers and prioritised based on the potential benefits and optimum timing for the regional network.

Delivery

Delivery is responsible for the implementation of capital investment projects and includes the dismantling and physical removal of assets that are no longer required. These activities will include the dismantling of older equipment in poor or unknown condition that may add complexity and risk to projects. This is described in further detail in the delivery lifecycle strategy.

Maintenance

Routine maintenance and repairs may involve the removal and disposal of equipment and/or materials that are no longer fit for purpose. This includes the disposal or recycling of hazardous wastes such as oil and sulphur hexafluoride (SF₆). This is described in further detail in section 3.1.6 and also in the maintenance lifecycle strategy.

Operations

The key disposal activity that impacts operations is the decommissioning of assets. When an asset is decommissioned we must assess the associated sub-spares held in stock and update key drawings (such as single line diagrams) operational plans and market systems, including Supervisory Control and Data Acquisition (SCADA) and Energy Market Services (EMS). This is described in further detail in the operations lifecycle strategy.

3 APPROACH

This section sets out our current high-level approach to our disposal and divestment activities.

3.1 Disposal

This section sets out the activities used to dispose of assets. These activities include:

- disposal planning
- disposal options, including re-use as spares and sale
- recycling and waste management
- site restoration.

3.1.1 Disposal Planning

Asset disposal activities are generally required when an asset is approaching the end of its useful life. There are a number of 'triggers' for disposal decisions. Some of these are set out below and are inputs into our general planning process.

- **Asset renewal:** We renew assets when they are no longer 'fit for purpose', such as when they do not meet performance targets or when they reach a pre-determined condition level (asset health).
- **Safety and environmental:** Changes to safety or environmental standards and our efforts to reduce safety risk may require assets to be upgraded or retired. Examples include confined environments where maintenance cannot be carried out safely or assets that cause unacceptable environmental or public safety risks.
- **Redundant assets:** Changing demand for Grid assets, security needs, specific customer requests, technological changes, or changes to Grid performance criteria can lead to Grid modifications. These can include Grid enhancements, functions replaced by alternative technology, or re-configurations leading to disposal of assets as they are no longer required.
- **Servicing and repairs:** Maintenance and servicing requirements can trigger disposal of equipment and materials, such as scheduled maintenance recognising the need to dispose of hazardous materials.

The overall planning process will assess the impact of the above drivers using the tools and methodologies discussed in the planning lifecycle. That decision-making process will generally include the consideration of various disposal options (options analysis). This analysis as applied to disposal is discussed next.

Stakeholder Consultation

We take the interests of the local community and landowners into account when disposing of certain assets (such as poles, towers and buildings). This includes consulting with customers, affected landowners, occupiers and communities at an early stage of planning projects that involve disposal or removal of assets.

Consultation helps to ensure improved stakeholder relationships and enables the investigation of cost-effective disposal options.

3.1.2 Options for Disposal

The options for disposal of an asset will be strongly influenced by the particular trigger or driver being addressed but will generally include:

- removal of the asset and use as a spare;
- removal and sale as a functioning asset;
- recycling – cannibalisation for spares;
- removal and sale as scrap;
- energy recovery;² or
- disposal to a waste management facility.

The option chosen will depend on a number of factors, including the asset's salvage value, its viability as a spare and the presence or otherwise of hazardous substances. In some cases, different options may be chosen for different components of the asset.

When considering disposal options, we actively seek opportunities to re-use, sell or recycle redundant assets. Transpower recycles, sells or re-uses assets and waste material where it is practical and cost efficient³ to do so.

In general, our preference is to re-use assets as spares or to sell retired assets as operational assets to distributors or to overseas transmission or distribution companies. When re-use or sale is not feasible or practical, Transpower dismantles and disposes of redundant assets and where possible recycles the associated materials. We dispose of surplus assets and waste material in a way that poses minimal risk to employees, contractors, the public and the environment.

3.1.3 Dismantling

Dismantling works are undertaken in accordance with the processes set out in the delivery lifecycle. Issues that are particularly relevant to dismantling works include:

- the work is adjacent to heavy or live equipment
- the asset is in deteriorated condition
- the asset contains hazardous materials.

3.1.4 Re-use as Spare

In cases where decommissioned assets remain viable and are of a make/model that are suitable for use on the system, we will retain these as spares. The assets will generally be refurbished to ensure they are in an appropriate condition.

