Controller and Auditor-General
Tumuaki o te Mana Arotake

Performance audit report

Maintaining and renewing the rail network

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This is the report of a performance audit we carried out under section 16 of the Public Audit Act 2001.

June 2008

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Foreword

I have a strong interest in how well public infrastructure assets are managed. In particular, I am interested in the extent to which planning provides for the assets to be managed effectively and efficiently. Our performance audit of ONTRACK forms part of my Office's work programme looking at major infrastructure management.

ONTRACK has significantly more work to do. Its systems, plans, policies, and procedures for maintaining and renewing the rail network are not yet complete, connected, or able to be used together where needed.

ONTRACK is not an established infrastructure manager. In the time it has been responsible for the rail network, it has needed to have a strong focus on day-to-day operations. Some parts of the rail network were old when ONTRACK took responsibility for them in 2004, but there is not enough information to form a clear picture of the state of the rail network (either in 2004 or at the time of our audit).

ONTRACK is actively trying to improve the information it holds about the rail network assets. I cannot emphasise enough the importance of ONTRACK continuing this work, and ensuring that information about assets is in a form that can be used to inform planning.

Until ONTRACK has a clear idea about the state of rail network assets, it will be difficult to determine the most effective options for managing the rail network and how much this will cost.

It remains to be seen how the Government's recent agreement to purchase the rail and ferry operations will affect ONTRACK's commercial arrangements. However, this report provides information about areas that ONTRACK clearly needs to address. I suggest that those with a direct responsibility for monitoring ONTRACK's performance – namely monitoring agencies, shareholding Ministers, and the Transport and Industrial Relations Committee – ask ONTRACK to provide regular reports on its progress to address the areas we have identified.

I would like to thank ONTRACK's staff for providing my Office with a high level of help and co-operation during the audit.

K B Brady
Controller and Auditor-General

24 June 2008

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Glossary

Ballast is crushed rock laid to form a track-bed for rail sleepers. It creates an even surface for the track and helps with drainage.

Code documents are controlled documents that set out standards and guidance for the rail network. The code documents form part of ONTRACK's safety system.

Electric traction assets include assets such as substations and overhead wires. They provide electricity to power the trains.

Line or **line segment** means a particular part of the rail network with a specific start and end point.

Maintenance activities keep an asset in good working order. Maintenance does not include replacing the asset.

A **modern equivalent asset** replicates an asset with the most cost-effective asset that performs the same level of service.

The **National Rail Access Agreement** sets out the arrangements between the Crown and Toll NZ Consolidated Limited for the rail network (excluding the Auckland urban rail network).

OIL is short for ONTRACK Infrastructure Limited, a subsidiary company of ONTRACK.

ONTRACK is the trading name of New Zealand Railways Corporation.

Rail network in this report means the track, structures, and signals, telecommunications, and electric traction assets that ONTRACK is responsible for. The rail network extends throughout New Zealand.

A **rail participant** is defined in the Railways Act 2005 as any of an infrastructure owner, a rail vehicle owner, a railway premises owner, an access provider, a rail operator, a network controller, a maintenance provider, a railway premises manager, or any other class of person prescribed as a rail participant by regulations.

Renewal is work to replace an asset that has reached the end of its life with a modern equivalent asset.

Safety case refers to information that rail participants (including ONTRACK) must prepare to meet requirements within the Railways Act 2005. Safety cases are approved by Land Transport New Zealand. The safety case must be underpinned by, and consistent with, the rail participant's safety systems.

Safety system is ONTRACK's written record of its management and operational policies and practices for the safe conduct of its rail activities. Land Transport New Zealand conducts regular safety assessments to check that ONTRACK complies with its safety systems.

Service levels refer to the quality of services provided by an asset or group of assets.

Structure assets include bridges, tunnels, and culverts.

Track assets include rail, sleepers, and ballast.

Upgrade means totally new assets or replacing assets with something better.

Summary

The rail network is a significant publicly owned infrastructure asset. It was valued in 2006, along with associated land, buildings, and mechanical plant and equipment, at $10.6 billion. The rail network is used to transport passengers and large quantities of freight.

New Zealand Railways Corporation (a State-owned enterprise trading as Ontrack) has been responsible for the rail network since September 2004, after the Crown purchased it back from private ownership.

We carried out a performance audit to provide assurance about the effectiveness of Ontrack's systems for maintaining and renewing the rail network.

We focused on Ontrack's long-term planning, its systems, plans, policies, and procedures for managing day-to-day maintenance and renewal work, and the checks and evaluations it had carried out of the work done. We did not review rail network safety.

The state of the rail network in 2004 meant that Ontrack needed to start with a strong day-to-day operational focus. Therefore, we expected that its top priority would be to ensure that it had systems, plans, policies, and procedures for managing day-to-day work. We also expected Ontrack to have started preparing a long-term plan for managing the rail network.

Our findings

Overall, Ontrack had, or was putting in place, various systems, plans, policies, and procedures for maintaining and renewing the rail network. However, it needed to do a significant amount of further work to ensure that the systems, plans, policies, and procedures were complete, connected, and able to be used together where needed.

Ontrack's systems, plans, policies, and procedures were focused on day-to-day management of the rail network. However, these varied in completeness and comprehensiveness. In most instances there was room for improvement.

Managing day-to-day work on the rail network

Ontrack planned maintenance and renewal work on a short-term, reactive basis using inspection results. The planning relied heavily on inspections to find problems before they could worsen or lead to failure. Similarly, Ontrack relied on decision-makers to accurately judge how quickly problems needed to be fixed.

Ontrack had not identified all the resources it needed or the constraints it faced in carrying out maintenance and renewal work. Ontrack documents reported that insufficient staff resources or a lack of time to access the tracks had made some planned maintenance and renewal work more difficult. This raises questions

about Ontrack's ability to do all the work it needs to do to maintain and renew the rail network. In our view, Ontrack needs to review whether it has the right level of resources, and clarify the effect of constraints on track access and the options for managing them.

Ontrack manages the different rail network assets in three groups. They are the:

- track asset group;
- structure asset group; and
- signals, telecommunications, and electric traction asset group.

Ontrack had a separate set of systems, plans, policies, and procedures to direct work for each asset group. There were no points where information from the separate systems, plans, policies, and procedures could be used together or compared, and it was not clear whether there were dependencies between the different types of assets. This meant it was difficult for Ontrack to co-ordinate work between the asset groups to achieve common outcomes or goals.

Demonstrating that plans and procedures are followed for day-to-day work

Overall, Ontrack did not have effective systems in place to demonstrate that plans and procedures for managing day-to-day work were followed.

In some instances, Ontrack was not keeping up with planned work, which in turn could create further work. Ontrack did not have an overview of the planned work, or the overall progress it was making against its planned work. Therefore, we could not determine whether Ontrack was close to keeping up with its planned work or whether the amount of overdue work was increasing.

We also had concerns about Ontrack's systems for providing assurance that work standards within code documents were met.

Long-term planning for the rail network

Ontrack had started to prepare a long-term plan for the rail network. Preparing a long-term plan for the rail network is a significant and complex task. Ontrack had not determined the extent of work required or how it would be resourced. It did not have project management disciplines in place to ensure that the plan preparation would occur in a logical and timely way.

Ontrack did not have all the information or systems it needed to prepare a long-term plan. It was doing work to address some of these deficiencies. However, Ontrack had not considered the fit between these pieces of work and the preparation of the long-term plan.

Effective asset management relies on clear service levels. The service levels and performance measures for the rail network were not clear. ONTRACK told us that negotiations with Toll NZ have precluded agreement about service levels. Toll NZ told us that they disagree with this view.

Until service levels are established and there is clear, accessible information about the state of the rail network, ONTRACK will not be able to determine optimum strategies for managing the rail network or how much this will cost.

Our recommendations

We recognise that ONTRACK is not an established infrastructure manager. ONTRACK is working to put in place and improve its systems, plans, policies, and procedures for maintaining and renewing the rail network. Although our report identifies a number of areas where ONTRACK can improve, our recommendations focus on the most important of these.

Managing day-to-day work on the rail network

We recommend that ONTRACK:

1. determine the resources it will need to carry out the work set out in its operational plans;
2. clarify the extent of constraints on track access and consider the options for managing those constraints;
3. update the code documents that are overdue for review; and
4. identify the critical points where the systems, plans, policies, and procedures for the three asset groups need to align to ensure that it can co-ordinate work to meet common outcomes and goals.

Demonstrating that plans and procedures are followed for day-to-day work

We recommend that ONTRACK:

5. clarify and communicate the purpose and accountabilities for code compliance reports, and consider whether existing controls for structures provide enough assurance that work standards in code documents have been complied with.

Long-term planning for the rail network

We recommend that ONTRACK:

6. determine the extent of work required to prepare a long-term plan and how it can be resourced, put project management disciplines in place, and have senior management staff actively sponsor the work that needs to be done;
7. clarify and convey to staff how their work both supports and is driven by the long-term plan;
8. provide clear and consistent information about service levels and performance targets that it intends to meet, and state whether these have been agreed with external parties;
9. complete work on its asset information systems so the information is up to date and able to be readily used for long-term planning and decision-making; and
10. gather information about expected long-term costs for the rail network.

Part 1
Introduction

1.1 This report is the result of our performance audit of Ontrack (officially, the New Zealand Railways Corporation), the State-owned enterprise that owns and manages the rail network.

1.2 In this Part, we describe:

- why we did our audit;
- our audit approach;
- how we carried out our audit; and
- what was outside the scope of our audit.

Why we did our audit

1.3 We wanted to know whether Ontrack had effective systems for maintaining and renewing the rail network.

1.4 The rail network is a national infrastructure asset of significant value. In 2006, the rail network, along with associated land, buildings, and mechanical plant and equipment, was valued at $10.6 billion. In recent years, the Crown has committed more than $1 billion to upgrading parts of the rail network. The rail network is used to transport freight, provide urban passenger transport, and, to a lesser extent, provide longer-distance passenger journeys.

