

Department for Transport
**Review of Revenue Support
Freight Grant Schemes**
Final Report

Issue 4 | 4 February 2020

This report takes into account the particular instructions and requirements of our client.

It is not intended for and should not be relied upon by any third party and no responsibility is undertaken to any third party.

Job number 268722-00

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Executive summary

Context

The Department for Transport (DfT) provides freight revenue grants to industry to encourage modal shift from road to rail or water. Sustainable Distribution Funding is offered by two revenue support grant schemes: The Mode Shift Revenue Support (MSRS) scheme and the Waterborne Freight Grant (WFG) scheme. Arup, AECOM and Port Centric Logistics Partners (PCLP) consortium were commissioned by the DfT to review the levels of support payable under the current MSRS scheme, and to consider how a similar scheme could be applied to coastal shipping. The aim of the research is to provide updated evidence to support decisions on, and be used in, any MSRS freight grants beyond March 2020, when the European State aid approvals for the current schemes are due for renewal.

Currently the MSRS scheme operates in two parts: MSRS (Intermodal) for the purchase of intermodal container movements by rail; and MSRS (Bulk and Waterways) for the purchase of bulk (non-containerised) freight traffic movements by rail and all freight movements by inland waterway. The scope of this review focuses on the MSRS (Intermodal) and the introduction of a similar scheme for coastal shipping. This is a zonal based grant, which has standardised maximum grant rates for freight movements between each of 18 zones, with separate rates for ports and domestic traffic. These rates are underpinned by cost models for each of ports and domestic traffic. The potential coastal shipping scheme is covered by a separate cost model developed under a previous study. This uses the same zone structure as the ports and domestic rail models. The MSRS Bulk and Waterways and Waterborne Freight Grants have no standardised grant rates, so financial need is assessed individually for each grant application.

Scope

The main focus of the review is on the ‘financial need’ for subsidy, which is defined as the cost of transport by rail or water minus the cost of transport by road. However, the subsidy cannot justifiably be greater than the value of the environmental and societal externality benefits for each journey. The updated valuation of these benefits is being considered by a separate DfT commissioned study.

Road costs in the port and domestic models represent the costs of the road haul equivalent of a port or domestic movement by rail. These costs are calculated by combining a standing cost (pence per minute) and a running cost (pence per kilometre) for the road equivalent port or domestic movement and assume one container per road vehicle. The same road costs are used as the baseline for the coastal shipping model.

The rail input is divided into two categories: costs (such as fuel and driver salaries) and productivity related assumptions such as train length. As for road,

rail cost data is comprised of rail fixed costs and variable costs; and the same rail costs are used in the coastal shipping model.

The coastal shipping model includes assumptions for ship capacity and speed, operating and port costs.

Consultation

Consultation with freight operators and stakeholders was held in two phases. The first was to secure the data required to calculate the ‘financial need’ and proposed grant levels; and the second was to share the initial results and supporting calculations, and to seek feedback on these.

For the first phase of the consultation we sought engagement with road, rail and maritime stakeholders through a range of approaches. These included: informal discussions at the 2019 Multimodal conference; data submissions and responses to questionnaires via email; and face-to-face interviews or telephone discussions focusing on general feedback, or to further clarify the email submissions.

The second phase was initiated with two stakeholder workshops: the first focusing on rail stakeholders and the second on coastal shipping. At both workshops we set out the context of the study and purpose of the workshops, described the stakeholder engagement undertaken to date, summarised the data received and presented our initial determination of the maximum grant rates payable for each zone to zone pair. Feedback was received from stakeholders in the workshops and in subsequent discussions. Where appropriate we made changes to our methodology in response to the feedback.

Updated costs

Road costs were primarily derived from the FTA’s ‘Manager’s Guide to Distribution Costs’ which combines data from a variety of sources including a survey of 70 contributors who provided partial data – including vehicle costs and wages. The contributors come from a variety of industry sectors with business operations that include the movement of freight. A number are distribution or haulage firms, but respondents also include construction, aggregate, food manufacture/distribution, and waste disposal firms.

Most of the data used to update the rail costs were provided by the five rail Freight Operating Companies (FOCs). Whilst there were variations in the costs provided, the costs used have been determined from an assessment of the responses to provide estimates representing an efficient operator. The rail costs have increased overall since the 2013 study, with the largest increases in the port shunt, loco annual maintenance, Track Access Charges, driver’s salary, terminal lift charges and access to third party terminals. These are largely outside of the control of the FOCs and thus little can be done to influence them. Leasing, final leg distribution and fuel costs have all reduced, at current and real prices, since the last review undertaken in 2013.

In order to validate the assumptions in the generic coastal shipping cost model we considered two separate illustrative services which the sector suggested would be

the most viable flows: a West Coast service using a small vessel, and an East Coast service using 900 TEU vessel with three-leg rotation – London Gateway / Teesport or Tyne/ Grangemouth / London Gateway. As for rail, the coastal shipping costs have typically increased in real terms although the rate of change varies between items.

Financial need and grant rates

Financial need is defined as occurring when cost factors indicate that rational freight customers will move containers by road rather than rail or water because the road transport cost is less than the rail transport cost.

Relative to the previous version of the domestic rail model, a further four zone pairs now have a financial need, 260 zone pairs continue to have a financial need, six zone pairs become ineligible and 36 zone pairs remain ineligible. In the port as origin model, 45 zone pairs now have a financial need, 157 zone pairs continue to have a financial need and 70 zone pairs remain ineligible. No zones in the port model move from requiring a financial need to not requiring financial need.

Overall rail grant rates have increased (due to the larger increase in rail costs versus road costs) since the last model update.

In the potential coastal shipping model, when measured relative to road, a further two zone pairs now have a financial need, 56 zone pairs continue to have a financial need, 23 zone pairs no longer have a financial need and 159 zone pairs remain ineligible. 1 zone pair has a financial need relative to rail, whereas in the generic model 20 zone pairs had a financial need.

Overall, the maximum grant rates in the coastal shipping model have increased although the results vary significantly between zones.

Overall cost of a potential coastal shipping scheme

The primary challenge in estimating the potential cost of a MSRS-style scheme for coastal shipping is the lack of any reliable evidence on the likely uptake of such a scheme by industry stakeholders. We have therefore undertaken some analysis of the rail port scheme to estimate the level of applications which might be expected. Assuming equivalent claim rates for the coastal shipping gives a scheme cost of £5.1 million per year. Any decision on the introduction of a coastal shipping scheme would be subject to a policy decision by DfT, Transport Scotland and Welsh Government.

The eventual design of the scheme could offer the potential for the DfT to realise cost savings in instances where there is a financial need for rail relative to road, but where coastal shipping offers a lower cost alternative than rail. This is reflected in the way in which the generic cost model originally produced in the 2017 study combines financial need and grant rates for rail and coastal shipping: where a potential grant is payable for both coastal shipping and rail, the lower rate would apply; and where a grant is payable for one mode only, the rate for that mode applies. Were such an approach to be adopted in the event that this scheme was introduced, then the result would be a lower set of maximum grant rates.

Combining the savings with the additional cost of the coastal shipping scheme would generate a net additional funding requirement for the DfT of £2.83 million per year.

At this stage the results apply the same environmental benefit values as applied in the rail models. Given the larger differences in distance between sea and road relative to rail and road, there would be value in calculating a bespoke set of values for the coastal shipping model. This would necessitate a change in the way the rates for rail and coastal shipping are combined to ensure that the environmental benefit is maximised relative to the financial need.

Impact of grant funding ending or tapering

In the event that grants are tapered or removed, the most likely outcome is that the flows continue to operate but transfer to road, as the elimination of subsidy will mean that rail is the more expensive mode. FOCs are only likely to continue to operate the flow by rail and cover the increased costs if wider commercial factors apply, such as the flow being an integral part of a wider and overall profitable contract, for example where a shipping line pays for a combination of flows from a port.

In the event that the grants were completely removed, those movements where the grant covers a higher percentage of total rail costs would be the most likely to cease altogether or to switch to road, whilst those where the grant covers a lower percentage of costs would have some possibility of continuing, at least in the short term.

Our analysis indicates that with the removal of the grants, approximately 60% of port traffic will switch to road and approximately 50% of domestic traffic. For the tapering, the reduction in port traffic is between 29% and 42% as the funding reduces, for domestic traffic, the reduction is around 30% to 40%.

Analysis of the potential employment impacts suggests that with the removal of the grants, employment in the road haulage industry may result in an additional 1,931 jobs due to more lorries required to move freight. For the intermodal rail industry, the impact could result in up to £188 million per annum (equivalent to 3,080 direct jobs) being lost if grants are removed and between £97 - £129 million through tapering.

The analysis indicates that **congestion costs** resulting from the removal of the MSRS Intermodal scheme could equal £90.5 million. For the tapering of the grant scheme a range of £49 to £62 million could be expected.

The **environmental¹ costs** show an increased environmental impact to society of between £29.58 million and £37.20 million in the case of tapered grant, and £54.24 million for full withdrawal.

¹ Environmental costs include accidents, noise, pollution, greenhouse gases, infrastructure and other road costs.

The **exchequer impacts** indicates a gain in tax revenues estimated at £35.8 million to £45.1 million in the case of tapered grant and £65.7 million for full withdrawal per annum.

Wider taxation impacts (for example changes in corporation tax payment or income tax and NI changes) have not been considered in this assessment.

The **cumulative impacts** of tapering or ending the scheme indicate that even allowing for the saving of the grant there is a net worsening of up to £57.9 million per annum with full withdrawal. Tapering the grants still indicates a negative impact of between £33.7 million and £39.2 million per annum during the tapering period.

Industry views on the MSRS rail scheme

Operator feedback on the functioning of the current MSRS scheme was sought through DfT engagement in January 2019, our consultation with operators over the summer, and during and following the workshops in September 2019.

Overall, the consultation has revealed a lot of industry support for the scheme and a strong opinion that, given the short timescales for review, the current scheme should be extended beyond March 2020 ‘as is’, ideally with an increased level of funding to be made available. It is commonly expressed that the grant scheme has had a genuinely positive impact, has boosted private investment, and provided excellent value for money in a manner which can be easily quantified in investment cases.

Beyond a general feeling that the MSRS system should be retained, the most commonly referenced topic concerned the length of grant awards and, linked with this, improving the level of support for new flows. A related issue is that stakeholders have mixed views on whether the MSRS scheme has encouraged competition (both in terms of bidding for grants and within the freight sector as a whole) in an effective way. Some respondents suggested that the capped budget and bidding rounds encouraged competition, although a small number of respondents suggested that it might be more effective if the efficiency of the rail freight operation could be improved in various ways, rather than government subsidising a suboptimal system.

Typically, organisations which rarely or never apply for MSRS funds perceived the process as long, complex or opaque; an issue not cited by companies which applied for grants on a more regular basis.

Further potential changes suggested by stakeholders included a corridor-based approach where all operators on the route receive the same level of funding, extending the MSRS scheme to cover other commodities, or revisions to better accommodate the mix of box sizes. Others suggested providing more extensive support to cover start-up costs or considering environmental impacts in a broader and more disaggregated manner.

Industry views on the potential coastal shipping scheme

Views from the coastal shipping industry were sought primarily at the workshop held in September 2019, although some industry views regarding coastal shipping were also received while collecting feedback regarding potential improvements or changes to the current rail scheme.

The primary concern related to the practicality of implementing an MSRS-style scheme for coastal shipping, given the lack of market interest and difficulty in formulating an appropriate standard zonal-based approach. Related to this, stakeholders had differing views regarding the usefulness of a zone structure.

Length of award was the key theme emerging from the submissions and was raised by three respondents. All suggested that the three-year limit on the length of the grants (required under maritime State Aid rules) was too short and did not provide a sufficient period over which to effectively build a strong business.

Other stakeholders stressed the need for any coastal shipping scheme to be genuinely additional to the current MSRS rail scheme (so as not to compete with it and dilute the overall level of funding available) and suggested that the potential coastal shipping scheme should cover other commodities in addition to intermodal. The process for awarding the grants was also discussed in the workshop, and several stakeholders subsequently provided a proposal for this.

Other EU modal shift subsidy models

Other EU Member States have implemented modal shift subsidy models which achieve the same objectives as MSRS (Intermodal) – transfer from road to rail, supporting a financial need in terms of rail being more expensive, and the potential to deliver environmental benefits. Approaches include: funding or support for operations, infrastructure, rolling stock or intermodal units; research on combined transport (rail or maritime with limited road distribution legs); and fiscal support such as tax exemptions or reduced charges.

Direct grants to support operations, such as the MSRS scheme, have been identified as problematic relative to other approaches, because they are not seen as giving sufficient encouragement to viable new services and have the potential to distort competition.

However, despite the potential issues associated with operational support grants, these have been successfully implemented by other Member States; for example, Belgium, Italy and the Netherlands. Germany and Switzerland have adopted a more diverse range of alternative approaches.

Recommendations

Considering the suggestions made by stakeholders and drawing on our industry expertise, with regard to the current MSRS rail scheme we recommend the following:

- Retain MSRS scheme subject to improvements;

- Undertake a programme of communications explaining how the MSRS scheme operates to encourage a broader range of applicants;
- Review the application process to assess its ease of use;
- Undertake a review of the zones and nodes used in the models;
- Consider how to better accommodate mix of box sizes; and
- Consider how to more effectively incentivise new flows.

For the potential MSRS-style scheme for coastal shipping our recommendations are as follows:

- Introduce MSRS-style scheme for coastal shipping, subject to close monitoring in the early years of operation;
- Provide a ringfenced budget for the coastal shipping scheme, additional to the rail scheme;
- Ensure the review of zones and nodes for the MSRS rail scheme includes zones and nodes problematic for coastal shipping;
- Consider appropriateness of local distribution adjustments for coastal shipping; and
- Consider approach to capturing environmental externalities and approach to trade-off between rail and coastal shipping benefits.

1 Introduction

1.1 Background

The Department for Transport (DfT) provides freight revenue grants to industry to encourage modal shift from road to rail or water. Sustainable Distribution Funding is offered by two revenue support grant schemes: The Mode Shift Revenue Support (MSRS) scheme and the Waterborne Freight Grant (WFG) scheme. Arup, AECOM and Port Centric Logistics Partners (PCLP) consortium were commissioned by the DfT to review the levels of support payable under the current MSRS scheme, and to consider how a similar scheme could be applied to coastal shipping.

The MSRS scheme assists companies with the operating costs associated with running rail or inland water freight transport instead of road; where rail or inland waterway transport are more expensive. The scheme is designed to facilitate and support modal shift, generating environmental and wider social benefits from reduced lorry journeys on Britain's roads. Over the last five years almost £100 million of funding has been awarded to 10 different companies, enabling the realisation of significant externality benefits in terms of environmental benefits, road traffic congestion, accidents and noise pollution.

The MSRS grant scheme, as currently established, will expire in March 2020, and its continuation will require both renewed European State Aid clearance and confirmation of future budget. This review is intended to provide evidence to support decisions on grants beyond 2020.

Figure 1 below shows the current DfT freight grant structure. Currently the MSRS scheme operates in two parts:

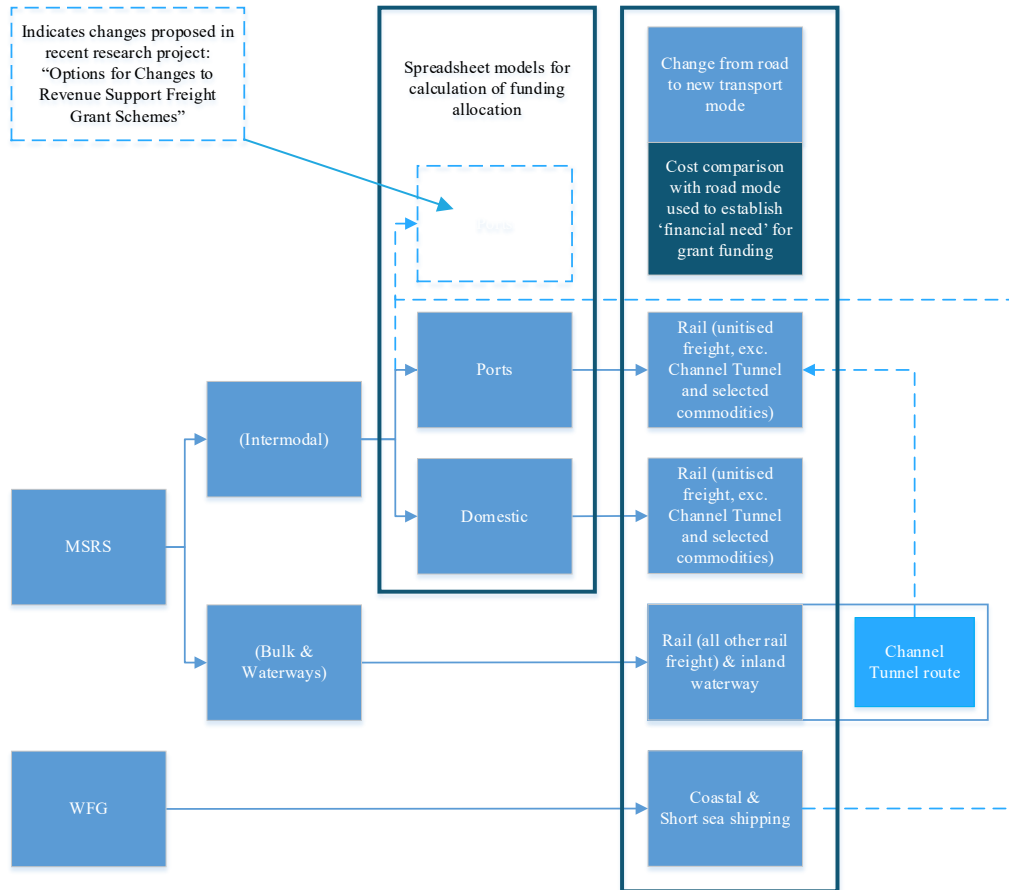
- MSRS (Intermodal) for the purchase of intermodal container movements by rail; and
- MSRS (Bulk and Waterways) for the purchase of other freight traffic movements by rail and all movements by inland waterway.

