# Strategy for regulation of health and safety risks - chapter 3: Management of change

## Our conclusions on the industry's management of change

The industry is undergoing a particularly active phase of organisational, operational and technological change which requires vigilance during designing, planning and implementation. Whilst we see comprehensive processes on both the mainline and non-mainline, the application is not always as effective as we would expect.

Change is being driven by the need to expand capacity to meet demand and to reduce costs; the opportunities to improve health and safety in conjunction with efficiency are not always being fully realised.

Proposals to lengthen train operator franchises will present opportunities for better innovation and longer-term planning.

Some operators are going through a period of sustained operational change affecting their workforce and ways of working. These changes pose complex challenges and create risks that must be managed carefully to ensure customer and staff health and safety.

The smaller metros, tramways and light rail systems may not all have the capability and resources to apply rigorous change management processes and there is much they could learn from the mainline railway.

## ORR's strategy for the industry's management of change

The focus of our strategy on the industry's management of change will be to:

- ensure duty holders have effective change management arrangements;

- target those areas / aspects of change that can give rise to significant risk and those duty holders where we have evidence of inadequate management of change;

- engage with duty holders at the early stages of designing/planning and make sure that the principles of health and safety by design are properly adopted;

- work to identify major changes in good time and encourage effective risk control;

- use our initial Risk Management Maturity Model (RM3) evaluations to provide a guide for targeting our inspection resource;

- maintain our activities on European developments through working with the Department for Transport (DfT), other member states, the European Union Agency for Rail (ERA) and the industry to apply change management processes such as the Common Safety Method on risk evaluation and assessment (CSM-RA);

- work with the non-mainline railways such as the underground and metro operators to ensure that change is addressed in their respective systems, and working with trade groups where appropriate such as in the heritage and tramway sectors to ensure that guidance and support is available where necessary.

## Summary

The industry continues to go through a period of change and change management is a key enabler to effectively manage safety risks created by change. Our interventions have shown us that the industry is not yet consistently demonstrating excellence in change management. Therefore, we consider this continues to be an area of focus for ORR and the industry.

RM3 enables duty-holders to assess themselves for how well they manage change as well as enabling us to build an overall understanding of duty holders' change management capabilities within their Health and Safety Management Systems.

# Index of issues discussed

# Introduction

1.      Change management processes are the means by which organisations ensure that changes to their organisational structure, assets, roles and responsibilities, the design of their procedures or processes are effectively managed and implemented such that any associated risks are sufficiently managed. If necessary, further control measures are identified and put in place before and after the change is implemented. The degree of effort required to manage the change should be proportionate to the extent and complexity of change.

2.      This chapter covers the basic principles of change management that all duty holders should consider and follow when introducing change into their systems. Whilst it highlights some specific projects, any management of change issues for significant projects, for example level crossings or train control systems, will be dealt with in those chapters. Reference should also be made to the chapter on Health and Safety by Design. This chapter is not intended to be a guide on change management.

3.      Management of change can be broken down into three distinct areas or types for the railway:

a)  **Technical change**: the introduction of new technology, a significant change to existing technology, or introducing existing technology in a new area either by a single operator or to reflect a cross industry change, such as the introduction of new or altered vehicles or train management systems, such as the European Rail Traffic Management System (ERTMS). These changes often require a variety of issues to be addressed ranging from new systems, changes to safety management systems through to extensive new training programmes for operational staff ;

b)  **Operational change**: the implementation of different working practices by railway duty holders, for example the way that train dispatch arrangements are managed or the implementation of a new railway timetable; and

c)  **Organisational change**: for example changes to an organisation's structure or size which, without effective management, may introduce risks to the safety aspects of an operation.

4.      Franchise change can encompass one or more of these elements, often involving amendments to processes and procedures and organisational change, making the use of, and revisions to, risk assessments of significant importance (particularly in respect of new or changed interface arrangements).

5.      The industry is currently in a period of substantive change brought about by internal and external factors including:

•      the need to adapt to increasing demand for passenger and freight traffic;
•      the drive to deliver greater efficiency by Network Rail and the wider industry; and
•      the introduction of a number of enhancements to networks, both under Control Period plans and through the building of Crossrail and High Speed 2.

6.      Legislation contains provisions prescribing how change must be managed by duty holders. The Railways and Other Guided Transport. Systems (Safety) Regulations 2006. (ROGS) define the processes which much be followed in order to place into service new or altered subsystems safely. These change processes are required by:

•      interoperability authorisations under the Railway Interoperability Regulations (RIR) 2011;
•      CSM-RA on risk evaluation and assessment[1]. Since 1July 2012 this CSM has applied to mainline railway duty holders in respect of all significant technical, operational and organisational changes which have the potential to affect safety on the mainline railway;
•      safety verification, for non-mainline projects introducing new/novel technology where these are accompanied by new or increased risks; and
•      change management for non-interoperable and non-safety verification projects.

