

# DERBY

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## RESIGNALLING PROJECT



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## Derby Station – 79 Day Challenge Ready For The Future

Eldon Atherton  
Renewals Manager  
S&C North Alliance

# Project Overview



Part of c£1.4bn MML programme of works and will deliver new signalling, track and platform modifications



14 track stages and 10 signalling stages culminated in a 79 day partial closure of Derby Station



The project was developed and delivered within CP5 and successfully delivered all enabling stages as well as the 79 day commissioning



The project successfully commissioned on 8<sup>th</sup> October 2018 and follow up works are being completed prior to final handback

# Project Objectives

01

Reduce journey times  
Improve performance  
Increase line speed  
Segregate services

02

Remodel station for a  
simplified and compliant  
track and signalling layout

03

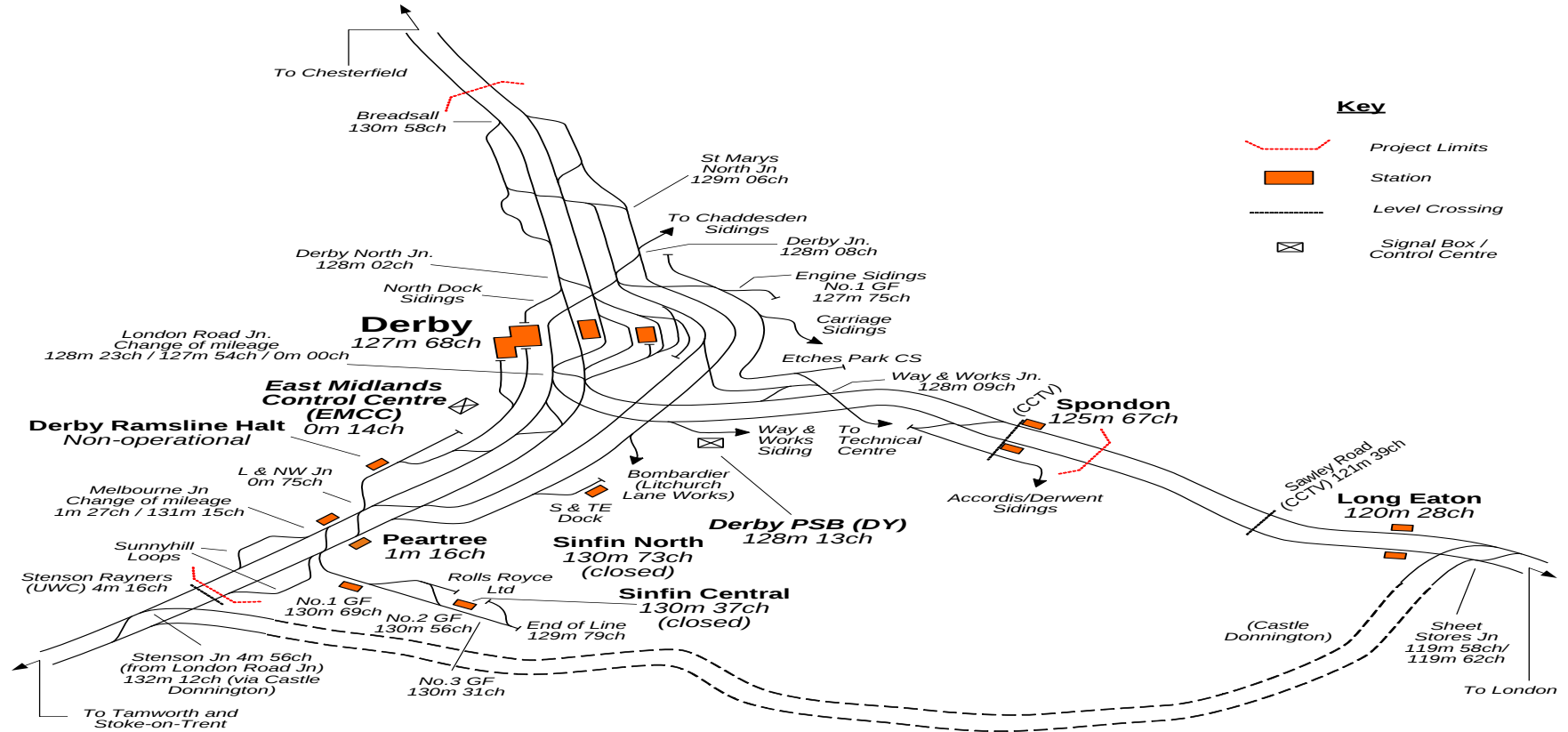
Renew life-expiring  
signalling and track  
infrastructure in the area

