



London Bridge – Designing a major station for the next fifty years

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The new station, just opened



The aim of this presentation is to:

1. To explain the **scale** and **scope** of the London Bridge Station rebuild
2. To highlight some of the **challenges**
3. To share the **lessons learned** that may help you!

A very busy station...



What is London Bridge Station?

- ▶ Fourth largest station in UK
- ▶ Over 50 million passengers per year PLUS the Underground passengers
- ▶ Needed rebuilding to accommodate the Thameslink Programme
- ▶ Located in South East London, by Tower Bridge – Area undergoing extensive regeneration
- ▶ Construction started in May 2013 – Completed in May 2018
- ▶ Cost of £1bn (approx. \$1.4bn)

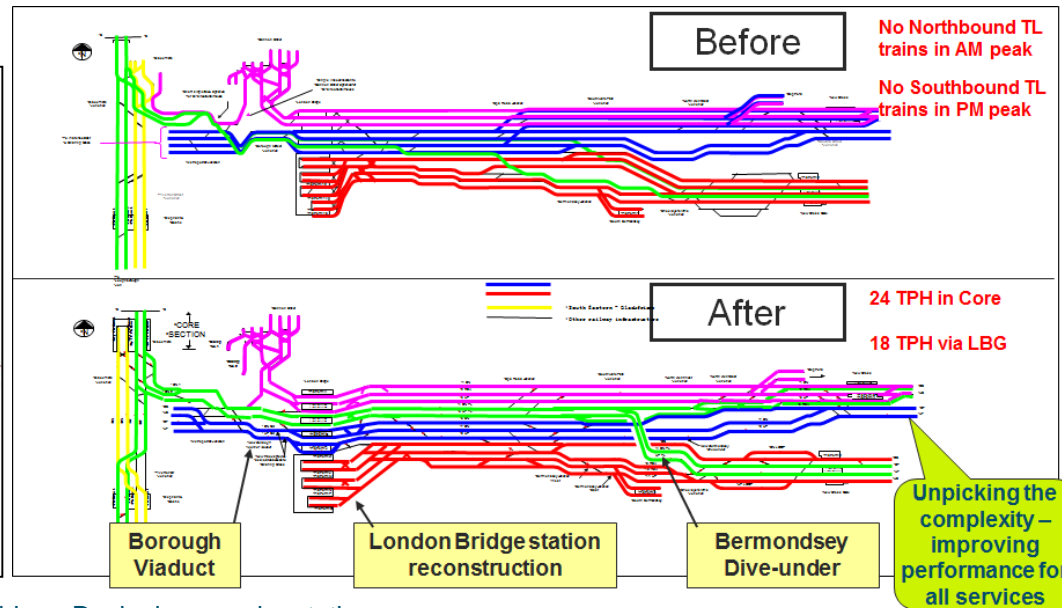
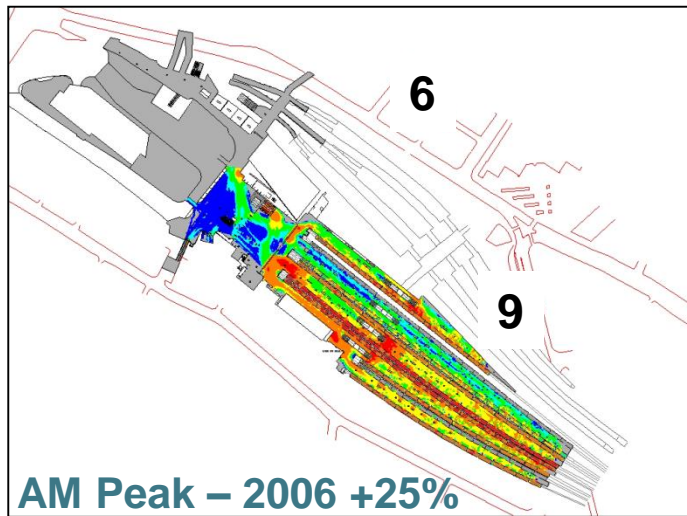
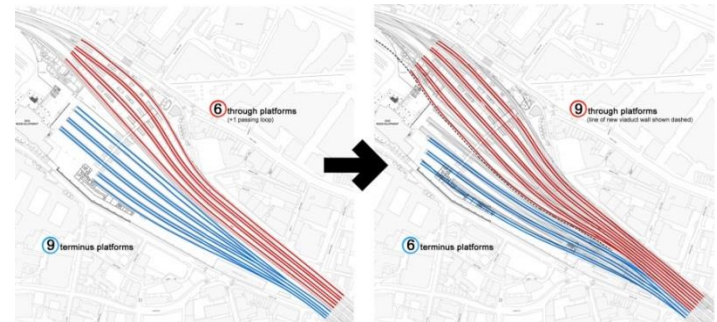
KO2 – Key facts at London Bridge

- ▶ New concourse at London Bridge - 80m x 165m - size of Wembley football pitch - will be biggest mainline concourse
- ▶ Station will be longer than the Shard is tall
- ▶ Circa 66% passenger capacity increase at station
- ▶ It will have 24 escalators and 11 lifts
- ▶ Tooley St façade - from street level to top of canopy is 20m – nearly 5 double decker busses high
- ▶ 4km of platform edge (22,000m² platform area)
- ▶ 70,000 cubic metres of concrete and nearly 10,000 tonnes of structural steel
- ▶ 180,000 cubic metres of arch demolition
- ▶ 140 S&C units
- ▶ 48 km of new high performance rail
- ▶ 552 Signalling equivalent units (full renewal)
- ▶ 980 Signalling Equivalent units (relocked or re-controlled)

