Case Study:
Operations Interface

THAMESLINK PROGRAMME
LEARNING LEGACY

London Bridge Station Redevelopment

One of the challenges of the Thameslink Programme was keeping London Bridge station open while the demolition and re-construction activities were taking place. This required a lot of interface and consultation with stakeholders including the station management, train operating companies (TOCs), passengers, nearby businesses and residents.

During the project lifecycle, the London Bridge Station Redevelopment Project (LBSR) team ensured that all works in station operational areas or works within one meter of a live operational asset have followed a strict control of contractor process for all construction activities. Some of the processes were bespoke to the project while others were adaptations of wider industry procedure.

They included:

- Blue Topper and Work Package Plan
- Permit to Work
- Station Construction Activity Updates
- Live Test event
- London Bridge Integrated Team day
- Fire Isolation Procedure
- Project Permit Office
- Scenario and Resilience Exercises.

The purpose of this lessons learnt case study is to capture the processes used, and to explain and document them for future knowledge transfer to other projects that may want to adapt these to their needs.

1. Blue Topper and Work Package Plan (WPP) Process

The Blue Topper Process was a unique one which ultimately strived to ensure compliance to the Network Rail control of contractors' procedure, which forms part of the Network Rail Health and Safety Management System for Managed Stations.

The principal contractor, sub-contractors and the self-employed had a duty to examine their undertakings to identify the operations which posed a Health and Safety Risk on the London Bridge station construction project. They developed control measures to eliminate or minimise these risks and these were documented within the Costain Work Package Plan (WPP) Process.

The WPP were prepared by a competent person using relevant hazard information relevant to the tasks being carried out. Works of a high, medium and low risk were identified and subject to a safety readiness review before the WPP was compiled.

The risk readiness review consisted of a workshop attended by relevant personnel and included design, engineering, safety, contractor, client and supervision. The workshop considered the hazards, risks and control measures that needed to be included in the WPP before the approval process.

The WPP was then passed to the Costain Health and Safety Manager for Review and the appointed Contractors Responsible Engineer (CRE) for approval. When applicable, the WPP would be reviewed by the Consents, Environment and Property teams. At this stage of the review process a nominated Network Rail Project Representative - normally a Project Manager - would accept the document. If the WPP was submitted less than 21 days in advance it could only be endorsed by Costain Project Director/Project Manager and Network Rail Project Director/Programme Manager. A record of all T-21 WPP's were kept by the project and available to the Network Rail Programme Director.

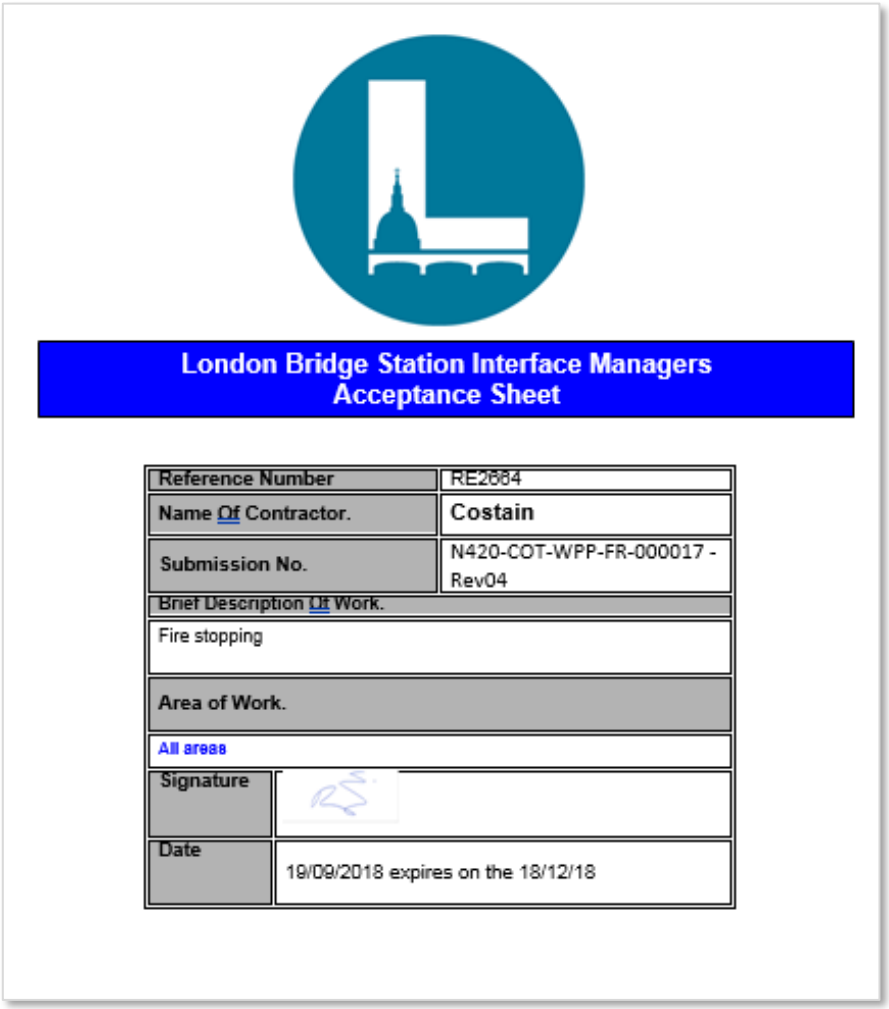
On completion of the review/revision process the WPP were formally distributed to the relevant third parties.