04

Deliver a layout ready for  
future electrification



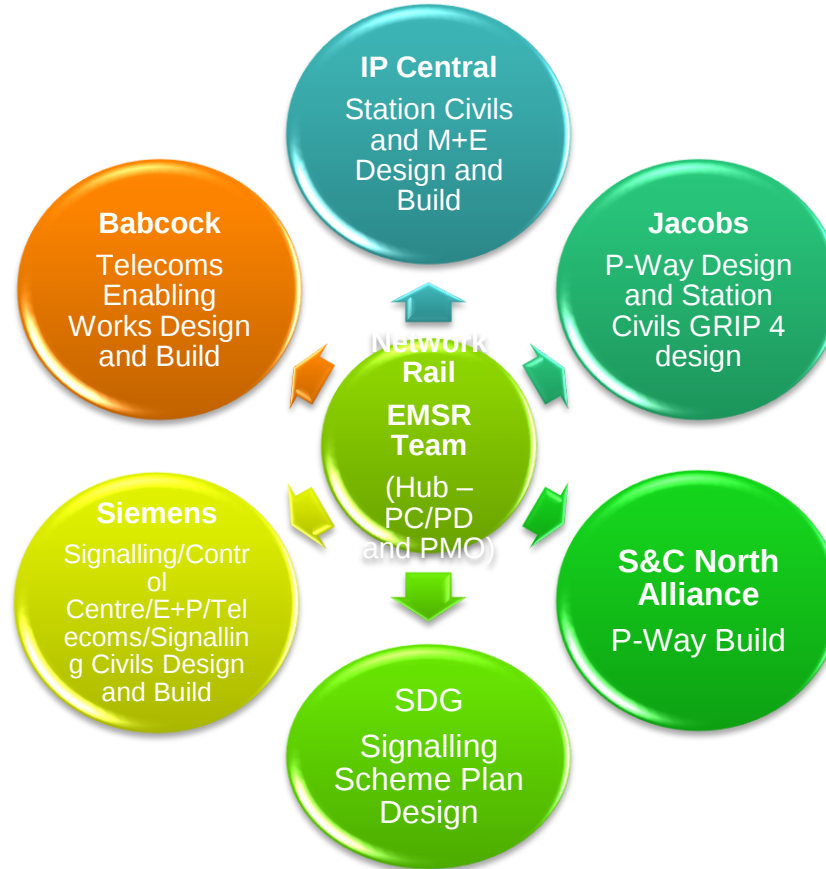
# Project Area



# Contracting Strategy – Hub and Spoke

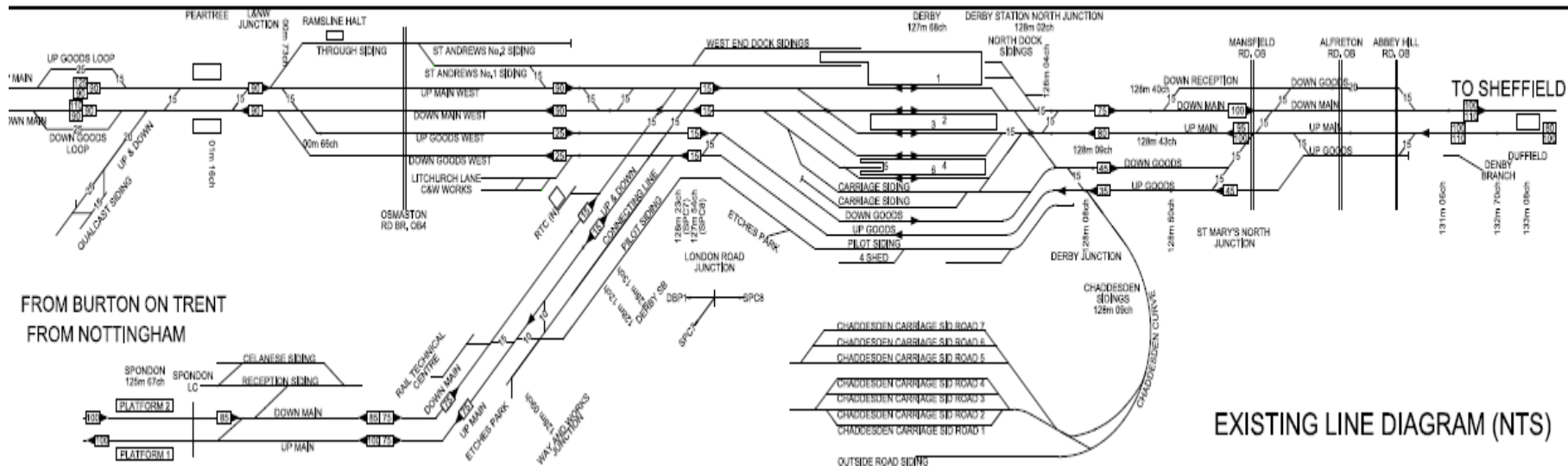


**SIEMENS**

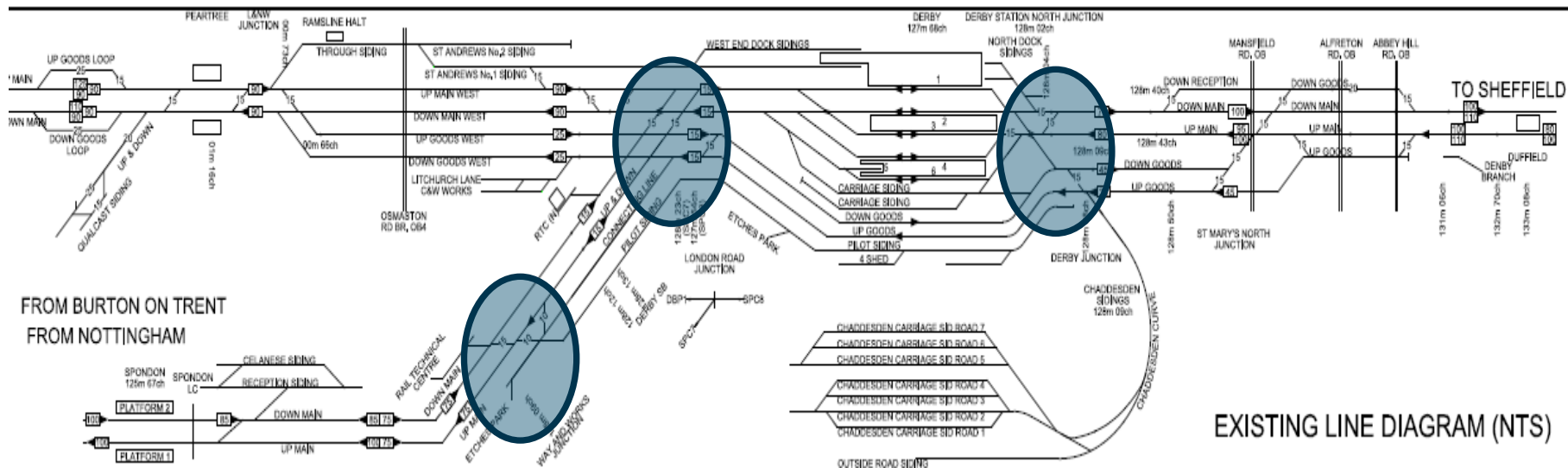


 **GallifordTry**

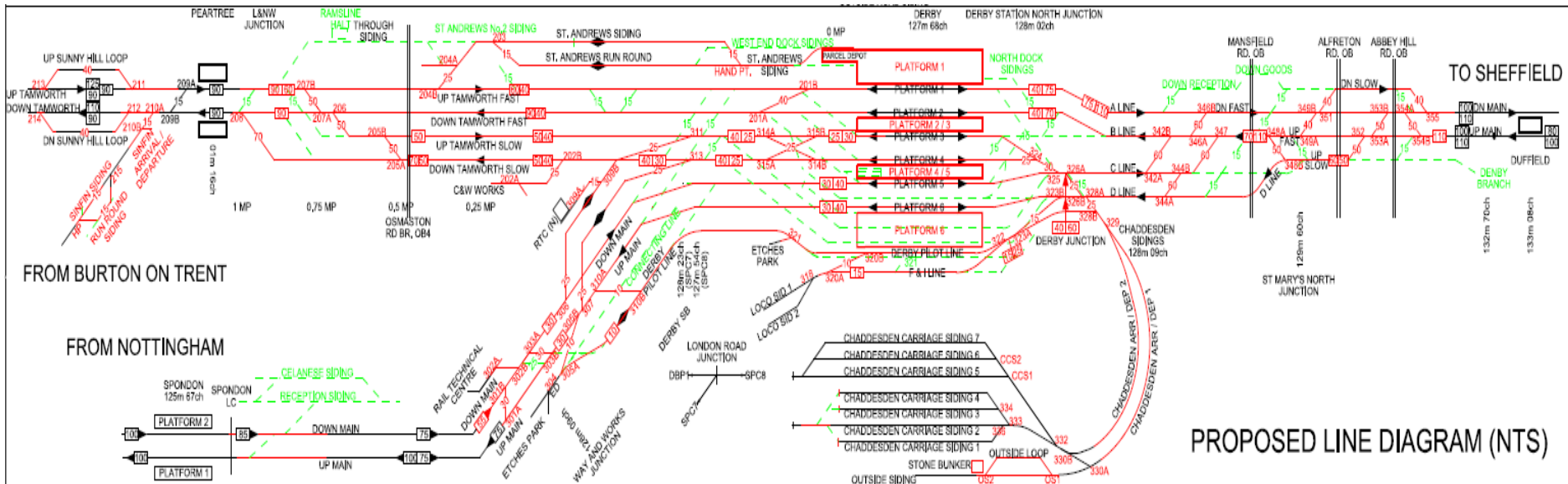
# Layout Changes - Existing



# Layout Changes – Existing – conflict areas



# Layout Changes - Proposed



# Layout Changes - Proposed

- S&C LAYOUT SIMPLIFIED.
- STANDARD S&C UNITS.
- INCREASED PLAIN LINE SPEEDS CLOSER TO THE STATION.
- HIGHER SPEED SWITCHES AT THE EXTREMITIES.
- LAYOUT ENABLES HIGHER SPEED APPROACH TO STATION LIMITS.
- PROPOSED LAYOUT 'OHL' FRIENDLY.

Derby OLE?

# Derby OLE?

- Electrification at Derby considered as part of MMLE until the project was paused.
- Elements of the current design maintained the ability to electrify – Passive Provision.
- ❖ Gantries and other structures have been installed with an indicative wire height assumed such that they are clear of future wires.
- ❖ All signalling equipment has been immunised.
- ❖ Where ever possible GRP handrail has been installed.
- ❖ The canopy on the new platform has been installed with an indicative wire design in mind.
- ❖ London road junction has been simplified so that it can be electrified in the future.

# Derby OLE? – CONT'D

## **Future Electrification at Derby to take account of -**

- ❖ **Further assessment of clearances at Existing Overbridge Structures (Mansfield Rd, Alferton Rd, Derby Station Footbridge) that may result in reconstruction/ track lowering at these locations.**
- ❖ **The resolution of Signal Sighting issues due to the Proposed OLE structures.**
- ❖ **The relocation of lineside equipment to facilitate OLE structure installation.**
- ❖ **Resolution of the Electrification of Etches Park Depot due to the non-suitability of the Existing layout for wiring.**

# Enabling Works



# Enabling Works



*Toton Panel Build*

Osmaston Rd. Pt 2  
Wk. 2,3,4



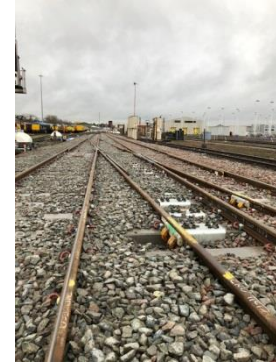
*Chad Sidings  
Wk. 27*



Sunny Hill Wk. 21



*Pilot Line Christmas Works*



*Way & Works  
Wk. 42-46*



# The 79 Day Challenge



# Top 5 Challenges

## 01 FATIGUE

Resources required for 24/7 working over 79 days  
Mitigation: Project Fatigue Management Plan in place.  
Rosters have been checked against the HSE Fatigue Index tool.