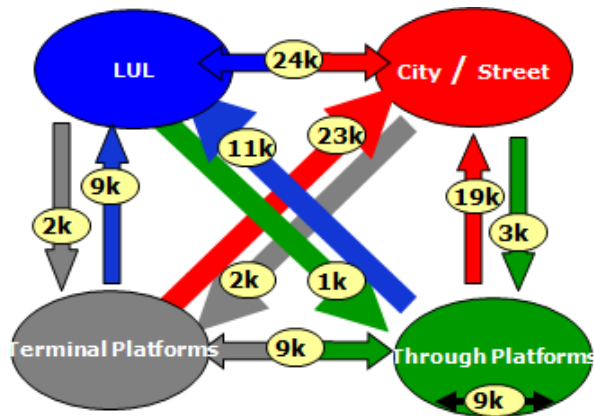
Why Rebuild LBG Station?

- ▶ Major bottleneck for Thameslink core – unblock 18TPH
- ▶ Track layout tangled and extremely constrained
- ▶ Station operating at capacity
- ▶ Footfall higher than Waterloo in peak 3 hours
- ▶ Improve street presence, connect both sides better
- ▶ Capacity to deal with disruptions

15 Platform Station

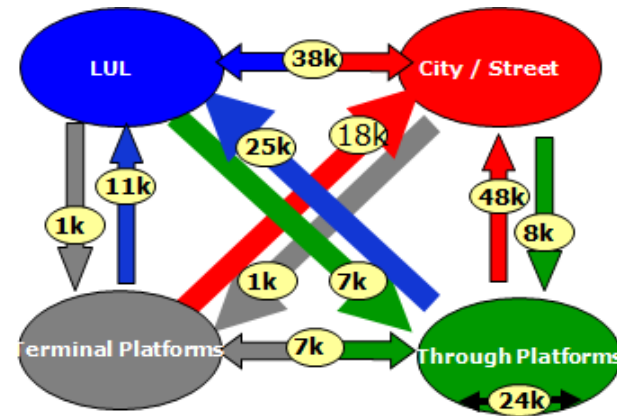


Design Forecast 2016+35%



Total AM = 112,000 passengers
(3-hours peak current usage)

2010 - Baseline



Total AM = 190,000 passengers
(3-hours peak)

2016+35% - Design Demand

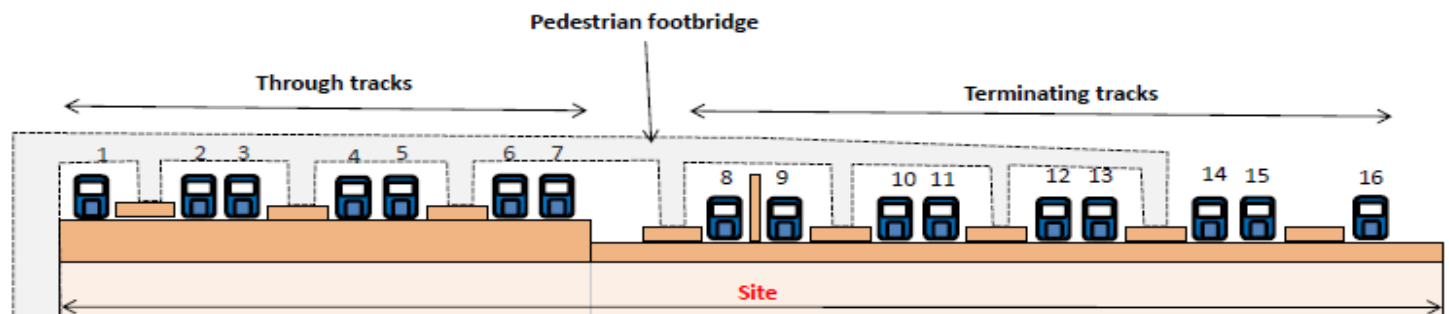
- ▶ The 2010 passenger usage at LBG is based on **survey data**.
- ▶ The future passenger forecast was developed and agreed in collaboration with all key stakeholders (NR, LUL, TfL Buses, TOCs)
- ▶ The 2016+35% equates to a **65% increase over the baseline 2010** station usage numbers.

