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

AM Peak – 2006 +25%

Before

No Northbound TL trains in AM peak
No Southbound TL trains in PM peak

After

24 TPH in Core
18 TPH via LBG

Unpicking the complexity – improving performance for all services
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

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.

Hoardings line
How we are constructing London Bridge

05/01/15 to 25/05/15

STAGE CC

Through only, non stopping
Up passenger loop, non stopping

Day 1

Through only, non stopping
Footbridge decommissioned but not demolished
Up passenger loop, non stopping

Demo

Through only, non stopping
Up passenger loop, non stopping
Slew enabling works for start of stage 2

Rev 06

Existing tracks in operation: 1, 2, 3, 4 & 7
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

STAGE 2

26/05/15 to 04/01/16

Day 1

Rev 06

Existing tracks in operation: 1,2,3,4,8,5
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

STAGE 2A

Day 1

Demo

Construction

Existing tracks in operation: 1,2&3
Existing platforms in operation: 1,2B,3
New platforms in operation: F,L,M,N,P&Q
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03/07/16 to 30/08/16

STAGE 2A#

Access blocked to 64-84 footbridge
Access maintained between live platforms

64-84 Partial demo

Day 1

Through only, platforms not open

Demo

Through only, platforms not open

Construction

Through only, platforms not open

Rev 06

Existing tracks in operation: 1,2,8,3
Existing platforms in operation: 1,2,6,3
New platforms in operation: K, L, M, N, P & Q

Accommodation blocks EIS

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31/08/16 to 18/04/17

STAGE 3

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

Through trains only

Trains now stopping

Through trains only

Day 1

Demo

Construction

CONCOURSE OPEN TO PUBLIC
How we are constructing London Bridge

19/04/17 to 28/08/17

STAGE 3A

Day 1

Construction

Through trains only

Site

1 2

A

B

C

D

7 8 9

10 11

12 13

14 15

Existing tracks in operation: None
Existing platforms in operation: None

CONCOURSE OPEN TO PUBLIC
How we are constructing London Bridge

29/08/17 to 02/01/18

STAGE 3B

Existing tracks in operation: None
Existing platforms in operation: None

Through trains only

Day 1

CONCOURSE OPEN TO PUBLIC

Construction

CONCOURSE OPEN TO PUBLIC

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03/01/18 to 28/05/18

STAGE 4

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

FULL CONCOURSE OPEN TO PUBLIC

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)

Initiate

1. Output Definition

Choose Option

2. Feasibility
3. Option Selection

Design

4. Single Option Development
5. Detailed Design

Build

6. Construction Testing & Commission

Close

7. Scheme Hand back
8. Project Close Out

London Bridge - Designing a major station
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 after....
Thank you

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