## 02 PROTECTION

Key elements of the existing signalling need to be kept operational under existing signalling arrangements during the 79 days.  
Mitigation: Early identification of affected cables. Protection in place.

## 03 ETCHES PARK

Etches Park Depot remains the key East Midlands Trains hub for maintaining their fleet during the 79 days.  
Mitigation: Close liaison with EMT Depot Operations Manager.

## 04 WORKSITE TRAINS

Timings of the Engineering Trains form the basis of the Integrated Programme.  
Mitigation: Close and regular liaison with the SCO team and 24/7 monitoring of the integrated programme.

## 05 SCALE OF THE JOB

The large volume of works and extended duration of the project, with the massive logistical efforts involved, create a railway job on a scale that is rarely seen  
Mitigation: Extensive scenario planning, contingency planning, Lessons Learnt from other blockades, Partial Closure implementation, change control process, extensive de-confliction and readiness reviews.

## Further Challenges/ issues

- **Culverts / Structures Assessments.**
- **Renewal site spread over 7 mile.**
- **Hottest summer since 1971.**
- **CRT Management, Weld & Stress.**
- **Delivery of LWR & management.**
- **843 Panels – mixture of road/ rail delivery.**
- **SG Switch & G switch Deliveries.**

- **Management of materials.**
- **Scope change – formation issues.**
- **Maintaining Quality.**
- **Control points – damaged/ lost.**
- **Resources – 79 Days 24/7.**
- **Reporting, Shift Briefing – Silver command.**

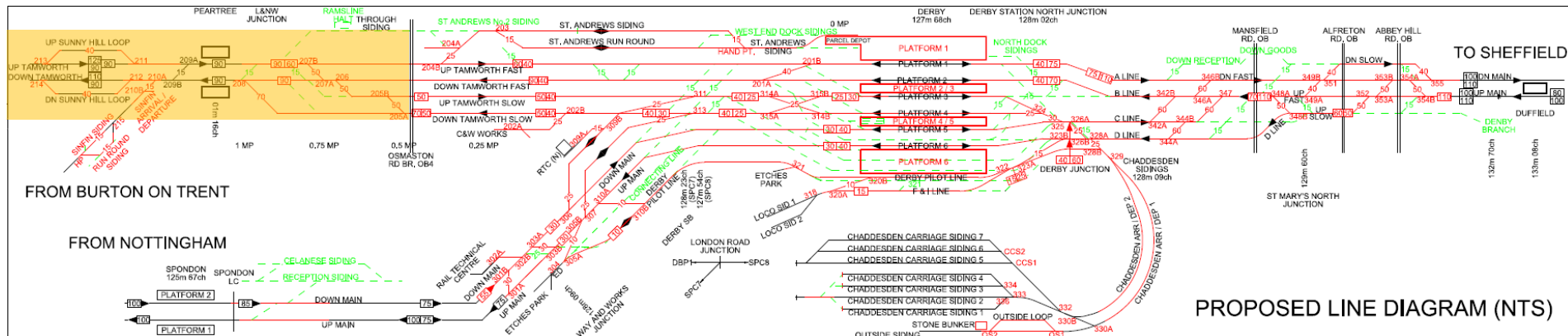
- **Integration / compatibility of works.**
- **Headroom issues.**
- **Extent of Close Out Works.**
- **Critical Plant Failures.**
- **Driver issues/ Supply Chain.**

# Staging Overview

Stage 1: 23:35 Sat 21/07/18 – 02:00 Mon 30/07/18  
Stage 2: 02:00 Mon 30/07/18 – 05:00 Mon 13/08/18  
Stage 3: 05:00 Mon 13/18/18 – 05:00 Mon 20/08/18  
Stage 4: 05:00 Mon 20/08/18 – 05:00 Mon 27/08/18  
Stage 5: 05:00 Mon 27/08/18 – 05:00 Tue 04/09/18  
Stage 6: 05:00 Tue 04/09/18 – 05:00 Mon 08/10/18



# Blockade Stages Overview



**STAGE 1: DAYS 0 - 9**

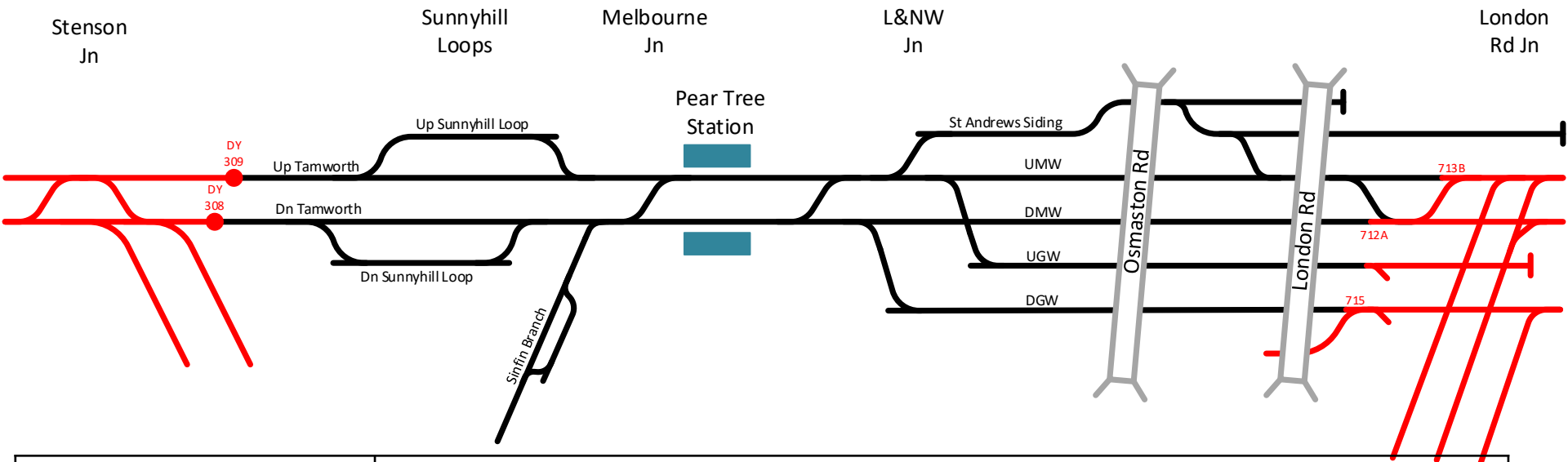
**23:35 Sat 21/07/18 – 02:00 Mon 30/07/18**

| OVERVIEW     |                  | TRAINS: 30       |              |
|--------------|------------------|------------------|--------------|
| 1A           | 1B               | 1C               | 1D           |
| 4 Pt. End    | 5Pt. End         | 1 Pt. End        | 1 Pt. End    |
| 14 PL Panels | 36 PL Panels     | 4 PL Panels      | 15 PL Panels |
| -            | 220m Loose Relay | 710m Loose Relay | -            |

# Stage 1- Lines Open

← To Birmingham

To Derby →

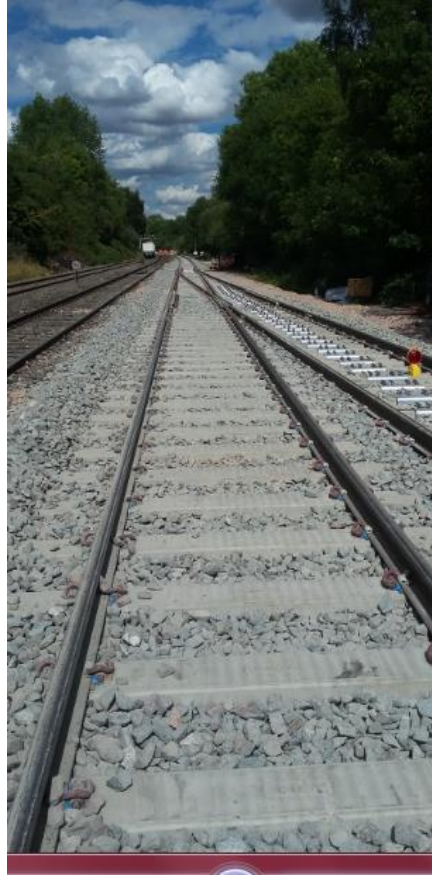


|       |                                                      |
|-------|------------------------------------------------------|
| Note: | Stenson Jn (Exclusive) to London Road Jn (Exclusive) |
|-------|------------------------------------------------------|

