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Dear Sir/Madam,

**FREIGHT WAGON TECHNICAL SPECIFICATION FOR INTEROPERABILITY (TSI) -
ORR MARKET STUDY**

One of the ORR's roles is to keep railway markets under review to ensure that they are working effectively and efficiently for the benefit of users and funders, and, where necessary, take appropriate measures when they are not.

Market studies analyse why particular markets are not working well and propose how they might be made to work better.

I attach our most recent market study, of the Freight Wagon TSI authorisations process.

We have reviewed this area following concerns raised by industry, who felt that the authorisation process was often difficult, complicated and lengthy.

Our study assesses the extra costs of complying with the current Freight Wagon TSI compared with the previous approvals process and makes recommendations on issues to be considered when the TSI is redrafted.

We usually publish an executive summary of each market study on our website. However, for this market study, given the level of participation with the industry, we are publishing the full report.

We hope this study will prove useful, and we would like to thank those who helped produce it.

Yours sincerely

A handwritten signature in blue ink, appearing to read 'John Larkinson', is written over a light blue horizontal line.

John Larkinson



Freight wagon TSI authorisations process

ORR market study

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0. Executive Summary

0.1. A competitive and innovative rail-freight industry is best able to meet its customers' needs, and important in realising this, is the industry being unhampered by possible barriers to entry, for example relating to the introduction of new wagons onto the network.

0.2. This short desk study examines the process and cost of complying with the current Freight Wagon TSI (Technical Specification for Interoperability). The study looks at the process and costs for obtaining authorisation to place wagons into service (and derogations where necessary) under this TSI to inform the ongoing debate on the impact and effectiveness of it, and whether it is a barrier to entry in the UK.

0.3. The Freight Wagon TSI sets out the technical standards of interoperability with which all new, upgraded or renewed freight wagons in the EU must comply. The current TSI took effect in January 2007, but due to a number of issues and critical errors it is currently in the process of being redrafted.

0.4. There have been significant issues raised by industry regarding the process under the TSI of gaining an authorisation (and derogations where required) to place a vehicle in service. Considerable effort has been expended, not only in the industry but also at the ORR and at the DfT, to work through the process for an authorisation. The authorisation process can be difficult, complicated and lengthy. There is some concern that the costs of compliance may potentially prevent innovation and dampen effective competition.

0.5. We interviewed freight operators, wagon manufacturers and rolling stock leasing companies, as well as DfT and ERA to understand and quantify the types and levels of cost associated with obtaining authorisations under this TSI.

Benefits

0.6. We found that the move to a more interoperable system should in the long-run provide benefits to manufacturers in terms of economies of scale. It was generally considered that, over time, manufacturers and therefore freight operators and customers would benefit from the move towards the harmonisation of standards and the ability to take advantage of more widely available, lower-cost EU parts and systems. This view is generally shared by the majority of the UK freight industry.

Costs

0.7. We found that generally the costs to a contracting entity of compliance with this TSI are higher than the previous ROTS process. The additional costs can be split into two categories:

- Wagon changes which are required by the TSI – which we estimate at around £150,000 - £180,000 per case (for an average fleet size of 60 to 70 wagons);
- The additional costs of obtaining derogations, which we estimate at around £20,000 per case.

0.8. We have estimated that the costs of complying with the TSI are around 0.4% of total rail freight costs, which is an increase of 0.3 percentage points on the previous ROTS process. While the increase in overall costs is not large, some parts of the rail market are sensitive to price and the overall profitability of rail freight is low. Rail freight operators have therefore voiced concerns over the impact of the additional costs. Further some members of the industry have stated that the lack of certainty over possible derogations has reduced innovation, with some new wagon designs not being taken forwards, partly due to concerns around the impact of compliance with the TSI.

0.9. The cost of noise testing was also highlighted by the industry. These tests are required by the Noise TSI, which is a separate TSI; however, it is worth noting as it is a significant cost to the industry. The Noise TSI requires all non third-rail electrified vehicles to be for tested for pass-by-noise before being authorised for placing in service. We have limited facilities in the UK for testing, and so this usually means that wagons need to be sent overseas. The costs of these tests can range from £30,000 - £100,000 per case. There are also additional costs of storing wagons which cannot be used until tested; these can cost around £10,000-15,000 per month per case to store. Under the previous ROTS regime, simulations and modelling were used to estimate noise levels, based on engineering assumptions. This was cheaper to undertake at around £10,000 per case, and was quicker as it could be undertaken in the UK.

Conclusions

0.10. While there are higher costs of compliance with this TSI, compared to the ROTS process, we have not found that it has had a significant adverse impact on the rail freight market. However, the higher cost could be significant to companies in the GB rail freight market, which is made up of private companies which operate at relatively low profit margins, particularly during the recent economic downturn. There is some evidence that the cost of compliance has been passed on in terms of higher wagon costs but we have not found evidence that this has caused contracts to be lost or traffic to be diverted to road.