How we are constructing London Bridge

Rev 06

MAIN CONCOURSE CROSS SECTION CONSTRUCTION SEQUENCE

ORIGINAL CONDITION / PRE-STAGE



Guidance notes:

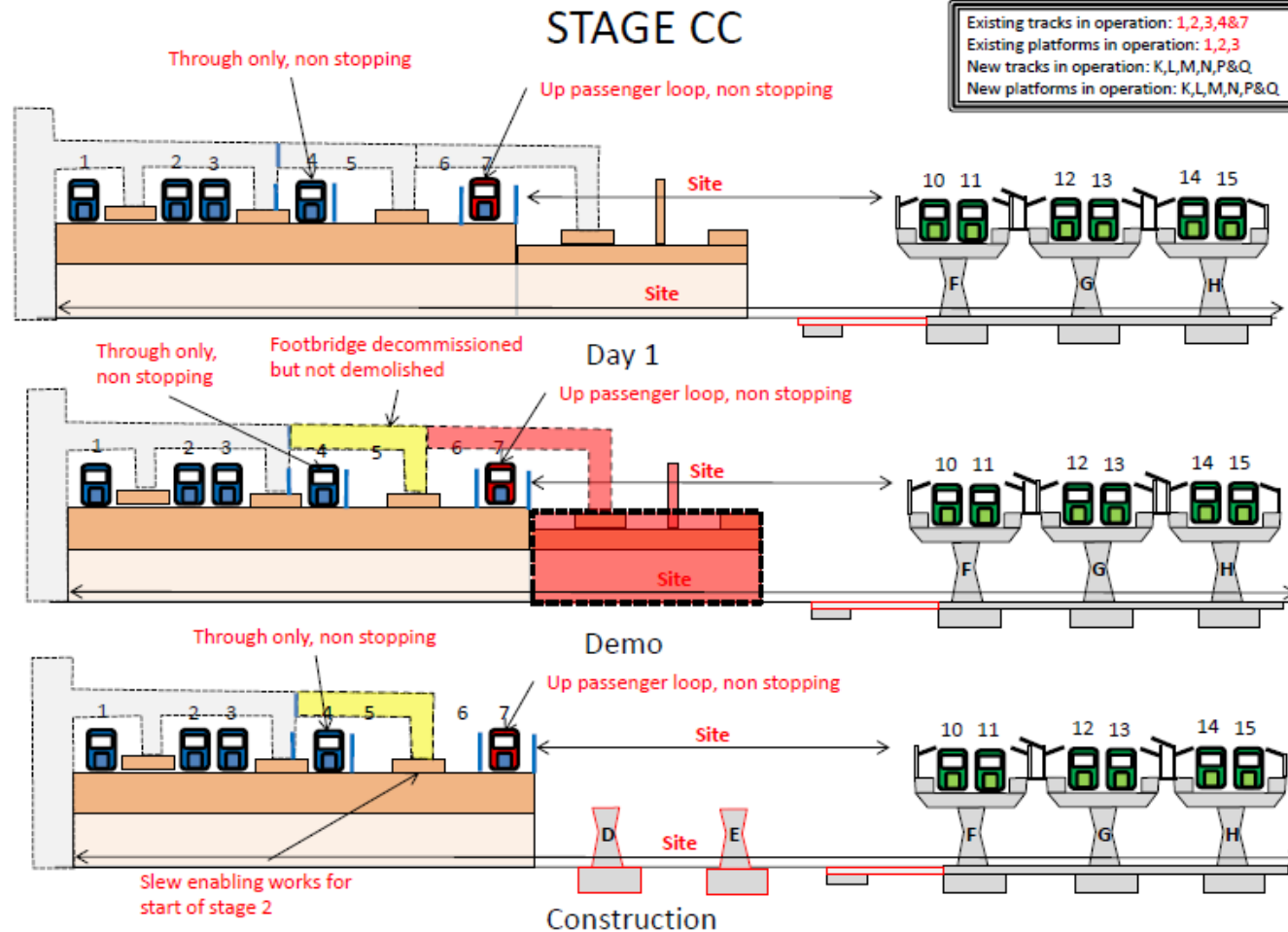
1. The section is taken through the main concourse bridge decks and may not represent the exact amount of work done to areas outside the concourse.
2. New structures constructed in each stage are highlighted in red lines
3. Rev 6 takes into account impact of moving the stage 2A demolition line and the latest TCF agreed dates and slight changes to 64-84 Demolition