² Energy recovery refers to the combustion of waste for energy use, such as used oil being used as cement kiln fuel.

³ Transpower may consider less cost effective options in cases where it is necessary to meet important environmental objectives.

Issues that impact the viability of retaining a particular asset for re-use as a spare include:

- condition of the asset
- remaining population and the level of existing spares
- cost to refurbish, transport and store the asset
- whether a replacement asset is readily available from suppliers.

3.1.5 Sale of Redundant Assets

In cases where decommissioned assets are serviceable but of no value as a spare for the Grid, we will assess whether it is cost effective to sell the asset. We will seek opportunities to sell assets and spares that would become obsolete and that would be of use to another organisation. In situations where serviceable assets are sold, we document known safety risks and hazardous materials.

A range of materials, such as metals and specialised gases, have residual scrap/recycled value. The sale of redundant materials follows a similar process to that used for viable assets.

We have standardised contracts, and specialist guidance for the sale of assets and materials is provided by a centralised procurement group. These arrangements manage residual liabilities and ensure that commercial terms are appropriate.

3.1.6 Disposal of Waste Materials

Assets that are unserviceable or fail to sell are dismantled and, where possible, materials are recycled. Transmission line assets (such as cables, conductors and towers) largely comprised of copper, aluminium or steel are easily handled and attractive to recycling businesses. Substation assets (such as transformers and circuit breakers) are typically more complex, containing recoverable material but also hazardous substances that must be disposed of with due care. The table below gives an overview of assets and the types of waste materials that we may need to manage.

Assets	Types of waste equipment and materials
Buildings and grounds	Building materials, lead-based paint, asbestos, and contaminated soil
Underground cables	Cross-linked Polyethylene insulation (XLPE), copper, lead, oil, and oil impregnated paper, steel wire armour
Outdoor switchyards	Metalwork, oil, heavy metals, hydrocarbons and contaminated soil
Switchgear/circuit breakers	SF ₆ , oil, recyclable metals, porcelain
Disconnectors and earth switches	Steel
Power transformers and instrument transformers	Oil, steel and copper
Reactive power equipment	Asbestos, electrolyte
Protection assets	Polychlorinated biphenyls (PCBs)

Assets	Types of waste equipment and materials
Transmission lines	Steel, aluminium, copper, soil, porcelain/glass

Table 2 Overview of waste equipment and materials generated from asset retirements

3.1.7 Site Restoration

When Grid assets are decommissioned and removed, part or all of a site (or building) can be either re-used or restored. We will either re-use the building or site or lease out to others, including connected customers.

These options require health and safety and environmental considerations to be taken into account, particularly where hazardous wastes are concerned. These include asbestos, mercury, lead-based paint and insulating oil. Identification, management, and removal of contaminated soil are a significant disposal cost.

3.2 Divestment

Divestment involves transferring ownership of operational assets *in situ*. The assets remain in service at the same location in the network and the assets are sold to a connected customer. These transactions result in changes in the Grid connection interface and the ownership boundary.

The rest of this section describes the following divestment activities:

- divestment planning
- ownership transfer
- termination of supporting activities.

3.2.1 Divestment Planning

Asset divestments relate to assets that are still required on the network but can be more efficiently owned and managed by an EDB. As outlined in Section 2.2 the characteristics of our network can mean that it is more efficient for EDBs to own, maintain and operate the assets. In most cases this is due to the technology or voltage employed. The primary divestment drivers are noted below.

- **Focus on the core Grid:** release engineering resources currently supporting connection asset replacement to focus on higher value work to improve core grid performance.
- **Asset rationalisation:** enable more efficient investment decision making. Distribution companies can make integrated decisions to enhance their networks for an overall lower cost by including our current connection assets when planning network enhancement.
- **Operational:** simplify the operational boundary with EDBs by eliminating the coordination required to manage equipment outages on low voltage assets and faults in distribution networks.
- **Financial:** achieve operating expenditure (Opex) and capital expenditure (Capex) savings by divesting assets

- **Reducing diversity:** realise efficiencies in spares holdings and procedural requirements by divesting assets that are at non-standard voltages or technologically different from the majority of our asset fleet.
- **Customer requests:** customers propose the purchase and manage their connection assets. This may include EDBs seeking to benefit from regulatory incentives⁴ to purchase and manage 'spur' assets.