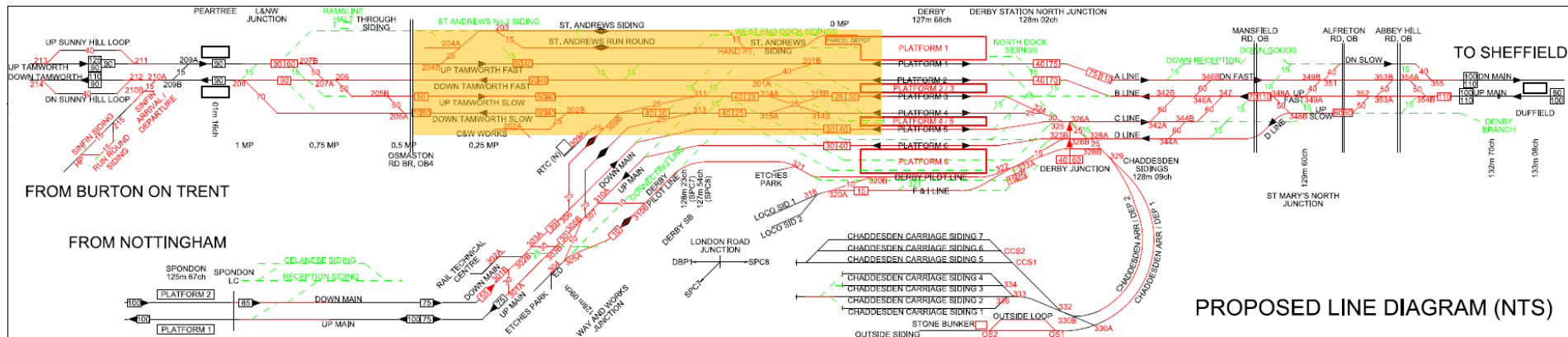


Stage 1

# Stage 1



# Blockade Stages Overview



**STAGE 2: DAYS 9 - 23**

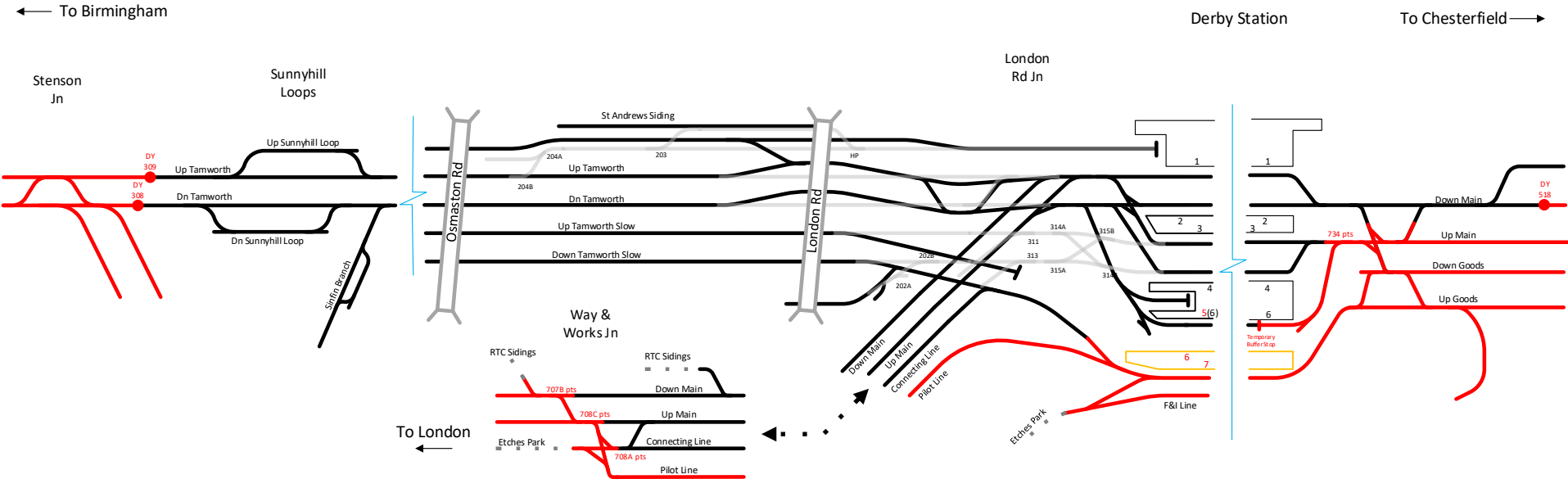
**02:00 Mon 30/07/18 – 05:00 Mon 13/08/18**

## OVERVIEW

TRAINS: 39

| 2A              | 2B          | 2C               | 2D          | 2E           | 2F           | 2G         | 2H          | 2I          | 2J           |
|-----------------|-------------|------------------|-------------|--------------|--------------|------------|-------------|-------------|--------------|
| 35m Cross Drain | -           | 3 Pt. Ends       | 1 Pt. End   | 2 Pt. Ends   | 7 Pt. Ends   | 1 Pt. End  | -           | -           | -            |
|                 | 8 PL Panels | 5 PL Panels      | 3 PL Panels | 34 PL Panels | 14 PL Panels | 1 PL Panel | 7 PL Panels | 8 PL Panels | 13 PL Panels |
| 535m Scrap      | -           | 540m Loose Relay | -           | -            | -            | -          | -           | -           | -            |

# Stage 2 - Lines Open



## Note:

Stenson Jn (Exclusive) to Derby Station (Platform 6 only partially blocked with Temporary Buffer). Blocked from Way & Works Jn south of Derby

