

Air Quality Update – Birmingham New Street Station Jan 2021 Azhar Quaiyoom & Jamie Shaw

Background & Challenge – recap (2018)



- Historical comparisons against EU Air Quality Directive that is not applicable in stations and depots
- Management of Health and Safety at Work Regulations 1999 and Control of Substances Hazardous to Health Regulations (COSHH) 2002 are applicable
- Train Operating Companies have operational guidelines to turn off engines but these were too long (after 15 – 20mins)
- Clear roles and responsibilities to be established across relevant departments
- > Technology constraints to retrofit solutions to engines

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University of Birmingham and Network Rail Study Findings 2017

- Report / Preliminary Analysis focuses upon nitrogen dioxide (NO2) and Particulate Matter (PM) based on EU Guidelines;
- Analysis acknowledges factors such as train idling and wind speeds create a variance in the results.
- Fume extract system / Impulse fans design assumes carbon dioxide (CO2) is a good indicator for other pollutants such as NO2 (as in HSE HSG187), but report states no correlation between CO2 and NO2;
- Clear correlation between spikes and train idling.

Note: UofB stated 'considerable week-by-week variation in pollutant levels and thus care must thus be taken in the interpretation of the results'.

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What we did -Fume Extract Systems enhancement



Existing 98 jet fans system across 12 platforms underwent enhancement in 2019

Previous array of CO2 sensors that control 4 speeds of each fan over 8 zones replaced

Additional 100 nitrogen dioxide sensors now installed to 8 speed fan control

Integration into Building Management System (BMS) to provide live emission level data and system status

Spent > £750k

Remove fumes towards end of platforms into open space



Pre V Post Ventilation System Enhancement (2016/17 V Feb 2020) – Nitrogen Dioxide, NO2



New Street Action Plan 2018 - 2020

Policy: Reduce Train idling

- Platform supervisors monitoring and recording excess train idling
- ✓ Further briefings from Train Operating Companies to promote behaviour change
- ✓ Discipline monitoring reports for station non compliance

Technology: Auto-Shutdown Software upgrade

- ✓ Shutdown class 220/221 engines after 12 minutes, Avanti use 6 minutes
- ✓ Avanti & Cross Country implemented on full diesel fleet

Process: Train Coupling/de-coupling (excessive acceleration of units)

- ✓ Working group set up to analyse issue
- Check hot spots around the station & avoid excessive acceleration

Health: Occupational Health Check

✓ Network Rail health screening for all train dispatch staff

Engagement with Dept. for Transport, Office of Rail and Road, and the Rail Safety and Standards Board (RSSB)

- ✓ Share best practices, feedback loop to DfT to influence change in train operators
- ✓ Steering Group with RSSB with further monitoring programmes



Network Rail Strategic Direction



New environmental sustainability strategy published in late 2020

Low emissions key pillar of strategy

Key target: reduce pollutants by 25% by 2030

Highlights:

June 2021: New air quality standard to manage and improve air quality

Dec 2021: Monitoring plans implemented regionally



Industry Collaboration

- 3 year air quality monitoring project funded by DfT delivered by RSSB starts in 2021;
- Requires collaboration with Network Rail and Train Operating Companies;
- Monitoring to take place at 100 stations across England and Wales to provide baseline emissions;

Further cross industry collaboration:

- Air Quality Strategic Framework launched in 2020 bringing all stakeholders together in improving air quality across the network;

- Set of projects established to help understand hot spots, exceedances, and agree mitigations and innovations.



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Air Quality – Strategic Direction



The Vision – clean, green mass transport, a low emission railway, continual improvement so that our passengers, neighbours, and employees breather healthier air

Measure – consistent data on a range of pollutants across stations and depots

Manage – take action to mitigate and improve air quality

Collaborate – engage the rail industry to solve problems together, educate the business

Innovate – identify and implement technology to improve air quality and embed it is a key parameter for rail operations

Ten point Air Quality Action Plan –2020



- 1. Creation of an Air Quality Standard for Stations / Depots.
- Include best practice for monitoring to all routes / regions.
- Agree outputs with all stakeholders and include feedback into a final version.
- 2. Set up **regional AQ reviews** and governance for monitoring led and coordinated centrally
- 3. Create and deliver air quality briefing packs to the stations and regions

4. Ensure that **COSHH Risk Assessments** are carried out where gaps exist. Aim to exceed COSHH Regulations on average for all our stations and long term aim to improve air quality by **25% by 2030** in line with our Air Quality KPI. The regions may set their own targets as part of devolution.

5. Agree the '**gap**' within stations regarding monitoring data and compliance with current legislation

Ten point Air Quality Action Plan – continued



6. Expand **Air Quality Focus Group** workshops with TOCs / FOC's / ROSCO's similar to that for New Street to London Euston and other stations at risk of air pollution and include;

- Strategy for train idling reduction
- Revisions to corporate idling policy reductions
- Update to innovations within ROSCO's in battery hybrids and assistance for route to market
- Ventilation systems and innovations within filtration/ionisation

7. Establish **framework** for reviewing and monitoring adherence to agreed policies (e.g. idling) and air quality data

8. Continue **Stakeholder Engagement** with DfT / RSSB /NR and ORR to check compliance. Continue engagement within **RSSB AQ Strategic Framework** to ensure consistency in monitoring, avoid duplication and share data in a consistent manner.

9. Engage with all **Local Authorities** and agree **Clean Air Zone** interface and record any future implication to GB Rail.

10. Research **innovative technologies** and operations that can help deliver air quality improvements across the network

Exploring Innovative technologies

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- Network Rail are actively seeking innovative solutions and products that can improve air quality in stations and depots.
- in-built filtration systems capable of reducing particulate matter (PM10 & PM1) and gases (NOx and SOx) being explored
- Network Rail awaiting further test data from suppliers.
- Welcome the industry to come forward with innovative solutions for treating polluted air.
- Have supported many Innovate UK research competitions for innovative solutions in air treatment.







Thank you







A better railway for a better Britain