

# **NETWORK RAIL - PASSENGERS AND FREIGHT**

**Environmental analysis, market audit and strategic recommendations**

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# INTRODUCTION

Network Rail (“NR”) claims that UK will witness an increase in demand of rail use by up to 100% for passenger trains and 90% for freight trains by 2041 (National Audit Office, 2015).

This paper analyses Network Rail’s external and internal environments, produces a marketing audit and provides strategic recommendations, in relation to the company statement regarding the increase in demand.

## ABOUT NETWORK RAIL

According to National Audit Office (“NAO”), NR owns and maintains 20,000 miles of track across the UK whilst employing 35,500 staff and with a revenue covering 68% of current operational costs (National Audit Office, 2015).

The Government have invested £25bn in a set of upgrades scheduled for 2013-2019 and have also planned a £34bn investment to facilitate the construction of High Speed 2 (“HS2”) (Network Rail, 2015).

NR’s main sources of revenue are: franchised track access and grant income (90%), freight revenue and property rental income (<2%) (National Audit Office, 2015).

## MACRO-ENVIRONMENTAL FACTORS

### Political

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#### Public Sector body

NR was declared a public sector body on 1/Sep/2014, meaning it is now subjected to a higher level of scrutiny from bodies such as the Parliament, Office of Rail and Road (“ORR”) and The Secretary of State for Transport (Network Rail, 2014).

NR have retained the freedom to manage their operational and commercial objectives, provided their decisions fall within the regulatory and control frameworks (Department of Transport, 2014) (Annex 4).

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#### Brexit

NR’s claim about the doubled increase in demand was released before the Brexit referendum result in favour of leaving the EU. The Prime Minister’s (Theresa May) full support for the result (Steven Swinford, 2016) (Annex 5) provides insurance that the UK will seek to leave the EU.

Although the Government have yet not provided details about the implementation of Brexit, it is expected to have a legal barrier which removes the freedom of travel for any EU member into the UK.

This raises the question of sustainability and the need to still increase the capacity to facilitate a potential double increase of demand, in the next 25 years.

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## Government stimulus

A study carried out in 2014 shows the passive influence which government has on members of the public, in all decisions made of a political nature, through which members of the public are encouraged to use public transport (Marti-Henneberg, 2014).

This questions the factors considered behind the authorisation of the government's support for HS2 and whether these factors were realistic or of an idealistic nature.

## Environment

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### Environmental impact

Civil works do have an impact on the environment in terms of noise, vibration, dust and waste.

Therefore, a number of assessments are required prior to commencing works under Health and Safety Act, Department of Transport, Department of Environment, Food and Rural Affairs and others (Annex 8, Annex 9), and after the completion of various restoration schemes can be setup (Keating, 2015) (Annex 10).

These assessments and mitigation measures are also legal requirements and increase the project costs substantially.

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### Environmental responsibility

NR have implemented the Safety & Sustainable Development ("S&SD") (Network Rail, 2013) function in 2013 and alongside the existing Safety, Health & Environment ("SSE") function, are reviewing Supplier Quality Assurance Requirements (Network Rail, 2011) to make sure suppliers are also considering environmental responsibility in their actions.

These efforts substantially increase the costs for projects producing assets that impact the environment i.e. manufacturing wooden sleepers. The less-intrusive option involves concrete sleepers, which increases transport and installation costs.

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### Climate change

Climate change brings a specific set of risks such as track buckling, frozen points/crossings, ice damaging pantographs, track flooding, etc. (Annex 1) which require new innovative means of risk avoidance.

The research behind the mitigation measures and applying them require a considerable investment beyond the basic extension cost (Network Rail, 2015).

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### Electrification

Pressure groups and Government are emphasising electrifying sections of the UK rail infrastructure that still require diesel trains (Network Rail, 2015) (Annex 21).

The current Control Period 5 contains elements of work which refers to the electrification of North-West, Great Western route, Cardiff and Midland Main Line area and several others (Network Rail, 2015). The initiatives involve installation of Overhead Line Equipment alongside the track and involve substantial investments.

## Social

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### Metropolitan congestion

The increased road congestion in large metropolitan areas in UK, requires road users to choose alternative transport routes such as the use of trains (Charlie Bibby, 2016), (Annex 6), (Annex 7).

Whilst the government may argue that investing in rail infrastructure projects will result in more users commuting by train, the long duration of such projects raises questions about the expected short terms improvement effects.