| Hoarding line

How we are constructing London Bridge

05/01/15 to 25/05/15

Rev 06



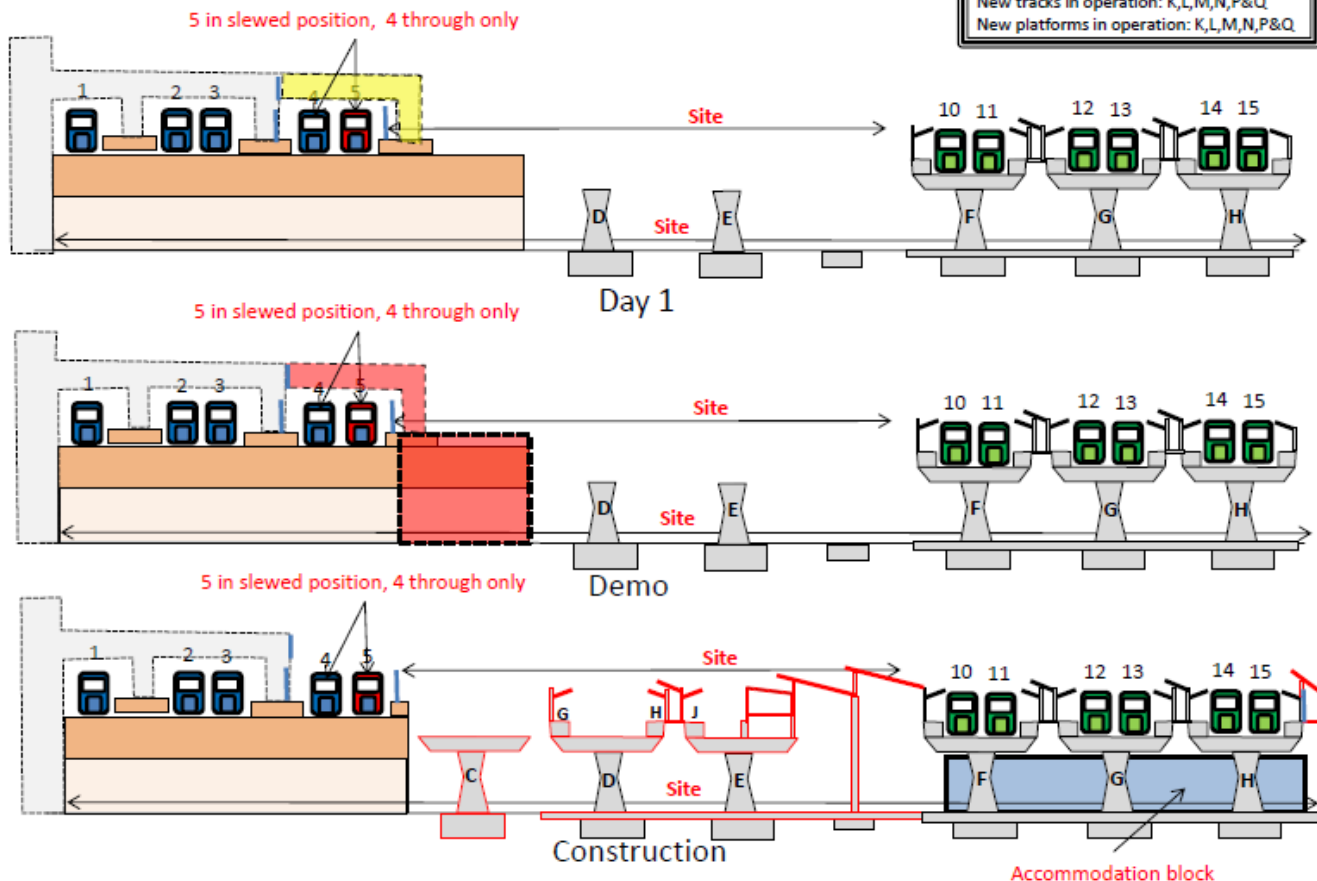
How we are constructing London Bridge

26/05/15 to 04/01/16

Rev 06

STAGE 2

Existing tracks in operation: 1,2,3,4&5
 Existing platforms in operation: 1,2,3
 New tracks in operation: K,L,M,N,P&Q
 New platforms in operation: K,L,M,N,P&Q