1.5 The management of major infrastructure assets is a core area of interest for our Office. This is the first of a series of performance audits we intend to carry out in this area.

About infrastructure assets

1.6 Infrastructure assets take a long time to establish. They often last a long time, so the way they are managed has long-term implications for their ability to sustain a particular level of service, and the cost of sustaining that level of service. This is the case for the rail network.

1.7 There are several aspects to physically managing infrastructure assets. These include:

- **maintenance** – activities that keep an asset in good working order;
- **renewal** – work that replaces an asset that has reached the end of its life with a modern equivalent asset;
- **upgrades** – totally new assets, or replacing an asset with something better; and
- **disposal** – decommissioning and removing assets.

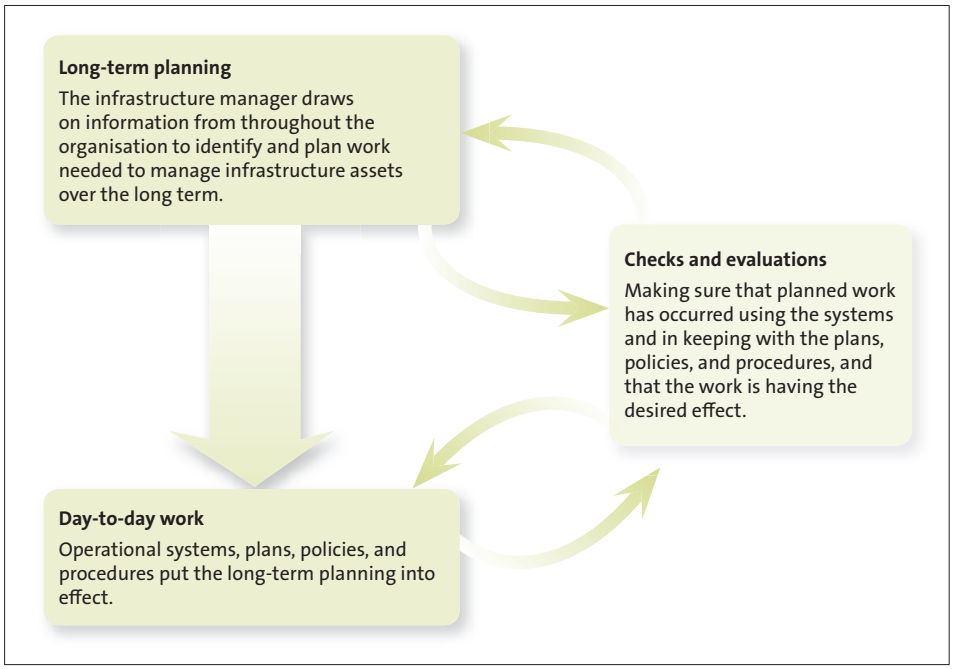
1.8 Maintenance and renewal work are core "business as usual" activities for an infrastructure manager wishing to manage an asset so it remains capable of providing a consistent level of service over time.

1.9 For any infrastructure manager to have effective systems for maintaining and renewing assets, they need to:

- **have a long-term plan**, to identify and prepare for work needed on the infrastructure asset over the long term;
- **manage day-to-day work**, with systems, plans, policies, and procedures to put the long-term plan into action; and
- **carry out checks and evaluations** to make sure that planned work has occurred in keeping with policies and procedures, and that it has the desired effect.

1.10 It is also important that there are clear links between these three areas. It needs to be clear how the infrastructure manager is implementing long-term planning. Checks need to be in place to make sure that long-term and day-to-day work is proceeding as planned. Feedback loops need to be built in so that the infrastructure manager can evaluate whether long-term planning and day-to-day management activities can be improved (see Figure 1).

Figure 1
Links between long-term planning, managing day-to-day work, and checks and evaluations



Our audit approach

1.11 We began our audit by forming expectations of the systems, plans, policies, and procedures that an established infrastructure manager should have for managing day to-day work, long-term planning, and checking progress with that work and against those plans.

1.12 In forming our expectations, we drew on:

- guidance on best practice in infrastructure management;[1]
- a report by the Victorian Auditor-General in Australia on maintaining rail assets;[2] and
- work the Commerce Commission did when reviewing asset management plan disclosure requirements for electricity lines companies.[3]

1.13 We used our expectations to review the completeness and effectiveness of the systems, plans, policies, and procedures Ontrack had in place for managing maintenance and renewal work. Appendices 1-3 set out our expectations.

1.14 In forming our views on Ontrack's performance, we were mindful that Ontrack is not an established infrastructure manager. When it took responsibility for the rail network in September 2004, it took on new responsibilities, and there were new commercial arrangements for managing the rail network. Ontrack has needed to increase staff numbers significantly, and adopted a new accounting treatment for fixed assets. None of these activities has been straightforward.

1.15 We anticipated that Ontrack's top priority in taking responsibility for owning and managing the rail network would have been to ensure that operational systems were in place for managing day-to-day work on the rail network. We set out our findings for this in Part 3. We expected that Ontrack could demonstrate that it was following its plans and procedures in managing the day-to-day work. We set out our findings for this in Part 4.

1.16 We expected Ontrack to have started preparing a long-term plan while it was establishing effective systems, plans, policies, and procedures for day-to-day work. Preparing a long-term plan is a significant task that draws on skills and information from throughout an organisation. We did not necessarily expect the plan to be complete. However, we did expect Ontrack to have identified the work

1 Association of Local Government Engineering New Zealand Inc. (INGENIUM) and the Institute of Public Works Engineering of Australia (2006), *International Infrastructure Management Manual Version 3.0*, ISBN 0 473 10685 X.

2 Victorian Auditor-General (2007), *Maintaining Victoria's Rail Infrastructure Assets*, PP No 15 Session 2006-07, Victorian Government Printer, ISBN 1 921060 35 2.

3 The Commerce Commission's information disclosure regime requires electricity lines businesses to disclose asset management plans. The Commerce Commission has done work (in particular Commerce Commission, 2006, *Regulation of Electricity Lines Businesses Asset Management Plans: Revised Information Disclosure Requirements and Handbook Decision Paper*) to identify best practice for asset management plans.

it needed to do to prepare a long-term plan, and to have a clear and disciplined approach for doing so. We set out our findings for this in Part 5.

How we carried out our audit

1.17 We reviewed operational plans, policies, and process information for directing day-to-day work. We looked at analysis, reports, and information Ontrack had prepared to check that work was carried out in keeping with Ontrack's requirements. We reviewed the work Ontrack had done to prepare a long-term plan.

1.18 We interviewed staff from Ontrack's Head Office, Regional Offices, and the Hamilton East, Kaiwharawhara, and Greymouth Area Offices. We made several field visits to familiarise ourselves with various rail network assets, including one site visit where significant emergency works were under way.

1.19 We also met with representatives from Toll NZ Consolidated Limited (Toll NZ), which is a company providing freight and passenger services on the rail network, and staff from Land Transport New Zealand, the Ministry of Transport, and the Treasury.

1.20 We appointed an independent rail expert to review our work in planning, conducting, and reporting on the audit.

Outside the scope of our audit

1.21 The main focus of our audit was Ontrack's systems, plans, policies, and procedures for maintenance and renewal work on the rail network. We did not consider the specific commercial arrangements in place for the Auckland urban rail network. We did not review any of Ontrack's upgrade projects.

1.22 We provide information about commercial arrangements for the rail network as context in this report. We also set out information about Ontrack's views on the effect the commercial arrangements have had on its business. However, we have not commented on the effect the commercial arrangements have had on Ontrack's ability to carry out its responsibilities.

1.23 We did not examine rail network safety. Land Transport New Zealand is the regulator of rail safety in New Zealand. It is responsible for checking and approving rail participant safety cases and issuing rail licences for activities on the rail network. The Railways Act 2005 requires that any safety case is underpinned by, and consistent with, safety systems. Land Transport New Zealand regularly assesses whether Ontrack complies with its safety systems.

Part 2
Background

2.1 In this Part, we describe:

- Ontrack's responsibilities and organisational structure;
- the rail network;
- the state of the rail network in 2004; and
- commercial arrangements for the network.

Ontrack's responsibilities and organisational structure

2.2 Ontrack has been responsible for the rail network since September 2004. It is the owner and manager of the infrastructure. As the owner of the rail network, its main responsibilities are:

- managing and operating the rail network;
- providing rail operators with access to the tracks;
- providing advice to the Crown on rail infrastructure issues;
- managing land and leases on the rail corridor; and
- carrying out activities for the public good – for example, putting assets in place to improve the safety of railway level crossings.

2.3 Ontrack is a State-owned enterprise. It has a board of directors, but, unlike other State-owned enterprises, it is not a registered company. The shareholding Ministers for Ontrack are the Minister of Finance and the Minister for State Owned Enterprises.

Ontrack's organisational structure

2.4 Ontrack's Head Office is based in Wellington. Head Office staff provide technical engineering advice and logistical planning support to staff in the field, and perform business and administrative functions for the organisation.