# Stage 2



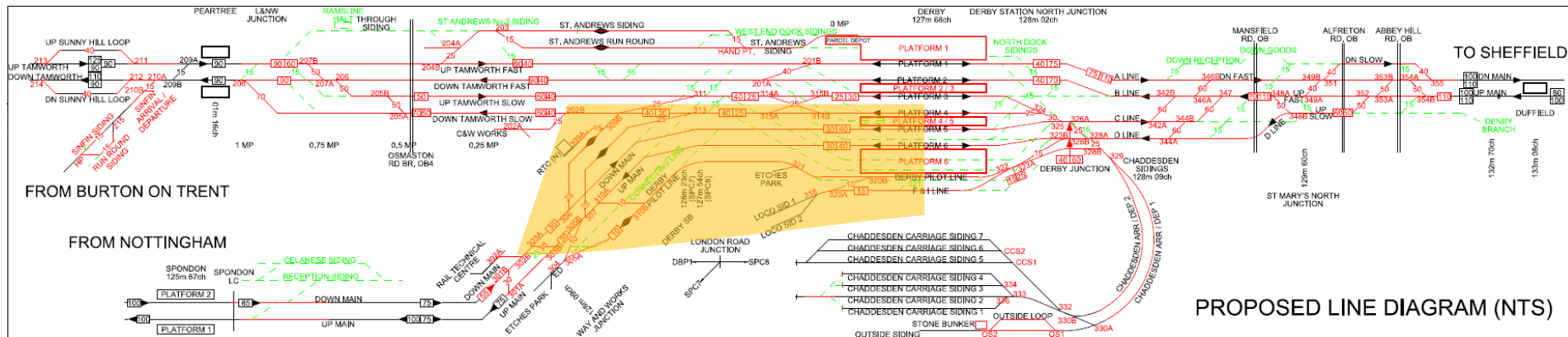
# Stage 2





Stage 2

# Blockade Stages Overview

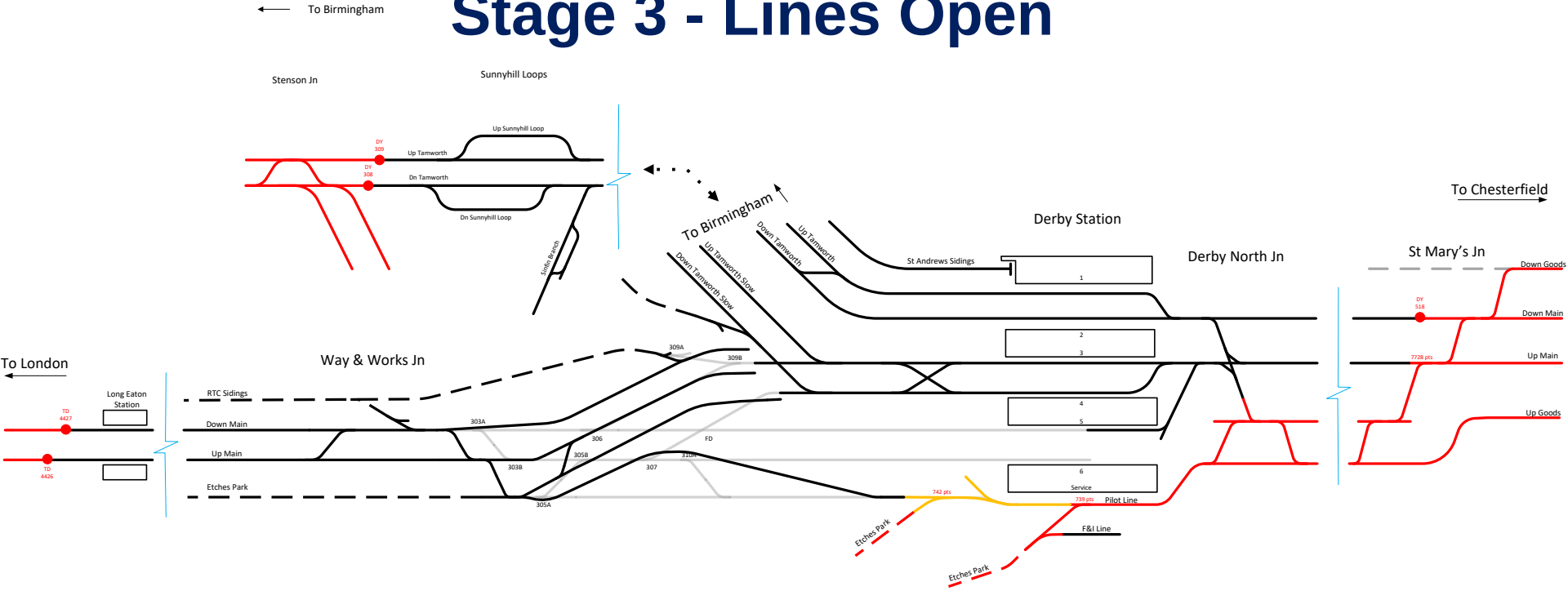


**STAGE 3: DAYS 23 - 30**

**05:00 Mon 13/18/18 – 05:00 Mon 20/08/18**

| OVERVIEW                 |                                | TRAINS: 22  |              |
|--------------------------|--------------------------------|-------------|--------------|
| 3A (Temporary Haul Road) | 3B                             | 3C          | 3D           |
| -                        | 1 Pt. End & Abandon AV Turnout | 4 Pt. Ends  | 4 Pt. Ends.  |
| 4 PL Panels              | 14 PL Panels                   | 9 PL Panels | 51 PL Panels |

# Stage 3 - Lines Open



## Note:

Stenson Jn (Exclusive) to Derby Station (New Platform 6 open to traffic).  
Blocked from Long Eaton Station to St Mary's Jn on the Up and Down Mains.  
Goods Lines North of Derby Station are open to Traffic.  
Day 24 - Pilot extended to 739 pts to allow for removal of temporary AV Turnout

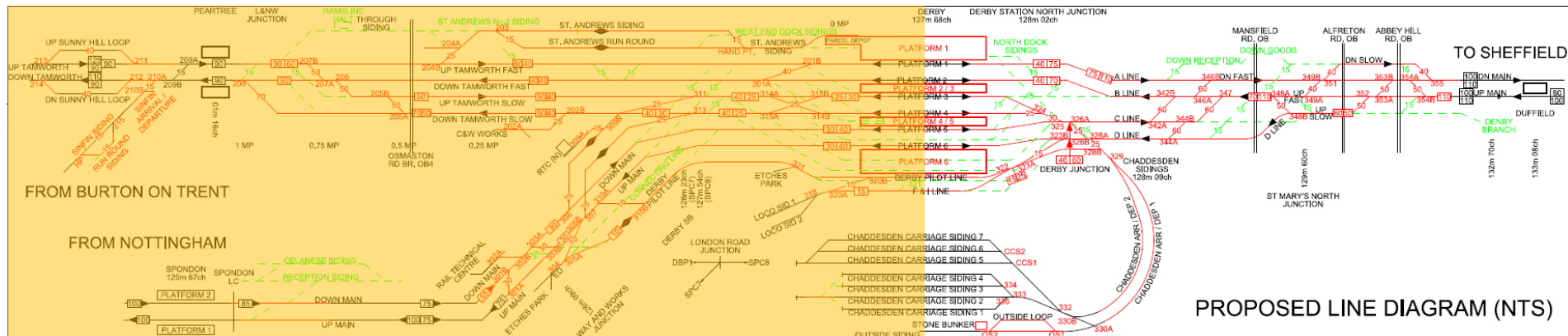
# Stage 3



# Stage 3



# Blockade Stages Overview

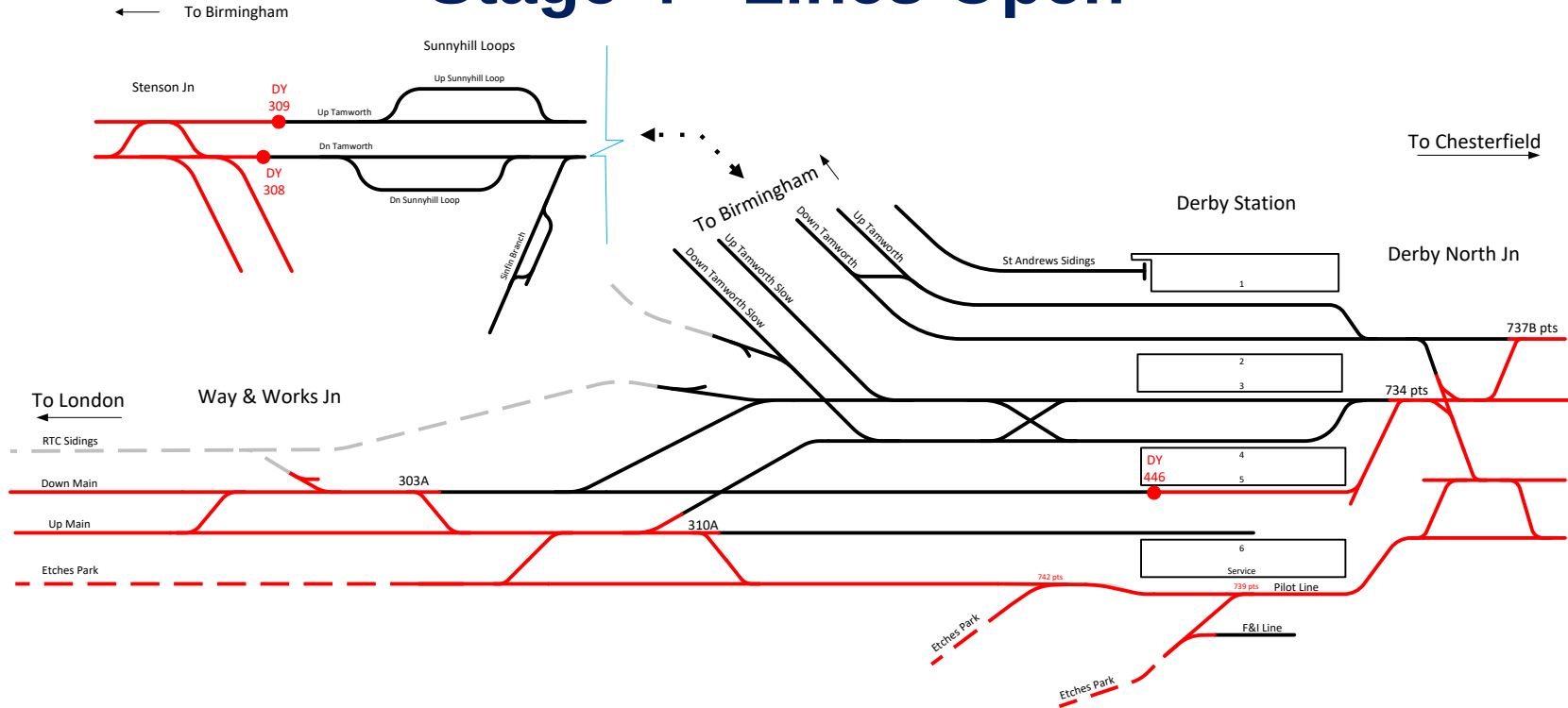


**STAGE 4: DAYS 30 - 37**

**05:00 Mon 20/08/18 – 05:00 Mon 27/08/18**

| OVERVIEW         |                                     | TRAINS: 2                     |
|------------------|-------------------------------------|-------------------------------|
| Sin Fin          | Spondon                             | Follow-Up                     |
| 1 Pt End.        | Remove switch panels from crossover | Weld & Stress Stages 1, 2 & 3 |
| 110m Loose Relay |                                     | DTS Tamp Stages 1, 2, & 3     |

# Stage 4 - Lines Open



## Note:

From 06:15 to 20:30 (Mon, Tue, Wed Thu, Fri, Sat, Sun) day, the possession is as above.