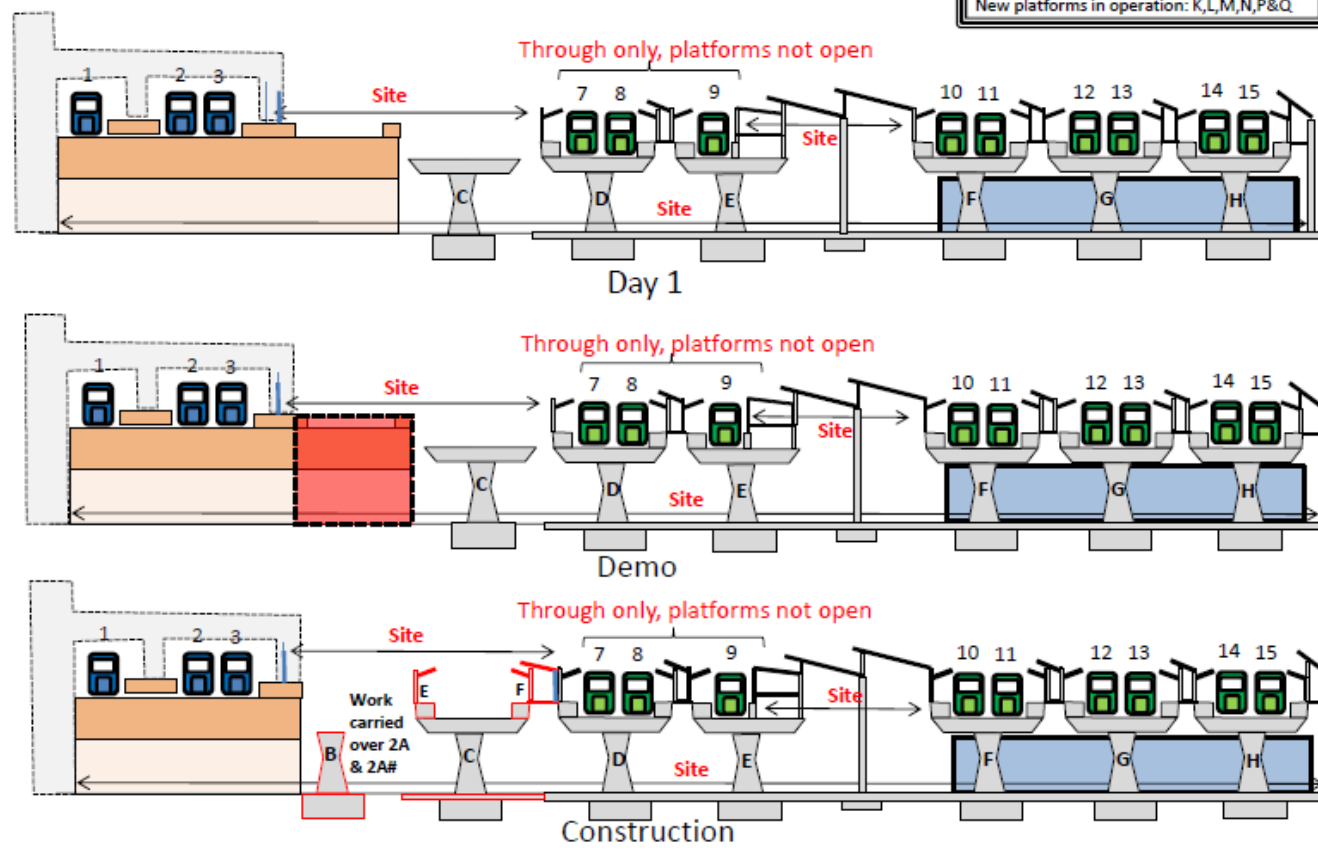
How we are constructing London Bridge

04/01/16 to 03/07/16

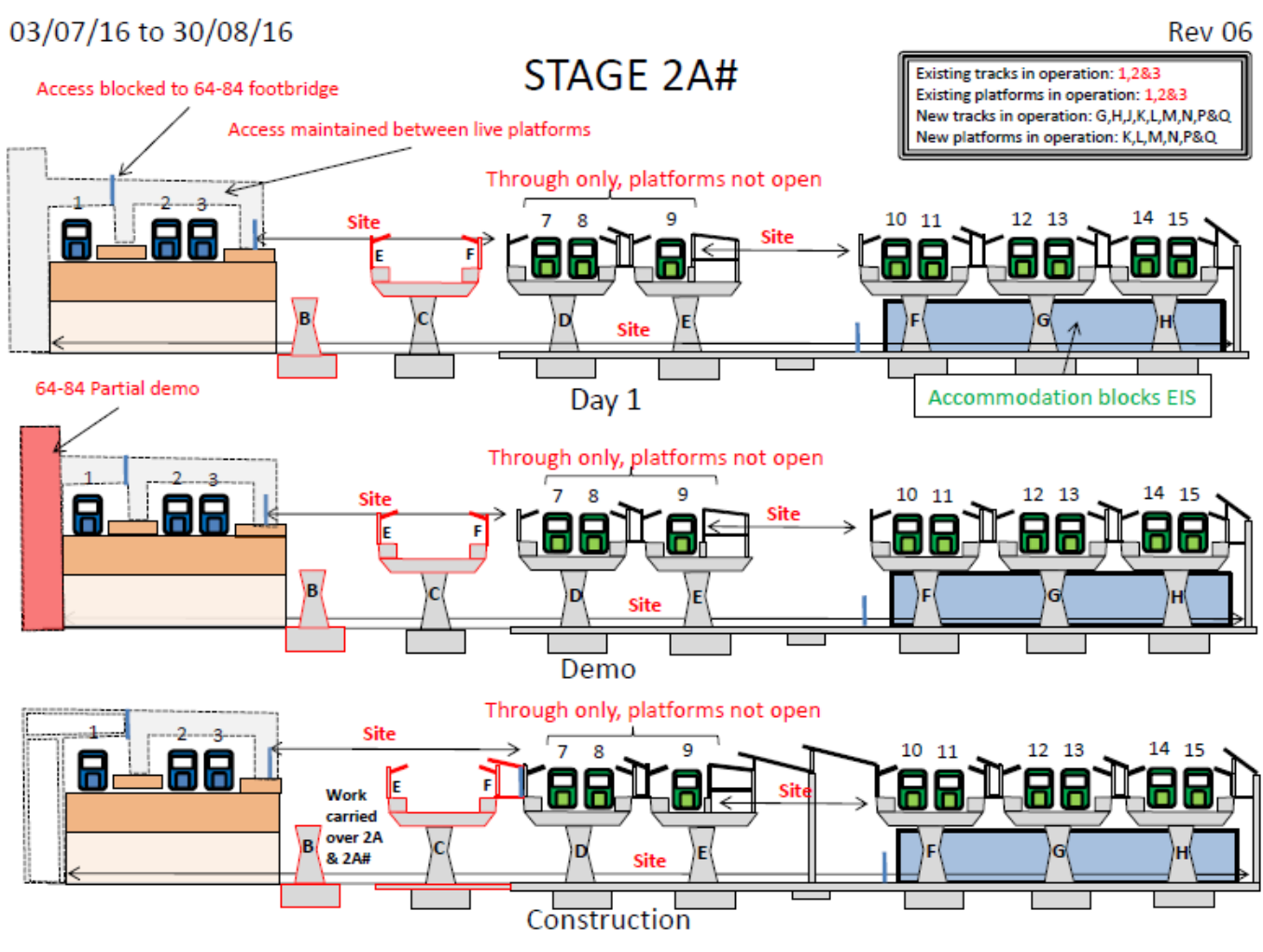
Rev 06

STAGE 2A

Existing tracks in operation:	1,2&3
Existing platforms in operation:	1,2&3
New tracks in operation:	G,H,I,K,L,M,N,P&Q
New platforms in operation:	K,L,M,N,P&Q