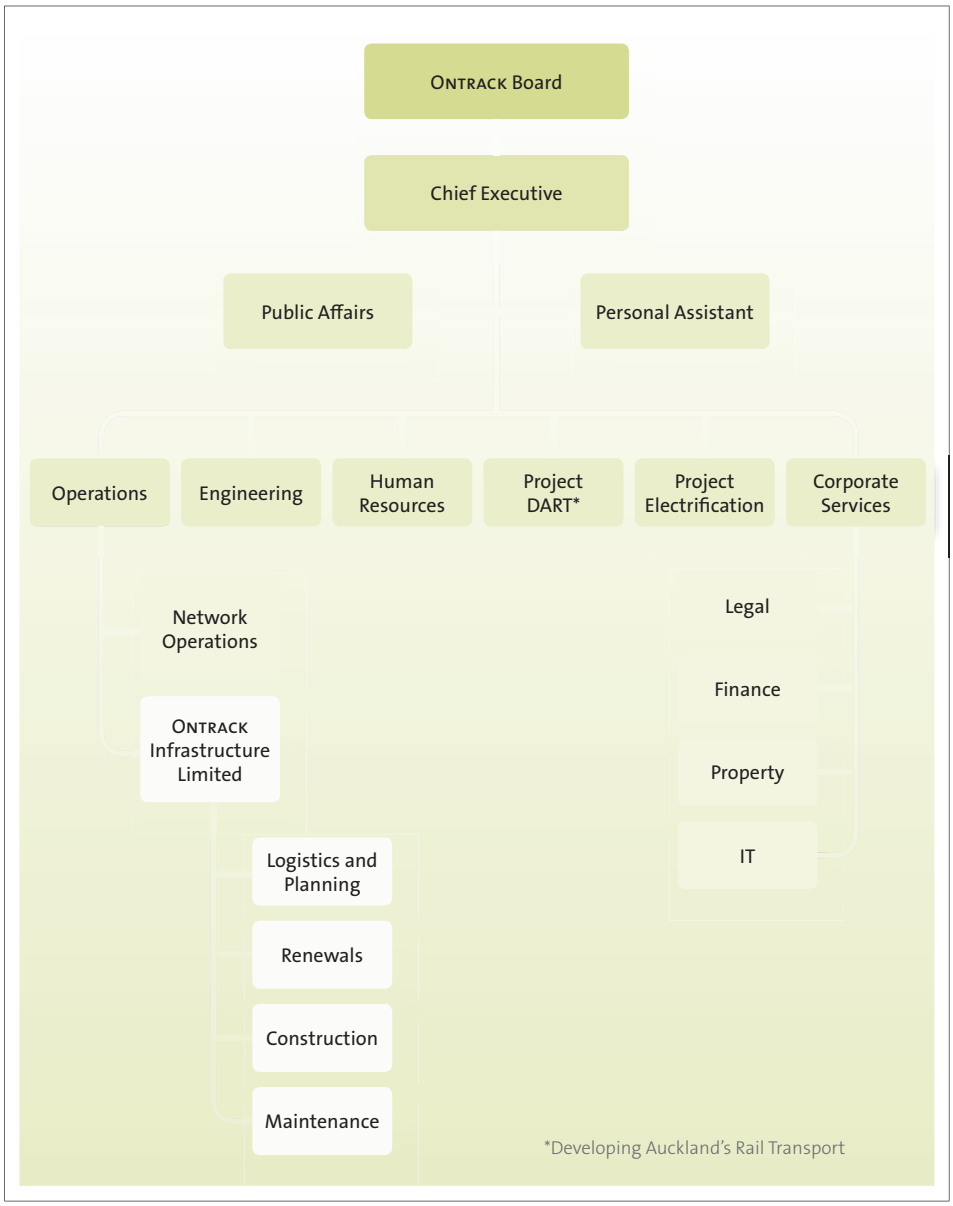
2.5 In February 2006, Ontrack changed from using contractors for rail maintenance work to using its own staff to do the work. It did this by forming a subsidiary company – Ontrack Infrastructure Limited (OIL) – and increasing total staff numbers (including OIL staff) from 150 to about 780. Since then, Ontrack's staff numbers have increased to about 860. OIL staff are primarily based at three Regional Offices and nine Area Offices.

2.6 Roles and responsibilities are fairly uniform in the Regional and Area Offices. Regional Offices co-ordinate and support planning, and oversee maintenance and renewal work. Staff in Area Offices perform specialised maintenance and renewal work on the rail network. Ontrack sometimes uses contracted labour or equipment for maintenance and renewal work.

2.7 Some Ontrack and OIL staff also participate in large upgrade projects. We have not reviewed staff arrangements for the projects.

2.8 Figure 2 sets out Ontrack's organisation structure.

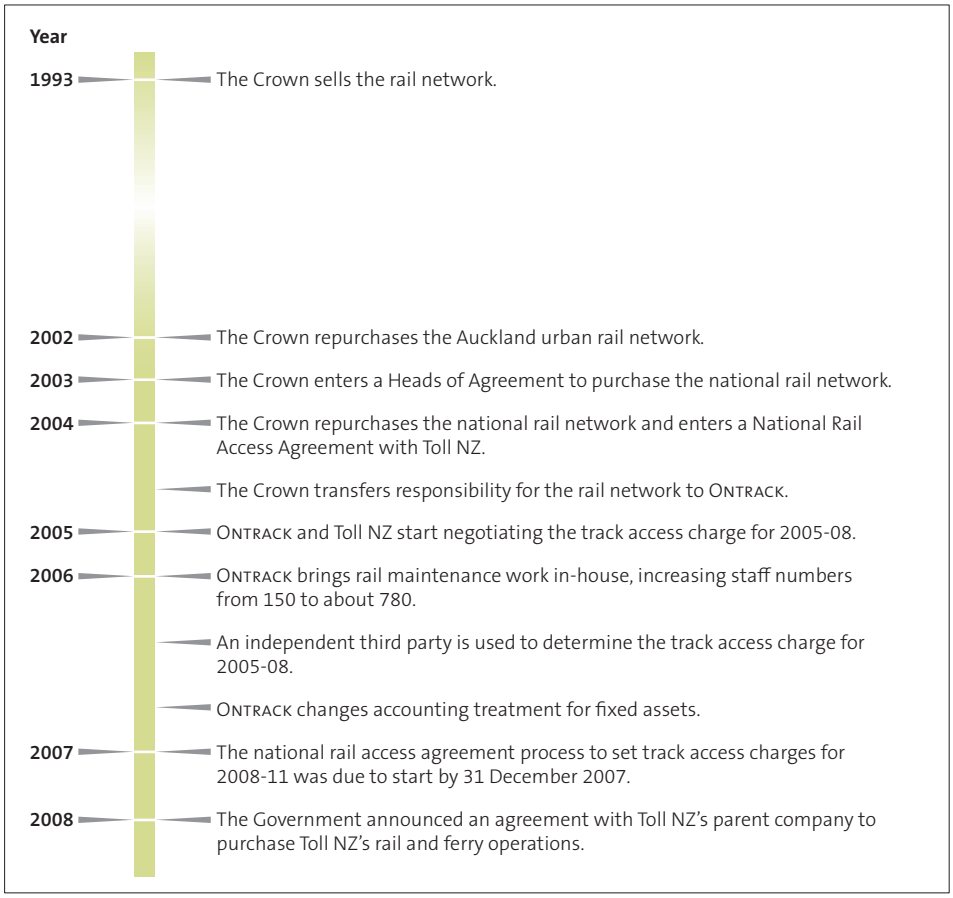
Figure 2
Ontrack's organisation structure



About the rail network

2.9 The rail network covers most of New Zealand. The Crown purchased the Auckland urban rail network in 2002 and the rest of the rail network in 2004. Figure 3 shows a timeline of significant events for the rail network since 1993.

Figure 3
Timeline of significant events for the rail network.



2.10 ONTRACK manages the rail network assets in three groups. They are the:

- track asset group;
- structures asset group; and
- signals, telecommunications, and electric traction asset group.

2.11 ONTRACK also owns land, buildings, and mechanical plant and equipment (for particular tasks on the rail network).

2.12 Figure 4 shows a map of the rail network.

Figure 4
Map of the rail network

2.13 There are significant ongoing costs in running the rail network. Figure 5 sets out how much Ontrack has spent on maintenance, renewal, and minor upgrade work.

Figure 5
Spending by Ontrack to maintain and renew the rail network and carry out minor upgrade work

	Maintenance ($)	Renewals ($)	Minor upgrade work (excludes major projects) ($)
2004/05	34,997,000	36,809,000	11,820,000
2005/06	42,702,000	70,279,000	5,467,000
2006/07	41,855,000	65,364,000	27,963,000

Source: Ontrack.

Asset valuation

2.14 In its financial statements for the year ended 30 June 2007, Ontrack changed the way it measures its rail network assets and associated buildings and mechanical plant and equipment from depreciated historical cost to fair value. Ontrack also changed the way it measures its land associated with the rail network and buildings from historical cost to fair value. The change in measurement means that the rail network assets and the associated land, buildings, and mechanical plant and equipment are recognised on a basis consistent with other significant items of property, plant, and equipment of the Crown, such as state highways.

2.15 The fair value of the rail network assets and the associated land, buildings, and mechanical plant and equipment was assessed by an independent valuer in 2006. The fair value of the rail network assets and the associated land, buildings, and plant and equipment was determined to be $10.6 billion. This value was derived based on the fair value of the land and the depreciated replacement cost of the rail network assets and the associated buildings and mechanical plant and equipment.

State of the rail network in 2004

2.16 It has been widely reported that many of the rail network assets were very old when Ontrack took responsibility for the rail network.

2.17 There is some evidence to support these reports. However, there is not enough information to form a clear picture of the state of the rail network when Ontrack took responsibility for it in 2004.

2.18 For example, in 2005 Ontrack assessed the state of the rail network. The assessment set out information, in varying levels of detail, about the age, condition, and historical performance of rail network assets. However, the information was

sometimes incomplete, or used different or unclear assessment criteria. It was not always apparent what conclusions could be drawn from the information. The assessment did not include a clear description of the rail network's assets.

2.19 The assessment did not identify what work Ontrack would need to do on the rail network in the long term, or the cost of doing so.

2.20 Toll NZ commented in its 2006 annual report that:

> *... since October 2003, both Toll and the Crown have found the track to be in a worse state of maintenance than we had believed it to be.*

2.21 The state of the rail network in 2004 has significantly influenced Ontrack's management focus. This is because older rail assets often need closer management attention – for example, more frequent inspections might be needed to check that the asset is in a satisfactory state to perform the job it is intended to do. If many assets reach the end of their life within short succession, renewing the assets without undue delay is likely to put pressure on resources, including staff and equipment.