Recommendations

0.11. Key recommendations from the study are:

- For the revised Freight Wagon TSI to take into account technical compatibility issues and specific cases for the UK. A revision to the TSI should allow the industry to make their case for general derogations and could potentially provide cost savings of up to £20,000 per authorisation (roughly 10% of the cost) and provide greater certainty to the industry on the required standards, assisting new wagon design and innovation;
- for the TSI to allow a set of reduced baseline standards for domestic wagons only and then a higher set of standards for international wagons. This could allow the costs for domestic wagons to fall;

- for us to work together with DfT and other bodies and continue to support companies applying for authorisations. Many industry members stated that ORR were helpful in ensuring that wagons were authorised quickly, helping to minimise costs. We should help to ensure that the knowledge of the benefits of the TSI is disseminated and that the industry is fully involved in the redraft of the TSI;
- for us to review the cost of compliance following the TSI redraft. This review could also investigate any evidence of increased interoperability across Europe; and
- to assess the costs of hiring a NoBo and whether increased competition within the NoBo market may provide an opportunity to reduce costs.

1. Introduction

Purpose & structure of study

1.1. This short desk study examines the process and cost of complying with the current Freight Wagon TSI (Technical Specification for Interoperability). The Freight Wagon TSI sets out the technical standards of interoperability with which all new, upgraded or renewed freight wagons in the EU must comply. The study looks at the process and costs for obtaining authorisation to place wagons into service (and derogations where necessary) under the TSI to inform the ongoing debate on the impact and effectiveness of this TSI in a UK context. In particular, it feeds into the current negotiations on redrafting the TSI.

1.2. The report is structured as follows:

- this first section provides a general introduction to the study and the current market issues;
- section two examines the general objectives of the current Freight Wagon TSI, the methods for complying with it and the approval process prior to the TSI;
- section three identifies the incremental costs of complying with the TSI;
- section four identifies the benefits from complying with the TSI; and
- section five concludes with an overall assessment of the impact of the current TSI process on the UK rail freight industry and makes recommendations of how costs might be reduced.

1.3. The study has been informed by a number of meetings with members of the industry, as well as DfT and ERA, to determine their views on the current TSI process and the costs of compliance.

Current Market Issues

1.4. A competitive and innovative rail-freight industry is best able to meet its customers' needs, and important in realising this, is the industry being unhampered by possible barriers to entry, for example relating to the introduction of new wagons onto the network.

1.5. The Freight Wagon TSI sets out the technical standards of interoperability with which all new, upgraded or renewed freight wagons in the EU must comply. The current TSI was published in December 2006 and took effect in January 2007, but due to a number of issues and critical errors¹ it is currently in the process of being redrafted. While we were not involved in drafting the original TSI, the DfT has convened a working group to advise the UK representative in Europe on redrafting the TSI.

1.6. A NoBo (Notified Body²) will carry out the assessment against the TSI, and provide evidence to support the authorisation request to place a wagon into service. This can vary in the amount of time and work required, depending on the particular wagon. Where derogation from the TSI is required, it can be lengthy and complex for wagon manufacturers and suppliers, which may produce extra costs in terms of obtaining the derogation through the Member State, DfT and clearance from the NoBo³. The time taken to obtain derogations will vary depending on the complexity of the issues and the time and resources available to the applicant to present a coherent argument to the relevant bodies.

1.7. There have been significant issues raised by industry regarding the overall process of gaining an authorisation to place wagons in service (and derogations where required) under this TSI. Considerable effort has been expended in the industry; here at ORR and DfT, to work through the process for an authorisation. As this process is new and applies to the entire industry, i.e. it is not restricted to railway undertakings or infrastructure managers wishing to place a subsystem into service, the authorisation process can be considered difficult, complicated and lengthy with a number of issues potentially needing to be resolved by the applicant. Some members of the industry have raised concerns that the costs of compliance may prevent innovation and reduce competition.

2. Background

The interoperability framework

2.1. Interoperability is a European Commission (EC) initiative to promote a single market in the rail sector. The Railways (Interoperability) Regulations 2006 (RIR) came into force on 1 April 2006 and incorporate three European

¹ Critical errors are standards in the TSI which are not technically possible to comply with, e.g. standards relating to wider loading gauges in the UK

² Notified bodies are appointed by the DfT for each of the relevant EC directives. The NoBos conformity assessment systems are designed to ensure that any such certification work is carried out in accordance with The Railways (Interoperability) Regulations 2006, the supporting guidance documentation produced by the Department for Transport, Technical Specifications for Interoperability (TSIs) and Notified National Technical Rules (NNTR).

³ This process is not uncommon, as derogations from other standards such as Railways Group Standards (RGS) can also be lengthy

Directives on railway interoperability into UK law (Directives 96/48/EC, 2001/16/EC and 2004/50/EC).