Approval Timescales:

- London Underground required a 20-day review period
- Network Rail required a 21-day review period prior to work commencing
- English Heritage required a 28-day review period.

Authority to work was then sought from the Station Interface Team and this was achieved via the receipt of a Blue Topper from the Network Rail Station Interface Manager.

Example of Blue Topper Acceptance Sheet is shown below:



London Bridge Station Interface Managers Acceptance Sheet

Reference Number	RE2684
Name Of Contractor.	Costain
Submission No.	N420-COT-WPP-FR-000017 - Rev04
Brief Description Of Work.	
Fire stopping	
Area of Work.	
All areas	
Signature	
Date	19/09/2018 expires on the 18/12/18

Note: *Works could not commence in station operational areas until this process has been completed.*

Communication / Briefings

Once approved, the contents of the WPP were communicated to all appropriate management, supervisors and support personnel via a formally recorded briefing. The methods of work, access and egress arrangements, materials, plant and equipment details, and specialist skills requirements together with the Safety, Health and Environmental risk control measures were explained during this briefing.

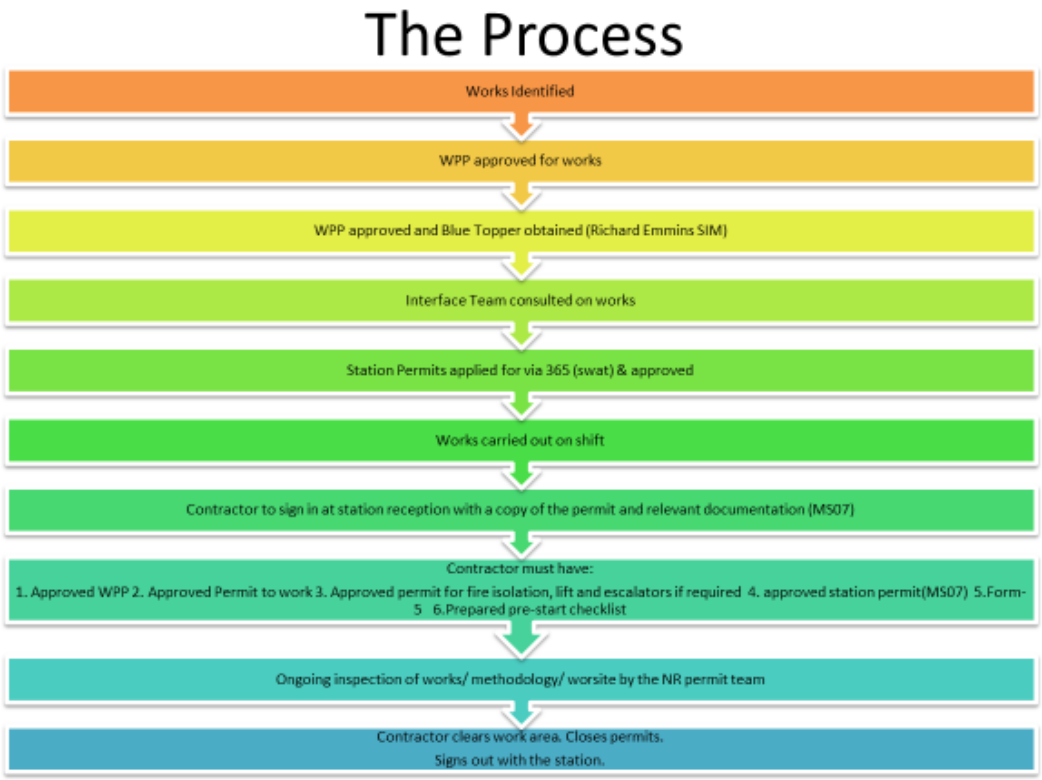
Blue Topper Layout Maps January 2018

The maps below give an indication of all new areas that were subject to the Blue Topper authority to work process following Stage 4 entry into service of operational areas on 2 January 2018, post the Christmas Blockade. Three maps were produced: street level, terminus level, and platform level, all of which were updated regularly over the following months as more areas were entered into service.