Commercial arrangements for the rail network

2.22 Arrangements for the rail network (excluding the Auckland urban rail network) are set out under the National Rail Access Agreement between the Crown and Toll NZ. The Agreement grants Toll NZ exclusive access rights until 2070 (with limited exceptions) to the track for freight, passenger services on the Wellington urban rail network, and long-distance passenger rights. These rights are subject to "use it or lose it" provisions.

Track access charge

2.23 Under the National Rail Access Agreement, Toll NZ is to pay Ontrack a track access charge. Ontrack and Toll NZ have been unable to reach agreement about the track access charge for 2005-08. Therefore, in keeping with the terms of the Agreement, a track access charge was determined using an independent third party in late 2006. The charge was due to apply from March 2007.

2.24 The National Rail Access Agreement process to set track access charges for 2008-11 was due to start by 31 December 2007.

2.25 Ontrack and Toll NZ did not consider that the track access arrangements provided them with the certainty they would have liked. Ontrack told us that negotiations over the track access charge had prevented meaningful discussions with Toll NZ about future plans for the rail network. Toll NZ had reported that it was:

> *... ready to make the investment needed to lift rail performance levels and service delivery to customers. We require only the certainty of an access agreement, to allow us to proceed with these plans.*[1]

2.26 In May 2008, the Government announced an agreement with Toll NZ's parent company to purchase Toll NZ's rail and ferry operations.

2.27 Negotiating the track access charge and future rail network arrangements has been a major focus for Ontrack's senior management team.

1 Toll NZ Limited, *Annual Report 2007*, page 1.

Part 3
Managing day-to-day maintenance and renewal work on the rail network

Key messages

Ontrack's various systems, plans, policies, and procedures for managing day-to-day management of the rail network varied in completeness and comprehensiveness. In most instances there was room for improvement.

Ontrack planned maintenance and renewal work on a short-term, reactive basis using inspection results. The planning relied heavily on inspections to find problems before they could worsen or lead to failure. Similarly, Ontrack relied on decision-makers to accurately judge how quickly problems needed to be fixed.

Ontrack had not identified the resources it needed or constraints it faced in carrying out maintenance and renewal work. Ontrack documents reported that insufficient staff resources or a lack of time to access the tracks had made planned maintenance and renewal work more difficult. This raises questions about Ontrack's ability to do all the work it needs to do to maintain and renew the rail network. In our view, Ontrack needs to review whether it has the right level of resources, and clarify the effect of constraints on track access and the options for managing those constraints.

Ontrack has grouped its assets into three groups – track assets, structure assets, and signals, telecommunications, and electric traction assets. It had a separate set of systems, plans, policies, and procedures to direct work for each asset group. There were no points where information from the separate systems, plans, policies, and procedures could be used together or compared, and it was not clear whether there were dependencies between the different types of assets. This meant it was difficult for Ontrack to co-ordinate work between the asset groups to achieve common outcomes or goals.

3.1 In this Part, we describe:

- why Ontrack needs systems, plans, policies, and procedures to manage the day-to-day work it does on the rail network;
- our expectations;
- Ontrack's systems, plans, policies, and procedures for managing day-to-day work; and
- issues with the systems, plans, policies, and procedures.

Why Ontrack needs systems, plans, policies, and procedures to manage day-to-day work

3.2 The rail network includes different groups of assets. Each group requires specialised skills and work practices to manage them. Some tasks require co-

ordination of materials, equipment, labour, and access to the track to carry out work. There are staff and contractors throughout New Zealand involved in work on the rail network.

3.3 It is important that ONTRACK has clear systems, plans, policies, and procedures in place to manage the day-to-day maintenance and renewal work on the rail network, to ensure that:

- the completed work will contribute to meeting performance targets or long-term goals;
- staff are clear about what tasks are more important and should be done first;
- staff are clear about responsibilities and accountabilities;
- work is carried out to a consistent standard;
- resources are co-ordinated so that planned work can be completed efficiently; and
- staff know what to do when unplanned work arises.

Our expectations

3.4 We prepared detailed criteria that described the systems, plans, policies, and procedures that we expected an established infrastructure manager to have for day-to-day management of maintenance and renewal activities. These are set out in Appendix 1.

3.5 We expected that ONTRACK would have:

- **operational plans** to implement maintenance and renewal programmes;
- **priority setting** to direct work within operational plans;
- **systems to co-ordinate resources** for work in operational plans;
- **processes to deliver work** in operational plans;
- **guidance information and work standards** for those doing the work; and
- **guidance and processes for managing unplanned work**.

ONTRACK's systems, plans, policies, and procedures for managing day-to-day work

Operational plans

3.6 A regime of inspections identifies whether an asset complies with the requirements in ONTRACK's code documents, or whether the asset's condition will limit its ability to perform in the desired way. This information was used to prepare ONTRACK's operational plans.

3.7 Operational plans were specific to each asset group – that is, there were separate maintenance and renewal plans for track assets, structure assets, and signals, telecommunications, and electric traction assets (the three asset groups). Plans for each asset group were prepared independently, followed different formats, covered different timeframes, and had different levels of detail for the tasks required.

3.8 The maintenance plans we reviewed were for short timeframes (often one to two weeks). We were told that this is because of the high level of unplanned work that arises, and to allow flexibility in assigning maintenance staff to assist with renewal work.

3.9 ONTRACK's operational plans for track renewal activities included clear numeric targets for track, sleeper, ballast, and destress[1] renewal work it intended to do within the financial year. We comment on the fit between these operational targets and ONTRACK's corporate performance targets in paragraph 5.37.

3.10 Usually, operational plans provided staff with a clear idea of the work ONTRACK intended to do on particular assets in the short term. However, because there were separate plans for each asset group covering separate timeframes, it was difficult to obtain an overview of all the work ONTRACK intended to perform on the rail network, and what it expected the net result or overall effect of this work to be in both the short and long term.

Priority setting

3.11 ONTRACK has prioritisation methods for:

- track capital work (including renewals);
- track maintenance work (with separate prioritisation methods for defects and faults);
- structures maintenance work;
- signals, telecommunications, and electric traction capital work (minor renewals); and
- signals, telecommunications, and electric traction maintenance work.

3.12 Each prioritisation method had a different basis and included different levels of detail. The methods were not readily comparable. For example, the track capital work prioritisation method identified rail lines that took priority, but the other prioritisation methods did not refer to those priority lines or asset locations.

3.13 ONTRACK's prioritisation methods provided staff with a consistent basis for ordering work for each asset group and helped to ensure that the most important tasks were done first. However, because there was no common policy or principles to guide ONTRACK in setting priorities, it was difficult to determine whether

1 Destressing is the term used to describe work that prevents tracks from buckling in hot conditions.

the work Ontrack was doing on different assets had a common focus or would achieve a common objective or outcome.

3.14 Ontrack staff told us that they based their prioritisation of capital work on structures on safety and risk considerations. This was because so many structure assets were close to the end of their life. Ontrack staff told us that they followed an annual process to plan and prioritise capital work for structure assets. However, because the process was not documented, it was not clear how Ontrack used safety and risk information to set priorities.

3.15 The planned structure renewal tasks we saw were expected to cost between $10,000 and $350,000 each, and some tasks were expected to take several years to complete.

3.16 It would be useful for Ontrack to document the method it uses to set priorities for planned capital work for structures so there is a clear and consistent basis for ordering work.

Co-ordinating resources through systems and procedures

3.17 Ontrack needs labour, equipment, and materials to perform maintenance and renewal tasks. For some tasks, Ontrack also needs to access the tracks when the trains are not running.

3.18 For maintenance and renewal work to be done efficiently, Ontrack needs to co-ordinate work so that labour, equipment, and materials are on site at the right time and that staff can access the track when they need to.

3.19 Ontrack had some mechanisms to co-ordinate labour and equipment resources for planned work. It also had systems in place to identify material requirements for tasks.

3.20 Several Ontrack documents, including reports and meeting minutes, noted concerns with resource availability and the co-ordination of labour resources for particular streams of maintenance and renewal work. Comments included that:

- there were not enough resources to keep up with planned work;
- planned work was not occurring because further resources were required;
- labour resources were being diverted from renewal work to capital upgrade projects;
- upgrade work had diverted staff and management's focus from maintenance;
- the same staff resources could be assigned to work on renewal and upgrade work at the same time; and
- up to two years could pass between identifying work that needed to be done and obtaining the funding and necessary resources to do the work.

3.21 Although Ontrack reports and meeting minutes had identified particular problems with Ontrack's resource allocation, Ontrack had not identified the resources it needed to do all the maintenance and renewal work in operational plans. It had not determined deficiencies in its resource allocation process. In our view, it is important that Ontrack has a clear idea about the resources it needs for the work it wants to do on the rail network. It needs to check whether it has the right level of resources for the different activities it performs, including maintenance and renewal activities.

3.22 We did not review Ontrack's arrangements for assigning staff to upgrade projects. However, the concerns raised in paragraph 3.20 and our observations during the audit led us to question whether the upgrade projects are placing pressure on Ontrack's ability to resource maintenance and renewal work.

Recommendation 1

We recommend that Ontrack determine the resources it will need to carry out the work set out in its operational plans.

3.23 Ontrack needs time to access the track to carry out various maintenance and renewal tasks. On busy lines, the opportunity to carry out work between trains can be limited. Maintenance staff can have difficulty accessing the track to work, and tasks can take longer because staff must wait for work opportunities between trains. In one area, it is estimated that maintenance staff can work on the track for only three to four hours a day because of the frequency of the rail traffic. We were told that difficulties gaining track access were made worse because Ontrack's usual staff work hours coincide with the busiest train times. Ontrack was consulting staff about changing work hours to help it plan work better.

3.24 Ontrack sometimes needs to close a track so that work can occur. Each of the three areas we visited had a different mechanism for seeking agreement from Toll NZ for such a closure. Staff in two of the areas told us that the track access arrangements significantly constrained their ability to perform track maintenance and renewal tasks. Ontrack meeting minutes noted that its ability to access the tracks in Wellington was a significant constraint to achieving its renewals programme.