2.2. The directives aim to remove technical barriers to the supply of equipment and the running of trains between Member States, with the objective of expanding the market for standardised components and in turn driving down costs through economies of scale. Cross border services should become increasingly viable, member states will have fewer opportunities to “protect” their own incumbent companies and safety levels should improve.

2.3. Interoperability has the potential to impose a major shift in UK rail planning and design. We are currently in discussions with DfT over UK strategy and progress in implementing interoperability and are keen to extend this discussion to the industry as part of a wider EU strategy review.

Technical Specifications for Interoperability

2.4. The Interoperability Directives require the European Commission to draw up TSIs, which underpin the entire interoperability framework. The objective is for most aspects of railway design and operation to be covered by TSIs and for all member states to ideally achieve high levels of compliance. In areas like infrastructure, this will take decades to achieve particularly in terms of loading gauge, although harmonisation of components, infrastructure operations and technical specifications could be achieved in a shorter time period.

2.5. The Freight Wagon TSI aims to enable wagons to operate throughout the member states without additional authorisation. The UK is one of the only member states to take this stance which encourages mutual recognition across borders.

2.6. The 2001/16/EC Interoperability Directive was transposed into UK law by the Railways (Interoperability) Regulations 2006. The Freight Wagon TSI provisions have been applicable since 31 January 2007. In practice, the EC mandates the European Rail Agency (ERA) to develop the TSIs. ERA has set up working groups that consist of industry representative bodies and National Safety Authorities (NSAs⁴). These groups negotiate and agree the content of each TSI which includes any specific cases.

2.7. Specific cases are introduced where a member state has identified areas of the TSI where it will not be able to comply temporarily or permanently with the TSI and must instead apply a different standard. The cases themselves can be put forward for a number of specific reasons; for instance, many of the UK’s specific cases relate to the loading gauge of our infrastructure – most bridges and tunnels in the UK are lower and narrower than on the continent. The ERA requires that submissions are accompanied by impact assessments, both on the cost implications for the member state of trying to apply the TSI in its original form, and the impact on other European states that will need to run on non-compliant infrastructure. Once agreed, specific cases are written in to the TSI, and cannot be removed or changed until the TSI itself is reopened for review.

⁴ National Safety Authority (in the UK this is ORR)

2.8. Many member states have some concerns with the Freight Wagon TSI and have found the need for a number of specific cases. This TSI is currently under review. TSIs are revised to a fixed timescale and the scope of the review is based on the number of critical errors, specific cases and open points. In the case of the Freight Wagon TSI, there are hundreds of critical errors and hence the scope of the review is very broad. The review will take 30 months and is due to be completed by summer 2010.

Authorisations process under TSI

2.9. The current process for gaining an authorisation for a new wagon to be designed, constructed, tested and placed in service is as follows:

- The contracting entity (CE)⁵ must establish whether the project falls within the interoperability regime. Generally, all new rolling stock in the UK falls within the scope of the regime;
- the CE then appoints a NoBo who begins to undertake assessments, gather evidence and compile a technical file. The NoBo works with the CE to identify requirements for derogations or the application of specific cases from the TSI where necessary;
- following this, a compatibility assessment is undertaken by the CE; the railway undertaking; and the infrastructure manager. This usually includes consultation with affected parties;
- the rolling stock is then tested on the infrastructure; and
- the CE then makes a declaration of compliance which is authorised by the NSA, after which the rolling stock is then ready for use. The rolling stock can only be placed into service by a railway undertaking or infrastructure manager who has a safety certificate issued under the Railways and Other Guided Transport Systems Safety Regulations (ROGS⁶).

2.10. This process can be straightforward, for example, when the project is fairly simple and derogations are not required. It can, however, become lengthy and costly when derogations from the TSI are required, which can often be the case given the current drafting of the TSI which is prescriptive and not well-matched to UK operational practices.

2.11. The first authorisations sought under the current TSI raised a number of technical errors, where standards set by the TSI were not possible to comply with, in the UK, for example, loading gauge incompatibilities as

⁵ The Contracting Entity is usually the manufacturer, although it could be the Railway Undertaking or the Keeper (the person or entity that, being the owner of a vehicle or having the right to use it, exploits the vehicle as a means of transport and is registered as such in the national vehicle register). If the contracting entity is not a railway undertaking, it will work with a railway undertaking that holds an appropriate Safety Certificate for the use of the rolling stock.

⁶ The Railways and Other Guided Transport Systems Safety Regulations 2006 (ROGS). This can be accessed at:
<http://www.opsi.gov.uk/si/si2006/20060599.htm>

discussed in paragraph 3.7. In total approximately 350 errors were identified and a number of derogations have been granted. These are listed in annex B.