2. Permit to Work Process in Operational Areas

In addition to the WPP and Blue Topper approval, the project also had an online permit to work approval system (Office 365). Each permit required approval by both Costain and Network Rail.

The purpose of the permit to work process was to provide assurance to the station that appropriate controls were in place for project related construction activities in areas particularly operationally sensitive to station assets, staff or passengers.



3. Station Construction Activity Updates

Weekly Presentations
Each Monday, the Station Interface Team hosted drop-in session for multidisciplinary project engineers to present their upcoming works. Once these had been fully understood, the Station Interface Team would then co-ordinate simultaneous work activities in the operational station. A weekly presentation would then be compiled off the back of this session, which summarised all upcoming weekday and weekend works.

Station Interface Meeting (SIM)
These slides would then be presented to the station team at weekly Station Interface Meetings, where all disruptions to station operations, retail units, and passenger routes were discussed, as well as mitigating measures and safety controls. This regular interface with stakeholders ensured all station stakeholders, including TOCs, were aware of upcoming works and were consulted prior to works starting on site. These presentations also included details on the number and position of marshals required for passenger management during disruptive weekend works, as well as signage requirements.

Each weekend's works would then be discussed at the following week's meeting, where the station would provide feedback on how the station operated whilst disruptive weekend works were carried out. The Station Interface Team gained a full appreciation of station requirements through this continuous feedback, and it helped to build a good relationship with the station team which was vital in ensuring future works were agreed without trouble.

Further Agreements

As well as this weekly presentation structure, there were also ad-hoc agreements throughout the week for more significant future works, such as hoarding changes or works that would affect station staff routes. These would be agreed with the Station Interface Manager, and the Thameslink Programme Central Engineering Team would be consulted if works would affect weekday peak time ped flows, as this would require a Managed Station Risk Assessment to be carried out to ensure the station can still operate safely after the changes have been made.

Permit Office Involvement

After 3 April 2017, the Permit Office would represent the Station Interface Team on site, both during dayshift and nightshift. They would carry out compliance checks to ensure that all safety controls agreed with the station were being adhered to. The weekend closure slides would also be used as a guide to ensure the project is not taking up more space than agreed for their works.

4. Live Test Day

In advance of the live event the project team liaised with the London Bridge station team and its Train Operator Interface Managers to produce a bespoke Work Package Plan and Risk Assessment Procedure for controls to be implemented throughout the period that event participants would be using the new station environment, and in advance of the first train arriving, a joint site health and safety inspection was carried out and an agreement was signed to hand the live test area over for a set period of time from a construction site to station operational area.

This event gave an opportunity for over 500 friends and family members of the people working on the project to see where they work daily.

The London Bridge team used the feedback to better understand how customers would use the new platforms, lifts and escalators leading down to the new concourse, including wheelchair users and parents with pushchairs who were in attendance on the day.

Volunteers also carried out trials including using the new access and egress routes, which gave the station team an opportunity to see how people would navigate around the new concourse once the station opened to the public post the Bank Holiday works.

As soon as the last train left to take volunteers back to Charing Cross, a sweep of the live event area was carried out by the station security team and normal construction activities resumed.

Purpose of Event

The live test day was always part of the agreed stakeholder plan for August 2016, as this type of event would follow on from other Major Projects where testing was completed in advance of a significant project milestone on a station under development i.e. Birmingham New Street. The Network Rail Certification Body would also expect to see this level of verification for a key milestone.

The lead train operator *Southeastern* also were planning to use the day for verification purposes and they used test trains full of passengers to enter London Bridge and use the platforms, lifts and escalators for access to the lower level concourse for the first time.

It was envisaged that around 300 people would be required to make the day worthwhile, as this was based on figures from Birmingham New Street live tests.

Assets that were tested

On the day the following assets were tested:

- Lifts and Escalators
- Staircases
- Automatic Ticket Gates
- Station Information Security Systems (SISS)
- Fire Systems – Linked to ATGs & Voice Alarm System

Operational Processes

- Emergency evacuation
- Crowd control to include: Option 14 management process
- Escalator failure - Investigation and re-start process
- Staff training opportunities.