7.      The safety verification process for non-mainline projects will not apply unless the new or altered equipment is both novel to the duty-holder and is likely to give rise to a new risk or significant increase in risk, i.e. the project (or works) must meet both of the following criteria:

•      difference test: the risk arising from the design is new to the duty holder; and
•      risk test: there will be a new risk or a significant increase in risk.

8.      For all other significant changes that do not meet the requirements of interoperability or the CSM on risk evaluation and assessment, the general change management processes that must be included in a duty holder's Health & Safety Management System (SMS) should be applied to identify and control any new risks. The processes are set out at Figure 1 below. These range from the planning stage, through risk assessment, control proposals and consultation (to ensure the proposed approach is the right one) to implementation and review. All these processes should be linked by a common system of oversight and governance.

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[1] Guidance on this CSM can be found at
http://orr.gov.uk/__data/assets/pdf_file/0006/3867/common_safety_method_guidance.pdf.

Figure 1: Key elements of a change management process

9.      Even small changes can have the potential to cause serious consequences, which is why change management is an important part of any SMS. While non-mainline duty holders are not bound to the same requirements as mainline duty holders we would expect a similar process of change management to be followed as it represents best practice.

10.      The CSM for risk evaluation and assessment requires a test of significance for technical, operational and organisational changes that affect safety on the mainline. For significant changes, the regulation prescribes a framework for risk assessment, as set out in our guidance on the CSM-RA,[2] with independent assessment of the process and currently applies to the introduction of new or altered rolling stock, infrastructure or organisation.

11.      Where changes are also deemed substantial under ROGS, then duty holders will need to take appropriate action for maintaining their Safety Certificate or Safety Authorisation.

12.      All parts of the railway are liable to be subject to change. In some cases these changes will involve working with other parts of the industry, providing even greater

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[2] This can be found on our website at
http://orr.gov.uk/__data/assets/pdf_file/0006/3867/common_safety_method_guidance.pdf.

challenges. We, therefore, have an important role in ensuring these challenges are successfully managed and completed. This approach is underpinned by the duty to co-operate between duty-holders to achieve safe operations required by ROGS regulation 22.

13.     Engaging with designers and the supply chain at the planning stage of a significant change can help deliver innovative and cost-effective solutions[3] (often learning from previous experience) that have a health and safety risk management philosophy designed in at the outset (the health and safety by design philosophy). This is one of the key areas of the hierarchical approach set out in the Management of Health and Safety at Work Regulations 1999, namely:

- eliminate risk
- control risk at source or by safer design
- use physical engineering controls and safeguards*;* Supported by:
- safe systems of work; and
- the use of personal protective equipment.

14.     Our priorities for change management are to see:

- a change manager or team acting as focal point to facilitate the process, in which a sponsor and/or proposer of the change is identified and they are aware of their responsibilities;
- robust assessment of risks associated with change;
- sufficient consideration of effects on and the boundaries of interfacing systems;
- systematic implementation plans for change: prior to, during transition and after;
- appropriate choice of control measures, in line with the aforementioned established hierarchy of controls;
- effective communication/cooperation between affected parties;
- effective pre-commissioning tests;
- clear records of issues identified and addressed (i.e. issues logs and key decisions taken);
- where it is proportionate to do so, reviews of assessment and plans through an independent challenge process;
- effective processes are in place to ensure that 'lessons learned' from change are gathered effectively; and
- to enable use of 'lessons learnt' from previously implemented related changes.

In assessing these priorities it is important that duty holders make the right choice taking into account any safety impacts, rather than basing decisions simply on cost. This approach will enable decisions to be justified. Where this justification is not sufficiently demonstrated ORR will take appropriate action within its powers to ensure compliance.

## Mainline

15.     There are a significant number of changes in progress or planned on the mainline railway that will be governed by one of the requirements for change management:

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[3] CSM for risk evaluation and assessment (when applicable) also requires that the independent assessor is appointed at the earliest, appropriate stage of the risk assessment process, for significant changes.

- increased use of train operator and Network Rail alliancing arrangements to deliver greater collaborative working;
- introduction of new train-control technology (ERTMS);
- new-build infrastructure projects;
- infrastructure enhancement programmes; and
- the longer-term National Operating Strategy aimed at providing a new way of managing, controlling and operating rail services to improve performance and reduce costs.