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### Increase of population

Statistics show an increase in the UK population between 2000 and 2016 from 58mil to 65mil, an increase in density (people/km<sup>2</sup>) from 78.8% to 81.7% and an explicit increase in the urban UK population from 46mil to 53mil.

The demographic argument supports the need for rail infrastructure upgrades to provide adequate means of travel and increased capacity.

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## Technological

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### Research and Development (“R&D”)

Over 40 UK institutions including 6 Universities (Network Rail, 2013) (Annex 13) are involved in research rail-specific processes, using new technology to improve the use of composite materials, the wheel-rail interface with respect to wear (Dodgson, 2014), detection of track failure, improving signaling aspects, etc.

Whilst the rail sector is being represented within a number of institutions in terms of research and development, the impact from these developments will affect people mid-long term basis and implementing elements of innovation will be costly given the size of the rail network (National Audit Office, 2015).

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### ICT trends

Research suggests that ICT trends which include the use of WIFI, passenger information points (“PIS”) and infotainment screens, CCTV equipment, etc. become required to meet current user expectation levels (Crown, 2015) (Annex 14).

It’s also evident that an element of comfort is expected when using laptops/tablets whilst commuting, which determines commuter’s decisions to choose rail instead of other modes of transport (Jay Saw, 2015).

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### QoS framework applications

Nicholson, Kirkwood, Roberts and Schmid (2015) have created a system to simulate and benchmark performance using simulation software tools, comparison of timetables and visual tools to observe delays, whilst using real operational data with digital representations; which can be extremely productive if used by Train Operator Companies (“TOCs”)

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## Legal

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### Consent management

Managing listed building, bridges, stations (Department for Communities, 2015) substantially increases project costs through identifying more expensive means to achieve the same outcome with minimal impact to the building's structure or architecture(Annex 15).

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### Reduce public subsidy

In 2013 NR set the objective to reduce public subsidy by selling un-utilised buildings and land (Network Rail, 2014). The company claimed in 2016 that by 2020 over 12,000 homes are to be built and released for use through local administration (Rail Technology Magazine, 2016).

Research doesn't show what actual steps were taken between 2013 and 2016. However at the end of 2019, NR will move from Control Period ("CP") 5 to CP6 (Network Rail, 2014) and will be required to produce transparency on the above progress.

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### Access for All ("AfA")

AfA is a £37mil project (Annex 17) (Annex 18) designed to upgrade 135 NR stations (Department of Transport, 2011) to provide access for disabled or elderly people or passengers with strollers (Network Rail, 2011) or large baggage. The upgrade involves the installation of lifts or electric ramps and upgraded power supplies.

A mean average shows an investment value of ~£274,000 per station including designing and constructing the appropriate facilities.

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## Economic

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### Demand increase

National Audit Office (2015) claim that by 2041 there will be an increase in demand of 100% for passengers and 90% for freight trains. However, it does not provide the reasoning behind the forecast or if Network Rail has plans or the means to support the increase in demand.

Office of Rail Regulation (2013) claimed in 2013 an increase of 14% passenger demand by 2018 and 22% increase for freight demand by the same year. However, ORR relies on governmental support to provide confidence and encouragement in determining users of the rail.

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### Decreasing track replacement cost per mile

When comparing North American Railroads manufacturing costs, pressure is put on Network Rail to identify new methods to decrease replacement costs for 1 mile of track (Rail Konsult, 2012).

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### Substantial penalties

Engineering works' overruns may lead to NR being fined with substantial penalties - NR avoided a fine of £14mil for the overrun at Kings Cross at Christmas 2015 (Moore, 2015).

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# COMPETITION

NR's competitor is Highways England ("HE"), making 5 times more freight transports than NR, transporting almost double passengers per km, with an infrastructure twice larger in value, yet requiring 3 times less maintenance costs (National Audit Office, 2015).

HE has a competitive advantage in terms of less staff required, lower operational costs and higher infrastructure value, making the key factors for questioning ORR's forecast of having the rail passenger and freight demand doubled by 2041.

HE's popularity is higher within the academic sector as modules specific to the structure of roads, gradients and maintenance techniques are taught in UK (London South Bank University, 2016), whilst NR has only reached NVQ Level 3 in form of apprenticeship programmes in Westwood Development Centre (Jaga Heating, 2015).