The scope of this review is focused on the MSRS (Intermodal). This is a zonal based grant, which has standardised maximum grant rates for freight movements between each of 18 zones (see map in Figure 4), with separate rates for Ports and Domestic traffic. These rates are underpinned by cost models for each of Ports and Domestic traffic which are based on average costs of operation by road and rail and consider the limit imposed by the maximum benefit value. There are no standardised grant rates for MSRS (Bulk and Waterways) or Waterborne Freight Grants as financial need is assessed separately for each grant application.

1.2 Grant distribution

Figure 1 shows the structure of the MSRS grant schemes administered by the DfT.

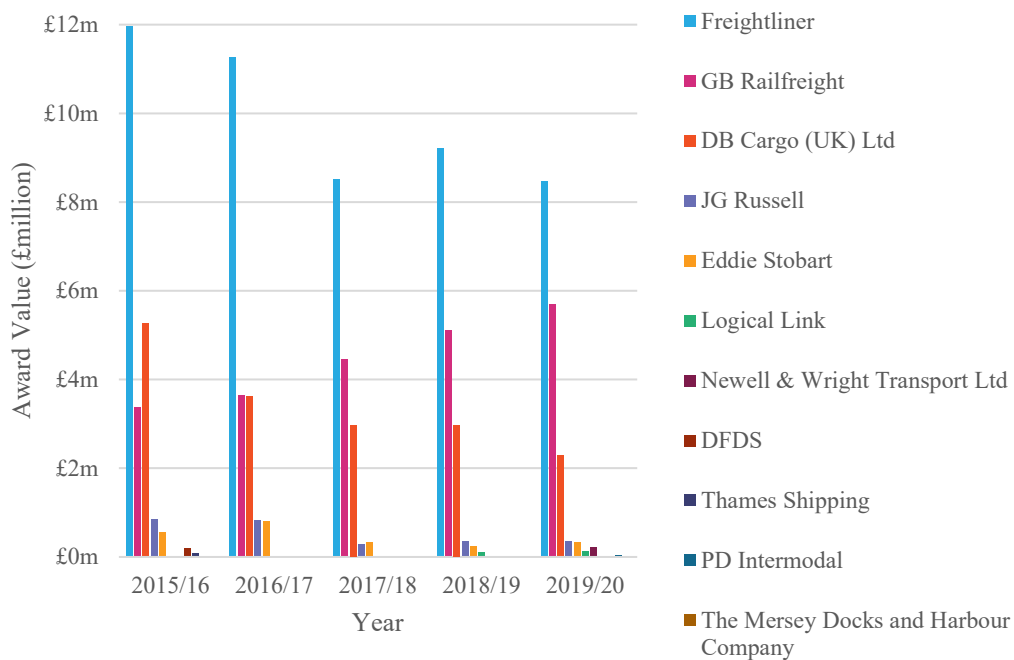
Figure 1 DfT freight grant structure



Analysis in Figure 2 shows that recipients of the current MSRS grant paid by the DfT are primarily rail freight operators, with Freightliner being by far the top recipient over the past five years. The operator has received a total of £49 million, 52% of the available funding. The award value has been steadily decreasing for all recipients except GB Railfreight – their share of the fund has risen from 15% in 2015/16 to 33% so far in 2019/20. Grants from Transport Scotland are paid separately and are not reflected in this analysis.

It is also important to note that the MSRS grants are not only available to freight operators. Logistics companies such as Russell Logistics and the Malcolm Group have been recipients of MSRS funding, using DRS and DB Cargo (UK) Ltd respectively to transport cargo.

Figure 2 Current and recent grant recipients



The total value of the DfT MSRS grants awarded to operators over the past five years is shown in Table 1 below. It should be noted that 2019/20 includes awards up to 16 October 2019.

Table 1: Total MSRS grant funding²

2015/16	2016/17	2017/18	2018/19	2019/20
£22.3 million	£20.1 million	£16.5 million	£18.0 million	£17.5 million

1.3 Study purpose and objectives

The aim of this research is to provide updated evidence to support decisions on, and be used in, any mode shift revenue support freight grants beyond March 2020, when the European State aid approvals for the grant schemes is due for renewal. The evidence specifically includes the ‘financial need’ for grant, which is the cost of rail or water freight transport in comparison to road, for intermodal freight. The schemes are GB-wide, and the DfT ensured that both Transport Scotland and the Welsh Government were able to participate in the study.

The research does not include updating the mode shift benefit values which are overlaid on the financial need to determine the final maximum grant rates. These were reviewed separately by the DfT before being incorporated into the calculation of the grant rates.

The project objectives are:

²https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/839671/awards-msrs-wfg.csv/preview (16 October update)

- To collect evidence for Great Britain on the difference in the average cost of moving intermodal freight by rail in comparison with road and estimate the ‘financial need’ for rail intermodal grants between April 2020 and March 2025. It is important this information considers what the cost would be on a ‘company neutral’ basis; which means that it should not take account of the current structure of companies or of areas where market imperfections may be increasing the cost beyond what it would otherwise be.
- To use this information to either update two in-house spreadsheet models of financial need used for MSRS (Intermodal) rail freight or, alternatively, produce a suitable replacement model which produces an assessment of financial need which balances the close modelling of the freight market with the need for ease of use for applicants and the DfT.
- To collect evidence for Great Britain on the costs of intermodal freight by coastal shipping and use this information and the road comparison to:
 - validate and update the cost information in the generic models developed in the Options for Changes to Revenue Support Freight Grant Schemes research³ and;
 - estimate the potential costs of an intermodal coastal shipping scheme, showing a range of scenarios.
- Evaluate the existing schemes’ effectiveness in maximising the environmental and congestion benefits of modal shift, including an international comparison with similar EU member states’ modal shift subsidy models.
- Assess the potential impact on the freight industry of grant funding ending in March 2020 or of it being phased out over three years
- Make recommendations for any changes to schemes beyond March 2020 in order to maximise the environmental and congestion benefits of modal shift, including suggesting alternatives and considering ideas for future alternatives as suggested by stakeholders.

1.4 This report

The project was structured as two key phases:

- To update the costs used to calculate the maximum rates payable under the current MSRS scheme and the potential coastal shipping scheme; and
- To share the results with the operators and then: estimate the impact on the industry of the existing schemes ending; estimate the cost to DfT of the potential coastal shipping scheme; and consider suggestions for potential future changes to the schemes.

In September 2019 we provided the DfT with an Interim Report which focused on the first phase. To inform the work we requested information from operators on the costs of transporting freight by road, rail and water. This information was used

3

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/770215/rail-and-water-freight-grants.pdf

to update the information in the existing spreadsheets used to calculate the MSRS as provided by DfT, and to validate the assumptions in the spreadsheet model for the potential coastal shipping scheme, produced under a previous commission. We spoke to a total of 28 operators across road, rail and coastal shipping sectors. We also requested and considered operators' views on the functioning of the current MSRS scheme and potential changes which could be considered by the DfT.

This Final Report builds on the Interim Report by setting out the output of the engagement with the operators and the changes we made to the calculation of the maximum grant rates in response to their feedback, as well as our own peer review of the calculation process.

The remainder of this report is structured as follows:

- Section 2 explains the process by which the grants are calculated, including the changes made to the process in the previous study;
- Section 3 summarises the consultation process we followed to update the cost data and views regarding the functioning of the scheme;
- Section 4 explains our determination of updated cost inputs for the models;
- Section 5 sets out our interim determination of the financial need and maximum grant rates payable;
- Section 6 estimates the cost to government of a potential coastal shipping scheme;
- Section 7 estimates the impact on the freight industry of grant funding ending;
- Section 8 summarises operators' feedback on the functioning of the existing MSRS scheme;
- Section 9 summarises operators' feedback on the proposed coastal shipping grant support strategy;
- Section 10 examines modal shift subsidy models in other EU Member States; and
- Section 11 considers high level options for change to the current MSRS grant funding scheme, and how a potential coastal shipping scheme could be designed;
- Appendix A incorporates all the materials we sent to potential respondents; and
- Appendix B sets out the peer review we undertook of the overall project and spreadsheet modelling activity.

2 Methodology for calculating maximum grant rates

2.1 Introduction

There are environmental and societal benefits in transferring freight from road to rail and water and HGVs do not pay their full external costs in terms of factors such as pollution, noise or congestion on many types of road. As such, for journeys where rail or water is more expensive than road, it may be justifiable to subsidise rail or water in order to secure the benefits of ‘mode shift’. This is the concept of externality benefits which underpins the mode shift benefit values which are overlaid onto the financial need to calculate the maximum grant rates⁴.

The financial need for subsidy is defined as the cost of transport by rail or water *minus* the cost of transport by road. However, the subsidy cannot justifiably be greater than the value of the mode shift benefit for each journey. Therefore, the maximum grant rate payable is the lower of the financial need and the environmental benefit.

MSRS (Intermodal) currently uses two intermodal cost models for port and domestic traffic which operate in a similar way but use different source data and have slightly different calculation methodologies. Both models compare the costs of movements by rail with the costs of a comparable movement by road. The difference between the two models relates to the origin and destination of each movement:

- The port model considers deep sea containers arriving at UK ports and then being forwarded by rail to central distribution terminals across the country. The comparator competitive road movement is for the haulage of a container from the port direct to the customer’s premises.
- The domestic model relates to the movement of domestic intermodal swap bodies between two points within the UK via two local rail terminals, one at the despatch point and one near the receiver. In this case the competitive road movement is for a standard semi-trailer direct from the forwarding location to the receiving customer.

Both the models use predominantly common inputs, and the study has sought to update both. We have taken as a starting point the versions of the models currently used by DfT and provided to us at the outset of this commission in May 2019. Alongside the two MSRS (Intermodal) models we were provided with the coastal shipping generic cost model as produced by Atkins and MDST in their 2017 study on behalf of the DfT.

⁴ For more information see <https://www.gov.uk/government/publications/freight-mode-shift-benefit-values-technical-report-an-update>

2.2 Road costs

Road costs in the port and domestic models represent the costs of the road haul equivalent of a port or domestic movement by rail. These costs are calculated by combining a standing cost (pence per minute) and a running cost (pence per kilometre) for the road equivalent port or domestic movement and assume one container per road vehicle. The size of container is not defined.

Standing costs comprise the following:

- Tractor and trailer lease costs;
- Vehicle Excise Duty (VED);
- Vehicle insurance;
- Employment costs; and
- Overheads.

Running costs comprise the following:

- Fuel;
- Tractor and trailer tyres; and
- Repairs and maintenance.

These standing and running costs are then applied to the distance and time calculations to produce an estimate of total road haulage costs. These calculations include additional distance adjustments for travel to/from specific zones, a local distribution road leg adjustment to represent delivery to the customer and a repositioning factor to consider road vehicle repositioning for a return haul. On the advice of the DfT we have assumed that the distance and time elements of the calculations remain unchanged from the current model as provided to us by the DfT at the outset of the project.

2.3 Rail costs

This section describes the structure of the rail input to the port and domestic models. The data is divided into two categories: costs (such as fuel and driver salaries) and productivity related assumptions such as train length.

Rail cost data is comprised of rail fixed costs and variable costs. These are made up of the following:

Fixed costs:

- Locomotive provision (annual leasing and maintenance, employment and other costs);
- Wagon provision (leasing and maintenance costs);
- Terminal handling (assessed as a standard per container handling charge);
- Port shunt or swap body cost (port and domestic model respectively); and

- Local distribution (assessed as a fixed delivery charge based on an average delivery distance).

Variable costs:

- Traction (assumes diesel fuel); and
- Track Access Charge.

Wagon costs are assembled from a range of train configurations based on the rail network characteristics (e.g. loading gauge, route availability and maximum train length), which determines wagon types used, number of wagons hauled per train, and costs for leasing, maintenance and the track access charge.

These costs are then applied to the journeys between zone pairs (a total of the distance between the zone centroids plus the road distribution legs) to produce a final cost based on the train type and the actual rail distance travelled through the network.

2.4 Coastal shipping costs

This section describes the context and methodology for the coastal shipping element of the study. The methodology for the calculation of the grant rates for coastal shipping was defined in the Atkins and MDST study which was conducted for the DfT from 2017 to 2018⁵. The study assumed that, to be in scope, the coastal shipping service would have to call ‘...at two or more GB ports allowing units to be transported between them and where the two ports are not in the same MSRS zone’. Flows should only be eligible where there is feasible competition with other modes; therefore, flows between mainland UK and Northern Ireland or other islands would not be included as there would be no diversion from other modes, but would still be eligible to apply for Waterborne Freight Grant.

The study found that there were no coastal shipping activities providing only intra-UK services. Any services calling at two UK ports were feeders for longer distance international services, typically connecting regional ports with the deep-sea port network. The introduction of a MSRS-style scheme for coastal shipping could therefore address any perceived distortion of competition from MSRS being available for equivalent movements by rail.

A generic cost model was produced for the study to calculate the cost and associated financial need for operating unitload regional to deep sea port feeder services. The feeder nature of the services meant that inland road collection or delivery could be assumed to be only required at one end of the transport chain.

The model was relatively simple, being based on a small number of assumptions as shown in Table 2. These were based on those developed for MDST’s own in-house cost model for feeder/short sea container shipping.

⁵ Available at <https://www.gov.uk/government/publications/options-for-changes-to-revenue-support-freight-grant-schemes>

Table 2: Generic coastal shipping model assumptions

Item	Value	Notes
Ship capacity (TEU)	600	Typical size of short sea/coastal shipping Load-on Load Off (LOLO) vessel
Time charter per day	£4,000	Cost of 'hiring' a typical 600 TEU ship with its crew. Charged for the term of the agreement at a charge per day. Typically excludes all variable costs such as port and fuel costs.
Bunker cost per tonne (MGO)	£500	Cost of the fuel required to operate the service. As the vessels are likely to be operating in the North Sea, the Baltic and the Channel area, assumed that the ships use Marine Gas Oil (MGO), which is a fuel with a sufficiently low sulphur content to meet the requirements of the Sulphur Emission Control Area (SECA) that is in place in these maritime zones.
Bunker consumption (tonnes/day)	20	Tonnes of fuel that the ship would burn in a 24-hour period at a typical efficient steaming speed for a 500 TEU ship of 13 knots.
Average speed (nautical miles per hour)	13	Based on average speed for a 'typical' 600 TEU container ship
Port cost per call	£3,000	Port costs include all charges to the port for use of infrastructure such as approach channels and breakwaters and quays.
TEU/unit	1.67	Average number of TEU for each container unit transported
Transshipment lift cost/unit	£30	For a container that is being transported by sea via a transshipment port without being taken directly inland, the charge to the container terminal operator for a lift from the container stack to the container ship
Gateway lift cost/unit	£60	For a container being transported inland to/from the port, the charge to the container terminal operator for a lift between the container ship and the container storage area and between the storage area and the back of a truck or a train at the port
Handling rate per hour (containers/hour)	20	Assumed to be 20 lifts per hour with one crane being deployed. Assumes that a feeder container ship is not given the same priority as a larger deep-sea container ship operating on an inter-continental service, with only crane being deployed by the terminal operator. While most container terminals advertise that they can achieve handling rates of 25 lifts per hour per crane, this is not always achieved in practice when providing a stevedoring service for short sea/feeder ship calls which are regarded as being less 'urgent'.
Vessel capacity utilisation	75%	Based on 'reasonably efficient' utilisation of vessel
Inland road D&C costs	£167	The fixed cost per container of transporting a container by road between a port and an inland origin or destination. Same value as for existing MSRS scheme.
Number of days per week for time charter	7	
Time required in port for manoeuvring (days)	0.1	Assumes 3 hours

Item	Value	Notes
Number of days per week	7	
Number of hours in a day	24	
Number of one-way trips	2	
Maximum grant limit compared to the total operating costs	30%	

Comparable rail and road costs are equivalent to the MSRS(I) rail models.