## Network Rail restructuring

16.    Network Rail applies its internal organisational change process "Safety Validation" to all restructuring programmes and where these are deemed to be 'significant', then additionally and within the process, CSM-RA is applied including assessment body (AsBo) appointment.

## New-build and enhancement infrastructure projects and system integration consequences

17.    The enhancement and renewal programmes will gain pace over the next few years. Some planned projects include: wider electrification of the network (including the Great Western route to Bristol and South Wales, the Edinburgh to Glasgow suburban routes, the North West and Transpennine routes between the East and West Coast Mainlines); Crossrail 1; East Coast Main Line route upgrade and potential longer- term plans for High Speed 2.

18.    Where Network Rail makes major changes to the infrastructure, an opportunity is presented to take significant steps forward in safety provision, which may only be reasonably practicable at this point in the infrastructure life-cycle. It is imperative that Network Rail uses these opportunities to make advances, to comply with the law, to secure improvements for the next generation and to set standards for the rest of the network. Good design decisions can improve safety for both travellers and railway staff in the construction, use, inspection and maintenance of both the new asset and the existing operational railway. There are significant efficiency gains to be made by considering the whole-life costs of the change, not just the project capital costs. The Construction (Design and Management) Regulations 2015 (CDM)[4] create a duty to avoid foreseeable risks in designs, so far as reasonably practicable, which complements the general duties to carry out risk assessment and act upon the significant findings. It is essential that senior managers consider the potential for major safety improvements at the time when a project is being scoped and the budget set.

19.    The development and introduction by Network Rail of the Integrated Engineering Lifecycle (iELC) should lead to a common integrated view of engineering activities through the life of projects across disciplines, and which is aligned with the existing GRIP system

## Managing change risks in the freight sector

20.    The freight sector is also undergoing sector-specific change due to challenges in its competitive market, technological developments with rolling stock; changes to operational

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[4] http://www.legislation.gov.uk/uksi/2015/51/contents/made

procedures and influences from Europe. As the quantity of coal being transported to power stations falls, there is a move towards carriage of new commodities. Pressures of achieving a competitive edge and efficiency are driving the industry towards new ways of working. It is a challenge for duty-holders to ensure commercial decisions do not lead to safety detriment.

21.    The changes introduced by the new certification requirements for entities in charge of maintenance[5] may add some early uncertainty because they introduce new duty holders - in the first instance this only applies to freight vehicle maintainers.

## Managing change risks for Train Operating Companies (TOCs)

22.    Recently we have found instances when duty-holders have not sufficiently recognised the full consequences arising from the introduction of new rolling stock, for example: issues affecting emergency evacuation plans, arrangements for disabled passenger assistance and stepping distances. We believe that more thought needs to be given to the design of new trains, and the impact of that design on the whole system, by the train operator, Network Rail and DfT. TOCs need to work with all affected parts of the industry to consider the "whole system" effect of changes.

## ORR activity: Network Rail, Freight and TOCs

23.    We have been proactive in our assessment of change management and have inspected the application of change management processes in a number of projects. To assist our inspectors, we have devised a toolkit which gives a framework for conducting the audit.

24.    We continue to influence the industry to ensure the construction design management principles, namely the designing out of risks at the project design stage are followed proactively by Network Rail and its contractors. We have taken enforcement action against Network Rail because of insufficient risk assessment during the design stages of two projects the Western route.

25.    Change also presents opportunities; we encourage the industry to consider how to make improvements and cost savings to risk management through innovation or better design at the early stages of any project involving change.

26.    Change management forms an important strand of the RM3 model and we use intelligence gathered from all our activities with a duty holder to inform the model which we then share with the duty-holder.

27.    ORR will continue to monitor the devolution into managed routes within Network Rail.

28.    ORR is engaging across the industry on the change management issues that surround the continuing move to 'Driver Controlled Operation' (DCO) trains to ensure that safety levels are maintained and improvements identified.

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[5] See: http://www.rail-reg.gov.uk/server/show/nav.2628

## Managing change risks by Transport for London duty-holders

29.    All Transport for London (TfL) operations are witnessing increasing demand for services this in turn is driving continuing change across all TfL duty-holders (London Underground (LU), Docklands Light Railway (DLR), London Trams, TfL Rail and London Overground).

30.    TfL's long term investment programme includes for LU progressive upgrading of track and signalling across a number of lines. Following on from the introduction of modern S-Stock trains on the sub-surface lines LU also has longer term plans to replace rolling stock across the tube network. These are large-scale complex projects requiring systematic and extensive consideration by LU of change management processes, to ensure that all relevant risks are identified, controlled and monitored in order to maintain safety for travellers and staff.

