

Reflections on Seven Decades of Permanent Way Infrastructure Engineering, and Membership of the Former PWI

Presentation to the RailEl, Thames Valley Section

Didcot Railway Centre, Wednesday 3 June 2026

Malcolm Pearce, F and HLM, the former PWI, Thames Valley Section

- **Brief Career Details**

Railway Civil Engineer, specialising in the survey, design, planning, execution and overall management of the maintenance and renewal of the permanent way infrastructure (fence to fence)

- 1956-1971 Permanent Way Office District and Division, Derby and Nottingham
- 1971-1977 AACE Leicester (Nottingham Division)
- 1977-1981 ACE North/PWME, Watford Division
- 1981-1989 Permanent Way Renewals Engineer, Watford Division
- 1989-1994 Project Engineer, HOE, BRB HQ
- 1994-1996 Project Manager North, Southern Track Renewals, W & E Anglia
- 1996-2005 Senior Consultant, Balfour Beatty Rail Technologies
- 2005-2013 Consultancy, Projects for various Clients, Track and Plant
- 2013 to date Occasional voluntary advisory projects, track maintenance and renewal and rail plant applications, including the heritage railway sector

Membership History: The PWI

- (Student Member 1956-1958)
- 1958 Elected Associate Fellow 1958 (58-310) Nottingham and Derby Section
- 1971 Elected Fellow Nottingham and Derby Section
- 1978 Transferred to Northampton and Watford Section
- 2009 Transferred to Thames Valley Section
- 2018 Awarded Honorary Life Membership for services to the PWI
- 1972-1978 Committee Member Nottingham and Derby Section
- 1979-1983 Chairman Northampton and Watford Section
- 2011-2019 Secretary Thames Valley Section, Committee Member until today
- Between 1962 and 2021 I presented over 90 papers on track infrastructure topics to UK Sections (all except Irish) and other professional Institutions
- In 2017, 2018 and 2019 I specified, organised and managed the site work for the PWI's Trackwork Challenge; also taking part as a reviewer/assessor at the March 2022 event

EARLY DAYS: 1950s/1960s

- The P/Way Drawing Office and Technical Competence
- Work Study and the BIS
- The Modernisation Plan
- Length Marking
- WCML Electrification
- Marples/Beeching
- APT
- Declining Morale
- The PWI: A&B Courses, Lectures, Visits, Meetings

THE 1970s: A REAL MIXTURE OF DESPONDENCY AND OPTIMISM

- Wholesale rationalisation of assets
- Severe financial restrictions, declining traffic volumes
- Anti-rail lobby and negative public perception
- Changing face of traditional UK industries
- More Electrification and the advent of HSTs
- WCML Infrastructure failures and subsequent remedial works
- APT trials and entering service, then failure.....
- Still room for Innovation and upkeep of standards
- Re-signalling schemes involving S&C layout remodelling
- My role as AACE Leicester – aligning technical competence into people and process management – the opportunity to shape the rest of my career
- Graduates – MICs – CETC involvement
- The PWI – Attendances at Section meetings substantial, all grades of staff and other disciplines and functions

THE 1980s: A NEW DAWN - OPTIMISM, INNOVATION, FOCUS

- Business-led, Investment in assets, Customer-focus
- Route improvements, Speed increases
- Innovation, New methodology and plant
- WCML rehabilitation continues
- Inter-Regional working parties steered by BRB set up to develop and implement both track maintenance and renewal methodology – fostered sharing of ideas and produced positive outcomes across the network
- Possession planning looked at alternatives to RoTR for some work
- Opening the line at higher speeds on major routes commercially advantageous
- Commitment working introduced for track renewals staff
- In late 1988 the BRB commenced the HOE Project, aiming to substantially increase track renewals productivity and efficiency
- Training in new working practices
- CETC: increased input at PWME and Renewals courses
- The PWI – presentations at all Sections increasingly focussed on evolving technology and methodology, positive and practical dissemination of information