How we are constructing London Bridge



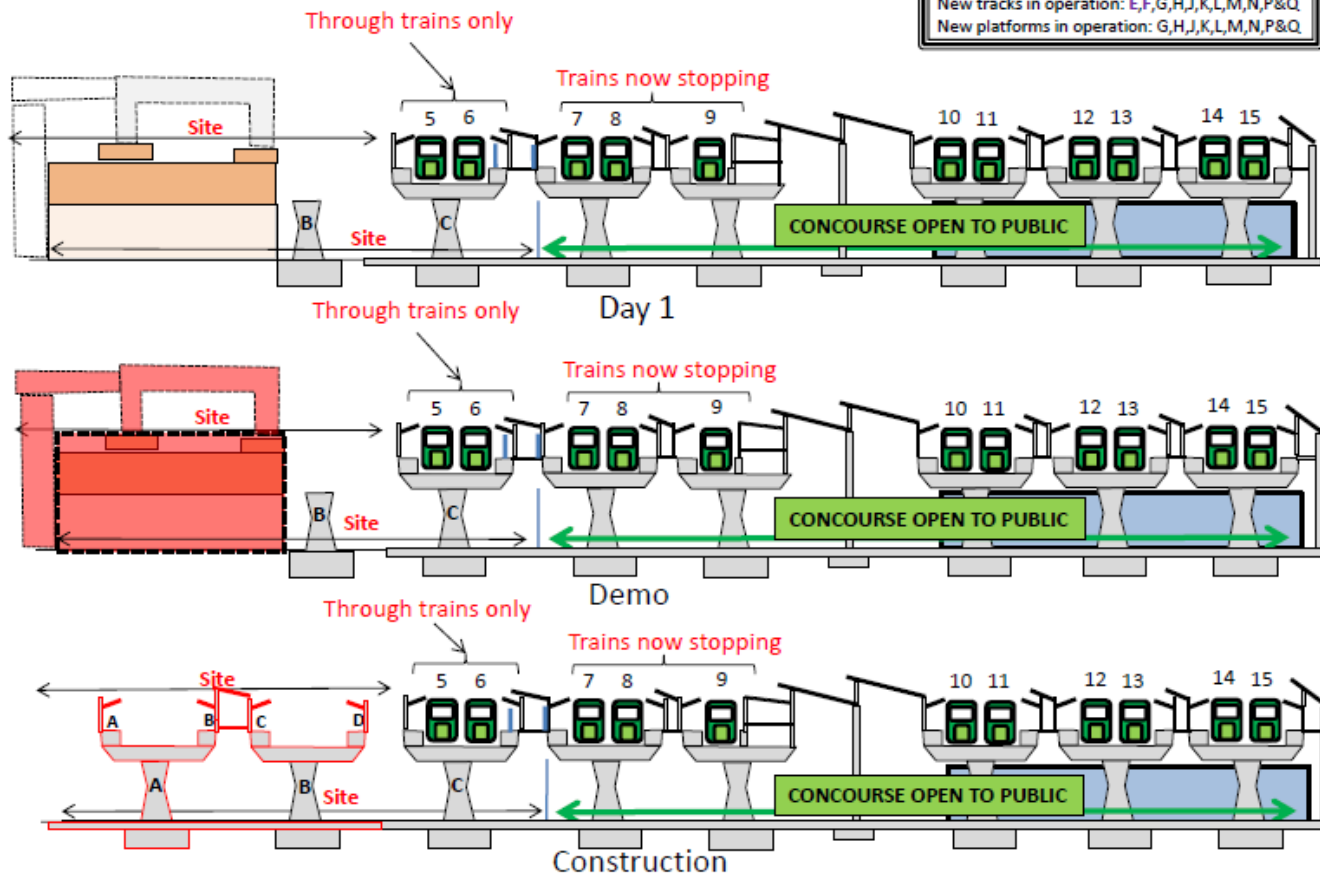
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31/08/16 to 18/04/17

Rev 06

STAGE 3

Existing tracks in operation:	None
Existing platforms in operation:	None
New tracks in operation:	E,F,G,H,J,K,L,M,N,P&Q
New platforms in operation:	G,H,J,K,L,M,N,P&Q