The generic cost model calculated maximum grants payable for each pair of MSRS zones through the following process:

- Ship capacity and TEU per unit are used to calculate the containers transported on each ship;
- Maritime distances, average speeds and the time required in port for manoeuvring are combined to calculate the number of trips per week on each flow;
- Total fixed costs are calculated by summing time charter, bunker costs and port costs;
- Total variable costs are calculated by summing transshipment handling, gateway handling and inland road D&C costs;
- Fixed and variable elements are summed to give total cost per container; and
- The maximum grant rate is the lowest of the cost differential from road, the existing rail grant rates and 30% of the coastal shipping cost per container.

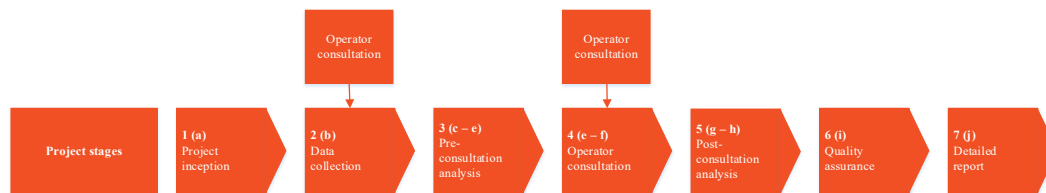
In section 4.4 we set out an updated set of inputs based on our consultation with companies operating in the maritime sector.

3 Operator consultation

3.1 Introduction

Figure 3 shows the two stages of operator consultation, providing inputs to stage 2 and stage 4 of the overall programme. Phase 1 of the consultation ran through June to August and Phase 2 from September to October 2019.

Figure 3 Approach to Delivery



The letters on the figure refer to the project scope as set out by the DfT, which stated that the supplier would be required to:

- a) Familiarise themselves with the spreadsheet models on which current maximum grant rates for MSRS (Intermodal) are based and the model for coastal shipping which was developed in the Options for Changes to Revenue Support Freight Grant Schemes research.
- b) Obtain and analyse cost information from rail freight operators, coastal shipping operators and from the road haulage industry and, produce a comparison between modes.
- c) Taking into account the effect of changes in track access charges from April 2019, provide an estimate of whether and by how much the average costs of intermodal rail freight exceed those of road freight and update figures for the financial need either in the Port and Domestic spreadsheet models or in a bespoke replacement.
- d) Provide an estimate of whether and by how much the average costs of coastal shipping freight operators exceed those of road freight in order to validate the information in the generic model developed in the ‘Options for Changes to Revenue Support Freight Grant Schemes’ research and to update the proposed coastal shipping model.
- e) Produce an interim determination of maximum grant rates for rail and for coastal shipping and circulate to freight operators to allow them to comment. Where rates are queried/challenged, review the provisional rate, record the reasons for decisions and, if appropriate, revise the grant rates accordingly.
- f) Consider stakeholder suggestions for how future schemes might work differently and note any other comments from freight operators on the current schemes. Make recommendations, as appropriate, for any future changes to those schemes.
- g) Produce an estimate of the potential costs of an intermodal coastal shipping scheme, across a range of scenarios.

h) Assess the potential impact on the freight industry of grant funding ending in March 2020 or of it being phased out over 3 years. This will need to include bulk rail freight, inland waterway traffic and short sea/coastal shipping as these are also covered by the grant schemes but are not subject to a financial need formula.

i) Propose and undertake a quality assurance process to ensure outputs are fit to be used for the purpose intended, and the spreadsheets are free from errors. This could involve checking against known current rates for freight movement. The quality assurance process will need to be fully documented.

j) Produce a detailed confidential report for the DfT, which it will share with Transport Scotland and the Welsh Government, and a summary report suitable for external stakeholders, which would exclude any identifiable confidential information.

Table 3 provides further explanation regarding the scope and purpose of each of the two phases of consultation.

Table 3: Operator Consultation Methodology Summary

Subject	Phase 1	Phase 2
Purpose	To secure the data required to calculate the 'financial need' and proposed grant levels	To share and seek feedback on our initial calculations
Identification of Stakeholders	We proactively identified key stakeholders, creating a list from DfT, Arup, AECOM, PCLP sources – the contacts and engagement details were recorded in a spreadsheet, allowing the most useful to be efficiently prioritised and communication level to be targeted	Continuation from Phase 1 engagement
Format	Conducted on a bilateral basis, given the commercially sensitive nature of the data being collected – depending on the preferences of the operators concerned, we utilised email, telephone or face-to-face discussions, structured around a templated list of targeted questions shared with the respondent in advance so as to minimise time needed from them	Two workshop-style sessions for Road & Rail modes and Coastal Shipping were held at the Arup London offices on 19 September
Conferences	Our consultation window aligned with the Multimodal UK conference (at NEC from June 18 to 22) and several discussions with operators were held at this three-day conference	Not applicable
Output	Data was received largely in standardised format as requested, helping to reduce the risk of unstructured and difficult to interpret inputs	Ensure any data presented is in an anonymous format which does not allow the identification of individual operators

Subject	Phase 1	Phase 2
	Concise documented recording of discussions was undertaken	
Duration	For both phases we allowed a four-week window to maximise chances of effective participation	

Activities relating to each phase are explained in the text which follows.

3.2 Stakeholder Consultation: Phase 1

DfT shared an initial list of contacts comprising current grant recipients and previous bidders for the grant. Members of the Arup/AECOM/PCLP consortium all contributed additional contacts, drawing from established industry-wide relationships, to create a stakeholder engagement database and spreadsheet progress tracker.

The stakeholders were divided into two broad groups for engagement:

- **Road and rail** including: 3PL and intermodal road haulage companies, rail freight operating companies (FOCs), customers buying services from hauliers and associated trade bodies;
- **Maritime** including: port operators, port authorities, terminal operators, shipping lines/3PL operators and associated trade bodies.

Road and rail stakeholders were allocated a star rating in order to prioritise the level of contact to be made during the engagement. This was based on cumulative scores for the following factors:

- Current active bidder for the MSRS grant;
- Previous bidder for the MSRS grant;
- Views previously received by DfT (in January consultation);
- Contact who had engaged in the 2013 study regarding the MSRS; and
- Top 30 logistics provider – CILT published in March 2019.

The complete consultation lists are shown in Table 4, for road and rail, and Table 5, for maritime. These tables, below, indicate how many stakeholders made inputs to Phase 1 of the consultation.

Table 4: Road and rail consultation list

Company Type	No. of Companies Contacted	Stakeholder attendance at Multi modal	Stakeholder Phase 1 Input
Rail freight operating companies	8	3	6
Transport and logistics	25	12	6
Retailers	6	1	1

Company Type	No. of Companies Contacted	Stakeholder attendance at Multi modal	Stakeholder Phase 1 Input
Trade bodies	5	0	4
Independent Consultant	1	1	1
Infrastructure	1	1	1
Inland Shipping	1	0	1
Engineering Consultancy	1	0	0

Table 5: Maritime consultation list

Company Type	No. of Companies Contacted	Stakeholder attendance at Multi modal	Stakeholder Phase 1 Input
Ports	8	5	6
Trade bodies	2	2	0
Independent consultant	1	0	1
Port authorities	2	0	2
Shipping lines	4	0	0

We sought engagement through a range of approaches:

- Informal discussions at the Multimodal conference;
- Email responses to ‘engagement packs’;
- Face-to-face interviews or telephone discussions focusing on general feedback, or to further clarify the email submissions.

Each approach is explained below.

3.2.1 Multimodal conference

On 18 and 19 June 2019, representatives on the project attended the Multimodal conference at the NEC in Birmingham. Attendees at this industry wide conference covered all the major sectors for our consideration: road, rail and maritime. This direct face to face industry engagement proved valuable in establishing the right connections within companies to gain access to the data being requested, particularly for companies which did not already have close relationships with the DfT.

3.2.2 Engagement packs

Having established a stakeholder engagement database, engagement packs were e-mailed to the company contact judged to be most appropriate based on our understanding of their position within the company, and their potential to be able to provide us with cost data regarding their operation. The engagement packs were designed to introduce stakeholders to our aims for the project and explain how they could help. They were sent out by individuals from Arup, AECOM and PCLP who were deemed to have the closest existing relationship with each

contact. Detail of communications was collated weekly in the stakeholder engagement progress tracker spreadsheet.

Full engagement packs contained the following:

- **Background information:** an introductory letter from the Head of the Freight Grants Team at the DfT, was sent to provide a statement detailing the background and aims of the study.
- **Excel spreadsheets:** requesting road/rail/shipping cost data in a standardised format, based on the existing formats of the MSRS intermodal models and the Coastal Shipping model.
- **Questionnaires:** to provide insights regarding road/rail costs as well as the existing/future functioning of the MSRS scheme.

Full engagement packs were sent out to all Road & Rail sector stakeholders. PCLP's approach for the Maritime sector was to e-mail the background information, then send out the Excel spreadsheets required after a successful initial contact.

Copies of the full engagement packs are provided as Appendix A.

3.2.3 Interviews

Selected stakeholders were engaged through interviews, either face-to-face sessions or 1:1 phone call. This approach was chosen where companies were not in a position to offer cost data, but were able to provide more detailed views, or if companies were able to provide very detailed data, which we wanted to understand and clarify in greater detail.

The main objective of the interviews was to obtain updated transport cost information and elicit views on the following:

- Effectiveness of the current scheme;
- Impact if grant levels were to be reduced or removed completely;
- Potential implementation of a coastal shipping grant.

Face to face and telephone interviews on a 1:1 basis were undertaken for trade bodies and selected existing grant recipients.

3.2.4 Data received

Data was received from the following company types as shown in Table 6, alongside the indication of the type of input which was made. Not all companies provided, or are in a position to provide, cost data. In summary, rail cost data was provided by seven companies (including all FOCs providing intermodal services); and by nine companies from the maritime sector.

Table 6: Data received by company type

Company Type	No. of Companies Contacted	Cost Data			Views	
		Road	Rail	Ship	Jan	June
Rail Operators	7		5		2	4
Transport Logistics	4	3	2	1	1	2
Specialist Industry	3					3
Trade Bodies	3	1			2	1
Independent Consultant	2					2
Infrastructure	1					1
Shipping (inland)	1					1
Ports	6			6	2	5
Port Authorities	2			2		
Shipping Lines	1				1	

*June consultation views provided in questionnaire format

3.3 Stakeholder Consultation: Phase 2

On Thursday 19 September we held two stakeholder workshops: the first focusing on rail stakeholders and the second on coastal shipping. Attendees are set out in Table 7 below.

Table 7: Phase 2 consultation list

Company Type	No. of Companies Contacted	Rail workshop	Coastal shipping workshop
Government	2	2	2
Rail Operators	9	3	0
Ports	8	1	3
Port authorities	2	0	0
Shipping lines	3	0	0
Transport Logistics	22	2	1
Specialist Industry	9	2	2
Trade Bodies	6	3	3
Independent Consultant	2	0	1
Infrastructure	1	0	0
Inland Shipping	1	0	0
Engineering Consultancy	1	0	0

At both workshops we set out the context of the study and purpose of the workshops, described the stakeholder engagement undertaken to date, summarised

the data received and presented our initial determination of the maximum grant rates payable for each zone to zone pair.

Summaries of the discussions at each of the two workshops are provided in the relevant sections below. The changes we made in response to the comments are set out in section 3.4.

3.3.1 Rail workshop summary

There were four key areas of discussion at the rail workshop:

- Summary of cost data received;
- Train productivity assumptions;
- Financial need by zone pair; and
- Wider policy decisions.

Responses to the cost data received were a combination of challenge and requests for clarification. The consensus was that operating costs had typically increased since the previous update, and operators expressed particular surprise that lease costs had generally reduced. We reviewed the calculations which subsequently confirmed this result to be supported by the data the operators provided. Operators were also concerned at the use of point estimates for fuel costs rather than longer term averages, which prompted a change in our approach. In response to requests for clarification we subsequently provided more detail to the attendees regarding the assumptions for terminal costs, local distribution and track access charges.

Regarding train productivity assumptions, operators suggested that train lengths had generally increased in recent years. In addition, the mix of 20- and 40-foot containers in the market had changed (and varies between port and domestic services), including a reduction in the number of 20-foot containers used on port traffic. Although hard to reflect in the modelling, there is also evidence to suggest that demand is now more variable across the week, with congestion and backlogs for onward movement as larger ships discharge, followed by a longer period until the next ship arrives creating a relative lull in activity. This causes issues for ports (e.g. lower utilisation of cranes over a week and increased storage requirements) and greater peaks / troughs for rail demand – which cannot flex quite as much as road. There was an additional view that some customers may demand road because rail is booked up for the earliest dispatch slots from the port.

The key concern expressed in response to the initial determination of the maximum grant rates was the finding that there could be financial need for flows such as from East Anglia to the North West⁶, where a strong rail market already exists. More generally it was considered surprising that financial need was being identified for long distance flows where rail's competitive position was typically stronger.

Wider policy options were considered at various points including the potential to incentivise new flows; no increase in grant rates for flows which were already

⁶ It should be noted that following the workshop, the grant rates have been revised in line with comments and further information received from operators.

successful; and whether to reopen the assumptions during the five-year period to account for any changes in circumstances. Zone 8 in Scotland was highlighted as being particularly variable in logistics terms and could potentially be split between the Central Belt and other parts of southern Scotland. These issues are for the DfT to consider with Transport Scotland and the Welsh Government and are outside the scope of this specific engagement.

3.3.2 Coastal shipping workshop summary

The coastal shipping workshop focused on three key areas:

- Zone and node locations;
- Grant rates; and
- Process and rules for awarding grants.

The primary issue raised with regard to zone and node locations was the potential for inconsistency with the MSRS regime in terms of the assumed final leg of the journey for a port to inland terminal flow. Under the MSRS scheme, the overall journey for which a grant may be payable comprises the rail flow from a port to an inland terminal, plus a cost for local distribution by road to an unspecified location. The coastal shipping model only considers the port to port movement plus the same local distribution cost, therefore potentially omitting the port to inland terminal leg of the journey. The group agreed that there could be value in comparing the grant rates with and without inland movements. Although beyond the scope of the study, several attendees also suggested that the zone structure was not well suited to the locations of major ports. Zone 8 was again cited as problematic in capturing only the East Coast port at Grangemouth and omitting Glasgow. The port for Zone 11 is at Garston. The group noted that although this is correct, the port does not handle containers. However, Seaforth container terminal is only 10 miles to the north and could be a more suitable replacement.

Few zone pairs had been found to be eligible for financial support, as in the vast majority of cases coastal shipping was found to be less expensive than road. Most operators disputed this finding, suggesting that the model might be producing misleading results by focusing on operating costs rather than market prices. High costs of entry and challenges in providing attractive levels of frequency could also explain the limited adoption of coastal shipping for intra-GB flows. Operators reported that the only market where intra-GB services currently existed was along the east coast from London/Southampton/Felixstowe to the north. Services on the west coast also call at Ireland and destinations in mainland Europe. Focusing only on intra-GB services could also be an artificial limitation as most services continue to non-UK destinations.

Stakeholders discussed a variety of options regarding the best 'actor' to be the grant recipient, and a small group agreed to provide a separate proposal on how the grant scheme could function if introduced, including which entity should receive the grant. It was also suggested that the model should be simple in its approach and should help to provide clarity on the recipient of the grant. Operators considered it vital that additional funding should be provided for any

potential MSRS-style coastal shipping scheme rather than grant being ‘re-allocated’ from existing budget levels.

3.4 Subsequent revisions to methodology

3.4.1 Summary

Table 8 summarises the revisions suggested by attendees at the workshops and the revisions we made in response. Although policy decisions are not within the scope of this project, we do take account of these when making our recommendations in section 11.

Table 8: Summary of workshop feedback and subsequent changes in approach

Issue	Rail workshop	Coastal shipping workshop	Change in data or methodology?	Comments
Review of cost data required	✓		No	Costs reviewed – no major issues found
Average fuel costs instead of point estimate	✓		No	Tested – hard to justify and limited impact
Train lengths too short	✓		Yes	Using operator submissions rather than existing model assumptions
Financial need for already viable flows	✓		No	Review of spreadsheet to confirm calculations
Incentivisation of new flows	✓		No	Policy decision
Reopening of assumptions during 5-year period	✓		No	Policy decision
Zones and node structure	✓	✓	No	Policy decision
Do not use zone structure – focus on most viable flows		✓	No	Policy decision
Inclusion of inland rail leg		✓	No	Insufficient data on ultimate origin / destination of coastal shipping flows
Consider international flows		✓	No	Policy decision
Consider grant recipient		✓	No	Policy decision
Additionality of coastal shipping scheme		✓	No	Policy decision

The changes are explained in detail below.

3.4.2 Rail

In response to the comments made by operators at the workshop, and subsequent discussions with the DfT, we made the revisions to the methodology listed below. We also received a further operator submission following the workshop which had a small impact on the results.

The wider policy discussions which emerged in the workshop are reflected in this report, but we have not made any changes to our methodology in response as these are beyond our remit for this study.

Lease costs

We reviewed the locomotive lease costs and did not find a case for reviewing the methodology for calculating these. However, the values used in the model increased slightly following the workshop, for two reasons:

- For one of the operators we were dividing total lease costs by the total number of locomotives, rather than leased locomotives only.
- Another operator submitted revised (higher) costs following the workshop.