3.25 Ontrack's staff need enough time to perform necessary track maintenance and renewal tasks, and rail network users need access to the track so they can provide services to their customers. Ontrack and rail network users need to understand this dynamic so they can determine an optimal solution. Working towards an optimal solution, and awareness of the necessary constraints, may be critical to

rail network users. For example, information about the dynamic may help urban passenger transport providers plan services they intend to provide in the longer term.

3.26 KiwiRail has approached the problem by consulting with staff about work hours. However, in our view, this is looking at only part of the problem. KiwiRail needs to first clarify the extent of the constraints on track access and consider the options for managing those constraints.

Recommendation 2

We recommend that KiwiRail clarify the extent of constraints on track access and consider the options for managing those constraints.

Delivering the work set out in operational plans

3.27 To deliver work in operational plans, different people need to complete tasks in a certain sequence. For example, work on a bridge may require a geological assessment, obtaining a resource consent, preparing engineering drawings, and the tendering and awarding of a contract for the physical works.

3.28 Clear information about processes or mechanisms for the work in operational plans enables that work to be consistent and efficient. Setting out clear roles, responsibilities, and information requirements for each part of the service delivery mechanism means it is clear what tasks should occur when, who needs to do them, and what information is required.

3.29 In 2007, KiwiRail mapped out the various processes it was following for managing track assets, structure assets, and signals, telecommunications, and electric traction assets. This work had helped document how work in operational plans was delivered. It included some roles and responsibilities for tasks, and identified information that needed to be prepared and handed over at various points in the process.

3.30 KiwiRail had used the process mapping work to identify areas where it could streamline processes and improve performance. This is good practice.

3.31 The work KiwiRail has done to map processes is considerable and useful. It will help provide consistency in the way KiwiRail plans and performs various maintenance and renewal tasks. However, some parts of the processes were not documented or were unclear. In our view, KiwiRail needs to complete its process mapping so it is always clear how work should be done, who is responsible for doing it, and what information is required for it.

Guidance information and work standards

3.32 Managing rail network assets is complex. The maintenance and renewal tasks that need to occur are many and varied. Tasks often require a high degree of precision and have specific technical requirements.

3.33 ONTRACK has controlled code documents for each asset group. The code documents are part of ONTRACK's safety system. They set out work standards and include guidance information. Information within code documents is detailed and covers a wide range of work activities. This information is useful and important because it means that staff and contractors working on the rail network are clear about what is expected. It also helps to ensure that physical work on the asset is done to a consistent standard.

3.34 The code documents are an important part of ONTRACK's asset management system because they set out asset inspection regimes and how quickly corrective action must be taken to address any identified faults or defects. Many of ONTRACK's operational plans are based on this information.

3.35 At the time of our audit, many of the code documents were overdue for review by between two and eight years. In some instances, information about responsibilities within the code documents was out of date. Because these are important documents and drive much of ONTRACK's maintenance and renewal work, we consider that ONTRACK needs to keep these code documents up to date.

Recommendation 3

We recommend that ONTRACK update the code documents that are overdue for review.

Managing unplanned work

3.36 ONTRACK had guidance material and procedures on how unplanned work should be dealt with. This included a callout system where problems were logged centrally and then passed on for action by staff in the field.

3.37 Many staff told us that unplanned work (including callouts) significantly affected the amount of planned maintenance work they could do.

3.38 ONTRACK had identified some problems with its procedures for unplanned work, and was consulting staff about options to address those problems. ONTRACK told staff that "there are currently too many callouts" and sought the views of staff on ways to reduce the number of callouts and how they can be managed.

Issues with Ontrack's systems, plans, policies, and procedures for managing day-to-day work

Nature of Ontrack's day-to-day maintenance and renewal work

3.39 The way Ontrack managed day-to-day maintenance and renewal work was reactive. Ontrack identified problems through inspections and used this information to plan maintenance and renewal work, often on a short-term and flexible basis. For example, maintenance work was planned one to two weeks ahead. Staff told us that planned maintenance work was often disrupted by the need to perform unplanned work.

3.40 Performing work on a reactive basis means Ontrack relies heavily on inspections to identify problems before they worsen or lead to failure. The reactive approach also means that decision-makers are required to make accurate judgements about how quickly problems need to be fixed. Further, because problems are sometimes addressed urgently, it is difficult to determine whether work has been done using the most effective long-term solution.

3.41 It is likely that this approach has resulted from Ontrack's need for a strong operational focus since gaining responsibility for the rail network, and because there is no long-term plan to direct work on the rail network.

3.42 In Part 5, we note that Ontrack has started preparing a long-term plan. We expect Ontrack to work out the most cost-effective balance of preventative and reactive maintenance, renewal, and upgrade activities it needs to do, so that the rail network performs at the desired level for a specified period. Ontrack will also need to ensure that there is a link between the long-term plan and the systems, plans, policies, and procedures for managing day-to-day work, so that solutions identified within the long-term plan can be implemented.

Separate systems, plans, policies, and procedures for managing assets

3.43 Ontrack has a separate set of systems, plans, policies, and procedures for each asset group. This may be because the asset groups are significantly different from one another and require different management techniques and different technical expertise. However, there are no points where information from the separate systems, plans, policies, and procedures can be used together or compared. For example, there is no common framework for directing work priorities, comparing priorities between the three asset groups, or looking for common efficiency gains for processes.

3.44 It is not clear whether there are dependencies between the different types of assets and how Ontrack identifies and manages such dependencies. This means it is difficult for Ontrack to co-ordinate work between the asset groups to achieve common outcomes or goals.

3.45 It can be difficult to draw together, or adopt similar management practices, for different asset groups. Care needs to be taken in carrying out this work, so that critical information or necessary management practices are not overlooked. However, infrastructure managers need to have a clear picture of how the "parent asset" – in this instance the rail network – is being managed in both the long and short term, and how the individual activities and performance of asset groups contribute to this. At present, this is not clear for the rail network.

3.46 Ontrack needs to consider:

- how work done within asset groups contributes to overall objectives, outcomes, or priorities it has for the rail network, and whether this is clear; and
- the extent to which the individual systems, plans, policies, and procedures for managing different asset groups need to align with each other to facilitate this.

Recommendation 4

We recommend that Ontrack identify the critical points where the systems, plans, policies, and procedures for the three asset groups need to align to ensure that it can co-ordinate work to meet common outcomes and goals.

Part 4
Demonstrating that plans and procedures are followed

Key messages

Overall, Ontrack did not have effective systems in place to demonstrate that plans and procedures were followed.

In some instances, Ontrack was not keeping up with planned work, which in turn could create further work. Ontrack did not have an overview of its planned work, or the overall progress it was making with its planned work. Therefore, we could not determine whether Ontrack was close to keeping up with its planned work or whether the amount of overdue work was increasing.

We had concerns about Ontrack's systems for providing assurance that work standards were followed.

4.1 In this Part, we describe:

- the importance of demonstrating that plans and procedures for day-to-day work are followed;
- our expectations; and
- Ontrack's systems for demonstrating that plans and procedures for day-to-day work are followed.

The importance of demonstrating that plans and procedures for day-to-day work are followed

4.2 Systems for demonstrating that plans and procedures are followed are an important means of informing an organisation about the progress it is making, and providing assurance.

4.3 Reviewing progress against plans provides feedback about whether work will be done within expected timeframes and budgets. It may provide an early warning of problems or the particular outcomes that can be expected. This information can be useful for further planning. It provides performance information for management decisions, and can be used to identify areas for improvement.

4.4 Demonstrating that procedures are followed may provide assurance that there is legal compliance, critical steps have occurred, or that particular considerations have been taken into account when performing tasks. It may also confirm whether a task has been completed or not.

4.5 Ontrack has code documents that set out technical standards and specifications for the rail network. The code documents are part of Ontrack's safety system. It is important for Ontrack to have assurance that it has followed the technical standards and specifications in code documents.

Our expectations

4.6 To set our expectations, we described the review and assurance mechanisms that we expected an established infrastructure manager to have in place to measure and review progress against operational plans and to show that procedures are followed. We set out our expectations in Appendix 2.

4.7 In Part 3, we discussed the operational plans and procedures Ontrack had for managing day-to-day maintenance and renewal work on the rail network. We expected that Ontrack could demonstrate that the work in operational plans was carried out, and that procedures had been followed.

Demonstrating that work in operational plans was carried out

4.8 In paragraphs 3.6-3.10, we noted that Ontrack had various operational plans for maintenance and renewal activities. Ontrack reviewed progress against these plans in several different ways.

4.9 Ontrack had detailed internal reporting and analysis of progress against its planned track renewals work. This provided clear information about actual progress against operational plan targets for various track renewal tasks, including trend information. This enabled Ontrack to more accurately predict whether it would achieve all the track renewals work within its operational plans, and whether it would do so within the planned budget.

4.10 Ontrack recorded whether particular types of tasks had been completed within timeframes that were specified in code documents. It did this differently for different types of tasks. Several of the reports we reviewed showed work overdue for completion. Some track maintenance and signals, telecommunications, and electric traction tasks were significantly overdue.

4.11 It was difficult to tell what progress Ontrack was making against planned maintenance and renewal activities where there was work overdue for completion. This was partly because work that was not completed within the required timeframe could create further work. For example, if work on a structure was not completed within a specified timeframe then a further inspection had to be performed to check that the structure was still suitable for use. Delaying work could also result in an asset's condition worsening, with more work required to fix it.

4.12 Ontrack looked at trend information to determine whether it was reducing the amount of outstanding work for some of its work activities. The information was reported differently for different activities. In many instances, the information helped staff in Area Offices to see whether they were showing an improvement in completing particular types of tasks.