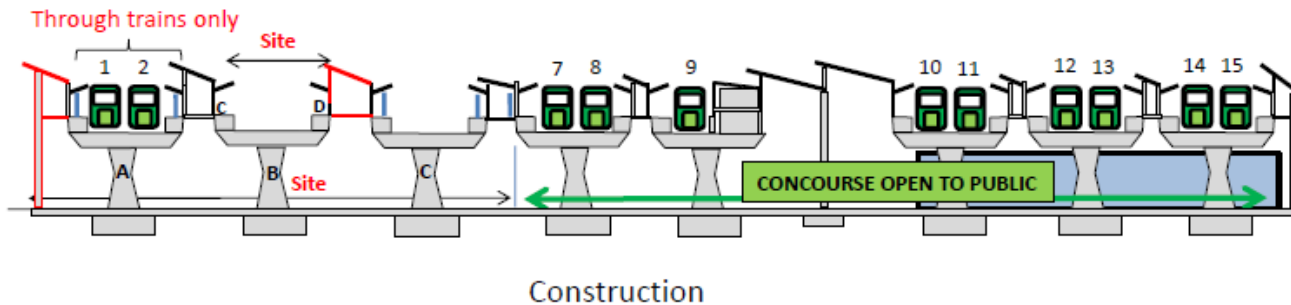
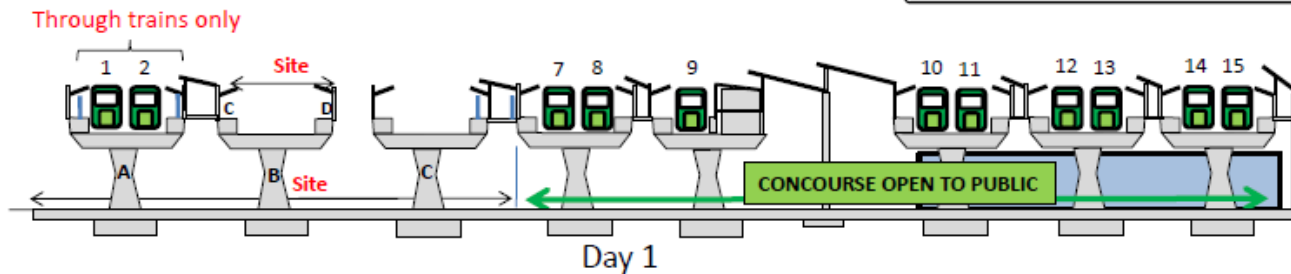
How we are constructing London Bridge

19/04/17 to 28/08/17

Rev 06

STAGE 3A

Existing tracks in operation:	None
Existing platforms in operation:	None
New tracks in operation:	A, B, G, H, J, K, L, M, N, P & Q
New platforms in operation:	G, H, J, K, L, M, N, P & Q



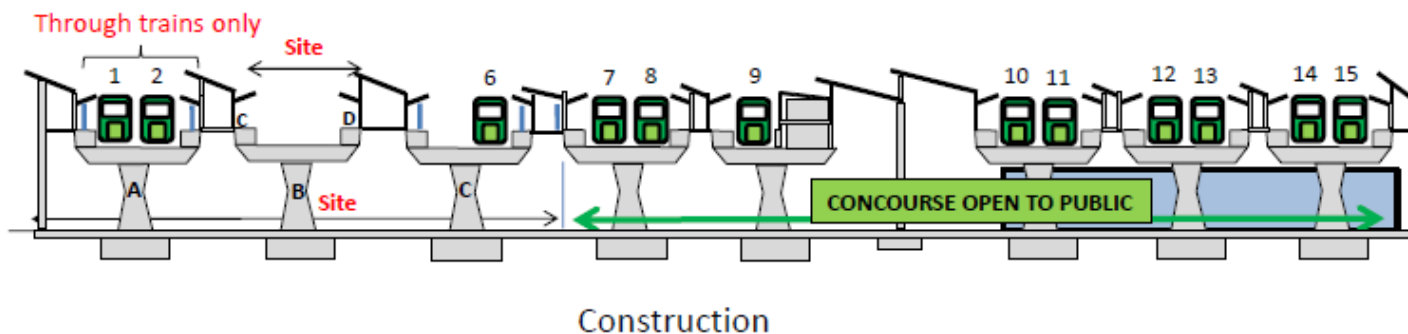
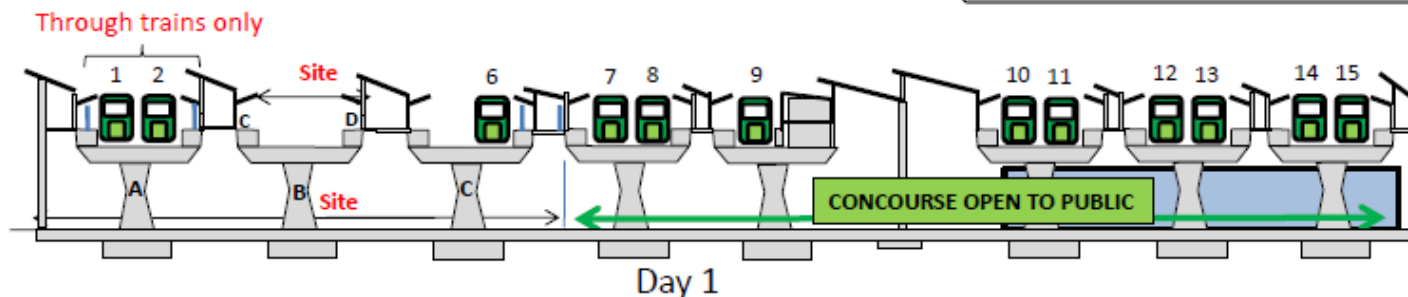
How we are constructing London Bridge

29/08/17 to 02/01/18

Rev 06

STAGE 3B

Existing tracks in operation:	None
Existing platforms in operation:	None
New tracks in operation:	A,B,F,G,H,I,K,L,M,N,P&Q
New platforms in operation:	F,G,H,J,K,L,M,N,P&Q