Since the introduction of the TSI, around 20 types/makes of wagon have been authorised in the UK, and every technical file for a freight wagon has included some derogation from the TSI. On average, it has taken around 17 months⁷ to navigate through the authorisation process. The shortest authorisation took around 2.5 months, which was for new coal hopper wagons built by IRS in Romania. Some cases can take longer for example the DBS HOA aggregate hoppers took around 2 years to gain authorisation. Around 15-20% of these authorisations have required significant support from the ORR prior to the final authorisation stage. DfT have also provided support to these companies.

2.12. The main reason for the long timescales associated with current authorisation process under the TSI is the process of obtaining derogations. Derogations require a strong case with economic justification, with the Commission requiring both commercial and technical data in support of certain derogations. Applicants find this difficult to compile and often meet jointly with DfT and ORR to seek guidance.

Authorisations Process pre TSI – ROTS

2.13. Prior to the TSI, most European member states complied with the standards set out by the International Union of Railways (UIC), in particular as member states in mainland Europe saw commercial benefit from following the same standards (fiches). EU member states were not legally bound by these standards, and therefore, the decision to comply was optional. Unfortunately the original TSI was essentially a book of UIC fiches and therefore unsuitable for application in the UK. The UK industry did not comply with the majority of these fiches due to the unique nature of the British railway infrastructure and instead used UK Railways Group Standards. Duty holders had to submit documents to Her Majesty's Railway Inspectorate (HMRI) who approved new and altered works. This was a statutory requirement under the Railways and Other Transport Systems 1994 Regulations known as the ROTS.

2.14. Under this guidance, approvals for all works, plant and equipment were carried out in line with the Guide to the Authorisation of Railway Works, Plant and Equipment⁸ document which was published by the Health and Safety Executive in February 2005. Under this approach, the duty holder was required to provide (HMRI) with conceptual proposal details, HMRI would then determine if the works required authorisation under this guidance. These requirements were largely set out by Network Rail. The duty holder was required to meet infrastructure requirements and undertake testing on small parts of the network at their own cost. A technical file was not required, nor

⁷ These calculations are based on the time taken between opening the technical file and gaining an authorisation, and assume 252 working days per year, and 21 working days per month.

⁸ The Guide Approval of Works, Plant and Equipment) Regulations 1994 (ROTS). This document can be accessed at: <http://www.rail-reg.gov.uk/upload/pdf/rotsguide.pdf>

was a NoBo; however, a similar role was carried out by the Vehicle Acceptance Body (VAB)⁹. If derogations from these standards were necessary, they were usually fairly straightforward to obtain, as for example less economic justification was required.

3. Assessment of costs

3.1. We have assessed the costs of complying with the TSI and compared this to the cost under the previous ROTS process. One aspect of cost is that of hiring the NoBo to prepare the technical file for a wagon authorisation. A NoBo will typically charge on a per hour basis, which means that the cost will vary according to the time it takes to gain authorisation. We, together with industry members estimated this cost at around £30,000. Under the previous regime, the cost of hiring a VAB was just slightly lower at around £25,000. The increase in cost is largely due to the longer timeframes needed to gain authorisation, rather than a change in the rate charged – although charges could have increased given the complexities associated with these cases. Where a CE is unfamiliar with the interoperability process, they may sometimes rely upon the experience of the NoBo. The costs of hiring a NoBo will vary depending on the amount of consultancy and advice provided by the NoBo to the CE. The industry generally regards the additional cost as relatively insignificant and that the large increase in costs lies elsewhere. It should be noted that these are average costs and NoBo costs could be significantly higher if, for example, it is asked to undertake the derogation process for the contracting entity. NoBos are appointed by DfT¹⁰ to assess and verify compliance with the relevant TSIs, on the advice of the United Kingdom Accreditation Service (UKAS). UKAS also monitors the performance of NoBos. There are currently around 9 NoBos in the UK that verify against the rolling stock TSIs, these include Railway Approvals Limited, Atkins Notified Body and Halcrow Rail Approvals Limited amongst others.

3.2. Projects under the previous ROTS standards included several stages of correspondence with and inspection by a railway inspector; the hours spent by an inspector were billed directly at around £150 per hour. The estimated average total cost for providing support for the authorisation of a new fleet of wagons would be around £5,000 - £10,000. The per-hour billing set by ORR was an incentive to manage the process, limit inspector input and hence billing.

3.3. The TSI can also require changes to new build of existing wagons which can introduce costs, due for example to new standards required for a harmonised rail system¹¹. These costs can be incurred as wagons are

⁹ There are elements of the VAB process that still remain

¹⁰ Guidance for how to apply for an appointment can be accessed at: <http://www.dft.gov.uk/pgr/rail/interoperabilityandstandards/interoperabilityapproval/guidelinesfortheassessmentof3324>

¹¹ These additional standards can provide additional benefits such as improved safety

required to make economically justifiable changes to comply with the TSI. There may be a number of changes that need to be made to wagons, for example, addition of handrails or changes to lamp brackets. These costs are estimated at around £2,500 per wagon. The average fleet size is around 60-70 wagons which gives an average cost of around £150,000 - £180,000, although this can vary from £50,000 (with a minimum fleet size of around 20 vehicles) to £500,000 (with a maximum fleet size of around 200 vehicles). These changes were not required by ROTS standards.