KiwiRail's overview of progress against planned work

4.13 Although KiwiRail had various reports about progress or performance for particular planned work activities, it did not have a clear picture of the overall progress it was making against planned work activities. There were several reasons for this:

- The short-term and flexible nature of KiwiRail's operational plans made it difficult to get an overview of the work KiwiRail intended to do in the first place.
- Further work could be created if planned work was not completed within a specified timeframe.
- KiwiRail had not documented the relative size and scope of the different types of planned maintenance and renewal activities (see paragraph 5.61). This made it difficult to tell whether the extent of overdue work for particular activities was of concern.

4.14 Our review of KiwiRail's progress reporting showed that, for some activities, KiwiRail was not keeping up with planned work, which in turn could create further work. However, because KiwiRail did not have an overview of planned work, or progress it was making against planned work overall, we could not determine whether KiwiRail was close to keeping up with planned work or whether the amount of overdue work was increasing over time. If KiwiRail held this information, it could use it to optimise resource allocation or to determine whether it needed further resources.

4.15 We discuss the need for KiwiRail to align information between corporate and operational plans, and the reporting associated with the plans, in paragraph 5.37.

Demonstrating that procedures were followed

Code documents

4.16 We noted in paragraphs 3.33-3.35 that KiwiRail had code documents setting work standards and specifications for work on each asset group. The code documents formed part of KiwiRail's safety system.

4.17 KiwiRail had various controls in place to check that the work standards within the code documents were complied with. The controls included inspections, audits, and mechanical testing. KiwiRail had reports associated with some of the controls.

Track assets and signals, telecommunications, and electric traction assets

4.18 We identified a number of problems with KiwiRail's controls and associated reports for track assets and signals, telecommunications, and electric traction assets.

4.19 Code compliance reports for track assets and signals, telecommunications, and electric traction assets were prepared by OIL staff, and required the signatures of the Area Manager and the Regional Manager before being forwarded to ONTRACK's Head Office.

4.20 It was unclear what these reports provided assurance about, or what accountabilities the Area Manager and Regional Manager had in signing them. The wording in the report sign-off areas was ambiguous, and the purpose of the reports was not stated.

4.21 One track compliance report we saw was missing a considerable amount of information. It noted that a number of outstanding actions to comply with code documents – the earliest from 2002 – had not been addressed because further staff resources were required. Despite the outstanding information and actions, it had been signed by both the Area Manager and Regional Manager. This raised questions about whether staff understood their accountabilities for code compliance reporting, and how seriously they took them.

4.22 The compliance reports for track assets and signals, telecommunications, and electric traction assets were prepared quarterly. Staff noted that the track compliance report took some time to prepare because they needed to compile detailed information within the reports from a number of systems.

4.23 In our view, ONTRACK needs to review its code compliance reporting requirements so the purpose and accountabilities for the reports are clear and well understood. ONTRACK has done a small amount of work to address aspects of this.

Structure assets

4.24 The controls for checking that structures work complied with code documents relied on the Structures Inspector for each area checking the condition of structure assets, either to detect whether work needed to be done or to check whether work had been done to the required standard. The Structures Inspectors had guidance material to help with their inspection and could consult with Head Office engineering staff. However, ONTRACK did not have formal controls to check or provide assurance about the quality of work carried out by the Structures Inspectors.

4.25 ONTRACK told us that its Structures Inspectors are competent and experienced in assessing the condition of materials used for the construction and repair of structure assets. However, the consequences of a Structures Inspector making a poor judgement call or failing to detect a problem in the integrity of a structure asset could be significant. In our view, ONTRACK needs to be very confident about the controls it has in place.

Recommendation 5

We recommend that Ontrack clarify and communicate the purpose and accountabilities for code compliance reports, and consider whether existing controls for structures provide enough assurance that work standards in code documents have been complied with.

Templates for following processes

4.26 We noted in paragraphs 3.27-3.31 that, in 2007, Ontrack mapped the processes for carrying out work described in its operational plans.

4.27 Ontrack had prepared standardised information templates for some points in the processes it had mapped. The templates should help staff carry out their tasks and check that work has complied with Ontrack's process requirements. The templates were introduced shortly before our audit work started, and it was too early to determine whether Ontrack was using them.

4.28 In paragraph 3.31, we described how some parts of processes were not documented or were unclear. We noted that Ontrack needs to complete its process mapping so it is always clear how work should be done, who is responsible for doing it, and what information is required for it. It was not clear whether Ontrack intended to do further work to document the processes fully, or to put mechanisms in place to check that processes were followed.

Part 5
Long-term planning for the rail network

Key messages

Ontrack had started to prepare a long-term plan for the rail network. Preparing a long-term plan for the rail network is a significant and complex task. Ontrack had not determined the extent of work required or how it would be resourced. It did not have project management disciplines in place to ensure that the plan preparation would occur in a logical and timely way.

Ontrack did not have all the information or systems it needed to prepare a long-term plan. It was doing work to address some of these deficiencies. However, it had not identified the fit between these pieces of work and the preparation of the long-term plan.

Effective asset management relies on clear service levels. The service levels and performance measures for the rail network were not clear. Ontrack told us that negotiations with Toll NZ had precluded agreement about service levels. Toll NZ told us that they disagree with this view.

Until clear service levels are established and there is clear, accessible information about the state of the rail network, Ontrack will not be able to determine optimum strategies for managing the rail network, or have a clear idea about how much this will cost.

5.1 In this Part, we discuss:

- why long-term planning is important;
- our expectations;
- Ontrack's long-term planning; and
- Ontrack's systems, plans, policies, and procedures to support long-term planning.

Why long-term planning is important

5.2 Many of the assets making up the rail network are long-life assets. To manage the rail network effectively, there needs to be a long-term plan with supporting systems, plans, policies, and procedures. A long-term plan sets out what the network is expected to deliver, how the assets are going to be managed cost-effectively over time, and what the financial and other implications of this are.

5.3 Integrating information from throughout an organisation into a long-term plan enables that organisation to highlight important issues and set a strategic direction for managing those important issues. It provides for management decisions to be made about particular activities and for resources to be co-ordinated in an informed way.

5.4 A long-term plan can demonstrate that there is a logical basis for decision-making. As such, it can provide for improved governance and accountability.

5.5 A long-term plan is a crucial planning tool, and needs to be underpinned (see Appendix 3) at least by:

- service levels;
- asset information and systems;
- information about planned physical work; and
- financial forecasting.

5.6 Long-term planning, particularly that used by decision-makers and for external consultation, should include specific information about planned physical work and forecast spending for at least the next 10 years. The policies and strategies that underpin it should look decades ahead when considering the implications of the age of the assets, the condition of the assets, and the costs of managing them.

5.7 Ontrack does not have a legal obligation to prepare a long-term plan for managing its assets. However, the Rail Network Bill 2005[1] proposes that Ontrack prepare a Rail Network Development Plan each year and include it within its Statement of Corporate Intent. The Rail Network Development Plan must set out a statement of Ontrack's priorities for the rail network during the next 10 years, including a 10-year forecast of proposed capital spending.

Our expectations

5.8 We described the long-term planning we expected an established infrastructure manager to have for managing their assets (see Appendix 3).

5.9 As discussed in paragraph 1.14, Ontrack is not an established infrastructure manager. It had been responsible for the rail network for about three years when we carried out our audit. We reviewed Ontrack's performance against our expectations, to give us a clear idea of the progress Ontrack had made.

5.10 We did not necessarily expect Ontrack to have completed its long-term plan. However, we expected Ontrack to have identified the work it needed to do to prepare one.

Ontrack's long-term planning

5.11 Ontrack did not have a long-term plan for managing the rail network's assets. In 2006, Ontrack had identified that it needed a long-term plan and started to prepare one.

1 In 2005, a Rail Network Bill was introduced into Parliament proposing to make Ontrack a Crown entity. The Bill sought to align Ontrack's objectives and functions with the New Zealand Transport Strategy. In June 2006, the Government Administration Committee reported back to Parliament recommending that the Bill be passed, but with some amendments. No further progress has occurred.

5.12 Ontrack had not clearly defined the tasks it needed to do to prepare a long-term plan for managing the rail network assets, and had not identified whether it had all the necessary information to prepare one. Ontrack needs to identify this work so it can sequence tasks – as some tasks depend on others occurring first. Some of the tasks that Ontrack needs to do to prepare a long-term plan will take time, so organising the sequence of tasks is important for the work to occur efficiently.

5.13 Ontrack had not identified when it expected to complete the plan, or how it would record its progress. It had not assessed what resources it would need to prepare the plan or whether those resources were available. It was not clear who was accountable for preparing the plan, or the importance Ontrack put on having a long-term plan in place to direct work on the rail network.

5.14 Some decisions about how to formulate the long-term plan, and the strategies adopted within the plan, may need to be agreed at a senior management or board level. Ontrack needs to identify when and how this will occur for efficient plan preparation.

5.15 Ontrack recently prepared guidance material for staff with project management roles. This information would help staff apply project management disciplines in preparing the long-term plan and the elements underpinning it.

Recommendation 6

We recommend that Ontrack determine the extent of work required to prepare a long-term plan and how it can be resourced, put project management disciplines in place, and have senior management staff actively sponsor the work that needs to be done.

Ontrack's systems, plans, policies, and procedures to support long-term planning

5.16 Overall, the systems, plans, policies, and procedures Ontrack had to support long-term planning – and the work it was doing to put these in place – had occurred as isolated pieces of work. Ontrack had not identified the fit between these pieces of work and the preparation of the long-term plan.

5.17 Often, the work Ontrack was doing was specific to one asset group. The separate systems, plans, policies, and procedures may not necessarily result in information that can be used in a consistent way to inform a long-term plan.

5.18 We spoke with several staff about the work Ontrack was doing to prepare a long-term plan for the rail network assets. They provided conflicting or confused accounts about who was responsible for delivering particular work that would support the preparation of a long-term plan, the timeframes for the work, and whether the work had started.

Recommendation 7

We recommend that Ontrack clarify and convey to staff how their work both supports and is driven by the long-term plan.