In general, we will consider divesting non-core assets to its customers where it provides a net benefit to New Zealand.

In most cases Transpower will consider asset divestments where non-core (connection or spur) assets are at or below 110 kV and the transfer does not detrimentally impact system integrity.

Based on the above considerations, we have established a process for divesting our non-core assets and have identified a programme of possible future divestments. Managing the divestment process is resource intensive and the programme is planned to ensure that it can be delivered to meet expectations.

Early identification of potential divestments is an important activity as it allows effective planning of distribution network developments. Similarly, our expenditure forecasts can then be adjusted to reflect the projected changes in our fleet.

3.2.2 Ownership Transfer

Once we have approved a divestment we will undertake the following ownership transfer activities:

- negotiating sale and purchase agreements
- documenting lists of assets to be transferred, including assets that are out of service and spares
- providing drawings, manuals and documentation including information on known hazards and controls
- documenting changes in connection assets for pricing purposes.

At the time of writing a formal divestment process to manage the above tasks was under development.

3.2.3 Termination of Supporting Activities

In situations where assets are sold as functioning assets, we will remove these assets from our operational processes and systems. When we divest assets, they will be removed from the asset register and work management systems. In addition amendments will be made to commercial arrangements (such as pricing models and transmission agreements) and the System Operator will be formally notified.

⁴ Ownership of the divested assets will enable the local lines companies to claim recoverable costs equivalent to the avoided Transpower charge for those assets for a certain period of time.

4 OBJECTIVES

The Grid Asset Management Strategy defines the strategic objectives and approach that we take when managing the assets that make up the New Zealand transmission system ('Grid'). The strategy reflects the intent of our Asset Management Policy and presents the forward facing strategic objectives have been derived from our principal corporate objectives and goals, and our long term vision document Transmission Tomorrow.

The five key asset management objectives aligned to our Grid Asset Management Policy are:

1. Safety
2. Service Performance
3. Cost Performance
4. New Zealand Communities
5. Asset Management Capability.

This chapter describes the forward-facing disposal objectives and strategies consistent with the five areas above, ensuring line of sight with the overarching asset management objectives.

4.1 Safety

Disposal activities in particular have significant safety and environmental considerations. These include the potential impact of hazardous materials on people and the wider environment and the safe dismantling of high-voltage equipment. Minimising waste is also an important environmental consideration.

Although we are transferring ownership of some assets through divestment we must ensure either that the assets transferred and the terms and process used comply with relevant statutory requirements or advise the prospective owner of any non-compliance or risks. Likewise, we must clearly describe the state of equipment that is contracted to be taken by waste management services, such as the presence or risk of contamination via hazardous substances.

Safety Objective for Disposal

We can demonstrate that disposal improvements are reducing the risk of injury to our workforce and the public.

To ensure we can demonstrate we are improving our disposal activities with regard to safety, we will implement a safety root cause analysis process to ensure that the root causes of safety incidents occurring in disposal are investigated and corrective action identified and implemented.

We will also ensure that any disposal includes a risk assessment that identifies potential risks to the workforce and /or public including details of how the risks will be managed as part of the disposal plan.

Improvement Indicators

By 2016, we will have a safety root cause analysis process in place.

4.2 Service Performance

To ensure we are maximising customer value, we need to ensure our assets are providing the performance, or level of service, that our customers expect at the lowest whole-of-life cost.

Disposal stage activities may be undertaken in close proximity to operational Grid assets. Divestment activities involve ownership transfer and a change in the operational interface at the Grid boundary. Both disposal and divestment activities can therefore be a source of reliability risk to the Grid.

Service Performance Objective for Disposal

We can demonstrate we have assessed the network risk presented by disposal and divestment activities.

Our works planning and outage management processes undertaken during the planning and operations lifecycles respectively should ensure that disposal and divestment-related works are accounted for in relevant work plans. This will involve integrating our dismantling and disposal plans across development, enhancement and maintenance projects.

We also need to ensure that we capture feedback from asset failures.

Improvement Indicator

By 2015 we will fully integrate any disposal and divestment activity into our forward work plan.

By 2018, where appropriate, assets will be fully investigated before being disposed or recycled to inform our understanding of condition and failure mode.