Customer Experience
The customer experience was also verified on the day, and people were set tasks around the new station area, and forms would be completed which would give the stakeholders time to evaluate what additional changes may be required prior to the official opening.

5. London Bridge Integrated Team Day

LONDON BRIDGE STATION
REDEVELOPMENT PROJECT

On Friday 31 March a Station Integrated Team day took place in advance of key Project Interface Changes at London Bridge on Monday 3 April when the new permit office opened, and when the 24/7 NGB Facilities Maintenance team rota went live.

Over 25 people attended, including the Network Rail Station Manager. Those in attendance were predominantly from three key teams involved in day to day railway operational management and project interface activities in areas already entered into service at London Bridge Station.

This included:

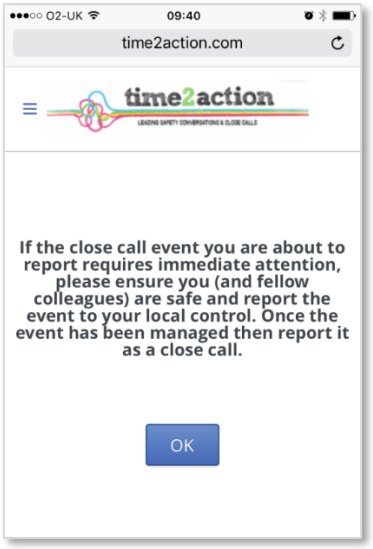
- Network Rail Station Shift Managers
- LBSR Project Interface / Permit Office Team
- NGB Facilities Maintenance Team.

The Network Rail Station Project Interface Manager facilitated the event and the key objectives of the day included:

- Knowledge sharing
- Understanding each other's issues
- Building relationships
- Planning for success
- Developing Integrated Operational Processes
- Ensure effective communication processes is agreed between all relevant parties.

Everyone in attendance also received a presentation on the Time2Talk and Close Call process that we have in place on Thameslink Programme, and the Managed Stations team were requested to use these processes at the same time as reports were sent via the national close call reporting system.

Example of Close Call Reporting site is shown below:



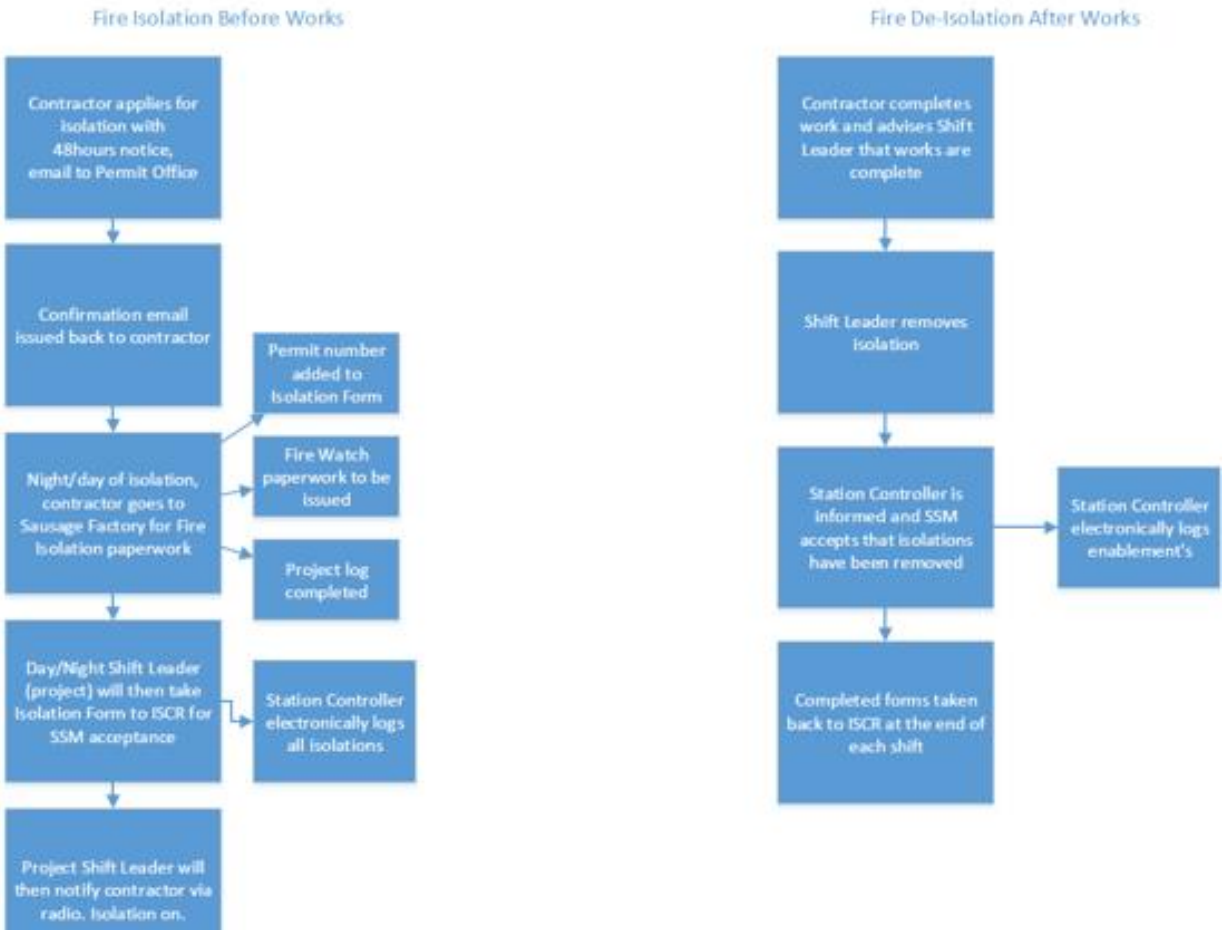
Scenario/Emergency Planning Management
Teams were split into groups and requested to implement an integrated management strategy linked to a burst water main on St Thomas Street which had an operational impact on both the local highways and station train operations post-handover to TFL in 2018. This scenario was prevalent as a similar incident had taken place in 2016 prior to the station street level concourse opening.