Service levels and performance targets

5.19 Service levels describe the quality of services provided by an asset, while measures and targets describe how performance will be assessed and the level of performance sought.

5.20 Service levels are critical to long-term planning because they collectively describe the outcomes the asset manager is seeking to achieve. The discipline of developing and integrating information about the assets, management programmes, and expected costs through long-term planning helps the asset manager to work out the most cost-effective way of achieving these outcomes.

5.21 There are various reasons for setting service levels – for example, to meet legal or contractual obligations, or to provide transparency and accountability to stakeholders.

5.22 Ontrack had done some work to prepare service levels. It also had some performance targets. We reviewed the service levels and performance targets to see how they directed work on the rail network.

Preparing service levels under the National Rail Access Agreement

5.23 The National Rail Access Agreement requires Ontrack and Toll NZ to use their best endeavours to agree service levels, and for service levels to be based on national rail objectives for:

- providing a viable nationwide rail service;
- safety (including third party safety);
- operating standards and efficiency;
- customer satisfaction; and
- facilitation of other (permitted) operators' operations on the rail network.

5.24 Ontrack told us that negotiations with Toll NZ had precluded agreement about service levels. Toll NZ told us that they disagree with this view.

5.25 Ontrack had prepared "performance operating parameters" as part of its work to fulfil its obligations to prepare service levels under the National Rail Access Agreement.

5.26 It was not clear whether the performance operating parameters were intended to achieve objectives in the National Rail Access Agreement, or to provide for other outcomes or objectives. For example, it was not clear whether the performance operating parameters sought to achieve any safety outcomes.

5.27 The performance operating parameters relied on, and included references to, information in separate documents. Information in these separate documents could change independently of, and therefore effectively change, the performance operating parameters.

5.28 There were no clear targets and measures for the performance operating parameters.

5.29 Ontrack did not report or evaluate its performance against the parameters. Therefore, it was difficult to determine whether Ontrack was managing the rail network to meet the parameters, or what Ontrack considered its accountability for meeting the parameters was.

Time lost because of temporary speed restrictions

5.30 Temporary speed restrictions require trains to travel slower than the rail network provides for because of a fault or a problem with the line. Ontrack had targets for minimising the delays to trains caused when temporary speed restrictions were in place. It was not clear what the basis of the targets was – whether they were expected to achieve particular objectives or outcomes.

5.31 Each week Ontrack measured and reported on its performance against the targets. The reports were detailed, and included information on the reasons and accountabilities if targets were not met.

5.32 Ontrack staff closely reviewed the information within the reports. It was clear that the time lost because of temporary speed restrictions, and the reporting of that information, were a key performance measure for Ontrack.

5.33 We had some concerns about using the time lost because of temporary speed restrictions as a single measure of performance. It inherently focuses on short-term improvements. Without a long-term plan, or service levels and measures that reflect long-term targets, the focus on short-term improvements means that work may not be directed toward areas where it will realise the most benefits over time.

5.34 Ontrack's performance in, and accountability for, time lost because of temporary speed restrictions were highly visible to staff. This is commendable. However, if other performance measures or outcomes sought are not as visible, staff may not have a balanced approach to meeting the outcomes that Ontrack seeks. For example, reports on whether Ontrack was meeting the requirements in code documents (which form part of its safety system) were produced quarterly, were not always prepared to a high standard, and were reviewed by far fewer staff. This raises the question of the relative importance Ontrack places on reducing the time lost because of temporary speed restrictions and complying with code requirements, and how well staff understand that relative importance.

Corporate targets for renewal work

5.35 Ontrack had three sets of targets for planned physical work during 2007/08, including renewal work. It had separate reports of performance against each set of targets. The three sets of targets had a different basis from each other. Information about the targets is set out in Figure 6.

Figure 6

Targets Ontrack had for planned physical work during 2007/08, including renewal work

	Statement of Corporate Intent	Annual Report	Operational Plans
Basis for the targets	Renewal work (excludes upgrades) Level crossing upgrades	All physical work on the rail network (including upgrades)	Unclear
Rail laid	35km rail laid	40km new rail laid	22.5km rail laid
Sleeper	90,000 new sleepers laid	123,000 new sleepers laid	122,000 sleepers laid (including breakdown by sleeper type)
Level crossings	Minimum 6 level crossing upgrades	10 level crossing upgrades	100 level crossing upgrades
Line destress	-	100km line destressed	120km line destressed
Bridge replacement	-	560m of bridges replaced	-
Ballast renewal	-	-	70,075m^3 ballast renewed.
New turnouts	-	-	35 new turnouts
Performance against the targets is reported within	Annual report (same year)	Annual report (following year)	Operational plans

5.36 The sets of targets and reports against them were inconsistent. It was difficult to determine:

- the relationships between the three sets of targets and reports; and
- KiwiRail's key performance measures and targets for planned physical work.

5.37 KiwiRail had not identified the links between corporate and operational planning and reporting for the rail network. Part of the work KiwiRail needs to do in preparing a long-term plan is to identify links between the long-term plan, corporate and operational plans, and the reporting associated with them. This would help KiwiRail to ensure that information in long-term plans is in a suitable format to inform corporate and operational planning, and that performance targets and associated reporting are clear and aligned.

Concluding remarks about service levels and performance targets

5.38 KiwiRail has various obligations to describe how it intends the rail network to perform. For example, it must prepare service levels under the National Rail Access Agreement, and set out objectives and targets within its Statement of Corporate Intent. Paragraphs 5.23-5.35 described the various ways KiwiRail had sought to do this. The varied approaches and lack of alignment between some of the targets and performance reporting made it difficult to determine what KiwiRail intended to do on the rail network, and whether it was doing it.

5.39 It was not clear whether KiwiRail had collectively considered its various obligations for describing how the network would perform. Doing so would ensure that the various service levels, performance targets, and measures were consistent with each other. It could help KiwiRail to streamline the performance information it collects and reports.

Recommendation 8

We recommend that KiwiRail provide clear and consistent information about service levels and performance targets that KiwiRail intends to meet, and state whether these have been agreed with external parties.

Asset information and information systems

5.40 Long-term planning for infrastructure assets requires different types of information, including information about assets, risks, and constraints. Information about assets is important at many levels of the organisation. For example, senior managers may need information about the overall condition or value of the assets, while operational staff may need specific information about the age or condition of assets they are responsible for.

5.41 Information about risks and constraints helps decision-makers focus on the areas of greatest importance.

5.42 Asset managers may also use information from demand forecasts to identify areas where they can expect risks or constraints in the future.

Asset information

5.43 Information about assets, particularly the condition of assets, is critical for asset management planning. This information, together with information about service levels, is needed to identify the gap between actual and desired asset condition, so the best way of managing the asset over time can be determined.

5.44 ONTRACK had only some of the information it needs about rail network assets. It did not have a clear set of information about the condition of signals, telecommunications, and electric traction assets.

5.45 ONTRACK was limited in the way it could use the asset information it had. In some instances, information was stored in a variety of formats and locations, and was difficult to access. In at least the short to medium term, staff may not be able to use the data they hold to direct long-term planning.

5.46 Information that ONTRACK held about rail network assets, including information about the condition of assets, was separate for each asset group. ONTRACK was unable to aggregate asset information about the three groups. For example, if ONTRACK wanted to know what assets were in a particular location or along a certain line segment, or what condition the assets were in, it would need to source this information separately for each asset group. It might not be able to collate the information in a useful way. Further, it may be difficult for ONTRACK to find the information it needed about the signals, telecommunications, and electric traction assets at that location.

5.47 ONTRACK had identified some problems with data accessibility for each asset group. It had formal projects to improve the asset information system for structures and to build an asset information system for signals, telecommunications, and electric traction assets. ONTRACK considered problems accessing track data to be less significant and did not have a formal project to address them.

5.48 It will take some time for ONTRACK to put asset information systems in place, so there may be a delay in its ability to retrieve the necessary information in order to formulate clear maintenance and renewal programmes.

Recommendation 9

We recommend that Ontrack complete work on its asset information systems so the information is up to date and able to be readily used for long-term planning and decision-making.

Risk management

5.49 Ontrack had a principal risk register for the rail network. The register provided an overview of the most important risks that Ontrack had identified for the rail network, and specified controls and planned actions to manage those risks.

5.50 Ontrack had other detailed information about risks within various risk management frameworks. In some places, it was easy to see how the information fed into the principal risk register. However, this was not always the case.

5.51 Ontrack had not identified the rail network's critical assets. Information about critical assets helps inform approaches to asset management. For example, if there are significant consequences of particular assets failing, then Ontrack may need specific risk management strategies or plans.

Constraints

5.52 Ontrack did not have clear information about constraints on the rail network. It had identified various constraints within its documents and reports. For example, within one document it had identified that tunnel clearances form constraints on different lines. As described in paragraph 3.24, Ontrack had identified that its ability to access the tracks in Wellington was a significant constraint to achieving its renewals programme.

5.53 The constraints work had occurred in isolation. Ontrack had not pulled the information together, nor had it comprehensively reviewed constraints on the rail network.

5.54 Comprehensive information about constraints will set out the limits of the rail network's performance with the existing assets. This will assist decision-makers to target major problem areas first.

Demand forecasting

5.55 Ontrack did not have a clear method for demand forecasting or detailed demand forecasts. However, Ontrack had a view on where there were opportunities to expand the rail network or increase its capacity. Ontrack formed this view based on commercial assumptions.

5.56 Ontrack told us that it needs information about Toll NZ's business plans to forecast future demand for the rail network, because Toll NZ is the largest provider

of freight and passenger services on the rail network. Similarly, Toll NZ may need information about Ontrack's activities. The National Rail Access Agreement recognises this, and requires Ontrack and Toll NZ to exchange certain types of information.

5.57 Ontrack told us that that the track access charge negotiations made it difficult to consult with Toll NZ on its long-term business plans.