Two further operators also provided data submissions in the weeks following the workshop. The combined impact of the revisions and the additional submissions was a 29% increase in the lease costs over the figures presented at the workshop.

Fuel prices

In response to the comments made at the workshop we investigated replacing the point estimates of fuel prices provided by the operators with averages over five and nine-year periods using the 'Typical retail prices of petroleum products and a crude oil price index' released by the Department for Business, Energy and Industrial Strategy (BEIS). We decided to retain the point estimate, because historic price data does not provide a means of determining future prices. In any case, we found that the point estimates were close to the 10-year average, although a 5-year average may be more than 10% lower given the changes in gas oil prices.

Final rail distribution leg cost

The final rail distribution cost could be interpreted as being high relative to the cost by road of an equivalent journey. However, the cost includes other components beyond a simple mileage-driven road haulage cost. We undertook a general review of the model which confirmed that this was not duplicating any other adjustments, and that this was consistent with the calculations for an equivalent road journey.

Train productivity

We recalculated the train productivity assumptions based on the data submitted by the operators. For the ports model, this gives longer trains but fewer containers

(given the mix of container types); and for the domestic model, shorter trains and fewer containers. For the domestic model we decided to reject the data submitted by the operators and to retain the existing assumptions, given the very limited volume of data provided by the operators from which to draw conclusions.

For the ports model we decided to adopt the data submitted by the operators, despite the fact that it demonstrated increases in the number of containers per train on some flows and reductions on others. We also obtained data from Network Rail's Track Access Billing System for total vehicle and train kilometres which allowed us to calculate the average wagons per train by service group. These calculated values were broadly consistent with the data provided by the operators.

The changes relative to the base model data are to be expected given the evolution of wagon, platform and container mix; and gauge clearance of key corridors.

Financial support for profitable flows

We reviewed the level of support for what were perceived to be more profitable flows and found this to be marginal and only a small change from the previous iteration.

3.4.3 Coastal shipping

The discussion at the coastal shipping workshop focused on three key areas:

- Zone structure and node locations;
- Grant rates; and
- Process and rules for awarding grants.

Items 1 and 3 are beyond the scope of the study and we did not make any changes to the model in response. However, the views expressed by the operators in the workshop and in subsequent submissions are set out in sections 3.3.2 and 9. We also consider the impact of the proposal by UKMPG in section 6.4.

We addressed the feedback on the grant rates in two ways:

- By reviewing the load factors used in the model; and
- By adding an allowance for overheads.

Respondents to the consultation suggested that a load factor of 84% would be a sensible assumption, based on reasonably efficient utilisation of a vessel. We decided instead to retain the 75% assumption in the generic model as a reflection of a reasonably efficient operator. Assuming the coastal service operates only on an intra-GB basis would require the operator to make a difficult trade-off between providing appropriate capacity for the demand which exists, whilst providing a minimum level of service which would be attractive to the market. This would point to a lower load factor than the 84% provided in the response to the consultation.

4 Determination of updated cost inputs

4.1 Introduction

This section describes the updates made to the cost inputs included in the ports and domestic models. Certain variable costs are multiplied by distances to calculate the resulting totals for each zone to zone pair. We assumed that the zone structure, the distances between the zones, and the corresponding locations of ports and terminals, remain unchanged from the last update to the model. This reflects the following:

- We have reviewed the status of all of the terminals in the existing model and have found that all remain operational;
- Notwithstanding the progression of the Smart Motorway Programme and improvements such as the A14 / M1 Catthorpe Interchange, the scale of changes to the road network is unlikely to have generated a significant change in overall vehicle speeds since the last major update of the models in 2014; and
- We did not identify any sufficiently significant expansions of the ‘high gauge’ rail freight network since 2014 which would have resulted in major changes to freight train routings.

Distances for road, rail and coastal shipping therefore remain unchanged from previous iterations of the model, and for road we have retained the 20% uplift to standard journey planning estimated journey times to account for congestion at certain times of day. We also retained the local distribution and vehicle repositioning adjustments. The purpose of these adjustments is to consider road vehicle repositioning for a return haul, and to take account of the proportion of road journeys where there is a ‘doubling back’ in distance.

The rail models use bands to capture variances in efficiency for journeys of varying lengths. For consistency and to retain ease of understanding by grantees we did not make any changes to these bands.

The models also continue to assume that one container is equivalent to one lorry journey.

4.2 Road costs

This section outlines the method used for calculating the updated road haulage costs for the movement of containers and domestic trailers.

As shown in Table 6 there was a limited response to the road cost questionnaire, with only two haulage operators providing partial data. However, the Freight Transport Association (FTA) provided valuable data through their ‘Manager’s Guide to Distribution Costs’. This was adopted as the main source as these cost tables combine data from a variety of sources including a survey of 70 contributors who provided partial data – including vehicle costs and wages. The contributors come from a variety of industry sectors with business operations that

include the movement of freight. A number are distribution or haulage firms, but respondents also include construction, aggregate, food manufacture/distribution, and waste disposal firms. The tables show an estimated average cost of running a vehicle with the caveat that actual costs can vary significantly depending on the nature of the business operation and individual companies' agreements with suppliers and employees.

The FTA handbook provided a useful source for updating the previous MSRS model values which were also compiled from transport cost tables. For both the port and domestic sub-models, a 44-tonne artic with trailer was assumed as respondents most commonly provided cost information for this configuration.

4.2.1 Proposed values

Road costs are divided into costs per kilometre (running costs) and costs per minute (fixed costs). The cost per km calculation depends on fuel, tyres, and tractor and trailer repairs and maintenance. Fuel is the dominant item within this cost category, which is a cost that does not vary greatly between operators.

Table 9 shows the breakdown of the distance-based pence per kilometre cost information.

Table 9: Road Operating Costs (pence per km)

Item	Current Value	Current Value plus CPI	Proposed Value	Ratio Proposed Value / Current Value	Ratio Proposed Value / Current Value (plus CPI)
Tractor					
Fuel	38.30	41.18	35.68	0.93	0.87
Tyres	1.09	1.17	1.15	1.06	0.98
Repairs and maintenance	5.37	5.77	6.65	1.24	1.15
Trailer					
Tyres	1.11	1.19	1.17	1.05	0.98
Repairs and maintenance	3.01	3.24	3.73	1.24	1.15
Combined unit					
Total operating costs	48.92	52.55	48.38	0.99	0.92

The time related fixed costs (pence per minute) include the remaining elements of standing cost – driver wages, tractor and trailer provision and road tax. The summary data on these costs are:

- Previous (2013 values and prices): 40.6 pence per minute
- Updated using CPI (1.08): 43.7 pence per minute
- Value used (FTA and data received): 47.3 pence per minute port and domestic model, giving an overall rate of increase $(47.3/40.6) - 1 = 17\%$

The FTA cost tables are considered to give maximum values of realised road costs. Discounts are offered to attract traffic and some parts of the market are highly competitive. It is difficult to gauge the extent to which these ‘book’ values may be over estimates of actual prices.

4.2.2 Summary

Between 2013 and 2018, the road distance based (pence per km) costs have decreased by 1% and the road time based (pence per minute) costs have increased by 17%. Overall, this represents an average increase in costs of 7%. As CPI inflation over the same period has been 8%, there has been a decrease in road costs in real terms.

4.3 Rail costs

Seven companies responded with updated cost data. In general, most of the required data was provided by the five FOCs who responded. The companies have different cost structures, in particular reflecting the assets they own and those that they lease. The key characteristics of the FOCs are set out in Table 10.

Table 10: Asset ownership arrangements

	DB Cargo (UK) Ltd	DRS	Freightliner	GB Railfreight	JG Russell
Locomotives	Owned	Leased	Leased / Owned	Leased / Owned	Leased
Wagons	Leased / Owned	Leased / Owned	Leased / Owned	Leased	Leased
Terminals	Owned	Leased	Third party / owned	Third party	Third party

There are variations in the rail costs reported by the different industry participants. However, the costs used have been determined from an assessment of the responses to provide estimates representing an efficient operator.

The operators provided data for a range of locomotive types, as shown in Table 11. As the dominant class and to retain consistency with previous iterations, the model only uses costs for Class 66 locomotives.

Table 11: Intermodal locomotive numbers by operator

Class	Traction type	DB Cargo (UK) Ltd	DRS	Freightliner	GB Railfreight	JG Russell	Total
08	Diesel			8			8
66	Diesel	15	4	40	88		147
70	Diesel			14			14
86	Electric			16			16

Class	Traction type	DB Cargo (UK) Ltd	DRS	Freightliner	GB Railfreight	JG Russell	Total
88	Diesel / electric		4			8	10
90	Electric	2		23			25
Total		17	8	101	88	8	220

4.3.1 Proposed values

Current and proposed values of key rail costs are shown in Table 12. Column 4 shows the current values adjusted to 2018 prices. Column 5 shows the proposed new values also at 2018 prices. Columns 6 and 7 show the build-up of the overall change proposed; column 6 shows the overall change and column 7 the change in real terms after adjusting the price base.

Track access charges have used the last Network Rail CP6 price list. These are used to calculate the track access charge rates Network Rail will apply to the FOCs.

Table 12: Rail cost information

Item	Units	Current value	Current value plus CPI	Proposed value	Ratio (Proposed value) / (Current value)	Ratio (Proposed value) / (Current value plus CPI)
Annual lease	£000	161	173	161	1.00	0.93
Annual maintenance	£000	66	71	96	1.45	1.35
Driver salaries	£000	45	48	61	1.36	1.26
Depot costs	£000	62	67	46	0.74	0.69
Access to third party terminals	£/train	164	176	197	1.20	1.12
Fuel	£/litre	0.67	0.72	0.59	0.88	0.82
Track Access Charge	£/kgm ⁷	2.57	2.76	3.52	1.37	1.27
Capacity charge	£/train m	0.17	0.2	0	0.00	0.00
Terminal (2 lifts)	£	50	54	62	1.24	1.15
Local distribution	£/trip	167	180	165	0.99	0.92
Port shunt	£/trip	18.5	19.9	31	1.68	1.56

⁷ kgm – 1,000 Gross Tonne Miles

4.3.2 Train productivity

Train productivity is reflected in the model through two components: train length (measured by wagons per train) and wagon utilisation (measured by containers per wagon). FOCs were asked to provide information on productivity which is a key input to the models. As explained in section 3.4.2, we revised the productivity⁸ assumptions in the ports model to reflect data submitted by the operators.

In the previous versions of the models the train productivity assumptions also drove wagon leasing and maintenance costs; and track access charges, based on the average split between standard, lowliner and megafret wagon types. In both the port and the domestic models, we simplified these calculations to use weighted averages based on the intermodal wagon fleet data provided by the operators, assuming consistent values for each train configuration.

The assumed train length and utilisation are shown in Table 13.

Table 13: Train configuration and utilisation

Train Configuration	Port or Domestic	Wagons	Maximum Containers	Utilisation: containers per wagon	Actual Containers
1	Port	22	39	63%	24
2 (deep sea)	Port	24	35	74%	26
2	Port	12	24	80%	19
3	Port	29	56	70%	39
4	Domestic	20	20	90%	18
5	Domestic	26	26	95%	25

Train productivity is a key input to the model.

4.3.3 Summary

The largest increases in the model are the port shunt, loco annual maintenance, track access charges, driver's salary, terminal lift charges and access to third party terminals. These are largely outside of the control of the FOCs and thus little can be done to influence them. Leasing, final leg distribution and fuel costs have all reduced, at current and real prices, since the last review.

4.4 Coastal shipping costs

Our focus was on updating each of the cost inputs in the generic cost model, although sourcing inputs from the operators for each item proved challenging in some instances, it became apparent that a number of port companies are using a consolidated rate for box handling, with the exception of pilotage fees that are

⁸ Measured by trips per day. Locomotive productivity was measured in this way to fit with the input needed for the Model. A measure of miles/day might give a different answer, but this information was not readily available.

charged separately where appropriate. Consequently, frequently only a limited breakdown of actual costs with which to build detailed examples of port operating costs could be obtained. A further challenge was the calculation of shipping line costs – in practice the lines operate multiple port calls that often include GB, mainland European and Ireland port calls.

Consequently, it is not possible to isolate the shipping line's operating costs and overheads allocations to specific calls between two specific GB ports. The overhead recovery cost (which is substantial in the comparable rail costs model) was absent in the Atkins and MDST model has the potential to alter the cost profile for coastal shipping. Further evidence (and transparency on the part of shippers) would be required to assess the scale of the overheads allocation. In the absence of this evidence we have added an assumption for overheads which is consistent with the rail models.

4.4.1 Proposed values

In order to validate the assumptions in the generic cost model we considered two separate illustrative services which the sector suggested would be the most viable flows:

- West Coast service using 600 TEU vessel with three-leg rotation: Southampton / Liverpool / Clydeport / Southampton
- East Coast service using 900 TEU vessel with three-leg rotation: London Gateway / Teesport or Tyne/ Grangemouth / London Gateway.

The specifications assumed for the vessels are as follows:

- For 600 TEU vessel – 5,520 gross tonnage; length overall 118m; draft 6.0m
- For 900 TEU vessel – 8,970 gross tonnage; length overall 154m; draft 6.9m

The vessel for each route was chosen on the advice of the shipping industry – the larger 900 TEU vessel is assumed to operate on the East Coast service where there are no deep-sea vessel calls into the 'regional ports', and the smaller 600 TEU vessel is assumed for the West Coast service because of deep-sea vessel calls into Liverpool. Respondents reported that larger container ships would become the norm for feeder operations in the future but the 600/900 TEU examples represent the current situation.

The original and updated inputs are shown in Table 14, followed by commentary on the key changes. Where the origin and destination ports are both located on the same coast, the east or west coast assumptions are used; and where one port is on the east and one on the west, the model uses an average. We assume that the Atkins and MDST work used a 2017/18 price base.

Table 14: Updated coastal shipping costs

	Generic model	Generic model (2018/19 prices)	West Coast Service	East Coast Service	Average	Ratio to generic model (2018/19 prices)
Ship capacity (TEU)	600	600	600	900	750	1.25
Time charter per day	£4,000	£4,122	£3,881	£4,503	£4,192	1.02
Bunker cost per tonne (MGO)	£500	£515	£410	£410	£410	0.80
Bunker consumption when steaming (tonnes/day)	20	20	18	25	21.5	N/A
Bunker consumption in port (tonnes/day)	-	-	2	3	2.5	
Average speed (nautical miles per hour)	13	13	13.5	13.5	13.5	1.04
Port cost per call	£3,000	£3,092	£3,174	£2,618	£2,896	0.94
TEU/unit	1.67	1.67	1.73	1.73	1.73	1.04
Transshipment lift cost/unit	£30	£31	N/A	N/A	N/A	N/A
Lift cost/unit	£60	£62	£76	£79	£78	1.26
Handling rate per hour (containers/hour)	20	20	23	22	22.5	1.13
Vessel capacity utilisation	75%	75%	75%	75%	75%	1.00
Inland road D&C costs	£167	£172	£165	£165	£165	0.96
Number of days per week for time charter	7	7	7	7	7	1.00
Time required in port for manoeuvring (days)	0.1	0.1	0.17	0.17	0.17	1.70
Number of days per week	7	7	7	7	7	1.00
Number of hours in a day	24	24	24	24	24	1.00
Number of one-way trips	2	2	N/A	N/A	2	1.00

Time charter per day originally assumed \$1.825 million (£1.4 million) charter cost for a 600 TEU vessel and \$2.117 million (£1.6 million) for a 900 TEU vessel, plus £100,000 for overheads. Two ship sizes were chosen under advice from industry, in particular from two port/terminal operating companies who also have feeder-ship operating subsidiaries. Subsequently we added a general uplift for overheads and adjusted these figures to remove the overhead allowance. This gives the lower values of £3,881 and £4,503 per day.

Bunker cost per tonne is an average of the six-monthly averages for Ultra-Low Sulphur Fuel Oil (ULSFO) and Low Sulphur Marine Gas Oil (LSMGO). ULSFO

is used in main engines for propulsion at sea within the SECA areas. At port, once main engines are shut down, auxiliary generators are fired up for power using LSMGO. In reality bunker costs are highly volatile and operators hedge their fuel costs in ways we are not privy to.

Bunker consumption is an aggregate of consumption during steaming and when at port. Daily consumption rates vary for each ship type and the indications we were provided were 18 tonnes per day for 600 TEU vessel and 25 tonnes per day for 900 TEU vessel, while steaming. We also factored in fuel consumption in port (2 tonnes per day and 3 tonnes per day respectively), using cost of fuel used in generators. These assumptions are intended to reflect reality as closely as possible for ship operations (switching off main engines in port and using generators for all power requirements).

Average speed on passage is assumed to be 13.5 knots (for fuel cost efficiency). This is an average based on the operator consultation.

Port cost per call includes pilotage, conservancy, berthing/unberthing and other ancillary charges. In a number of cases the ports provide a consolidated rate to the shipping lines rather than itemised charges. Examples include Liverpool, Clydeport and Teesport. This approach simplifies decision making, the logistics process and related documentation.

TEU/unit is the actual box/TEU ratio in 2017, as provided in the DfT's maritime statistics.