Permit to Work and Fire Isolation Changes
Two vital presentations on the day were given by the NR Project Manager and Operations Manager NGB Facilities Services, who both provided the station management with briefings on the permit to work and fire isolation procedural changes taking place. This included both their teams operating a new 24/7 rota to ensure a more integrated working relationship with the Network Rail Station team over the next 18 months, in advance of full handover of the station to the Route.

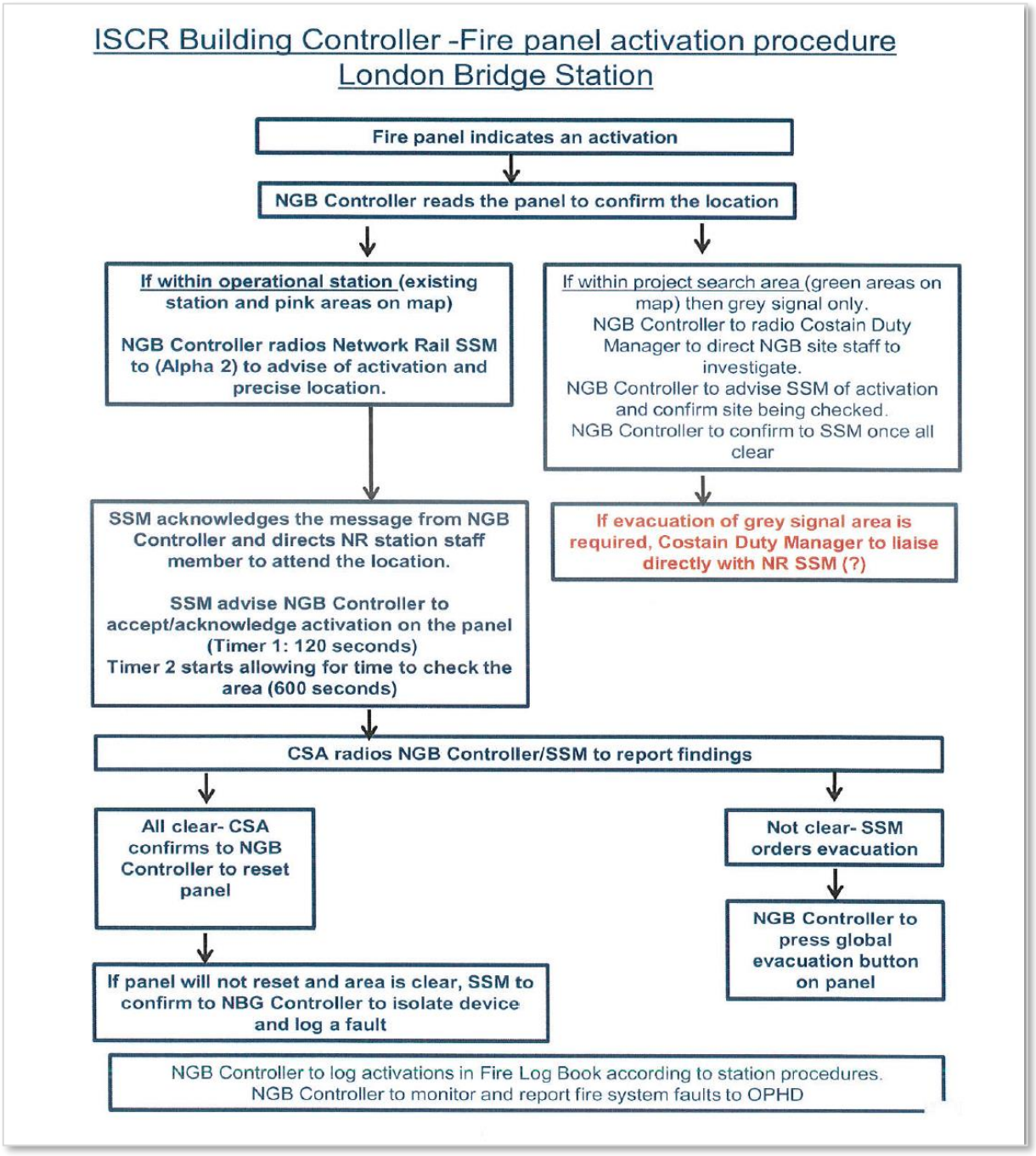
6. Fire Isolation Process

Due to the level of construction activities taking place at London Bridge station which had the potential to impact the live station Fire Alarm System - and in worst case scenario cause a full station evacuation leading to significant stakeholder impact - a robust fire isolation process was implemented, which is shown below.