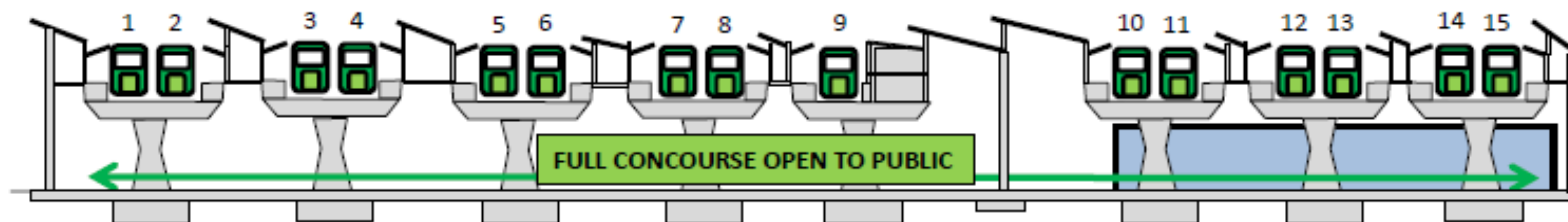
How we are constructing London Bridge

03/01/18 to 28/05/18

Rev 06

STAGE 4

Existing tracks in operation: None
Existing platforms in operation: None
New tracks in operation: ALL
New platforms in operation: ALL



Day 1

Planning

- ▶ What is the vision and strategy?
- ▶ Does the business objective include an actual capacity required?
- ▶ Think what you would like to do first, before adding any constraints
- ▶ Operational strategy is key. How far and wide do you consult?
- ▶ Ability to keep trains running whilst closing the station (& vice versa)
- ▶ Controlling Change with and by “external parties”
- ▶ Agreement papers for involved parties with a clear process
- ▶ Stakeholder management is key
- ▶ Despatch strategy – start early!

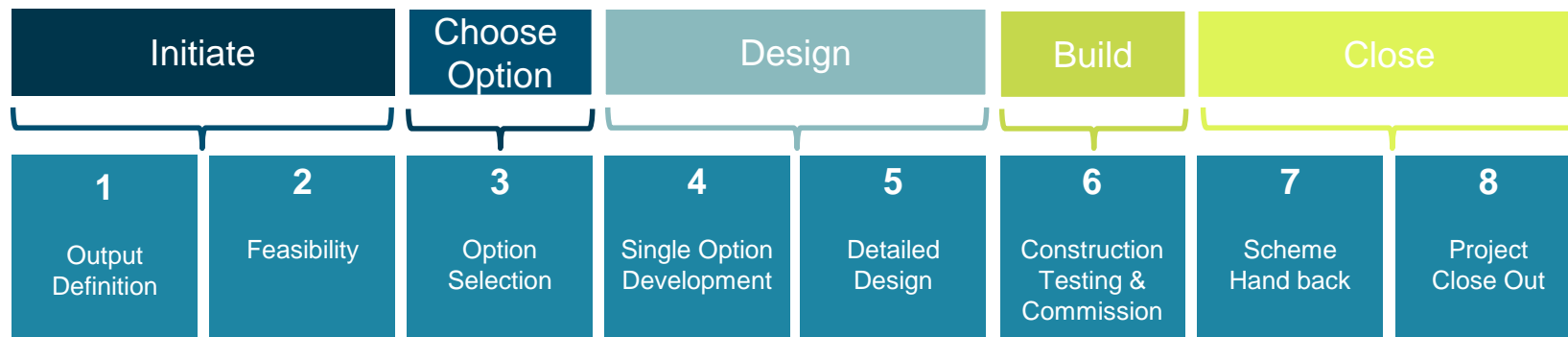
Design

- ▶ Capturing best practice elsewhere. Align with strategy, if one.
- ▶ Early work needed on Ops Plan, for benefit of designers and engineers
- ▶ Work up all and any interim plans to the same level of detail as final
- ▶ Get early “HQ” involvement and buy in
- ▶ How do you check the accuracy and validity of the designers?
- ▶ Don't short cut timescales
- ▶ Importance of all elements being “equal” – MEP, Construction, Telecoms, Operations, Maintenance, Track etc
- ▶ Aligning Project and Operations views
- ▶ Getting local management to input and buy in when “so far away”
- ▶ Importance of maintenance as part of design
- ▶ Inclusive and regular team management
- ▶ Recheck staff to be housed numbers...they have probably changed!
- ▶ Scope creep needs control

Construction

- ▶ Co-ordination of contractors – role of principal contractor
- ▶ Co-ordination with rail and station operations
- ▶ Off site construction – speed and quality control improvements
- ▶ Communications – public and stakeholders

Governance Railway Investment Projects (GRIP)



Key messages

- ▶ Be clear on the objectives of the project
- ▶ Take the necessary time to scope, plan and design
- ▶ An inclusive approach is so important
- ▶ Have structured responsibility, accountability and controls
- ▶ Take on technology in the design before it “passes you by”
- ▶ Once building, design, construction and operations priorities are all EQUALLY important

The before.....



The before.....



The after....



The after....



The after....



The after....



The before...



The after....



Thank you

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