3.4. There are also additional costs to the contracting entity from gaining authorisations. These costs involve hours spent on meetings with the NoBo, DfT, ORR, Rail Safety and Standards Board (RSSB) etc and discussing the issues. It is clear that much more working time was spent to obtain authorisations as almost every project has required some derogation from the TSI. As discussed above, a great deal of time is spent providing economic justification to the DfT to obtain derogation. There are also additional costs from the delays the derogation process has entailed, for example relating to the capital costs tied up in vehicles that cannot be used yet on the network.

3.5. The average costs under both regimes can be seen in table 1 below. It should be emphasised that these are average costs and assume a reasonable knowledge of the TSI and ROTS process. There can be additional costs from developing knowledge of the processes and this will be particularly felt by smaller companies who may only use the process infrequently.

Table 1- Estimated Average Costs of Authorisations (2009-10 prices)		
	Average Cost per case (TSI)	Average Cost per case (ROTS)
NoBo/VAB ¹²	£30,000	£25,000
Railway Inspector charges	-	£5,000 - £10,000
Wagon changes	£150,000 - £180,000 ¹³	-
Cost to CE of obtaining derogations ¹⁴	£30,000	£10,000
Average cost per authorisation	£210,000 - £240,000	£40,000 - £45,000
Average cost per wagon	£3,500	£650

Note: Costs are for an average fleet size of 60-70 wagons

3.6. Another cost factor is that of the additional finance required for longer projects. However, this has not been quantified in table 1.

¹² Estimated averages provided by industry

¹³ Based on average of around £2,500 per wagon

¹⁴ This amount is estimated, and the responsibility of working hours spent has shifted within industry considerably, this cost has moved from wagon builders to leasing companies.

Costs to the UK rail freight market

3.7. We have estimated that the costs of complying with the TSI may be around 0.4% of total rail freight costs, an increase of 0.3 percentage points over the costs of the previous ROTS process. The estimated cost of the previous ROTS process were around 0.1% of total rail freight costs.

3.8. The average price of a wagon is around £70,000¹⁵, and the cost of complying with the Freight Wagon TSI is around £3,500 per vehicle, around 5% of the cost of a freight wagon. The lease cost (which reflects the purchase cost) of a wagon accounts for 50%-60%¹⁶ of the annual wagon costs (the rest is made up of maintenance) which makes up between 10%-20%¹⁷ of annual rail freight costs.

3.9. An estimate of the overall impact on rail freight prices is therefore:

5% (TSI cost in wagon price) * 55% (purchase price compared to annual wagon costs) * 15% (wagon costs over annual freight costs) = 0.4%.

The Freight Wagon TSI may therefore account for around 0.4% of total rail freight costs.

3.10. Some of these costs would have been incurred under the earlier ROTS approach. We estimate that the ROTS process cost around £650 per wagon or 1% of wagon purchase price. This represents around 0.1% of total rail freight costs (1% * 55% * 15% = 0.1%). The Freight Wagon TSI may therefore increase rail freight costs by around 0.3 percentage points. Some parts of the rail freight market are sensitive to price, for example intermodal and aggregates traffic, and a change in costs for these sectors could have a more than proportionate impact on volumes^{18, 19}. The profitability of the rail freight market is low with the latest available figures showing that the operating profit margin was around 5% or less than £50m in 2006-07²⁰. Profitability is likely to have declined since then due to the recession. Rail freight operators have raised concerns over any increase in their costs at this time.

¹⁵ Based on confidential information provided to ORR, and Impact of track access charge increases on rail freight traffic, MDS Transmodal, November 2006. This document can be accessed at: <http://www.rail-reg.gov.uk/upload/pdf/mds-freight-nov06.pdf>

¹⁶ Based on confidential information provided to ORR and DfT Mode Shift Revenue Support Intermodal available on request from DfT

¹⁷ Based on confidential information provided to ORR and DfT Mode Shift Revenue Support Intermodal available from DfT at request

¹⁸ See Impact of track access charge increases on rail freight traffic, MDS Transmodal, November 2006. This document can be accessed at: <http://www.rail-reg.gov.uk/upload/pdf/mds-freight-nov06.pdf>

¹⁹ See Periodic Review 2008: Consultation on caps for freight track access charges, Office of Rail Regulation, December 2006. This document can be accessed at: <http://www.rail-reg.gov.uk/upload/pdf/310.pdf>

²⁰ Rail industry monitor 2008, TAS Publications, 2008.

3.11. Some industry members have raised concerns that the TSI could limit innovation. They have suggested that the TSI could limit the development of new wagons as, for example, TSI bogie requirements could limit the payloads on wagons, making new designs less financially attractive, with little benefit to the CE. Further it has been suggested that the difficulty of complying with the TSI was a factor in the decision not to take forward proposals for new wagons, although it should be noted that this was not the sole factor in decisions. It appears that the lack of clarity over the costs of compliance and the scope of potential derogations could limit innovation and the development of new wagons.