Fire Isolation Procedure – London Bridge Station



As the Project progressed, various areas of the station were brought onto the live fire system via testing and commissioning, whilst others remained still within the project's construction site. This meant a process for managing fire activations was required, and this is shown on the following page.

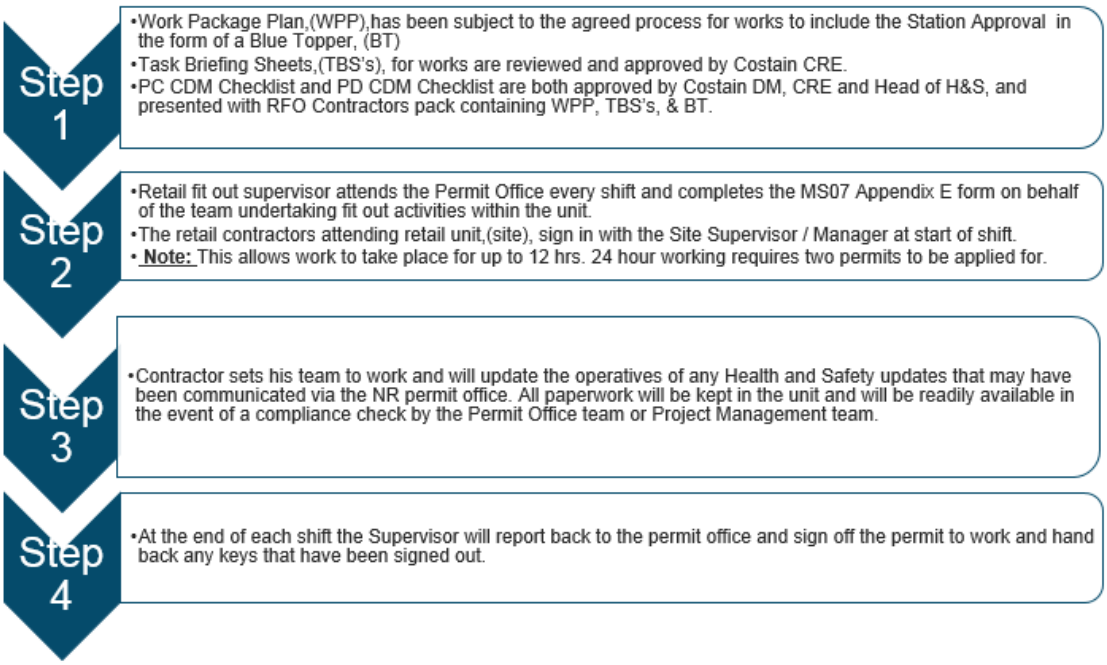


7. Project Permit Office

On Monday 3 April 2017, project staff no longer reported to station reception to sign in for Blue Topper works. The signing in / signing out responsibilities for all works in operational areas were passed onto the Network Rail permit office team, giving station staff the opportunity to familiarise themselves with managing business as usual maintenance activities.