5.58 Demand forecasts, including the information that underpins them, are essential to plan for the rail network. It is important that any future arrangements for the rail network enable Ontrack to carry out detailed demand forecasting.

5.59 There is always uncertainty in predictions about the future. Because the consequences of an error in demand forecasting can vary in size, it is important that Ontrack's demand forecasting work includes an assessment of the risks and sensitivities associated with the demand forecasts.

Planned physical work

5.60 Ontrack regularly performed various maintenance and renewal activities. It also had several projects to upgrade parts of the rail network.

5.61 Ontrack had not documented the scope and nature of those activities. It was difficult to determine the different types of maintenance and renewal work it did, or the relative size and scope of the different maintenance and renewal activities – and whether this was expected to change over time. It is not clear how the upgrade work Ontrack was doing fitted in with maintenance and renewal activities.

5.62 Without information about maintenance and renewal activities, and how they fitted in with upgrade projects, it was difficult for us to have a clear picture of how the rail network was being managed, or how Ontrack intended to manage the network over time.

5.63 In our view, Ontrack needs to prepare clear information about planned physical works, including maintenance and renewal work programmes and upgrade projects. This will enable Ontrack to review whether it has the right mix of work to achieve long-term outcomes and objectives, and to identify where it can optimise work programmes or activities. It will also help Ontrack to determine what the expected costs of planned work will be over time.

5.64 After our audit fieldwork, Ontrack prepared programmes for various aspects of capital spending for bridge assets. It is not clear whether Ontrack intends to follow these programmes. However, it is a start in identifying what work Ontrack

may need to do in the future and will be useful if Ontrack needs to prepare a Rail Network Development Plan, as proposed in the Rail Network Bill.

5.65 Ontrack had various regimes for inspecting its assets. It had documented many aspects of the regimes and, in some instances, had detailed information about planned inspection work for years to come.

5.66 Inspection regimes were a significant factor in workload peaks at an area level. Setting out information about inspection regimes, including the required frequency and workload implications for staff, could help Ontrack identify whether it could better phase some inspection programmes. It would be useful for Ontrack to include information about inspection regimes within a long-term plan.

Financial forecasting

5.67 Ontrack has a statutory obligation to set out expected expenditure for the next three years within its Statement of Corporate Intent. It has a contractual obligation under the National Rail Access Agreement to forecast expected cash expenses for a three-year period.

5.68 Beyond meeting these obligations, Ontrack's financial forecasting was limited. Ontrack had been gradually refining information it held about anticipated capital works for structures, to help it identify work and capital expenditure requirements for the next four years.

5.69 In our view, forecasting three to four years ahead does not provide enough certainty about the future cost of managing the rail network, or that the network can be managed effectively without this information. For example, we noted in paragraph 2.18 that Ontrack prepared an assessment of the state of the rail network in 2005. The assessment reported that 900 bridges (about half of all the bridges) were 80 to 90 years old – which is close to the end of their average estimated life of 100 years. The assessment did not set out the financial implications but noted:

> *... the 'bow-wave' of life expired structures may not hit in this Forecast period but it cannot be ignored.*

5.70 Ontrack's bridges were valued at $1 billon in total. The need to replace or upgrade 50% of these structures is likely to have a significant financial effect for Ontrack in the foreseeable future.

5.71 Longer-term financial forecasting for all rail network assets would provide an early indication of large spikes in expected capital spending. Ontrack would have more time to determine the most cost-effective way to manage the assets now and over time.

5.72 The bridge programme information Ontrack had prepared after the fieldwork for our audit sets out information about expected capital costs of the programmes for the next 11 to 27 years. It is not clear how far the proposed work in these programmes will go toward meeting the expected "bow wave" of structures to be upgraded or replaced. However, this information is a start in determining the work Ontrack will need to do on the assets and the costs associated with this. Ontrack will need to collect information about expected costs associated with other activities to have a clear picture of expected future costs.

Recommendation 10

We recommend that Ontrack gather information about expected long-term costs for the rail network.

Appendix 1
Expectations for managing day-to-day maintenance and renewal work

For the purposes of our performance audit, we set out our expectations for Ontrack for managing day-to-day maintenance and renewal work on the rail network. Our expectations were:

Detailed performance expectations
1.1 Operational plans • There are operational plans to implement maintenance and renewal programmes from the asset management plan. • It is clear what work is scheduled to occur over the time period the operational plan covers.
1.2 Prioritising work • It is clear how maintenance and renewal work is prioritised. • Prioritisation takes account of asset condition information and is informed by information from the risk framework. (Links to 3.5 in Appendix 3).
1.3 Resource allocation • It is clear what and how resources are allocated to implement operational plans. *For example: equipment, materials, staff time and budget, and track closures*.
1.4 Service delivery mechanisms • There are clear mechanisms for work items or groups of work items in operational plans to be delivered. *For example, internal service level agreements, external contracts, and service delivery processes*. • It is clear where responsibilities and accountabilities sit within the service delivery mechanism. • It is clear what information flows need to occur as part of the service delivery mechanism. *For example, the asset planner may need to provide information about the asset condition or resource management planning requirements, or the service delivery manager may be responsible for advising a customer when work is completed and speed restrictions can be lifted*.
1.5 Guidance information • Those delivering the maintenance and renewal work have the information they need to do the work. *For example: engineering drawings, material specifications, condition of the asset to be maintained or renewed*.
1.6 Work standards • There is detailed information (*for example specifications, standards, guidance, procedures*) so those doing operational tasks know the standard of work that is expected.
1.7 Unplanned work • There is guidance and processes to direct when and how unplanned work should occur.

Appendix 2
Expectations for following plans and procedures

For the purposes of our performance audit, we set out our expectations of how ONTRACK would follow its plans and procedures for managing day-to-day maintenance and renewal work on the rail network. Our expectations were:

Detailed criteria for demonstrating that plans and procedures for day-to-day work have been followed *(bracketed numbers indicate the link between these criteria and criteria in Appendix 1)*
2.1 Work in operational plans is done (1.1) • The status/progress of work items in operational plans is recorded. • Progress against operational plans is reviewed.
2.2 Service delivery mechanisms are followed (1.4)
2.3 Work standards are followed (1.6) • There are systems to check that work is done to the required standards or specifications.

Appendix 3
Expectations for long-term planning by an established infrastructure manager

For the purposes of our performance audit, we set out our expectations for an established infrastructure manager. We do not consider Ontrack to be an established infrastructure manager as it has been responsible for the rail network for a relatively short time (about three years at the time of our audit). Our expectations were:

Overarching criteria
The organisation has an asset management plan for the rail network, and uses it as a key planning tool.

The asset management plan includes information about:

- the plan's purpose and fit within the organisation's documents and processes;
- description of assets;
- levels of service;
- planned work;
- financial forecasts;
- risk management; and
- performance evaluation and improvement.

Detailed criteria for long-term planning
Systems, plans, policies, and procedures covered in the asset management plan, or that underpin it.

3.1 Plan purpose and fit within the organisation's documents and processes

- The date the plan was approved and the time period the plan covers is clear.
- Plan objectives are stated.
- There is a clear link between asset management planning and the organisation's strategic/corporate goals.
- There are clear links between the asset management plan and business planning.
- There are clear accountabilities and responsibilities for asset management.
- There is a process for preparing the asset management plan.
- The organisation consults with key stakeholders as part of its asset management planning.
- There is a description of key asset management processes and systems.

3.2 Description of assets

- The organisation holds a description of its assets.
- It holds information on asset condition, performance, utilisation, capacity, and financial value.
- It can aggregate and disaggregate the information it has for assets.

3.3 Levels of service

- There are clear proposed levels of service for the asset. The length of time over which these services will be delivered is defined.
- Existing levels of service are known.
- There is a clear basis for the proposed levels of service.
- There are clear performance targets and measures for the levels of service.

3.4 Planned physical works

- Planning assumptions are listed.
- There is information on the degree of confidence of data reliability underpinning the plan (for example, information held on assets, accuracy of demand forecasts).

Demand forecasting

- There are details of demand forecasts, including the basis on which they are derived.
- Parts of the network where there are known or expected to be constraints are identified.

Upgrade work

- There is analysis of upgrade options available and details of decisions made to meet the levels of service.
- There is a description of the programme of planned upgrade works.
- A prioritisation methodology or policy for upgrade work is described.

Maintenance and renewal

- There is a description of maintenance and renewal programmes.
- There are maintenance and renewal policies to direct programmes.
- Maintenance and renewal policies, practices, and programmes are based on analysis of the costs, benefits and risks of alternative maintenance and renewal options over the life of the assets.

Condition monitoring

- There are details of condition monitoring policies and programmes.
- There is justification of condition monitoring practices, including evidence that ONTRACK has sought to optimise practices and programmes.

3.5 Risk management

- Critical assets, associated risks, and risk management strategies have been identified.
- There is a risk management framework.

3.6 Financial forecasts

- There are financial forecasts for the planned maintenance, renewal, upgrade, and condition monitoring work.
- The financial forecasts show planned spending for at least the next 10 years.

3.7 Performance evaluation and improvement

- There are clear processes for :
  (a) Reviewing progress against the asset management plan.
  (b) Reviewing and reporting progress against performance targets and measures (particularly targets and measures relating to levels of service).
- There are improvement programmes for asset management processes and techniques.

Detailed criteria for demonstrating that long-term planning has been followed
(bracketed numbers indicate the link between these criteria and criteria in the previous table)

3.8 Reporting against targets and measures (3.7(b))

- The organisation reviews and reports on progress against performance targets and measures.
- The organisation has controls in place to ensure that reviews and reports are complete, accurate, and useful.

3.9 Measuring and evaluating progress

- The organisation reviews its progress against its asset management plan (3.7(a)).
- The organisation evaluates its progress against planned improvement programmes (3.7).
- The organisation measures progress against maintenance and renewal programmes (3.4).

3.10 Policy implementation (3.4)

- It is clear how policies for maintenance and renewal are implemented (3.4).

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