1990-1996: THE LEAD-UP TO MAJOR CHANGE

1996-1999: A NEW CHAPTER

- The decade began positively, with public satisfaction improving
- HOE Project continued, first systems procured and put into service. Process widely promoted through PWI Section meetings
- Improved track maintenance productivity, efficiency and quality
- Introduction of new methodology and plant for track renewals

THEN

- Privatisation loomed: expenditure curtailed, no new orders for plant and equipment, impetus gained in previous years lost
- Come the day: loss of expertise; change to management of Contractors; loss of sense of ownership
- HOE Project put on hold. Restarted in 1998 by Railtrack
- Concerns grew about lack of direction and purpose or long-term asset management by Railtrack

1996-1999: A NEW CHAPTER - continued

- From 1998 Railtrack began to re-introduce various BR initiatives: Contractors were incentivised to procure new plant and introduce innovative working practices
- Balfour Beatty Rail, with Serco, developed line speed track and OLE inspection with dedicated vehicles
- Balfour Beatty Rail and GrantRail began the process to procure high capacity rail cranes primarily to facilitate S&C renewals
- Construction of HS1 from Fawkham Jct. to the Channel Tunnel commenced in 1998 and progressed rapidly
- Fragmentation of the system provoked confrontation and decline in standards. Silo mentality precluded dissemination of information and debate
- During this time the PWI made every effort to reconcile best practice with Railtrack; however critical voices, even when well-intentioned, were discouraged

2000-2002: FINAL YEARS OF RAILTRACK

- Increasingly difficult times for Railtrack, deteriorating standards and lack of direction, finally collapsing into insolvency in 2001 and being replaced by Network Rail in 2002
- Some initiatives however progressed:
- HOE; 2x Kirow High capacity rail cranes delivered and put in service; inspection procedures further developed; new plant ordered; methodology to improve efficiency and productivity developed by Contractors
- Construction of HS1 from Fawkham Jct. to St.Pancras commenced in 2001
- The PWI struggled to remain relevant

2002-2013: HEADLINES

- Under Network Rail stewardship:
- HS1 sections completed in 2003 and 2007 and fully opened
- HOE procured and put into service
- Further Kirow rail cranes procured and deployed (now 15 in UK)
- Track and OLE inspection regimes developed and implemented
- Modular Switch Project initiated
- Major upgrade of WCML including key junctions and OLE
- Standards updated, controls re-instated, new contracting relationships established
- Did ownership of the asset manifest itself.....?
- Many ORR assignments to review initiatives

2002-2013 HEADLINES - continued

- HS2 construction started in 2012. Euston to Birmingham, then to Manchester and Leeds
- PWI: difficult times, relevance diminishing. Membership static, age profile increasing. Attendances at Section meetings declining. Financial crunch came in 2010, possible demise in 3 years unless action taken.
- Plan put in place by then CEO David Packer and the Board. Measures restored viability and set the future direction for the Institution

2014 TO DATE

WHAT ARE YOUR REFLECTIONS ON THIS PERIOD? I WILL ADD THESE TO THIS SLIDE

- My involvement during this period has been mainly advisory to various Contractors and Consultants on HOE, plant development and methodology.
- Specifically I assisted Kirow Ardel in the introduction of 2x KRC250 rail cranes and tilting wagons to TfL for its Modular Switch Project on surface and sub-surface lines
- HS2: we should be anticipating commencement of services between London and Birmingham this year to relieve capacity issues on WCML – “possible” completion of this section in 2036, 24 years on from the much-heralded start. Remainder of the Project cancelled! Capacity issues remain, current answer is to reduce service frequency.....??
- The PWI: a continuing success story with recognition from regulatory bodies, universities, overseas railway undertakings and organisations, and Network Rail. Strong Corporate Member response and involvement in seminars, workshops and events
- Following discussions with the then CEO David Packer in 2016 I initiated the PWI Trackwork Challenge. I managed the 2017,18 and 19 events and acted as a reviewer at the 2022 event.

SUNNYHILL DPB UP WEST GOODS 1962

Mechanised production-line
Drainage. All materials on ballast
train, in sequence.

Subject of my first-ever lecture at
a PWI meeting, Autumn 1962



ALFRETON TCC UP MAIN/DOWN GOODS WIDEWAY 1963

Mechanised Drainage using early Poclain excavator with 360deg capability.