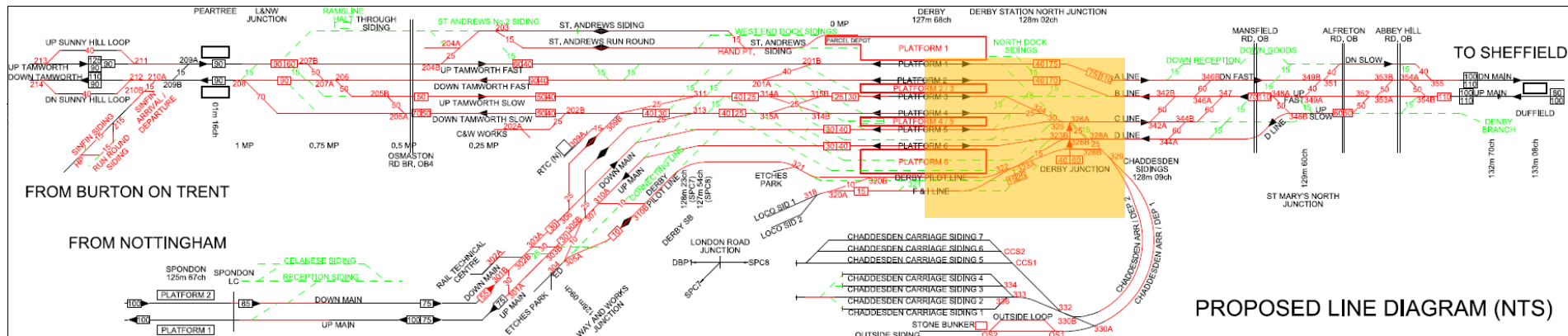


Stage 4



Stage 4

# Blockade Stages Overview

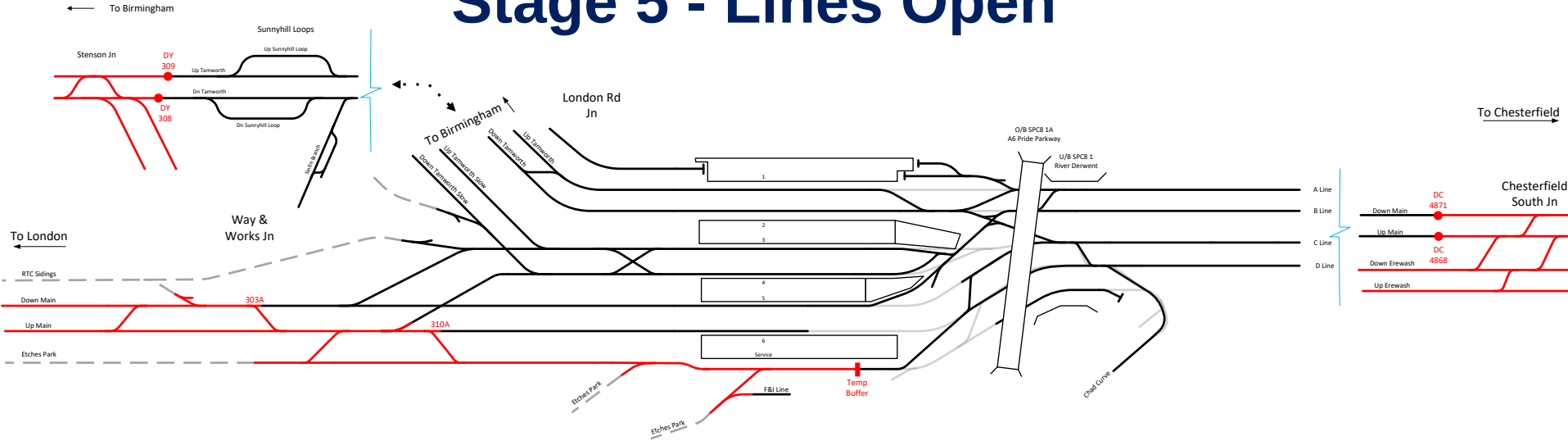


**STAGE 5: DAYS 37 - 44**

**05:00 Mon 27/08/18 – 05:00 Tue 04/09/18**

| OVERVIEW     |             |             |              | TRAINS: 30  |           | Drainage: 355m |  |
|--------------|-------------|-------------|--------------|-------------|-----------|----------------|--|
| 5A           | 5B          | 5C          | 5D           | 5E          | 5F        | FG             |  |
| 5 Pt. Ends   | 1 Pt. End   | 1 Pt. End   | -            | 2 Pt. Ends  | De-scoped | 1 Pt. End      |  |
| 30 PL Panels | 8 PL Panels | 9 PL Panels | 28 PL Panels | 3 PL Panels |           | 12 PL Panels   |  |
| -            | -           | -           | -            | -           |           |                |  |

# Stage 5 - Lines Open

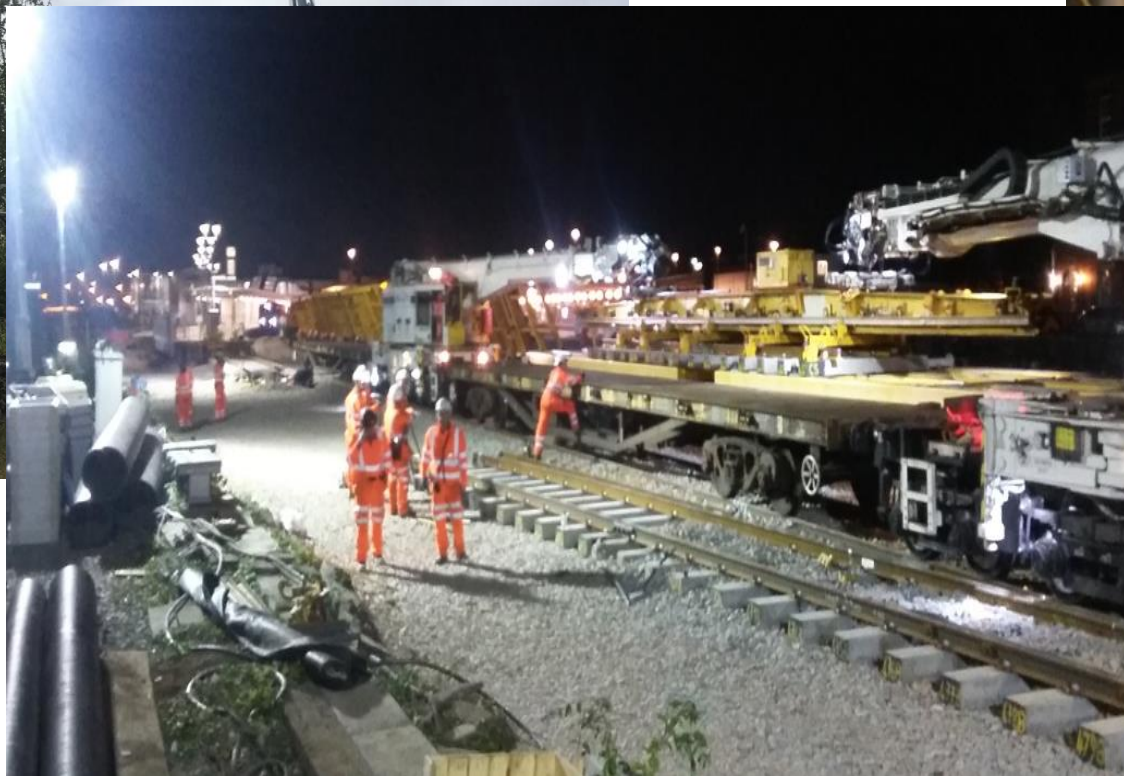


## Note:

The possession extends on Saturday night week 23 to Sheet Stores / Long Eaton on the SPC7 Lines.