Testing

3.12. One particular concern that many industry members shared was the high cost of testing. The cost of noise testing was highlighted by more than one operator. These tests are required by the Noise TSI, which is a separate TSI; however, it is worth noting as it is a significant cost to the industry.

3.13. The inconvenience of this is especially apparent as currently there are limited UK facilities for noise testing. The uncertainty surrounding this process imposes significantly greater costs and delays to new design and build projects. The Noise TSI requires all non third-rail electrified vehicles to be tested for pass-by-noise before being authorised for placing in service. We have limited facilities in the UK for testing, and so this usually means that wagons need to be sent overseas for example to Switzerland, Czech Republic and Poland. This issue may be partly mitigated in the future through the development of a noise testing facility in High Marnham in the UK. High Marnham is owned and operated by Network Rail, who propose to extend the range of services offered - the facility currently has limited use due to low permissible line speeds. This limitation extends also to passenger rolling stock because of the lack of electrified lines and the speed restrictions along the test routes. The first 4 vehicles from the production line are required to undertake the tests. The costs of these tests can range from £30,000 - £100,000. There are also additional costs of storing wagons which cannot be used until tested; these can cost around £10,000-15,000 per month to store. These costs are not included in table 1 as they relate to a different TSI.

3.14. Other significant testing expenditure was for ride tests which can also be very costly; these tests can often be required under the Freight Wagon TSI.

3.15. Under the previous ROTS regime, simulations and modelling were used to estimate noise levels and ride quality, based on engineering assumptions. This was cheaper to undertake at around £10,000, and for which the results took considerably less time to provide, as this could be undertaken in the UK.

4. Assessment of benefits

4.1. There will also be benefits from the introduction of the TSI. These benefits are likely to be in the longer term and are difficult to quantify.

4.2. The move to a more interoperable system should provide benefits to manufacturers in terms of economies of scale. Presently rolling stock for the UK railway is somewhat bespoke and can require unique products which are often more expensive. Over time, we would expect that manufacturers and therefore freight operators would benefit from the move towards the harmonisation of standards and the increased ability to take advantage of more widely available, lower-cost EU parts and systems and a reduction in maintenance costs from harmonised maintenance practice. This view is shared by the majority of the UK freight industry. The average asset life of a wagon is, on average, around 30 years; therefore, the full benefits from improved wagon design may not be seen for up to 30 years (when all wagons on the network are likely to have gone through the TSI) and these will need to be offset against the short term increased costs of compliance for new wagons.

4.3. The TSI approvals process has to be transparent as wagons need to be mutually accepted across Europe. The TSI process is more transparent than ROTS as it has better defined rules describing its application, increasing clarity to both the industry and government on the requirements for rolling stock. However given the difference in the UK and European loading gauge, it is unlikely that European wagons will be used extensively in the UK (or vice versa) and so benefits of cross acceptance are likely to be lower in the UK than in mainland Europe.

4.4. Applicants who navigate the TSI authorisation process are not charged for the time or advice given by ORR unless they are holders of a safety certificate under ROGS and subject to the charging levy. Many freight manufacturers who seek guidance do not meet these criteria and therefore receive free advice from ORR. The cost of this is estimated at around £10,000 per case. Prior to the TSI when ROTS was in force, this was charged at a per-hour basis.

5. Conclusions & Recommendations

Conclusions

5.1. Overall, this study has found that most members of the industry are in favour of interoperability, and generally recognise the long term benefits that interoperability can bring to UK plc. The concerns lie with the way in which the regime was introduced and how the change in processes has been managed and communicated. Many of the companies acknowledged that the problems currently faced are partly due to their low level of engagement during the drafting phases of the TSI prior to introduction, and have since attempted to be much more involved and engaged in the processes by actively participating in the relevant working groups.

5.2. We have found that there are generally higher costs of compliance under the Freight Wagon TSI than the previously ROTS process. There are some current benefits of the TSI mainly in terms of a clearer, more transparent process. In the longer term, the TSI should ensure common standards allowing UK operators to take advantage of lower cost European parts. We consider that these long-term benefits could, over time, offset the

short term costs of the TSI. The additional costs of the TSI can be split into two categories:

- Wagon changes which are required by the TSI – which we estimate at around £150,000 - £180,000 per case;
- The additional costs of obtaining derogations, which we estimate at around £20,000 per case.

5.3. A revision to the TSI should allow the industry to make their case for general derogations and could potentially provide cost savings of up to £20,000 per authorisation (roughly 10% of the cost per authorisation). This issue has already been recognised and the TSI is in the process of being revised with the final version expected at around the end of 2010. The costs of wagon changes are likely to continue as it has not been possible to make an economic case for derogation against these TSI requirements.