31.    As well as upgrade projects there are a significant schemes for extension of the network on both the Northern and Metropolitan Lines.

## London Underground Limited (LUL)

32.    London Underground's introduction of the 'Night Tube' commenced in August 2016 and completed its primary roll-out toward the end of that year when 'night tube' operations commenced on the Piccadilly line. Our site visits as lines were progressively introduced for 'night tube' operations confirmed our understanding of the extensive planning to identify risk and develop controls to manage these risks.

33.    Other organisational changes within LUL have brought new challenges for LUL to address, with regard to risk management and ensuring that staff have the skills, knowledge and equipment to fulfil new roles. It is clear that LUL needs to carry out further work to ensure it has sustainably robust staffing resilience across the network.

## Crossrail

34.    Introduction of the first TfL Rail (Crossrail) services operated by the Mass Transit Railway Corporation (MTR) has been an orderly transition, characterised by early engagement with the regulator and comprehensive planning for the services and oversight by MTR management.

35.    As progress on Crossrail continues towards the completion and commissioning of the Crossrail central section we are again seeing management of change associated risk being addressed early as typified by early engagement with ORR.

## ORR activity: TfL

36.    Previously, our scrutiny of LUL's change management had tended to be reactive as we became aware of issues such as reducing the number of station staff, while some of our activity has been in response to complaints from trade union representatives. We are now looking proactively at the projects, and elements of them, to make sure that safety issues are effectively managed from an early stage. We will continue to engage with major schemes, for example; '4 lines' modernisation and Metropolitan Line and Northern Line extensions.

37.    We will also continue to look at the planning and monitoring of organisational change.

# Tramways

38.    Most of the tramways in Great Britain are relatively modern and, like the rest of the industry, have experienced significant growth, though tram operators would generally be considered small companies. Several systems are now into substantial expansion projects and rolling stock replacement and the change management around these schemes needs careful planning and resourcing. The situation is often complicated by major projects being designed, funded and managed by the local authority bodies that own the tram systems, infrastructure and vehicles.

# ORR activity: Tramways

39.    When looking at change management in tramways projects we have found evidence of some weaknesses in works and systems that were subject to safety verification in some projects. A focus on the lack of a whole-system approach to system safety and the use of inappropriate heavy-rail technology in the design of the new British tramways may have led to unnecessary risk needing to be managed through operational controls instead of being designed out. We continue to check that proper risk management arrangements are used to identify appropriate standards and measures.

# Heritage railways

40.    Heritage railways face some change management risks, but on a smaller scale that can be managed without extensive change management processes. The main issues we have identified are that the older age and predominant volunteer nature of the workforce probably means that staffing changes are more frequent and limited funding means fewer large engineering change projects.

41.    Some railways are involved in substantial extension and reconstruction projects and there are some changes to rolling stock that require careful consideration and management to ensure that catastrophic risk is avoided.

# ORR activity: Heritage Railways

42.    Our activity on change management in heritage railways has been very limited to date. The issues around volunteer staffing are dealt with in the competence chapter and the issues around engineering changes are dealt with in infrastructure.

43.    ORR will continue to engage with the increasing number of heritage operators intending to provide commercial services onto the mainline railway network.

| Glossary of terms | |
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| AsBo | Assessment Body |
| CDM | Construction (Design and Management) Regulations 2015 |
| CSM | Common Safety Method |
| CSM-RA | Common Safety Method on Risk Assessment and Evaluation |
| DCO | Driver Controlled Operation |
| DfT | Department for Transport |
| DLR | Docklands Light Railway |
| ERA | European Union Agency for Rail |
| ERTMS | European Rail Traffic Management system |
| FOC | Freight Operating Company |
| GB | Great Britain |
| GRIP | Guide to Rail Investment Process |
| HSE | Health and Safety Executive |
| iELC | Integrated Engineering Lifecycle |
| LUL | London Underground Limited |
| MLX | Metropolitan Line Extension |
| MTR | MTR Corporation (Crossrail) Limited |
| NLE | Northern Line Extension |
| ORR | Office of Rail and Road |
| RIR | Railway Interoperability Regulations 2011 |
| RM3 | Railway Management Maturity Model |
| ROGS | The Railways and Other Guided Transport Systems (Safety) Regulations 2006 (as amended) |
| SMS | Health & Safety Management System |
| TfL | Transport for London |
| TOC | Train operating company |

References:

RSSB website page on management of change:

http://www.rssb.co.uk/improving-industry-performance/management-of-change