Transshipment lift cost is assumed to be zero, as the term does not apply to a GB coastal service. Import deep-sea boxes at a GB hub ports are customs cleared on arrival and have the option of onward transportation by road, rail or coastal shipping. The correct usage of the term 'transshipment' is for transfers of boxes between two different countries, without there having been any customs clearance at the first hub port.

The **lift cost per unit** is the aggregate of handling (loading or discharging) costs of laden and empty boxes at each of the ports on each voyage, i.e. two lifts (i) mother vessel to feeder vessel and (ii) feeder vessel to quay. All of these costs were provided by the industry in strictest confidence.

Handling rate per hour was provided by a number of ports: some suggested 22 average moves per hour; most others said 23. The West Coast service is marginally higher reflecting the crane capacity at ports along that route.

The operators we consulted suggested a **vessel capacity utilisation** percentage of 84%, higher than was assumed by the generic cost model. However, given the lack of existing intra-GB coastal shipping services we decided to retain 75% as a conservative assumption. This is also broadly consistent with the analysis reported by Atkins and MDST in the 2017 study, which reported that analysis of the DfT's Maritime Freight statistics shows that 32% of containers transported coastwise were empty in both 2015 and 2016.

Inland road D&C costs are assumed to be equivalent to the MSRS Port model.

Time required in port for manoeuvring assumes four hours for pilotage and berthing/unberthing for each port visit (i.e. two hours after arrival and a further two hours to prepare for departure).

Number of one-way trips is assumed to be two per week for each flow, on the basis that this would be likely to be the minimum required to provide a reasonably attractive frequency for end users.

5 Financial need and grant rates

5.1 Introduction

The models have been updated and revised in line with the values contained in Section 4.

This section explains the effect of these changes and discusses the impact this would have on the resulting levels of assistance payable to grantees.

The outputs of the proposed model are calculations, for each zone-to-zone pair, of the financial need of carrying a container by rail rather than by road and resulting from this the maximum grant rate payable. These rates have been defined as set out in the sections below.

5.1.1 Financial need

Financial need is defined as occurring when cost factors indicate that rational freight customers will move containers by road rather than rail because the road transport cost is less than the rail transport cost.

The financial need is calculated by comparing the road and rail costs for an equivalent movement between zone pairs. Where this identifies that the road cost is lower than rail cost an assumption is made that FOCs would not bid to carry containers between these zone pairs without financial support. It should be noted that the model compares costs without the addition of any profit elements and does not consider wider commercial implications of container movements.

In cases where the model identifies there is a financial need the implication therefore is that movement by rail will only occur if external financial support is made available.

5.2 Rail

5.2.1 Introduction

The financial need is a key intermediate output in the model analysis and consequently the proposed model outputs of it are shown in the tables below. The financial need for each zone to zone movement is shown in Table 15 and Table 16 for the domestic and port as origin models respectively. In each case the figure quoted for each zone pair is the difference in cost of moving one container by road and rail, with instances where rail is more expensive being shown as a positive figure and where rail is cheaper a negative figure. The units are £ per container (not capped by Environmental Benefit) for each zone pair, and each table is graded to indicate positive values in green (those pairs which qualify for support), and negative in red (which wouldn't qualify for support).

Figure 4 shows the model zones with the Strategic Freight Network shown in green. There are other core rail routes used by freight trains and represented in the model, but these are not shown here.

Figure 4: Model zones and primary rail freight routes

Table 15: Domestic Financial Need

		Destination Zone																	
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Origin Zone	1	-	£182	£190	£198	£152	£56	£21	£9	-£2	-£48	£106	£183	£113	£212	£151	£183	£205	£164
	2	£182	-	£182	£199	£123	£38	£7	-£9	-£30	-£69	£94	£150	£83	£145	£114	£88	£79	£146
	3	£190	£182	-	£213	£156	£138	£80	-£5	£38	-£2	£127	£142	£90	£275	£127	£171	£54	£101
	4	£198	£199	£213	-	£271	£170	£189	£158	£92	£54	£218	£156	£162	£197	£191	£88	£158	£132
	5	£152	£123	£156	£271	-	£185	£143	£129	£131	£115	£241	£227	£109	£175	£140	£119	£103	£49
	6	£56	£38	£138	£170	£185	-	£201	£95	£162	£121	£117	£216	£14	£144	£44	£119	£7	-£29
	7	£21	£7	£80	£189	£143	£201	-	£199	£181	£151	£154	£157	£34	£105	£64	£136	-£8	-£75
	8	£9	-£9	-£5	£158	£129	£95	£199	-	£160	£123	£137	£173	£12	£21	£29	£66	-£25	-£97
	9	-£2	-£30	£38	£92	£131	£162	£181	£160	-	£194	£74	£113	-£21	£51	£10	-£87	-£46	-£119
	10	-£48	-£69	-£2	£54	£115	£121	£151	£123	£194	-	£100	£74	-£56	£16	-£24	-£121	-£80	-£152
	11	£106	£94	£127	£218	£241	£117	£154	£137	£74	£100	-	£289	£149	£155	£102	£155	£108	£41
	12	£183	£150	£142	£156	£227	£216	£157	£173	£113	£74	£289	-	£194	£170	£222	£120	£156	£88
	13	£113	£83	£90	£162	£109	£14	£34	£12	-£21	-£56	£149	£194	-	£118	£259	£177	£133	£44
	14	£212	£145	£275	£197	£175	£144	£105	£21	£51	£16	£155	£170	£118	-	£156	£191	£152	£102
	15	£151	£114	£127	£191	£140	£44	£64	£29	£10	-£24	£102	£222	£259	£156	-	£224	£172	£36
	16	£183	£88	£171	£88	£119	£119	£136	£66	-£87	-£121	£155	£120	£177	£191	£224	-	£240	£78
	17	£205	£79	£54	£158	£103	£7	-£8	-£25	-£46	-£80	£108	£156	£133	£152	£172	£240	-	£99
	18	£164	£146	£101	£132	£49	-£29	-£75	-£97	-£119	-£152	£41	£88	£44	£102	£36	£78	£99	-

Table 16: Port as Origin Financial Need

		Destination Zone (Inland Terminal)																	
Origin Zone (Port)	Zone	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
	1	-	£177	£66	£112	£26	-£59	-£106	-£161	-£214	-£248	£17	£56	£72	£57	£90	£20	£95	£203
	2	£119	-	£64	£102	£25	-£68	-£106	-£157	-£214	-£245	-£11	£37	£61	£22	£103	-£27	£20	£133
	3	£96	£66	-	£221	£200	£160	£158	£85	-£5	-£37	£147	£109	£141	£160	£169	£64	£54	£71
	4	£123	£85	£160	-	£236	£149	£190	£117	£40	£1	£185	£139	£133	£128	£161	£56	£78	£65
	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	6	-£10	-£77	£128	£175	£237	-	£194	£157	£83	£39	£182	£181	£90	£126	£118	£77	-£63	-£8
	7	-£146	-£219	£49	£107	£164	£173	-	£204	£128	£95	£167	£123	£66	£63	£96	-£14	-£182	-£117
	8	-£143	-£220	-£18	£84	£142	£153	£201	-	£175	£129	£153	£110	£60	-£6	£87	-£16	-£178	-£117
	9	-£163	-£236	-£67	£36	£83	£121	£141	£144	-	£172	£36	£59	-£56	-£56	-£27	-£130	-£192	-£260
	10	-£208	-£280	-£110	-£5	£55	£78	£109	£108	£171	-	£57	£21	-£98	-£97	-£70	-£172	-£237	-£304
	11	£18	-£52	£99	£170	£234	£135	£169	£159	£73	£44	-	£266	£174	£115	£136	£98	£7	£23
	12	£91	£4	£79	£140	£204	£175	£140	£133	£56	£18	£259	-	£156	£95	£184	£80	£62	-£7
	13	£117	£23	£90	£123	£153	£69	£87	£74	-£80	-£115	£189	£155	-	£103	£277	£158	£135	£33
	14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	15	£158	£63	£121	£151	£181	£97	£115	£98	-£49	-£83	£150	£182	£274	£134	-	£199	£176	£50
	16	£85	-£63	£82	£49	£79	-£113	£79	£6	-£149	-£183	£114	£81	£158	£93	£201	-	£160	-£17
	17	£152	-£15	£26	£70	£14	-£89	-£104	-£156	-£206	-£243	£20	£60	£135	£42	£177	£158	-	£107
	18	£195	£139	£100	£92	£88	£14	-£29	-£60	-£235	-£270	£81	£36	£107	£92	£91	£21	£146	-

5.2.2 Impact of changes to costs

To assist in the understanding of the impact of the changes between the current and the proposed model the following figures provide a graphical comparison of the change in the financial need and the maximum grant rate for each zone to zone movement produced by the proposed models against the current models.

The models generate 272 different zone-to zone movements in the port model and 306 movements in the domestic model. Whilst changes to the estimated financial need and maximum grant rate on specific movements will be of interest to individual grantees, the scatter diagrams provide an overall picture of the changes in the outputs.

Each chart plots the change for each zone pair between the current and proposed models. A plot point is established for each zone pair, falling into one of four quadrants. A solid blue 45-degree line provides a benchmark for assessing the ratio of the calculated proposed vs. current outputs. This line represents no change between the outputs. As the outputs are not adjusted for inflation it can be expected that plot points will fall to the left of the line.

A move to the left of or above the line represents a zone pair for which the financial need or maximum grant rate is increased. To the right or below the line indicates a zone pair which has reduced financial need or maximum grant rate.

The overall scatter is divided into four quadrants moving in a clockwise rotation from the first quadrant, defined as follows:

- Quadrant 1: movements with positive financial need in the current model and still a positive financial need in the proposed model;
- Quadrant 2: movements with positive financial need in the current model changing to a negative financial need in the proposed model;
- Quadrant 3: movements with negative financial need in the current model staying negative in the proposed model;
- Quadrant 4: movements with negative financial need in the current model changing to a positive financial need in the proposed model.

5.2.3 Change in financial need

Figure 5 and Figure 6 show a scatter plot of the estimated financial need by movement for the domestic and port as origin models respectively. The results indicate that the costs for most movements have risen, especially in the Port model where port handling charges have risen. The points represent the origin zone of the movement and thus a movement from that zone.

Figure 5: Change in Financial Need – Domestic, by origin zone

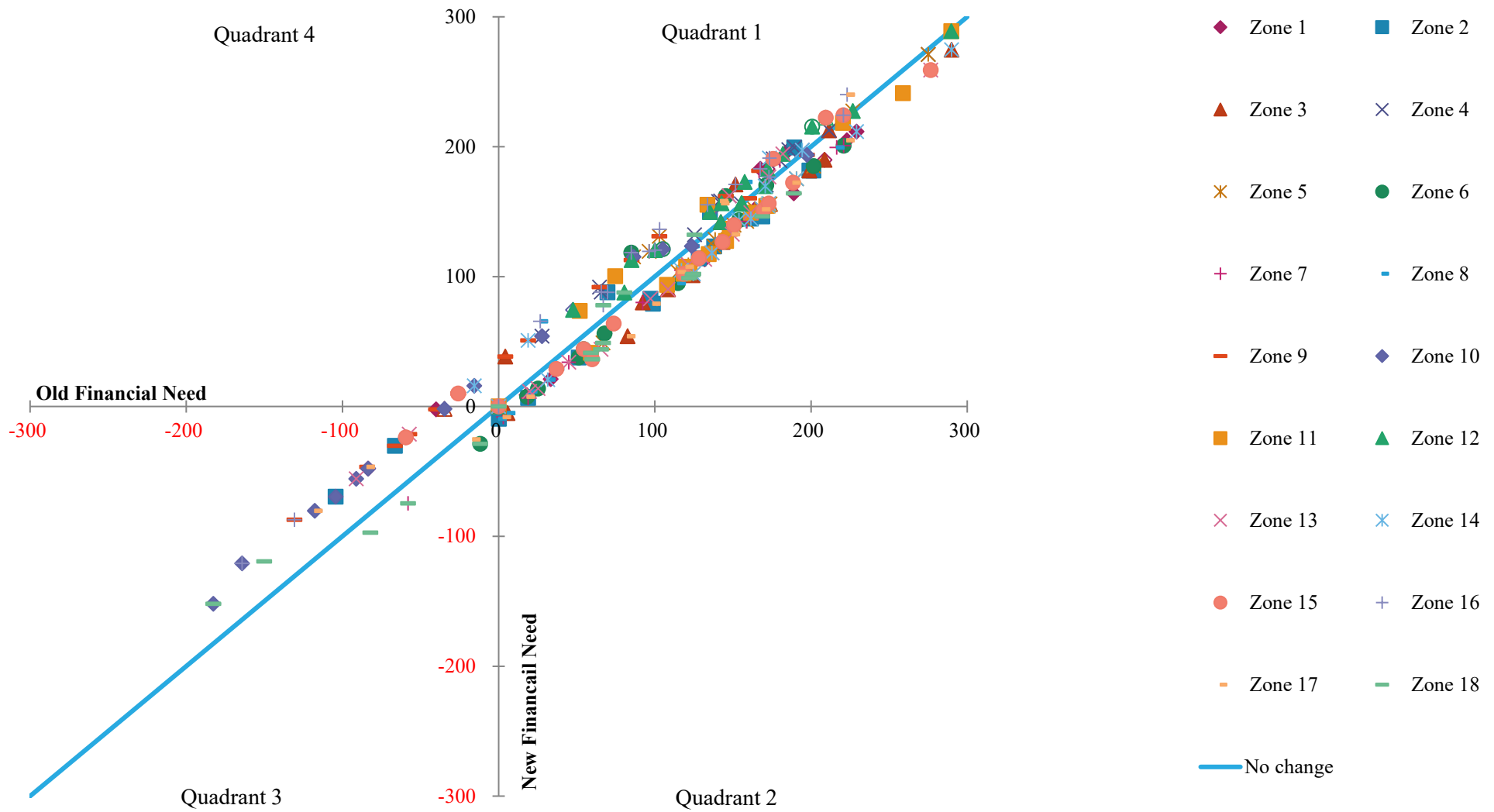
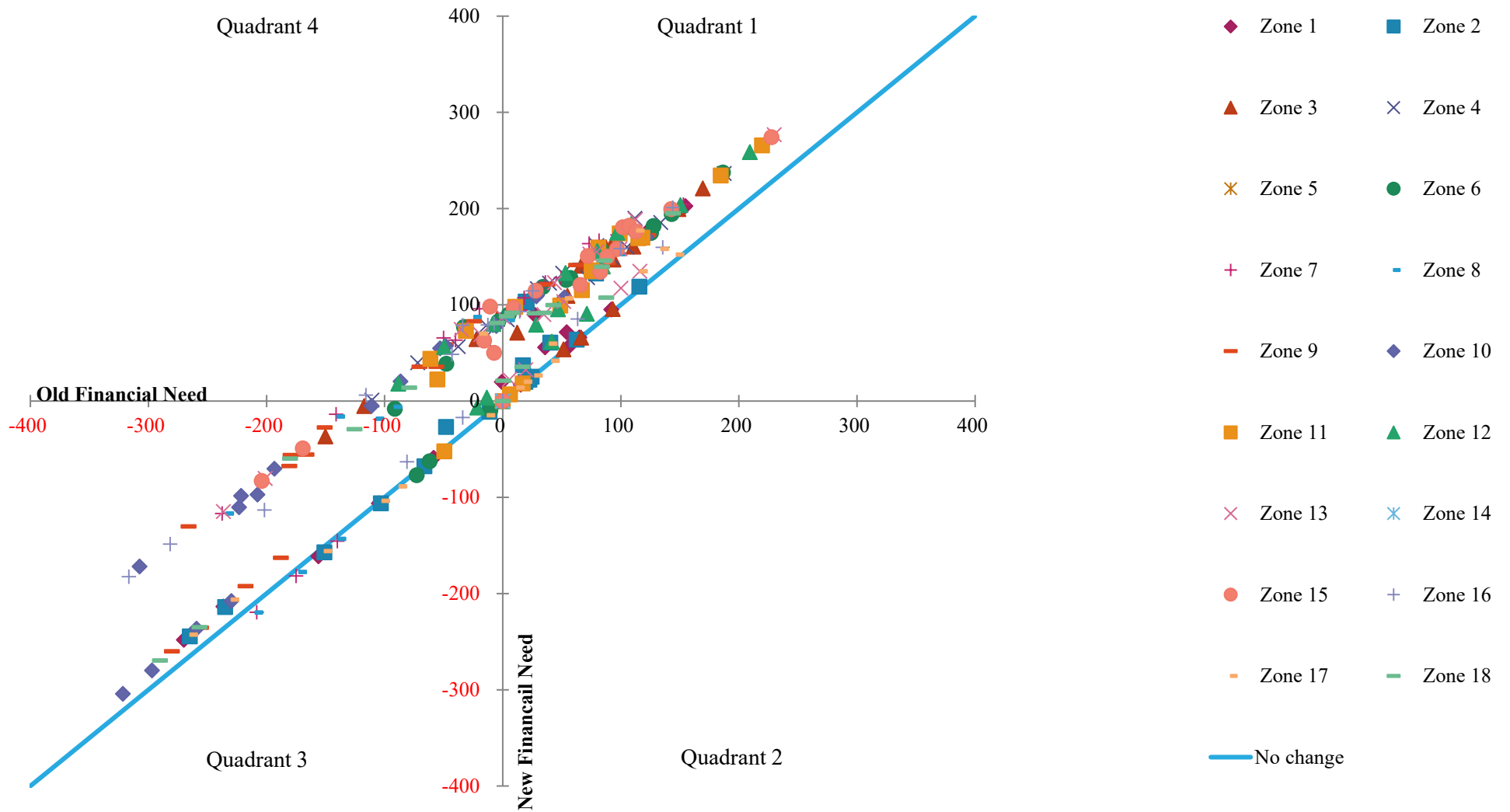


Figure 6: Change in Financial Need – Port as Origin, by origin zone



The results derived from the scatter diagrams of the updates to the costs are summarised in the following tables.