## SWOT

### Strengths (internal)

Rail transport is not affected by congestion therefore arrival times can be predicted unless train delays or cancellations take place.

20,000 miles of track fully functional (National Audit Office, 2015) in normal maintenance regime, meaning any upgrades such as electrification can be planned and installed as per normal possession times without affecting the public (Butcher, 2016).

### Weaknesses (internal)

Research shows a substantial difference between the number of employees 35,000 (National Audit Office, 2015) and the total number of personnel engaged including contractors 80,000 (Network Rail, 2013) (Annex 13).

Civil works are currently delivered during night time or large possessions i.e. Christmas, Easter and May bank Holidays.

### Opportunities (external)

Engaging partnerships between Government, Trade Unions, Network Rail and TOCs to identify and address disputes without affecting the rail services will increase trust for a reliable service.

Research shows that for return journeys in the UK of at least 50 miles, traveling by train may prove to be faster. However, in the majority of the case studies, traveling by car proved to be cheaper with savings of up to £158 for a journey between London and Newcastle or £80.39 in savings for Glasgow-Bristol route (Hull, 2016) (Annex). This brings NR the opportunity to decrease fare costs and aim to secure an increase in the passenger demand.

### Threats (external)

NR's reputation is often affected by poor service disruptions caused by TOC i.e. cancelled or delayed services, some TOCs have setup online refund systems to automatically facilitate refunds for delays. (Great Western Railway, 2016).



Bus operating companies benefit from timetable flexibility, ease of access with road coverage and governmental Low Carbon Emission incentives (Gov.uk, 2015). There is no entry barrier to become a bus operating company, with over 320 companies registered in 2015.

# RECOMMENDATIONS

## Training, research and development

The research shows a substantial difference between the number of employees - 35,000 (National Audit Office, 2015) and the overall number of staff engaged with Network Rail - 80,000 (Network Rail, 2013).

Given the uncertainty induced by the Brexit referendum (Thomas, 2016) (Annex 24) and with planned long-term projects such as HS2, the paper suggests setting up initiatives aiming to recruit, train and employ using development centres and colleges across UK.

The objective is to provide NR with strategic access to the labour market (Bratton and Gold, 2003), by creating long term apprenticeship programmes, through academic institutions, whilst integrating elements of the NR Human Resource ("HR") culture and HR Strategy (Huslid, 1995) throughout the course portfolio.

The business has tested the models at Westwood Development Centre (Jaga Heating, 2015) and will expand by 2019 with National High Speed Rail College (B-ham, Doncaster) (Rail Technology Magazine, 2016). However programmes are minimum 3 years and are concentrated into a single point, away from the City or other rarely populated towns such as London, Birmingham, Manchester, Cardiff, etc.

Increasing the portfolio of programmes to offer 1, 2-years fast track apprenticeships or BEng modules (London South Bank University, 2016), (Annex 25) and by increasing the number of college or universities in partnership, will enable NR to provide ability, motivation and opportunity, which Harrison (2005) believes will lead to an increased number of candidates with high retention rates.

## Civil engineering works

NR runs 5-year control periods every 5 years (Network Rail, 2014), using Project Management methodologies which involve multiple types of reviews, meaning NR can run multiple smaller projects (<1yr each), instead of large projects (8+yrs).

Whilst doing so the business may run a number of Lessons Learned reviews throughout the programme, and will be able to learn from multiple project bidding sessions, construction challenges and closeout procedures during the same control period.

When transferring the findings across the entire programme, this will substantially improve the quality of projects and mitigate against possession overruns and financial penalties.

## Centralised independent refund system

In order to maintain customer fidelity despite service failures, the paper recommends an independent automated system integrated with all TOCs to facilitate refunds on fares paid for failed or delayed services.

Whilst at the moment some TOCs have refund facilities on their websites, their systems is automated and not uniformly implemented across UK.

## Joint exercise between key stakeholders

The paper recommends NR to initiate a different approach to tackle customer dissatisfaction, with respect to failed services, TOCs strikes and Government stance on Trade Unions (Chakraborty, 2016).

The recommendation is that NR engages and maintains joint dialog with all TOCs, RMT (“National Union of Rail, Maritime and Transport Work”), DfT (“Department of Transport”) to create an action plan to avoid service disruption.

The overall outcome will lead to service improvements using existing infrastructure, which will increase customer’s level of insurance which will make possible a double increase in the demand, forecasted by ORR by 2041.

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# ANNEXES