Note: A*ccess for Phase 1 retail fit out and project maintenance contractors continued to be managed through station reception until Stage 2 Retail fit out which then transferred to the permit office team as shown in chart below.*

Retail Contractor Permit to Work Process



Permit Officer Roles and Responsibilities

- Review SPR / VIR submissions
- Manage MS07 sign in / sign out process for blue topper works (day shift and night shift) and interface with SSM on shift
- Interface with integrated station control room to ensure booked fire isolations are in place prior to works commencing (note: these should be booked by the engineer 24 hours in advance of works)
- Issue project staff with keys and access cards where required
- Permit officers will be on site 24/7 to manage operational access and will be contactable via site radio or mobile.
- Carry out compliance checks on works in operational areas to ensure all safety controls are adhered to

Access Control

All keys previously held by the project maintenance team in Vinegar Yard were moved to the permit office. A new field was added to VIR permits to detail key / access card requirements. Limitation of access forms signed by NG Bailey is also required for access into some rooms (e.g. HV & LV switch rooms). Engineers are required to verify access requirements for rooms with the relevant NG Bailey team prior to requesting keys from the permit office.

8. Scenario and Resilience Exercises

The Interface Project Manager took the lead in preparing table tops and live exercises for scenarios to be agreed with Station Stakeholders, Project Teams and Emergency Services. In total four multi stakeholder table tops were carried out during the project construction phases and up to 40 people attended these sessions on each occasion.

Examples of events shown below:

- Security Threats
- Fire
- Explosion
- Adverse Weather
- Train Derailment / Collision.

Other events causing unplanned suspension or curtailment of services for a significant period:

- Crowd Control
- Off-site emergencies e.g. Proximity to Shard
- Construction Incident - Impacting the station.

Resilience

Resilience is the ability of the network to provide and maintain an acceptable level of service in the face of various faults and challenges to normal operation.

Scenario

An imagined sequence of events, especially any of several detailed plans or possibilities.

- Buffer Stop Collision
- Fire Activation
- Station Overcrowding.

There were 3 main types of exercise:

- Discussion-based
- Table top
- Live.

The choice of which one to adopt depends on what the purpose of the exercise is. It is also a question of lead-in time and available resources.