Table 17: Domestic model results

	FN current negative	FN current positive
FN proposed positive	Quadrant 4: There is now a financial need to support these zone pairs. 4 new zone pairs have a financial need.	Quadrant 1: There was a financial need previously and this is still the case: 260 zone pairs remain eligible but there has been an increase in financial need as there are more points above the 45-degree line than below.
FN proposed negative	Quadrant 3: There was not a financial need previously and there still is no financial need. 36 zone pairs remain ineligible.	Quadrant 2: 6 zone pairs move from a financial need to no financial need.

Overall, with the proposed domestic model there are 264 zone pairs with financial need (made up of 260 in quadrant 1 and 4 in quadrant 4). 42 zone pairs show no financial need.

Table 18: Port as origin model results

	FN current negative	FN current positive
FN proposed positive	Quadrant 4: There is now a financial need to support these zone pairs. 45 new zone pairs now have a financial need.	Quadrant 1: There was a financial need previously and this is still the case: 157 zone pairs remain eligible, but there has been an increase in the financial need as there are more points above the 45-degree line than below.
FN proposed negative	Quadrant 3: There was not a financial need previously and there still is no financial need. 70 zone pairs remain ineligible.	Quadrant 2: 0 zone pairs move from a financial need to no financial need.

Overall, with the proposed port models there are now 202 zone pairs with financial need (made up of 157 in quadrant 1 and 45 in quadrant 4). 70 zone pairs show no financial need.

Table 19 summarises the overall impact of the proposed model on each zone pair's eligibility for support. Zone pairs have been broken down into four categories:

- No financial need in current model or in proposed model – zone pair remains ineligible for grants;
- No financial need in current model but has financial need in proposed model – zone pair becomes eligible for grants when is currently ineligible;

- Financial need in current model but has no financial need in proposed model – zone pair becomes ineligible for grants when it is currently eligible; and
- Financial need in both current and proposed models – zone pair remains eligible for grants, but the proposed maximum grant rate may be higher or lower than currently apply.

Table 19: Change to financial need (number of zone pairs in each model)

Quadrant	Current model	Proposed model	Domestic	Port as Origin
1	FN	FN	260	157
2	FN	No FN	6	0
3	No FN	No FN	36	70
4	No FN	FN	4	45
Total			306	272

As a result of the changes in costs, 4 flows in the domestic model and 41 flows in the port model become eligible for financial need.

The zone pairs which would become eligible for grants based on the new rates are shown in Table 20 and Table 21. In the Domestic model, all zone pairs gaining eligibility have an origin or destination in Scotland.

Table 20: Domestic model eligibility

From	To	Zone pairs gaining eligibility	
9	15	North East Scotland	South West
10	14	North West Scotland	West Midlands
14	10	West Midlands	North West Scotland
15	9	South West	North East Scotland

Table 21: Port model eligibility

From	To	Zone pairs gaining eligibility	
1	16	London	Cornwall and Devon
3	8	East Midlands	Central Scotland
3	16	East Midlands	Cornwall and Devon
4	9	Humberside	North East Scotland
4	10	Humberside	North West Scotland
4	16	Humberside	Cornwall and Devon
4	17	Humberside	South England
4	18	Humberside	South East England
6	9	North England	North East Scotland
6	10	North England	North West Scotland
6	16	North England	Cornwall and Devon

From	To	Zone pairs gaining eligibility	
7	3	South Scotland	East Midlands
7	13	South Scotland	South Wales
7	14	South Scotland	West Midlands
7	15	South Scotland	South West
8	13	Central Scotland	South Wales
8	15	Central Scotland	South West
9	4	North East Scotland	Humberside
9	5	North East Scotland	Yorkshire
9	11	North East Scotland	North West England
9	12	North East Scotland	North Wales
10	5	North West Scotland	Yorkshire
10	6	North West Scotland	North England
10	11	North West Scotland	North West England
10	12	North West Scotland	North Wales
11	9	North West England	North East Scotland
11	10	North West England	North West Scotland
11	18	North West England	South East England
12	2	North Wales	East Anglia
12	9	North Wales	North East Scotland
12	10	North Wales	North West Scotland
12	16	North Wales	Cornwall and Devon
13	6	South Wales	North England
13	8	South Wales	Central Scotland
15	2	South West	East Anglia
15	8	South West	Central Scotland
15	18	South West	South East England
16	4	Cornwall and Devon	Humberside
16	5	Cornwall and Devon	Yorkshire
16	7	Cornwall and Devon	South Scotland
16	8	Cornwall and Devon	Central Scotland
16	12	Cornwall and Devon	North Wales
17	4	South England	Humberside
18	6	South East England	North England
18	11	South East England	North West England

5.2.4 Change in maximum grant rate

These results are shown in Figure 7 and Figure 8; they introduce the capping of financial need by the revised Environmental Benefits provided by DfT.

The points shown in these figures are related only to zone pairs either with a positive financial need in the proposed model or in the current model. Zone pairs represented by points lying on the y axis in the maximum grant rate figures were not eligible for grant previously but now qualify for support. Zone pairs represented by points on the x axis in the maximum grant rate figures were eligible for grant previously but now fail to qualify for support. Points above the 45-degree line show where the maximum grant rate has increased; points below the 45-degree line show where the maximum grant rate has decreased. The trend line from the origin at an angle slightly greater than 45 degrees represents zone pairs where the grant is capped by Environmental Benefit.

Figure 7: Change in maximum grant rate – Domestic, by origin zone

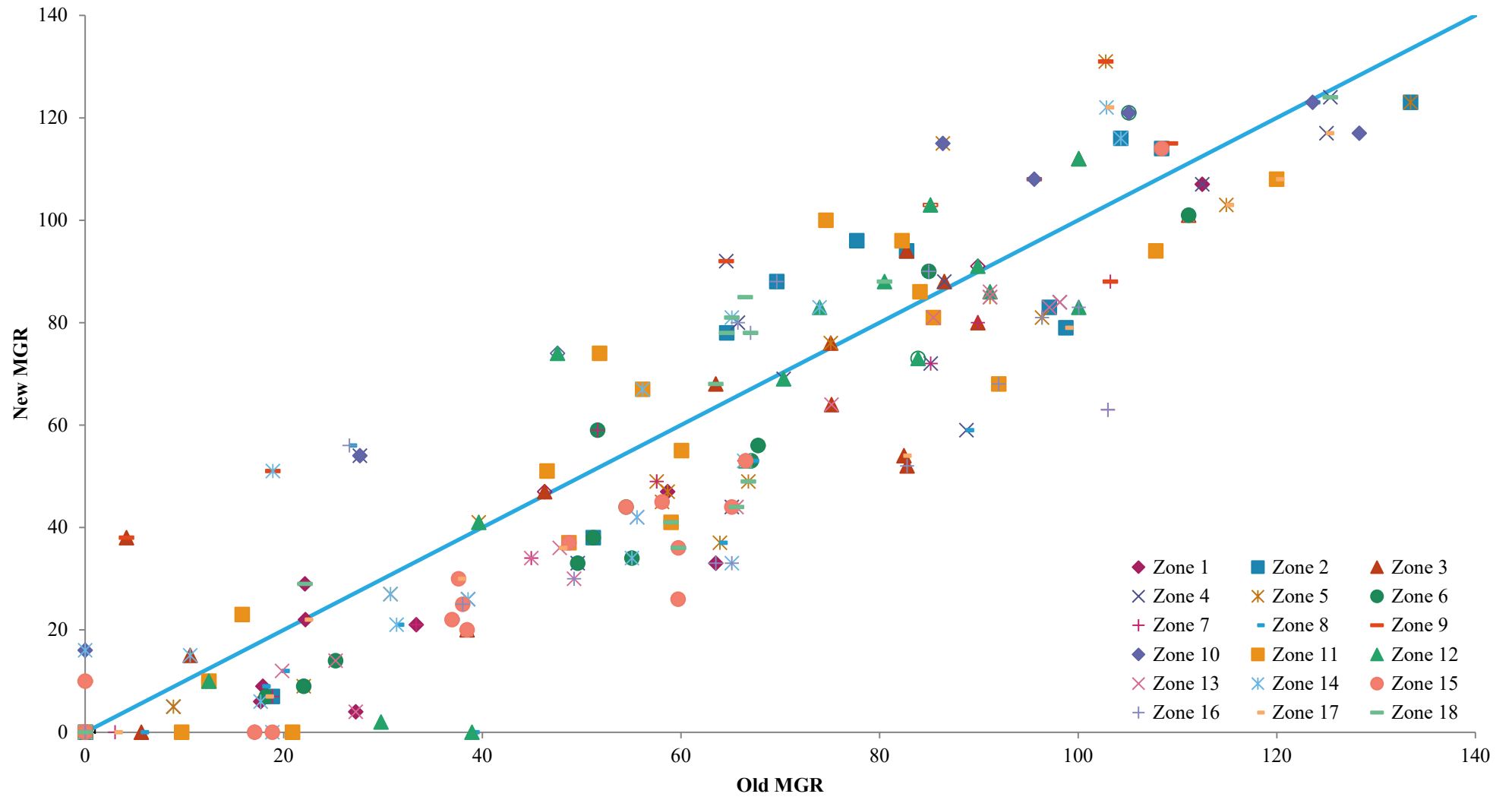
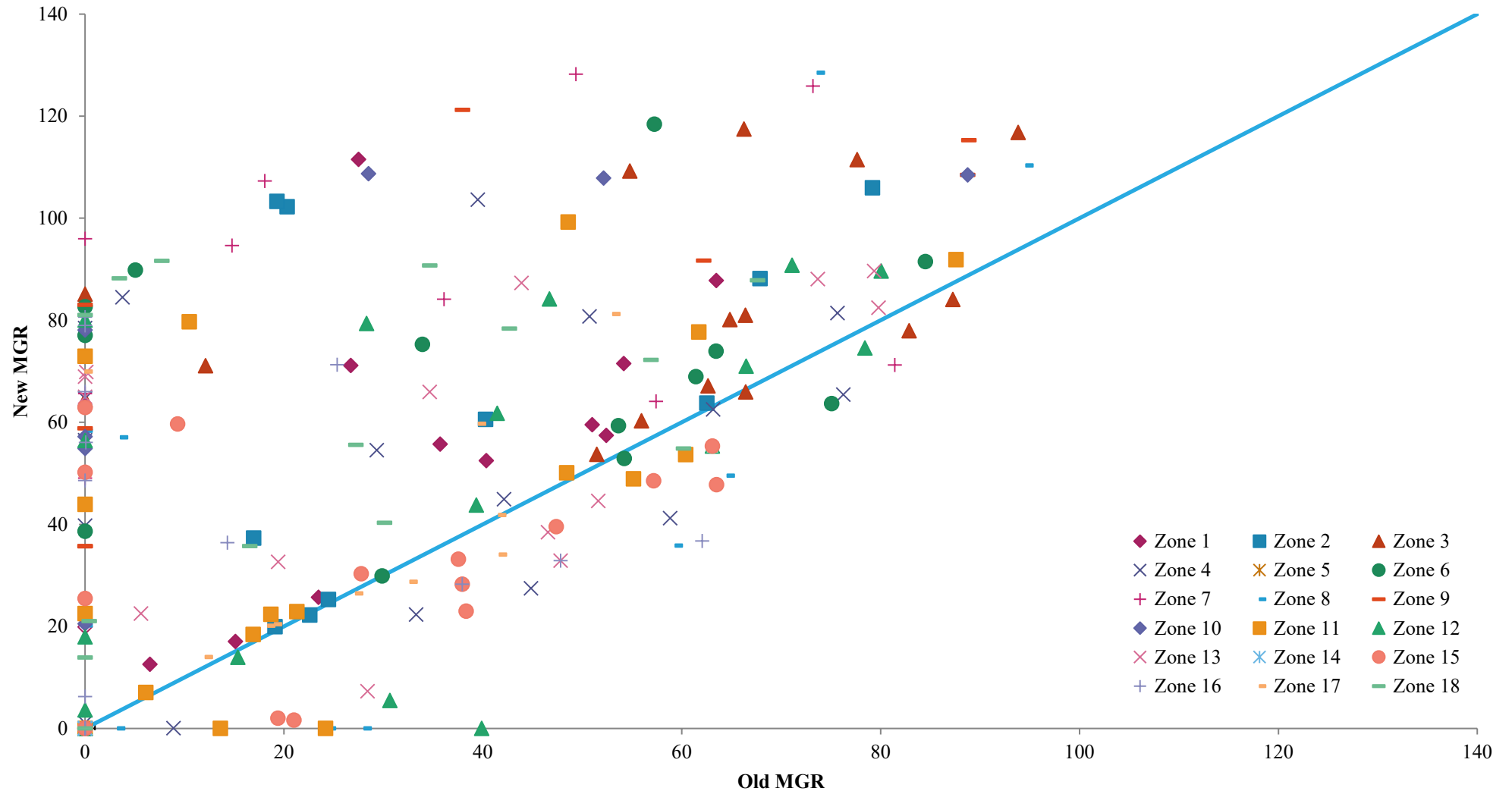


Figure 8: Change in maximum grant rate – Port as Origin, by origin zone



5.3 Potential coastal shipping scheme

5.3.1 Introduction

The following sets out the potential for a coastal shipping scheme which would be allocated using a similar approach to that adopted in the port and domestic rail models. As with these models, the financial need is a key intermediate output in the analysis. The results for the coastal shipping model are shown in Table 22 below. In each case the figure quoted for each zone pair is the difference in cost of moving one container by coastal shipping and road, with instances where coastal shipping is more expensive being shown as a positive figure and where coastal shipping is cheaper a negative figure.

The model also includes an additional output comparing coastal shipping and rail, shown in Table 23.

The zones are the same as those used for the rail models.

Note that the results also reflect a small simplification to the methodology, whereby for each flow costs are only incurred for the overall time required to operate the full service for each zone pair – so for example, if the two round trips per week plus time in port takes five days, ship charter costs are only incurred for five days and not seven. This reflects the reality that individual flows could be combined to ensure optimum use of assets.

The results also reflect the updated input data and the further revisions outlined in section 4.4.

The tables outline the financial need in £ per container (not capped by Environmental Benefit) for each zone pair. Positive values are in green showing those pairs which qualify for support (where shipping is more expensive), negative (not qualifying for maximum grant rate as shipping is cheaper) are in red.