5.4. Over time, we might expect the additional costs from the TSI to reduce, as the industry learns lessons on how to deal with the new processes and the benefits of interoperability start to be seen. The lessons learning process is not dissimilar to the impact of the introduction of the VAB process some years ago. In the short term, any additional costs are likely to be most felt by smaller companies who can only spread the costs of building up knowledge of the TSI process across a relatively small number of wagons. The industry, DfT, ORR and ERA therefore have been working together to minimise the impact on all companies and ensure that lessons are learnt.

5.5. An additional cost that caused some concern from across the freight industry was that of the noise testing required by the Noise TSI. While this is not necessarily within the scope of this study - as the Noise TSI is separate from the Freight Wagon TSI - this is a significant cost to the industry. Companies complying with the Passenger & Locomotive TSI also raised concerns over the cost of noise testing. One of the main issues is that, as there are currently limited testing facilities in the UK, companies are forced carry out noise tests abroad. This incurs additional time and money. ERA is managing a partial revision of the Noise TSI, if wagons need to be sent overseas going forwards then this issue would require further investigation, and if verified, the UK could request for the test to be amended to reflect the change in risk profile for UK wagon projects. Proposals put forward by the UK may allow UK freight traffic to be tested for pass-by-noise on operational lines. This should reduce costs and is expected to enter into force in early 2010. Under the previous ROTS regime, modelling and simulations could be used to estimate the noise levels. DfT has been working with ERA to ensure that the revised TSI provides a similar level of flexibility.

5.6. While there are significant costs of compliance with the Freight Wagon TSI and Noise TSI, we have not found that it has had a significant adverse impact on the rail freight market. The GB rail freight market is made up of private companies which operate at relatively low profit margins, particularly during the recent economic downturn. There is some evidence that the costs of compliance has been passed on in terms of higher wagon costs but we have not found evidence that this has caused contracts to be lost or traffic to be diverted to road.

5.7. We consider that the costs of compliance with the Freight Wagon TSI are small, relative to overall rail freight costs but can be significant in comparison to the wagon costs. We estimate that the costs of complying with this TSI accounts for around 0.4% of total rail freight costs, which is an increase of 0.3 percentage points over the previous ROTS process. Freight operators have raised concerns of the impact of this cost increase on the rail freight market.

5.8. As we noted earlier, part of the costs are associated with obtaining derogations. More bespoke derogations are likely to be required where the wagon design is innovative. Some members of the industry have suggested that developing new and innovative products has been difficult under this TSI, due to its prescriptive nature. To build a new type of tank or container wagon, a large number of derogations from this TSI could be required. The Freight Wagon TSI may therefore not encourage innovation; in particular for tank and container wagons.

5.9. Some industry members have suggested that proposals for new wagon designs have not been taken forwards, with the difficulty of complying with the TSI a factor in this decision. It is likely that the lack of clarity over the costs of compliance and the scope of potential derogations could limit innovation and the development of new wagons. It is important that the impact on innovation is considered as part of the TSI redraft.

5.10. It is important to emphasise that it is not just the UK that has raised issues with the TSI with other countries such as Spain, Portugal and Italy considering the TSI to be too prescriptive (although the UK's concerns are likely to be the most significant). The redraft aims to respond to the concerns of all member states. Generally, TSIs are revised every 3-4 years and the ERA has highlighted that the proposed benefits of TSIs may not be seen until some time after the second revision.

Recommendations

5.11. The key recommendation from the study is for the revised Freight Wagon TSI to take into account technical compatibility issues and in particular to draft in the specific cases for the UK. It raises concerns that wagons used solely in the UK have to incur additional costs to comply with the TSI when they are not going to be used overseas. Certainly, UK gauge differences will persist for a long time and therefore other countries are unlikely to want to buy stock that could only be used on UK infrastructure. It is unclear therefore how soon the UK is likely to be able to realise the benefits of EU-wide supply other than by making UK specifications clear across the EU. In the intervening period, wider derogations for the UK may be more appropriate.

5.12. We hope to engage with ERA, by way of this study, to feed into their impact assessment of the TSI redraft, by setting out what the costs are to the UK industry. We believe that by drafting these general derogations and specific cases into the TSI, wagon manufacture for the UK, will be more able to design new and innovative freight wagons.

5.13. As raised by many industry members, many freight wagons in the UK will not be used outside the UK. We would agree with DfT's recommendation to ERA in 2008 to revise the TSI to allow a set of baseline standards for

domestic wagons only, and then another level above this for international wagons would be more appropriate and can allow these costs to fall, and possibly encourage innovation. We understand that the work being undertaken by ERA is considering this option.

5.14. The study has shown that companies value the support they receive here, from DfT and other bodies. Given the concerns with the TSI, this approach can provide benefits by ensuring lessons are learnt and barriers to potential new entrants are minimised. ORR involvement can help to ensure that the knowledge of the benefits of the TSI is disseminated and that the industry is fully involved in the redraft of the TSI.