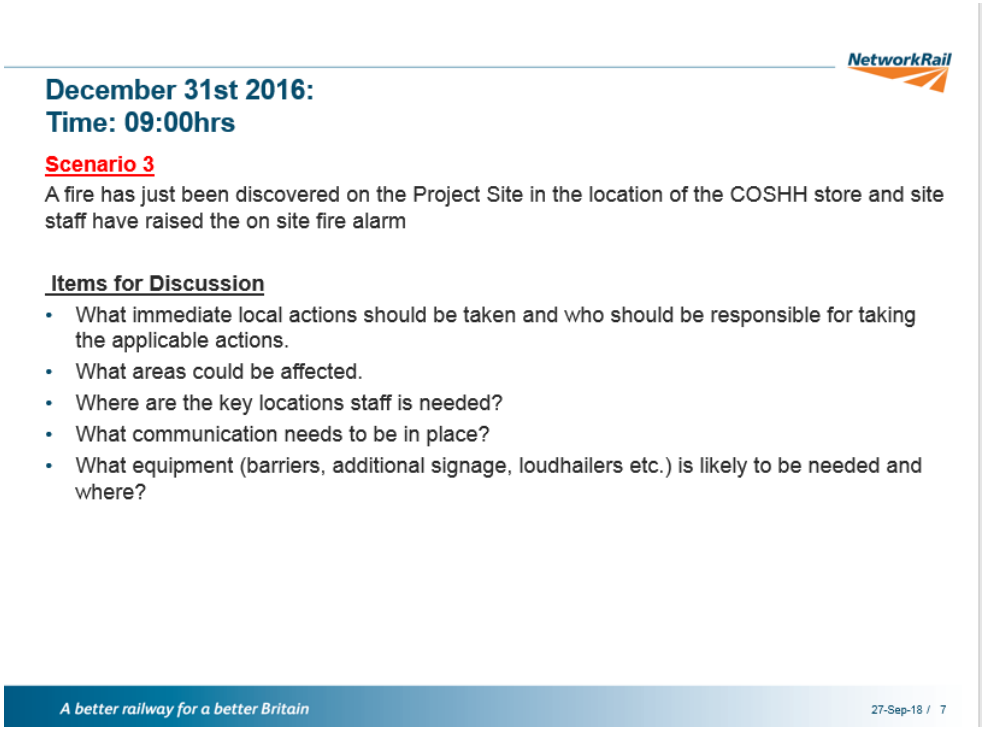
Table top exercises

- Table top exercises are based on simulation. These involve a realistic scenario and a timeline.
- Usually table tops are run in a single room, or in a series of linked rooms which simulate the divisions between responders who need to communicate and be co-ordinated.
- The players are expected to know the plan and they are invited to test how the plan works as the scenario unfolds.
- This type of exercise is particularly useful for validation purposes, particularly for exploring weaknesses in procedures.
- Table-top exercises are relatively cheap to run, except in the use of staff time and they demand careful preparation.

Live exercises

- Live exercises are a rehearsal for implementing a plan. These exercises are particularly useful for testing logistics, communications and physical capabilities.
- They also make excellent training events as they help participants develop confidence in their skills and providing experience of what it would be like to use the plan’s procedures in a real event.
- Live exercises are expensive to set up on the day and demand the most extensive preparation.

Example of a Scenario used during Operational Readiness Event in December 2016:



NetworkRail

December 31st 2016:
Time: 09:00hrs

Scenario 3

A fire has just been discovered on the Project Site in the location of the COSHH store and site staff have raised the on site fire alarm

Items for Discussion

- What immediate local actions should be taken and who should be responsible for taking the applicable actions.
- What areas could be affected.
- Where are the key locations staff is needed?
- What communication needs to be in place?
- What equipment (barriers, additional signage, loudhailers etc.) is likely to be needed and where?

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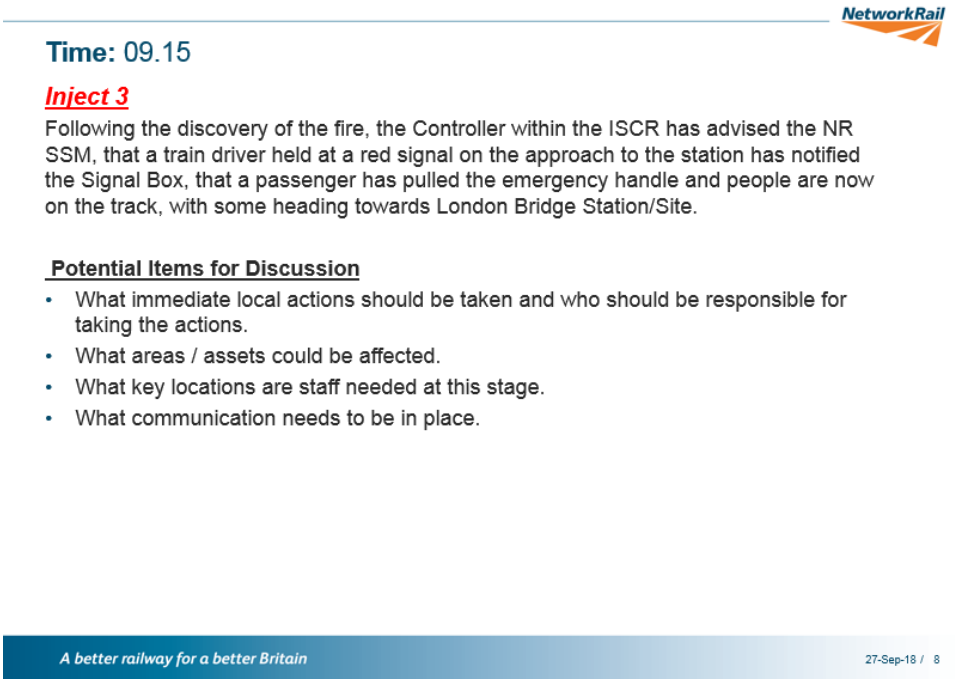

NetworkRail

Time: 09.15

Inject 3

Following the discovery of the fire, the Controller within the ISCR has advised the NR SSM, that a train driver held at a red signal on the approach to the station has notified the Signal Box, that a passenger has pulled the emergency handle and people are now on the track, with some heading towards London Bridge Station/Site.

Potential Items for Discussion

- What immediate local actions should be taken and who should be responsible for taking the actions.
- What areas / assets could be affected.
- What key locations are staff needed at this stage.
- What communication needs to be in place.

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About the author

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Further information

For more information on this Learning Legacy case study please email **contact@thameslinkprogramme.co.uk**