Table 22: Financial need: coastal shipping vs. road

		Destination Zone (Port)																	
Origin Zone (Port)		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1	-	£54	£11	-£78	-	-£172	-£150	-£315	-£530	-£556	-£4	-£45	-£2	-	£26	-£154	£46	£94	
2	£44	-	-£7	-£90	-	-£189	-£158	-£326	-£542	-£564	-£39	-£80	-£71	-	-£27	-£225	-£46	£1	
3	£33	-£7	-	£58	-	-£74	£3	-£195	-£402	-£412	£104	£47	-£13	-	£31	-£171	-£23	-£58	
4	-£60	-£109	-£22	-	-	-£29	£45	-£154	-£348	-£380	£157	£78	-£40	-	£5	-£197	-£101	-£125	
5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
6	-£110	-£188	-£107	£23	-	-	£127	-£82	-£215	-£252	£128	£49	-£88	-	-£44	-£239	-£149	-£202	
7	-£255	-£343	-£230	-£91	-	£8	-	£129	-£77	-£126	-£97	-£158	-£306	-	-£267	-£423	-£324	-£368	
8	-£292	-£385	-£307	-£171	-	-£22	£123	-	£2	-£36	-£5	-£65	-£209	-	-£173	-£366	-£308	-£402	
9	-£466	-£558	-£471	-£336	-	-£159	-£58	-£35	-	£17	-£199	-£249	-£403	-	-£364	-£538	-£481	-£575	
10	-£502	-£594	-£507	-£370	-	-£195	-£107	-£64	£15	-	-£250	-£303	-£461	-	-£422	-£574	-£516	-£610	
11	£25	-£87	£51	£134	-	£57	£18	£8	-£221	-£265	-	£132	-£28	-	-£15	-£141	-£43	-£85	
12	-£2	-£114	£22	£83	-	£31	-£26	-£33	-£252	-£306	£114	-	-£56	-	-£55	-£168	-£70	-£112	
13	£57	-£103	£1	-£43	-	-£121	-£158	-£185	-£425	-£475	-£13	-£54	-	-	£140	£3	£46	-£40	
14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
15	£102	-£56	£42	-£5	-	-£83	-£120	-£151	-£384	-£433	£5	-£16	£138	-	-	£61	£92	-£18	
16	-£80	-£259	-£138	-£202	-	-£446	-£259	-£300	-£561	-£588	-£123	-£164	£6	-	£65	-	-£37	-£194	
17	£104	-£84	-£18	-£111	-	-£189	-£174	-£288	-£502	-£529	-£28	-£69	£48	-	£95	-£39	-	-£2	
18	£77	£5	-£19	-£101	-	-£199	-£178	-£346	-£558	-£584	-£31	-£72	-£3	-	£20	-£161	£35	-	

Table 23: Financial need: coastal shipping vs. rail

		Destination Zone (Inland Terminal)																	
		Zone	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Origin Zone (Port)	1	-	-£123	-£55	-£189	-	-£112	-£43	-£153	-£316	-£308	-£21	-£101	-£73	-	-£64	-£174	-£49	-£108
	2	-£75	-	-£70	-£193	-	-£121	-£52	-£169	-£328	-£319	-£28	-£118	-£132	-	-£130	-£198	-£66	-£131
	3	-£62	-£73	-	-£163	-	-£234	-£155	-£281	-£397	-£375	-£43	-£62	-£154	-	-£138	-£235	-£77	-£130
	4	-£182	-£193	-£183	-	-	-£179	-£145	-£271	-£387	-£381	-£28	-£61	-£173	-	-£157	-£254	-£180	-£189
	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	6	-£100	-£111	-£235	-£151	-	-	-£67	-£239	-£298	-£291	-£54	-£132	-£178	-	-£162	-£316	-£87	-£194
	7	-£109	-£123	-£279	-£199	-	-£164	-	-£75	-£205	-£221	-£264	-£281	-£372	-	-£363	-£409	-£142	-£251
	8	-£149	-£165	-£289	-£255	-	-£175	-£78	-	-£172	-£165	-£158	-£175	-£269	-	-£261	-£350	-£130	-£285
	9	-£303	-£323	-£404	-£372	-	-£280	-£200	-£179	-	-£156	-£234	-£308	-£347	-	-£337	-£408	-£288	-£315
	10	-£294	-£314	-£397	-£365	-	-£273	-£215	-£172	-£156	-	-£307	-£324	-£362	-	-£352	-£402	-£279	-£306
	11	£7	-£35	-£48	-£36	-	-£78	-£151	-£151	-£294	-£309	-	-£133	-£202	-	-£151	-£238	-£50	-£108
	12	-£93	-£118	-£57	-£57	-	-£144	-£166	-£166	-£308	-£324	-£145	-	-£212	-	-£239	-£248	-£132	-£105
	13	-£61	-£126	-£89	-£165	-	-£190	-£245	-£260	-£345	-£360	-£201	-£209	-	-	-£136	-£155	-£89	-£72
	14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	15	-£56	-£119	-£79	-£155	-	-£180	-£235	-£250	-£335	-£350	-£145	-£199	-£136	-	-	-£139	-£85	-£68
	16	-£166	-£196	-£220	-£251	-	-£332	-£338	-£306	-£413	-£405	-£237	-£245	-£152	-	-£136	-	-£197	-£177
	17	-£48	-£69	-£45	-£181	-	-£101	-£70	-£132	-£296	-£286	-£48	-£129	-£87	-	-£82	-£197	-	-£108
	18	-£118	-£134	-£118	-£192	-	-£213	-£149	-£286	-£324	-£315	-£112	-£108	-£110	-	-£71	-£182	-£111	-

5.3.2 Impact of changes to costs

To assist in the understanding of the impact of the changes between the current and the proposed model the following figures provide a graphical comparison of the change in the financial need and the maximum grant rate for each zone to zone movement produced by the proposed model against the current model.

As with the analysis of the rail models, a move to the left of or above the line represents a zone pair for which the financial need or maximum grant rate is increased. To the right or below the line indicates a zone pair which has reduced financial need or maximum grant rate.

The overall scatter is divided into four quadrants moving in a clockwise rotation from the first quadrant, defined as follows:

- Quadrant 1: movements with positive financial need in the current model and still a positive financial need in the proposed model;
- Quadrant 2: movements with positive financial need in the current model changing to a negative financial need in the proposed model;
- Quadrant 3: movements with negative financial need in the current model staying negative in the proposed model;
- Quadrant 4: movements with negative financial need in the current model changing to a positive financial need in the proposed model.

5.3.3 Change in financial need

Figure 9 and Figure 10 show a scatter plot of the estimated financial need by movement for the coastal shipping vs. road and vs. rail outputs respectively.

Figure 9: Change in Financial Need – coastal shipping vs. road, by origin zone

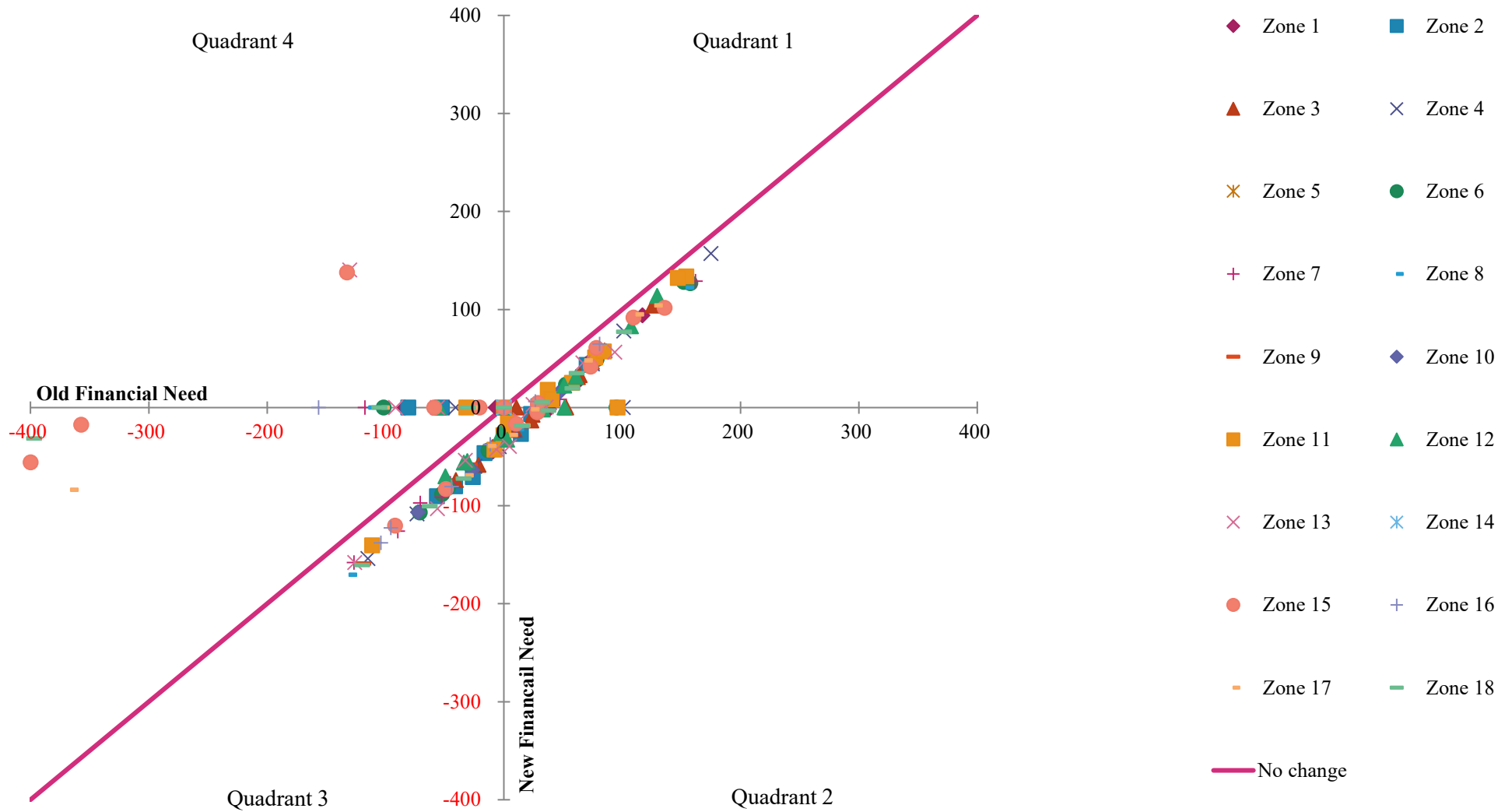
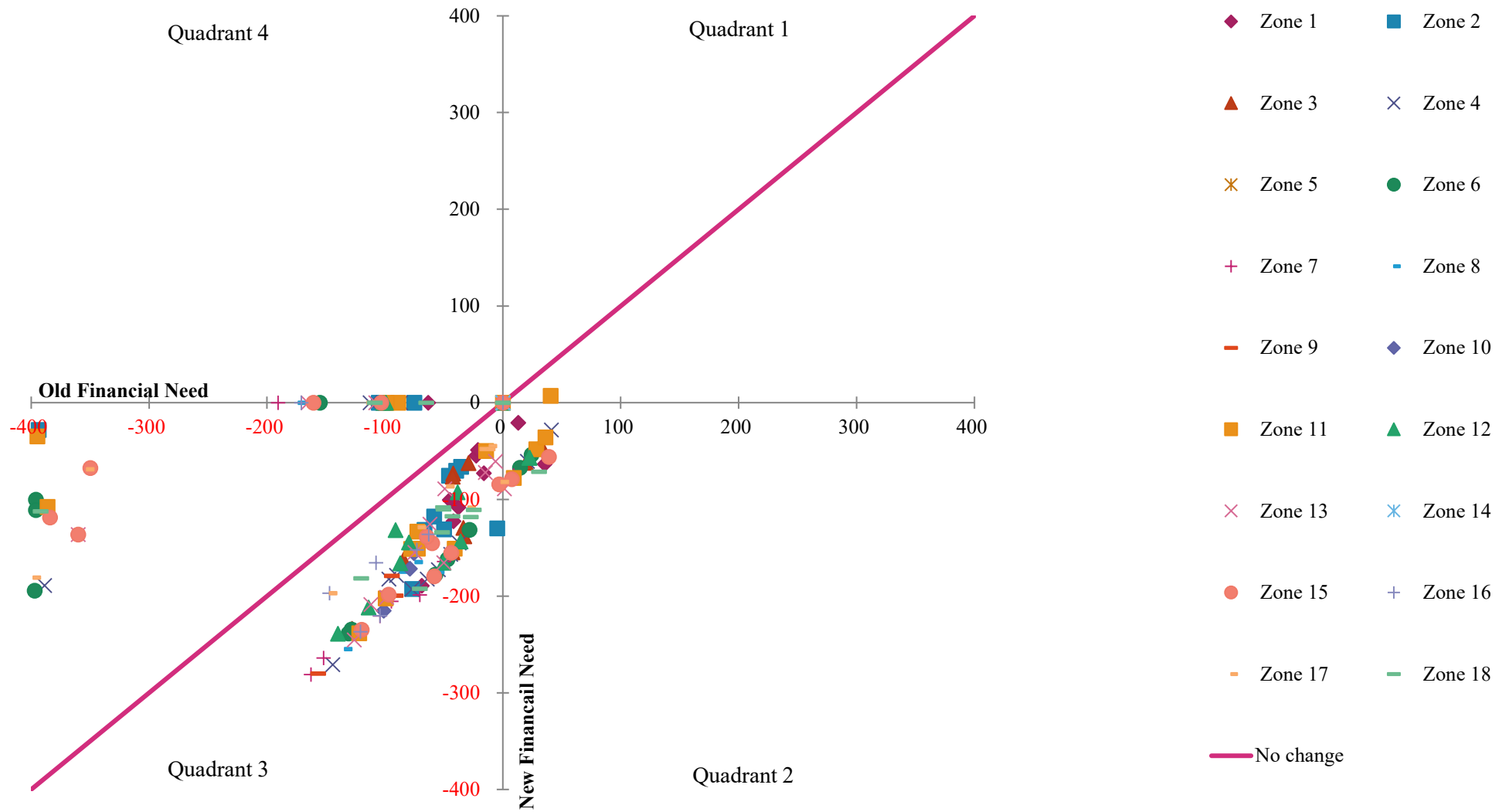


Figure 10: Change in Financial Need – coastal shipping vs. rail, by origin zone



The results derived from the scatter diagrams of the updates to the costs are summarised in the following tables.

Table 24: Coastal shipping vs. road results

	FN current negative	FN current positive
FN proposed positive	Quadrant 4: There is now a financial need to support these zone pairs. 2 new zone pairs now have a financial need.	Quadrant 1: There was a financial need previously and this is still the case: 56 zone pairs remain eligible.
FN proposed negative	Quadrant 3: There was not a financial need previously and there still is no financial need. 159 zone pairs remain ineligible.	Quadrant 2: 23 zone pairs move from a financial need to no financial need.

Overall, there has primarily been a reduction in financial need for coastal shipping flows relative to road.

Table 25: Coastal shipping vs. rail results

	FN current negative	FN current positive
FN proposed positive	Quadrant 4: There is now a financial need to support these zone pairs. 0 new zone pairs have become eligible for grant.	Quadrant 1: There was a financial need previously and this is still the case: 1 zone pair remains eligible.
FN proposed negative	Quadrant 3: There was not a financial need previously and there still is no financial need. 220 zone pairs remain ineligible.	Quadrant 2: 19 zone pairs move from a financial need to no financial need.

When measured relative to rail, previously 20 zone to zone pairs had a financial need. Following the update to the model only one flow would qualify for funding, suggesting that coastal shipping would almost always be cheaper than rail.

Table 26 summarises the overall impact of the proposed model on each zone pair's eligibility for support. Zone pairs have been broken down into four categories:

- No financial need in current model or in proposed model – zone pair remains ineligible for grants;
- No financial need in current model but has financial need in proposed model – zone pair becomes eligible for grants when is currently ineligible;
- Financial need in current model but has no financial need in proposed model – zone pair becomes ineligible for grants when it is currently eligible; and
- Financial need in both current and proposed models– zone pair remains eligible for grants, but the proposed maximum grant rate may be higher or lower than currently apply.

Table 26: Change to financial need (number of zone pairs in each model)

Quadrant	Current model	Proposed model	Vs. road	Vs. rail
1	FN	FN	56	1
2	FN	No FN	23	19
3	No FN	No FN	159	220
4	No FN	FN	2	0
Total			240	240

As a result of the changes in costs, 56 flows remain eligible for Financial Need when measured relative to road and one when measured relative to rail. Two zones become eligible when measured relative to road, with no zones becoming eligible when measured relative to rail.

5.3.4 Change in maximum grant rate

The maximum grant rate payable in the coastal shipping model is the minimum of:

- Coastal shipping vs. road costs (financial need); and
- Environmental externality benefits.

A further set of rates which include the MSRS(I) rail maximum rates are then calculated as the lowest of:

- Coastal shipping maximum grant rate;
- Rail maximum grant rate; and
- 30% of the coastal shipping operating cost.

The following illustrates the calculation utilised in the Atkins and MDST study. It is structured such that:

- Where a grant is payable for both coastal shipping and rail, the lower rate applies;
- Where a grant is payable for one mode only, the rate for that mode applies.

The changes are shown in Figure 11 are driven primarily by increases in the rail grant rates.

Note that this approach represents an assumption adopted by Atkins and MDST and might not reflect the final design of such a scheme if it were to be introduced. This would be a policy decision for the DfT.

6 Overall cost of potential coastal shipping scheme

6.1 Introduction

This section explores the overall cost of a potential coastal shipping scheme. As for the MSRS(I) rail scheme, the primary objective is to replace road journeys, so the mode shift benefit values associated with diverting freight traffic from road would also apply, albeit with possible adjustment to reflect the environmental impact of ships relative to rail. Consistency with the MSRS(I) rail scheme would also be achieved through the use of standardised maximum grant rates for the 18-zone matrix. Were this not to be a feature of the scheme, this consistency would not be achieved, and the existing WFG scheme could achieve similar objectives.

The estimation of the potential overall cost of the scheme is focused on the core operating cost-based scenario which reflects the costs and methodology set out in previous sections of this document. It also considers an alternative price-based scenario, although it is not possible to estimate what the cost of this approach could be. Each scenario is explored in turn below but ultimately, the design of the scheme would be a policy decision by DfT.

6.2 Core cost-based scenario

The core cost-based scenario reflects the assumptions set out in Table 14, which include an assumption of two sailings per week and a 75% load factor. Overall ship capacity ranges from 600 TEU (West Coast) to 900 TEU (East Coast), which equates to between 347 and 520 containers per ship; or 694 to 1,040 per direction per week. This is equivalent to between 12 and 17 trains per week, assuming a train can carry a maximum of 60 containers.