The possession extends on Saturday night week 23 to South of Stenson Jn on the DPB Lines.

**NOTE: FROM 23:35 SAT 01/09/2018 ALL TRAINS / TAMPERS MUST ARRIVE / LEAVE TO THE NORTH AS WHEELS FREE TESTING IS OCCURRING ON THE SOUTH AND WEST APPROACHES TO DERBY STATION**

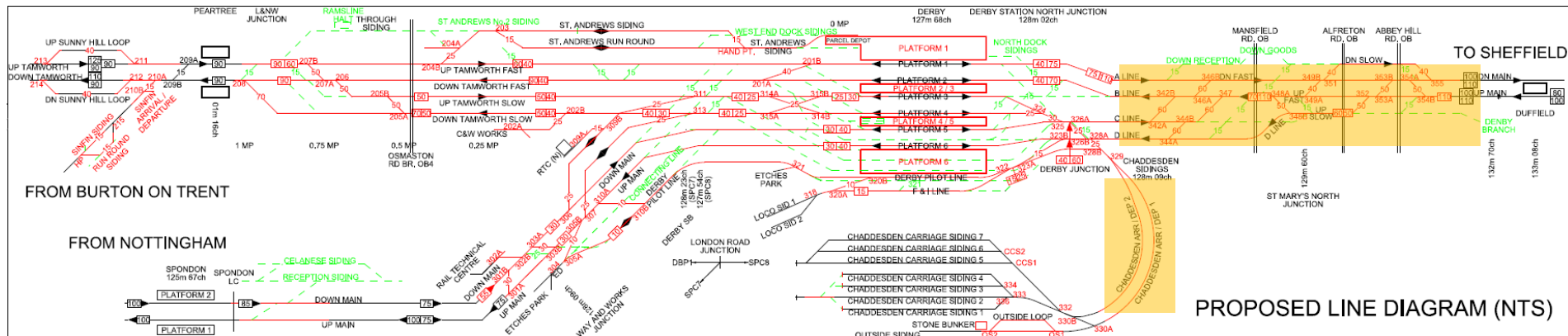


Stage 5



Stage 5

# Blockade Stages Overview

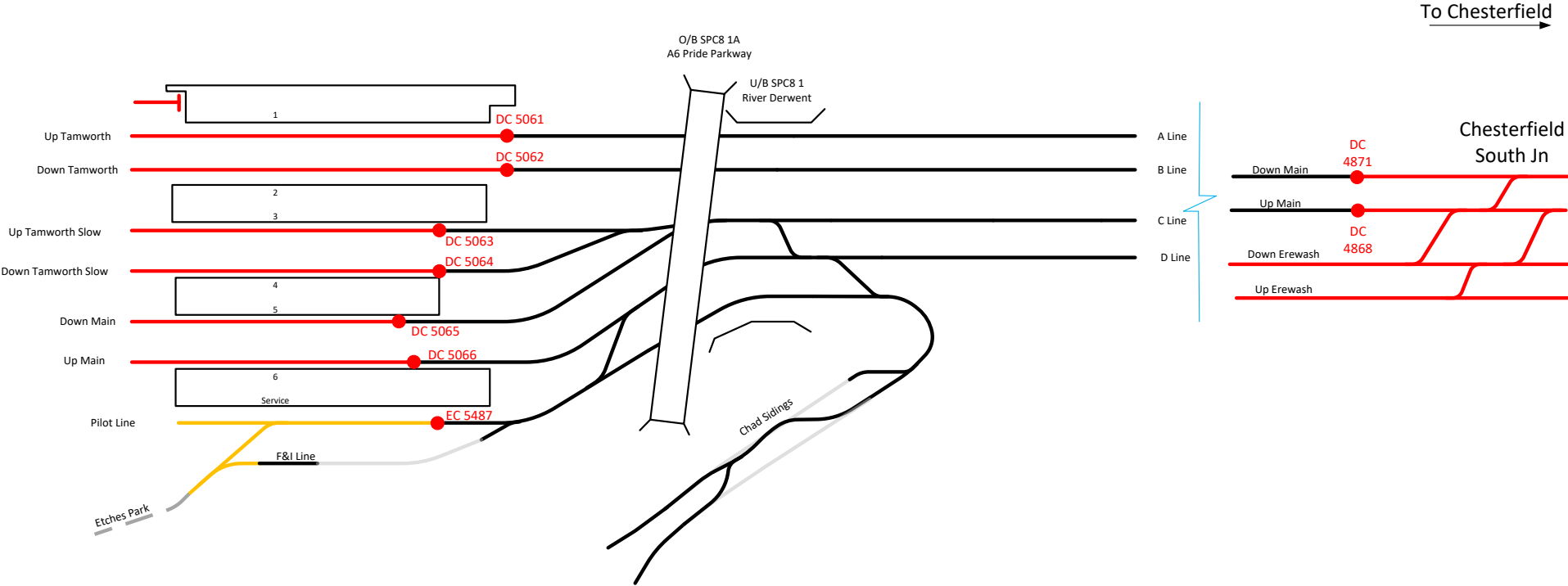


**STAGE 6: DAYS 45 - 79**

**05:00 Tue 04/09/18 – 05:00 08/10/18**

| OVERVIEW  |           |           |                   | TRAINS: 79 |  |
|-----------|-----------|-----------|-------------------|------------|--|
| 6A        | 6B        | 6C        | Chad Double Track | F&I Line   |  |
| 9 Pt Ends | 3 Pt Ends | 6 Pt Ends |                   |            |  |
| 3156m     | 3300m     | 2200m     | 538m              | 280m       |  |
|           | -         | -         | -                 |            |  |

# Stage 6 - Lines Open

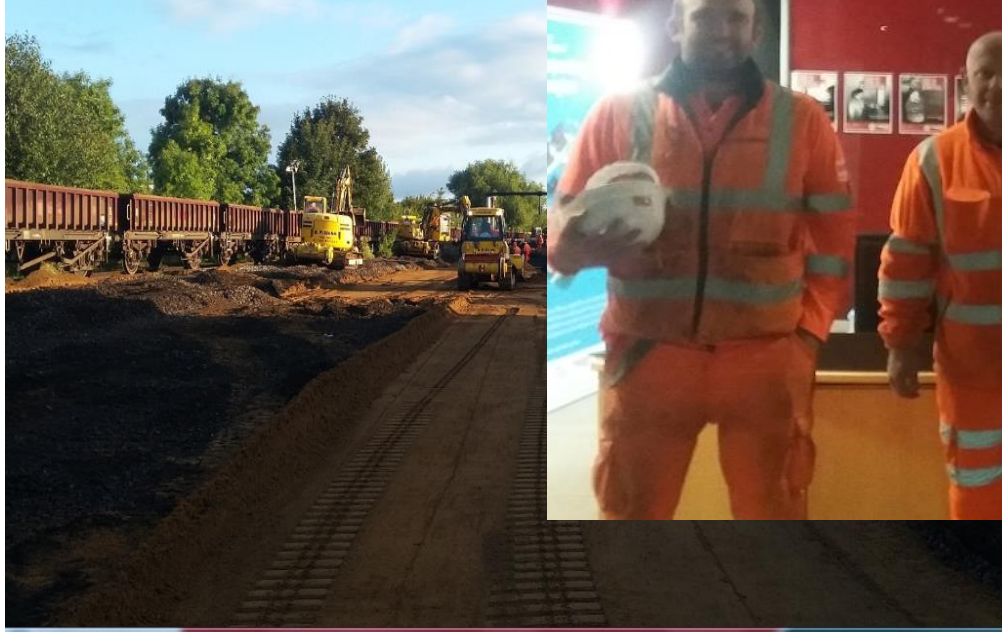
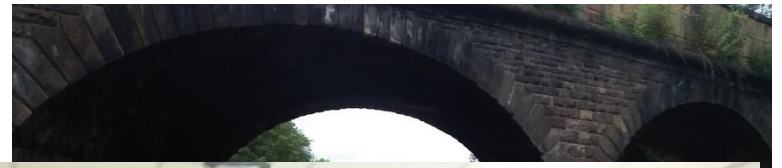


## Note:

Pilot Line to be taken under possession of siding in Week 27 to complete F&I Line Work



Stage 6



Stage 6

# Pictures of 79 day partial closure



# Derby Remodelling Before and After



# SITE VIDEO - DRONE

[DERBY VIDEO V6 1080p.mp4](#)



# THE STATS

**SIEMENS**



# Derby Station Platform 6/7 Build

- 4,500 Tonnes of waste removed from site.
- 330 Pre Cast Concrete units installed.
- 3500m<sup>3</sup> Platform Fill poured.
- 2500m<sup>2</sup> Paving Laid.