Weekday possession of Goods Lines, T4 applied on Up Main, T/I in attendance

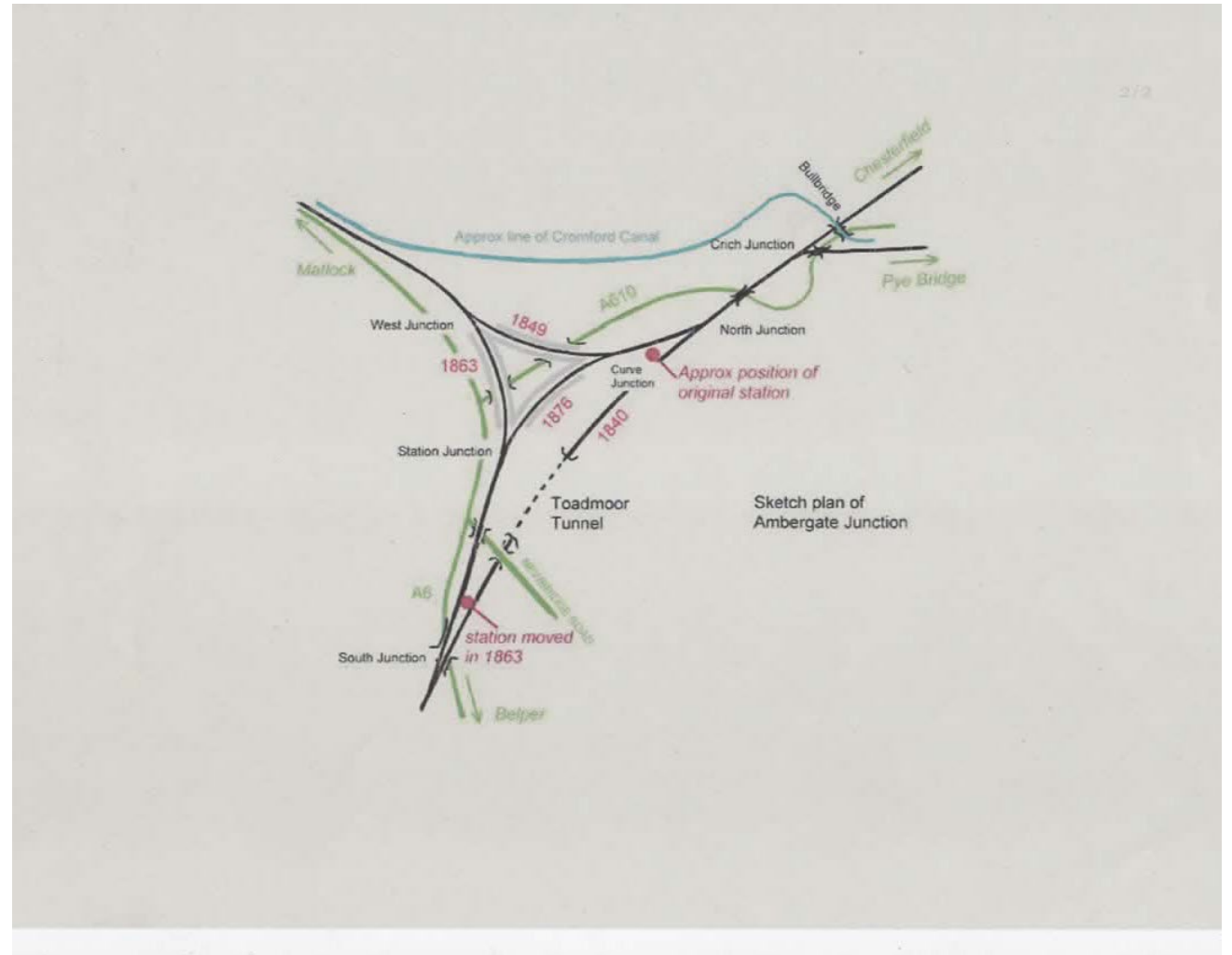


AMBERGATE WEST JUNCTION (NOW AJM)

Unique triangular station and
avoiding line dating in final form
from 1876.