4.3 Cost Performance

To ensure we are maximising customer value, we need to ensure our assets are providing the performance, or level of service, that our customers expect at the lowest whole-of-life cost.

We are committed to putting in place systems and decision-making processes that allow us to effectively manage the full lifecycle cost of our assets. Accounting for the actual cost of disposal will be an important component of this work.

Cost Performance Objective for Disposal

We can demonstrate we have considered the cost of disposal of our assets in our investment decision making, including our fleet strategies.

Given the decision to dispose of an asset is made in the planning stage of an asset lifecycle, it is essential that we have better information about the cost of disposal when making

investment decisions. It is essential therefore that the fleet strategy review arising from the planning strategy takes disposal into account.

To support this, we will develop and update a price book of commonly transacted materials and assets to be used to improve the accuracy of our cost information.

Improvement Indicator

By 2015, we will have developed detailed disposal cost building blocks to populate whole-of-life cost models for main asset fleets.

4.4 New Zealand Communities

We are committed to developing and managing our assets in a way that has regard for the interests of communities and the environment.

The Asset Management Strategy discusses how the needs of these groups are taken into account in asset management decisions, including building effective relationships, and undertaking consultation and satisfaction surveys.

Communities Objective

We can demonstrate that the impact of our disposal activities on communities is actively minimised.

To ensure we can minimise the impact on landowners with regard to our disposal activities, it is essential that we engage with them soon after the decision has been made to dispose of an asset. We also need to ensure that any potential environmental impacts are identified during the planning stage so we have sufficient time to mitigate risks.

Once a decision has been made to disposal of an asset, it is essential that the physical disposal is supported by our internal policies and processes. This includes the development of:

- pre-accreditation of contractors undertaking dismantling and disposal works
- standardised contracts for sale of equipment
- process and tools for analysing disposal options (re-use, sale, recycling, disposal to landfill)
- standardised handling and spill management plans for major sites
- a site restoration policy.

Improvement Indicator

By 2014, we will include early consultation with regards to asset disposal in our consultation processes.

By 2015, we will specifically include any asset disposals when testing the feasibility of the work plan.

By 2016, we will have developed standardised policies and procedures relating to the physical disposal of assets.

4.5 Asset Management Capability

We are undertaking an improvement programme to gain PAS 55 accreditation. Our objective is to seek accreditation with PAS 55 by June 2014.

Given asset management straddles all the asset lifecycles, there are no specific strategic objectives associated with the disposal lifecycle and all objectives for this area can be found in the main Asset Management Strategy document.

Given our disposal and divestment decisions are made during the planning stage of an asset's life, the planning objectives and strategies in relation to developing our people capability also apply to disposal.

A RELEVANT POLICIES AND LEGISLATION

This appendix includes the requirements for hazardous substances and oil and waste management.

TP.SS.06.40 Hazardous Substance Inspections

TP.SS.02.84 Station Oil Services Maintenance

TP.GS.54.01 Oil Spill Management

Disposal of sulphur hexafluoride contaminated materials, gas and equipment

SF₆ disposal warrants particular mention in this lifecycle strategy.

SF₆ is used as a material in circuit breakers and switchgear. It is the most potent of greenhouse gases with a global warming potential 23,900 times higher than carbon dioxide.

SF₆ comes under New Zealand's emission trading scheme through the passage of the Climate Change Response (Emissions Trading and Other Matters) Amendment Act 2012.

All gas handling and maintenance activities are to be carried out to minimise gas emission to the environment. All gas removed from equipment is to be recycled or labelled and stored pending disposal.

Relevant service specification

TP.SS.02.29 Sulphur Hexafluoride (SF₆) Gas Maintenance and Management

This includes requirements for disposal of contaminated materials, gas and equipment.

Statutory Requirements

Key statutory requirements that affect disposal activities are compliance with the:

- Health and Safety in Employment Act 1992
- Resource Management Act 1991, including National Environmental Standards for Electricity Transmission Activities, District Plans, Regional Plans, Bylaws, Resource Consent and Notice of Requirement conditions, audible noise levels and any other legal requirements
- Hazardous Substances and New Organisms Act 1996.

We measure the success of this objective by ensuring it has positive asset and waste disposal processes and audit trails.