## **Derby Station Platform Modifications**

### **Removal & Realignment of Platforms 2,3,4,5 & old 6**

- 10,500 Tonnes waste removed from site.
- 462 Pre Cast Concrete units installed.
- 2042m<sup>3</sup> Platform Fill poured.
- 2769m<sup>2</sup> Paving Laid.

# Signalling Equipment Installed

- 9 Gantries.
- 111 Signal Heads.
- 1 PSP.
- 130 AWS.
- 290 Axle counters.
- 12 REBS.
- 140 Speed Signs.
- 19 UTXs.

**SIEMENS**

# Project Statistics – The Biggest Ever!



STAGE 1: DAYS 00 - 09

STAGE 2: DAYS 09 - 23

STAGE 3: DAYS 23 - 30

STAGE 4: DAYS 30 - 37

STAGE 5: DAYS 37 - 44

STAGE 6: DAYS 44 - 79

121,948

TONNES OF SPOIL

116,181

TONNES OF BALLAST

18,000

EST. PEOPLE SHIFTS

1,932

(394 TEAMS) WELDS

622<sub>m</sub>

DRAINAGE

DURATION

79

DAYS

65

POINT ENDS

243

S&C PANELS

10,285<sub>m</sub>

LOOSE

18,000<sub>m</sub>

PLAIN LINE

600

PL PANELS

248

TRAINS

105

TAMPING SHIFTS

74

KIROW SHIFTS

812

RRV  
SHIFTS

# Stakeholder Feedback

# Stakeholder Feedback

## Message to Secretary of State for Transport

Derby Resignalling was the biggest investment into the railway in Derby for decades and an important opportunity for the industry to show it can deliver major planned investments.

All partners involved were absolutely committed to delivering an outstanding project, which put passengers first. The right time hand back of the project and the results of the regular passenger surveys shows the project has succeeded and we are immensely proud of the dedication and skill shown by our teams.

We would be delighted to help create a case study or a similar piece of work which the industry could learn from and help to inform future projects or arrange an opportunity to talk you through this project in more detail. If either of those options was appealing, please do not hesitate to get in touch.

Thank you,

A handwritten signature in black ink, appearing to read 'Martin Griffiths', with a stylized flourish at the end.

Martin Griffiths  
Chief Executive  
Stagecoach Group

A handwritten signature in black ink, appearing to read 'Andrew Haines', with a stylized flourish at the end.

Andrew Haines  
Chief Executive  
Network Rail

# Stakeholder Feedback

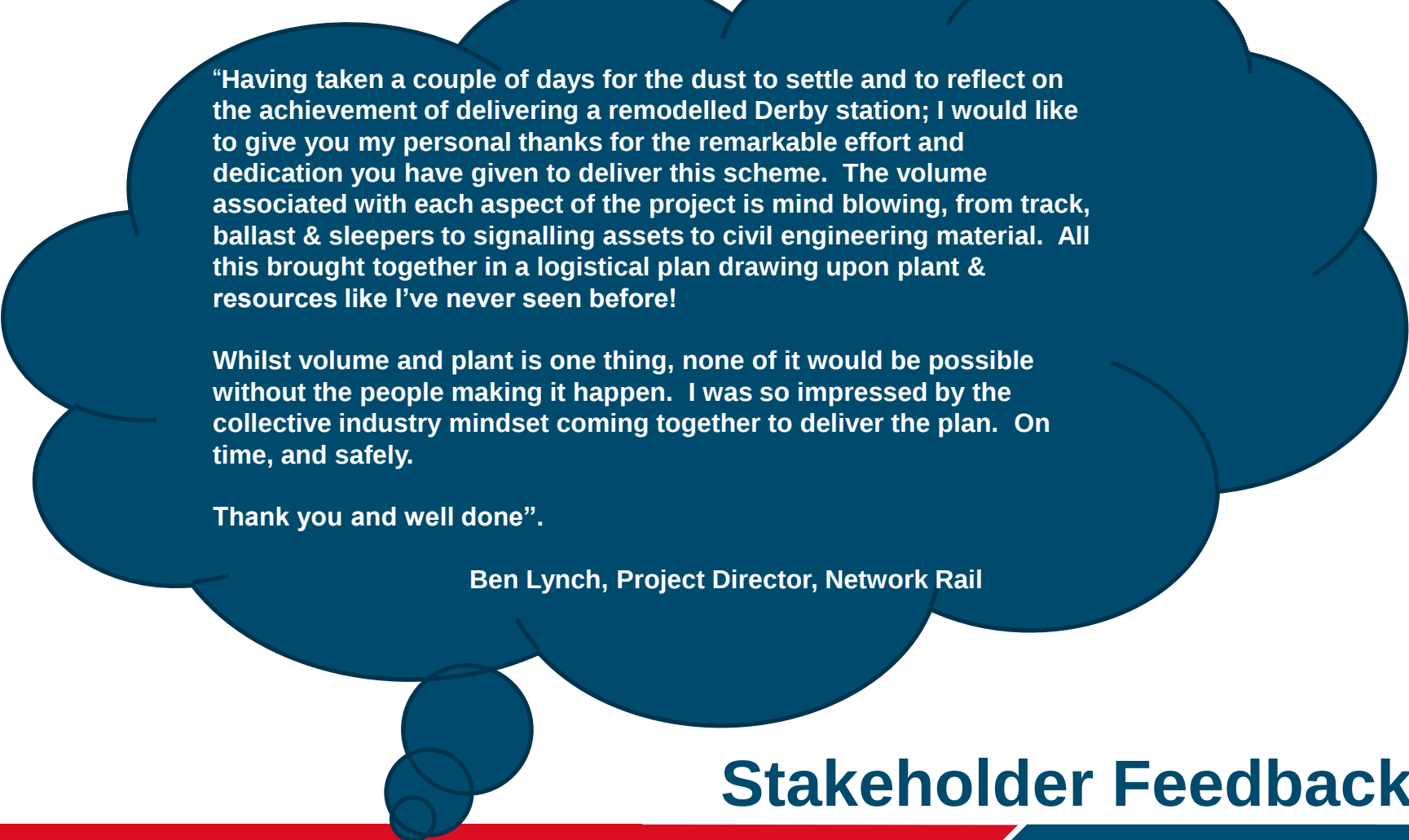
“Well done and thank you to everybody who has been involved, not just over the last 79 days, but over the last few years of detailed planning to get this right.

This has been the biggest continuous piece of disruptive work that we have ever undertaken, equivalent to 30 bank holiday jobs completed one after another.

The way that the various teams have worked together has been fantastic to deliver an outcome which will benefit passengers for many years to come.

Thank you to everybody who helped to make this happen”.

Steve Featherstone, Programme Director Track, Network Rail



“Having taken a couple of days for the dust to settle and to reflect on the achievement of delivering a remodelled Derby station; I would like to give you my personal thanks for the remarkable effort and dedication you have given to deliver this scheme. The volume associated with each aspect of the project is mind blowing, from track, ballast & sleepers to signalling assets to civil engineering material. All this brought together in a logistical plan drawing upon plant & resources like I’ve never seen before!

Whilst volume and plant is one thing, none of it would be possible without the people making it happen. I was so impressed by the collective industry mindset coming together to deliver the plan. On time, and safely.

Thank you and well done”.

Ben Lynch, Project Director, Network Rail

# Stakeholder Feedback

Questions?