Sketch plan showing the layout in
the mid-1960s immediately prior to
rationalisation following the
“Beeching cuts”.

The avoiding line remains as the
MML SPC8; the only other remnant
is the now single line from the South
Jct. to Matlock, (AJM) serving just
the former Up platform on what was
the Midland St.Pancras to
Manchester Central main line until
1968.



AMBERGATE WEST JUNCTION RELAYING 1965

Crossover BU&T layout ready for
loading, Derby W&W sidings



AMBERGATE WEST JUNCTION RELAYING 1965

BU&T layout detail, laths and
location markings prior to loading,
Derby W&W sidings



AMBERGATE WEST JUNCTION RELAYING 1965

Double Junction in course of fabrication as BU&T layout, Derby W&W sidings.

Steam Crane 1063/7 assisting, will also be used for loading the layout and installing on site.



AMBERGATE WEST JUNCTION RELAYING 1965

Site installation: Crossover

Unloading a “kench” of timbers for crossover.



AMBERGATE WEST JUNCTION RELAYING 1965

Site installation: Crossover

Aligning timbers to “white line”
and laths prior to installation of
steelwork.



AMBERGATE WEST JUNCTION RELAYING 1965

Site installation: Crossover

Levelling beds prior to installation of remaining steelwork, switch panel and closure panel.



AMBERGATE WEST JUNCTION RELAYING 1965

Site installation

Double Junction

Up line lead and diamond laid in,
aligned and packed, ready for
removal of old Down line.

(Main line circular curve to the
right, LH turnouts to/from North
curve platform lines)



AMBERGATE WEST JUNCTION RELAYING 1965

Site installation

Double Junction

Removal of final old Down line
panel prior to levelling beds and
installation of through timbers,
steelwork, switch panel and
closure panel



AMBERGATE WEST JUNCTION RELAYING 1965

Site installation

Double Junction

Preparing to lift Down line switch panel from wagon. (Down line closure panel under).

Crane 1063/7, jib fully derricked, effective 11feet radius, panel weight 6.4 tons. Consistent conditions to laying in point.



AMBERGATE WEST JUNCTION RELAYING 1965

Site installation

Double Junction

Preparing to lay in Down line switch panel.

This is around 1300 Sunday, closures were cut, alignment finalised, ballast unloaded, layout fettled, trains and equipment cleared from site and possession given up o/t at 1645.

S&T staff continued to work b/t and to signalling rules (mechanical locking), normal working resumed on both routes 0630 Monday



ROADE LEC1 DOWN MAIN 1985

Original DTS (not self-propelled)
on first LM Rgn. l/s opening
following Ballast Cleaning, 450m

RoTR weekend possession 15.5
hrs. Open at 40 mph 1530 Sunday

RoTR possession 0030-0630
Monday. Open at 100 mph

Set standard for future BC work



QUEENS PARK LEC1 UP FAST 1986

Ballast Cleaning following
resleepering on top.

Design agreement with OLE
Engineer re track and contact wire
compatibility in event of Ballast
Cleaner failure, TSR 40mph.



KIROW RAIL CRANES

Balfour Beatty Rail Plant KRC1200
No. DRK81611 and KFA support
wagons ready for transit W6A,
RA8, 60mph, in any train
formation.

I'm ready to move!



KIROW RAIL CRANES

HMRI Letter of Approval

Balfour Beatty Rail KRC810

February 2002

HMRI reference: PR113190
Contact: Eur Ing John Wesley
Direct Line: 0207 717 6027
Your reference: RJR/M207

Date: 12 February 2002

Dear Sir

RAILWAYS AND OTHER TRANSPORT SYSTEMS (APPROVAL OF WORKS, PLANT AND EQUIPMENT) REGULATIONS 1994:
KIROW - KRC 810 UK RAIL CRANE NO. DRK 81602 AND ASSOCIATED RUNNER WAGONS BB97403 AND BB97404 BALFOUR BEATTY RAIL PLANT

I refer to Mr R J Reed's letter dated 6 February 2002 enclosing the report dated February 2002 on the testing of the above equipment and associated Certificates of Engineering Acceptance.