5.15. It is also important that we monitor the cost of compliance with the TSI so that we can identify any potential problems and ensure that there is not an undue adverse impact on the freight market, particularly during the current downturn. It would be sensible for us to keep this under review, by engaging with industry to understand how the costs and market situation changes after the TSI redraft. It would also be useful to investigate any evidence of increased interoperability following the TSI e.g. in the secondary market and in the industry across Europe.

5.16. Another area of further work could be to assess the costs of hiring a NoBo. This could include investigating whether increased competition within the NoBo market may provide an opportunity to reduce costs.

6. Appendices

Annex A – Overview of key process for authorisations under TSI

Is it interoperable?

- Firstly, the CE must establish whether the project falls within the interoperable regime. If it is new rolling stock then interoperability applies. If it is an upgrade or renewal, it may seek advice from the DfT or ORR prior to seeking a formal decision from the DfT. The DfT may seek the NSA's view on whether the project should be treated as interoperable for safety reasons. All new rolling stock in UK is treated as within scope of interoperability.

Standards and derogations

- The CE appoints a NoBo, and identifies the technical requirements of the project, in conjunction with them.
- The CE identifies requirement for derogations and project specific National Notified Technical Rules²¹ (NNTRs) from the TSI, and makes a case to the DfT. The DfT issues derogations or notifies NNTRs where appropriate.
- Alternatively, the CE may identify requirements for derogations from NNTR, and makes a case to the industry body controlling the relevant standards, and then derogations are issued where appropriate.
- The NoBo compiles a Technical File, working with the CE.

Compatibility assessment

- The CE works with a railway undertaking and the infrastructure manager to perform a compatibility check for infrastructure and aspects of rolling stock that do not comply with the TSI. Affected parties such as other railway undertakings, station operators etc are consulted. The compatibility check is covered by a NNTR (GE/RT8270).
- While the NoBo must satisfy itself that the technical compatibility process has been carried out, it is not required to review the technical content.
- A failure to agree over the compatibility assessment can be escalated to the NSA after exhausting the industry escalation processes defined in the RSSB guidance of duty of cooperation.

Testing

- For testing to take place, the NoBo produces an Interim Statement of Verification (ISV). The infrastructure manager puts appropriate controls in place. Testing is managed through the railway undertaking's safety management system; the NoBo may be contracted to manage the CE aspects of the process.

²¹ Project specific NNTRs are identified in exceptional circumstances and require an independent assessment from an appropriate body

- The CE then provides the NoBo with a Declaration of Verification with the other Directives. These are not reviewed by the NoBo.
- The NoBo completes the Technical File and passes it to CE.

Interoperable authorisation

- The CE then makes Declaration of Verification with relevant requirements, and submits it with Technical File to the national safety authority.
- The NSA must satisfy itself that the Technical File is complete and that the documents provide evidence of compliance with the essential requirements. It does not however perform a technical review of the content.
- The NSA authorises rolling stock. The rolling stock can now be used for passenger service or other purpose for which it has been built.

Rolling stock library

- Rolling Stock Library notified of authorisation, and associated data to permit rolling stock onto the national network.

SMS

- RU maintains ongoing compliance of rolling stock. Subsequent changes to the rolling stock are managed through the RU's SMS, or if sufficiently major may trigger a new authorisation.
- The RU's SMS will have processes to be followed for assessing the introduction of new or modified rolling stock. The SMS may need to be changed. A significant change may require the RU to seek a new Safety Certificate from the NSA.

Other aspects

- A commercial agreement is made between IM and RU for access charges. This is a transparent process, based on vehicle characteristics.
- A commercial agreement is made between station / depot operators and RU for access charges.
- IM leads consultation process for affected parties to comment on non-technical implications of introducing new vehicles onto network. Office of Rail Regulation (which includes NSA function) may have to arbitrate.
- IM consults affected parties on implications of providing track access rights to RU. Office of Rail Regulation (which includes NSA function) may have to arbitrate.
- The Designated Body is not used by UK processes.

Annex B – Freight wagon TSI DfT Derogations and decisions

Derogations granted by DfT to date:

- D12 – Trinity Rail
- D13 – Standard Car Truck Europe (SCT)
- D14 – EWS Bogie Box Wagons
- D23 – WH Davis Superlowliner (from Decision 2009/107/EC)
- D24 - VTG Fabnoos Aggregate Hopper Wagons (from Decision 2009/107/EC)

Freight Wagon Reg 5 Decisions from DfT to date:

- Freightliner MJA Box Wagons
- DfT National Solution Letters to date:
 - energy limits for wheels b) safe access/egress for rolling stock c) buffers
- GB gauge
- Pneumatic Half Couplings
- Minimum Braking Performance (2 letters)
- Spark Guards
- Brake Timings
- Composite Brake Blocks