Subject to conformity with the operational limitations set out in the VAB and EA Certificates Nos. EL/1296/2001, EL/1507/2001, EL/2057/01, EL/0119/02, and RSAB/319/08/i, I confirm that Kirow - KRC 810 UK Rail Crane No. 81602 and associated runner wagons BB97403 and BB97404 and equipment (Balfour Beatty Rail Plant) are approved.

Yours faithfully



Dr Derek Hill
HM Assistant Chief Inspector of Railways

cc: Project Manager
The Engineering Link
Trent House
Railway Technical Centre
London Road
Derby DE24 8UP

Mr R J Reed

Eur Ing J. Wesley
HMRI, Rose Court

Mr K J Watson
Head of Acceptance Services
RSAB
Railtrack Plc
Railtrack House

KIROW RAIL CRANES

HMRI Letter of Approval

Balfour Beatty Rail KRC1200

January 2005

PO Box 5065
Raynesway
Derby DE21 7ZQ

Our File Reference: RI/58/8/1003/03
HMRI reference: PR144281
Your File Reference: BBRP/Tech/HCC2/94
Our Contact: John Daniels
Direct Line: 0207 717 6025

10 January 2005

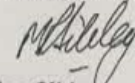
Dear Sir

**RAILWAYS AND OTHER TRANSPORT SYSTEMS (APPROVAL OF WORKS,
PLANT AND EQUIPMENT) REGULATIONS 1994.**
Balfour Beatty Rail Plant Ltd: Korow Rail Crane Type KRC 1200 UK

I refer to the letter dated 07/01/2005 from Malcolm Pearce, Project Manager and enclosed Certificate of Completion with test results.

I confirm that the Korow Rail Crane Type KRC 1200 UK is approved.

Yours faithfully



Myles Sibley
HM Assistant Chief Inspector of Railways

Cc Malcolm Pearce
Project Manager
Balfour Beatty Rail Plant Ltd

Ian Morrice
HMRI

John Daniels
HMRI

KIROW RAIL CRANES

HMRI Letter of Approval

Carillion (subsequently Colas Rail)

KRC1200

June 2005

Newbury
Berkshire
RG14 1JH

Our file reference: RI 58/8/1003/04
HMRI reference: PR165166
Your reference:
Our Contact: Mr J Daniels
Direct Line: 0207 717 6025

27 June 2005

Dear Sir

**RAILWAYS AND OTHER TRANSPORT SYSTEMS (APPROVAL OF WORKS,
PLANT AND EQUIPMENT) REGULATIONS 1994.**

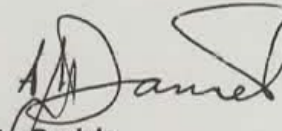
Purchase By Carillion Rail Of 1 x KRC 1200 (Kirow) UK Rail Crane

I refer to your letter dated 20 June 2005 regarding the scheduled delivery of the above equipment in the UK on 1 July 2005.

From the information you have provided, Carillion Rail is not required to seek approval from HMRI under the above Regulations for the use in the UK of a Type KRC 1200 UK- Kirow Rail Crane, as a current Kirow Rail Crane: Type KRC 1200 UK was approved by HMRI (for Balfour Beatty Ltd), back in January 2005.

Our files have now been closed, and no further action required.

Yours faithfully,



John Daniels
HM Inspector of Railways

cc Mr I Morrice) HSE/HMRI Rose Court
Ms J Greig)

KIROW RAIL CRANES

March 2005 Balfour Beatty Rail
Plant Depot, Ashford, Kent:

Despite my name having just been
unveiled on DRK81611, my wife is
the person invited by its dedicated
crew to pass judgement on the
ergonomics of the crane cab and
controls.....equality at work!!!



THANK YOU FOR LISTENING

I hope my reflections of Railway life and its close relationship with the PWI over nearly 70 years have not only been of interest to you but have also stimulated your own thoughts and aspirations for this still great industry and public service of ours.