Implicit in the grant rates offered is the assumption on the productivity / load factor of coastal shipping services set out above. It will be for applicants to judge acceptable load factors taking account market demand for intra-GB port container movements, available vessel capacities and opportunities since in most probability services will operate as rotations calling at non-GB ports.

The primary challenge in estimating the cost of a MSRS-style scheme for coastal shipping is the lack of any reliable evidence on the likely uptake of such a scheme by industry stakeholders. We have therefore undertaken some analysis of the MSRS rail port scheme to estimate the level of applications which might be expected. As shown in Table 27 below, this suggests that grants are claimed for 15% of theoretical eligible container traffic, and on average 30% of the maximum grant rate is claimed.

Table 27: MSRS(I) costs and volumes 2018-19

Item	Source	Value
Containers applying for ports rail grants 2018-19	DfT data	780,598
Maximum ports grant awarded	DfT data	£14,128,719
Total container capacity on eligible flows	Train configurations and containers per train from MSRS ports model Average trains per flow calculated from operator submissions	4,891,414
Grant claim rate	Calculated from above	16%
Theoretical cost of scheme at actual claim rate	Calculated from above	£43,062,297
Actual cost of ports scheme 2018-19	DfT data	£14,128,719
Average % of maximum grant claimed	Calculated from above	33%

Applying the same claim rate to the coastal shipping gives a scheme cost of £5.1 million per year, as shown in Table 28 below.

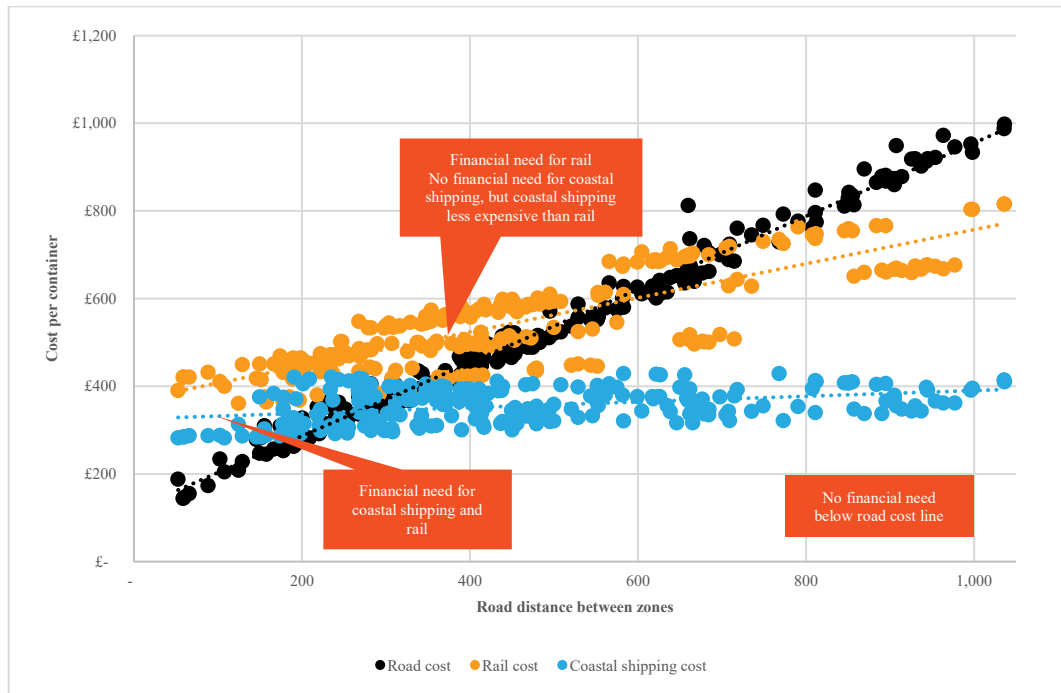
Table 28: MSRS coastal shipping scheme cost

Item	Source	Value
Containers applying for coastal shipping grants	Total containers on flows eligible for coastal shipping grant	543,102
Total grants awarded	Total grant for eligible flows	£5,141,849

6.3 Potential savings from combining the schemes

As shown in Figure 12 below, there is the potential for the DfT to realise cost savings in instances where there is a financial need for rail relative to road, but where coastal shipping offers a lower cost alternative than rail.

Figure 12: Cost and distance by mode and zone pair



This is reflected in the way in which the generic cost model originally produced in the 2017 study combines financial need and grant rates for rail and coastal shipping. As stated in section 5.3.4:

- Where a grant is payable for both coastal shipping and rail, the lower rate applies;
- Where a grant is payable for one mode only, the rate for that mode applies.

The result is a lower set of maximum grant rates, which produces the overall costs set out in Table 29 below. Combining the savings with the additional cost of the coastal shipping scheme would generate a net additional cost to the DfT of £2.83 million per year.

Table 29: Cost savings from reduced grant rates

Item	Source	Value
Cost of rail scheme at reduced grant rate	Calculated using theoretical total demand, claim rates and percentage of maximum grant claimed	£11,813,472
Saving from full base rail rates	Relative to actual cost of port scheme in 2019/20	£2,315,247
Net additional cost to DfT	Accounting for additional cost of coastal shipping scheme	£2,826,602

At this stage the results are capped using the same environmental externality values as applied in the rail models, which value the benefits of modal shift from road to rail. Given the larger differences in distance between sea and road relative to rail and road, there would be value in calculating a bespoke set of values for the

coastal shipping model. This would necessitate a change in the way the rates for rail and coastal shipping are combined to ensure that the environmental benefit is maximised relative to the financial need.

For MSRS (Bulk and Waterways), there would be no change in the overall cost to DfT, because the scheme already requires that goods be sent by water if this is cheaper than rail.

6.4 Alternative price-based scenario

The consultation with UKMPG has emphasised the role of Beneficial Cargo Owners (BCOs) who, ultimately, make decision on choice of mode. An alternative approach to detailed cost-based analysis would be a market price benchmarked approach. Under this approach, awards would be supported by a contract obliging the BCO to provide auditable evidence of price quotes by coastal ship, rail and road. This alternative should be explored further as it could prove more efficient than the operating cost-based scenario outlined in the previous section.

7 Impact on freight industry of grant funding ending or tapering

7.1 Introduction

This chapter sets out our assessment of the impacts if MSRS Intermodal and MSRS Bulk grants were: discontinued at the end of March 2020; or tapered from March 2020 over a three-year period before being discontinued.

The areas which are considered to be impacted by a change in grant award are as follows:

- Employment (direct, indirect and induced jobs);
- Gross Value Added (GVA); and
- Environmental impact and road decongestion as measured by Mode Shift Benefit Values (MSBV).

The majority of the assessment applies to MSRS (I) grants, as MSRS (B) are based on specific cost build ups for a nominated flow, and therefore the impacts of tapering or withdrawal are specific to each flow.

The grant rates paid for the 2018-19 period have been used as the basis of the analysis. Therefore, the assessment for the impact on the flows is based on the current MSRS (I) models provided by DfT.

7.2 Freight industry context

The following section outlines the current extent of the rail freight industry. From 2008 to 2017, freight carried by rail has accounted for approximately 10% of all freight moved with water around 18%. Table 30 shows the splits.

Table 30: Freight moved – billion net tonne kms (Source: ORR)⁹

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Rail	21	19	19	21	21	22	22	19	17	17
Road (HGV)	146	125	139	140	143	131	128	143	148	147
Water	50	49	42	43	36	29	27	31	30	25
Total	216	193	199	204	200	183	177	194	196	189
Percentage of goods moved by rail	9.7%	9.9%	9.3%	10.3%	10.8%	12.2%	12.5%	10.0%	8.7%	9.1%
Percentage of goods moved by water	22.9%	25.2%	21.0%	21.1%	17.8%	15.9%	15.2%	16.2%	15.5%	13.2%

7.2.1 Rail freight industry

The UK rail freight industry currently comprises of five licensed Freight Operating Companies (FOCs), each being an independent operating company which responds to standard commercial opportunities and financial considerations. Their share of the overall freight market varies and is shown as a market share based on their income for 2017/18.

Table 31: FOC market share 2017/18 (Source: ORR)¹⁰

FOC	DB Cargo (UK) Ltd	Direct Rail Services	Freightliner ¹¹	Freightliner Heavy Haul ¹²	GB Railfreight
Market share	40%	9%	24%	10%	17%

In addition to FOCs, the UK rail freight industry also comprises:

- Terminal operators who run private transshipment and storage terminals;
- Road hauliers who purchase full train movements;

⁹ Rail market share - Table 13.12, ORR Data Portal

<https://dataportal.orr.gov.uk/statistics/usage/freight-rail-usage-and-performance/rail-market-share-table-1312/>

¹⁰ UK rail industry financial information 2017-18 <https://orr.gov.uk/rail/publications/reports/uk-rail-industry-financial-information/uk-rail-industry-financial-information-2017-18>

¹¹ Part of Genesee & Wyoming

¹² Part of Genesee & Wyoming

- Network Rail’s general and freight specific infrastructure;
- Rolling stock providers (locomotives and wagons); and
- Mechanical handling equipment providers.

All of these stakeholders may be impacted by loss of business following a tapering or full removal of the grant.

All FOCs possess open access rights to the entire GB rail network and are essentially free market players who will normally carry traffic only so long as it produces a profit. The FOCs either own or lease their locomotives, and wagons are owned or leased by them, private wagon suppliers or customers.

There is no explicit state support for FOCs, and no regulated requirement for them to run specific services or regulation of the rates they charge. On routes where grant assistance is available, the payment of any grant is dependent on the environmental externality benefits realised. The DfT scheme has a minimum BCR requirement of environmental benefits to grant award of 2:1, though awards typically range between 5:1 and 9:1 BCR.

The different operators have different business mixes and network coverage. The impact of a reduction of business in a specific market area will be different in every case. However, with the increasing use of leased assets, it has become relatively easier for FOCs to withdraw from wider business areas at shorter notice, though this does vary by operator, with committed periods for leases of up to five years.

If assets are taken off lease, they are returned to the lessor and they or the FOC may redeploy them elsewhere in Europe rather than continuing to seek work in the UK. This is especially true of intermodal wagons which are normally standard European design and Class 66 locos which have European-wide certification.

Table 32 shows the amount of freight moved on the GB rail network with all intermodal traffic showing growth over the last 10 years compared to the overall decline of total freight moved.

Table 32: Amount of freight moved on the GB rail network – billion tonne km (Source: ORR)¹³

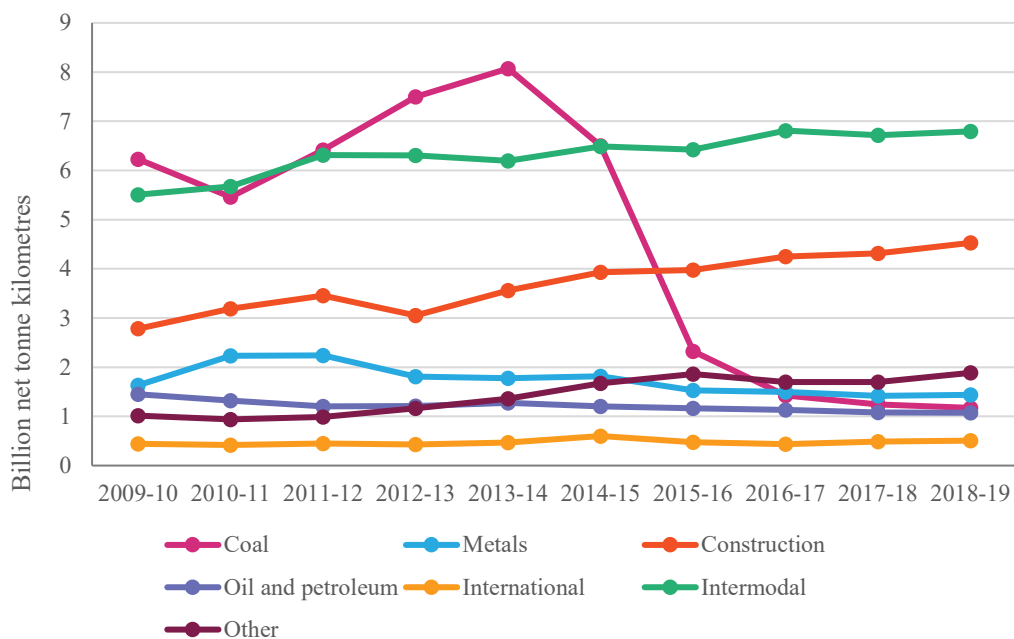
Financial year	Coal	Metals	Construction	Oil and petroleum	Europe	Intermodal	Other	Total
2009-10	6.23	1.64	2.78	1.45	0.44	5.51	1.01	19.06
2010-11	5.46	2.23	3.19	1.32	0.42	5.68	0.94	19.23
2011-12	6.41	2.24	3.45	1.20	0.45	6.31	0.99	21.06
2012-13	7.50	1.81	3.05	1.21	0.43	6.30	1.16	21.46

¹³ Freight moved - Table 13.7, ORR Data Portal
<https://dataportal.orr.gov.uk/statistics/usage/freight-rail-usage-and-performance/freight-moved-table-137/>

Financial year	Coal	Metals	Construction	Oil and petroleum	Europe	Intermodal	Other	Total
2013-14	8.07	1.77	3.56	1.27	0.47	6.19	1.36	22.71
2014-15	6.50	1.82	3.93	1.21	0.60	6.49	1.67	22.21
2015-16	2.32	1.53	3.98	1.17	0.48	6.42	1.86	17.76
2016-17	1.43	1.50	4.25	1.13	0.43	6.81	1.70	17.25
2017-18	1.24	1.42	4.31	1.08	0.49	6.72	1.70	16.95
2018-19	1.17	1.44	4.53	1.07	0.51	6.79	1.89	17.39
10-year growth	-81%	-12%	63%	-26%	14%	23%	86%	-9%

Figure 13 highlights the results in graphical format and show the dominance in recent years of domestic intermodal traffic.

Figure 13: Rail freight trends (Source: ORR)¹⁴



7.2.1.1 MSRS support

The availability of grants is a critical factor in encouraging the movement of containers by rail, both as a tangible contribution to operational costs and as an indication of the endorsement by government of the concept of moving containers

¹⁴ Freight moved - Table 13.7, ORR Data Portal
<https://dataportal.orr.gov.uk/statistics/usage/freight-rail-usage-and-performance/freight-moved-table-137/>

by rail. Further thoughts by stakeholders on the importance of the grants can be seen in Chapter 8.

The value of grants awarded between 2015/16 and 2019/20 are shown in Table 33. It should be noted that the data includes awards made by DfT include Welsh Government. Grant awards from Transport Scotland are separate.

Table 33: Total value of grants awarded by financial year – millions (Source: DfT and TS)

Financial Year	2015 16	2016 17	2017 18	2018 19	2019 20 ¹⁵	Total
DfT grants awarded	£22.3	£20.	£16.5	£18.0	£17.5	£94.4
Scottish Government grants awarded	£0.4	£0.4	£0.4	£0.4	£0.4	£2.0
Total grants awarded	£22.6	£20.5	£17.0	£18.4	£17.9	£96.4

The breakdown of awards to recipients is shown in Table 34. These have been derived from the information on grant awards contained on the DfT's website.

Table 34: Number of grant-supported services (Source: DfT)

		DB Cargo (UK) Ltd	Eddie Stobart	Freightliner Ltd	GB Railfreight Ltd	JG Russell Ltd	Others	Total
2015/16	MSRS (B)	21				1	3	25
	MSRS (I) D	2	6			3		11
	MSRS (I) P	13		44	5	1		63
2016/17	MSRS (B)	8						8
	MSRS (I) D	4	6		1	3		14
	MSRS (I) P	20		25	7			52
2017/18	MSRS (B)	6						6
	MSRS (I) D	2	5		1	2		10
	MSRS (I) P	10		16	6			32
2018/19	MSRS (B)	6						6
	MSRS (I) D	2	3		1	1		7
	MSRS (I) P	10		15	10		3	38
2019/20 ¹⁶	MSRS (B)	5						5
	MSRS (I) D	2	4			1		7

¹⁵ As of November 2019

¹⁶ As of November 2019

	MSRS (I) P	DB Cargo (UK) Ltd	Eddie Stobart	Freightliner Ltd	GB Railfreight Ltd	JG Russell Ltd	Others	Total
		8		20	10		5	43
Total		119	24	120	41	12	11	327

7.2.2 The inland waterway and coastal/short sea shipping industries

Volumes of freight moved by water transport (on inland waterways or by coastal/short sea shipping) are shown in Table 35. The total volume of 24 billion tonne km in 2018-19 is greater than the 17.4 billion tonne km moved by rail. However, it should be noted that the total includes petroleum products and liquid bulk which in 2018 accounted for 39% (with petroleum products accounting for 87% of this).

Table 35: Amount of freight moved by inland waterway and coastal/short sea shipping - billion tonne-kilometres (Source: DfT)¹⁷

Financial year	Coastal/short sea between UK ports	One port traffic	Inland waters	Total
2009-10	34.9	12.8	1.3	48.6
2010-11	30.0	10.8	1.4	41.9
2011-12	31.3	10.3	1.4	42.7
2012-13	23.8	10.7	1.4	35.5
2013-14	19.9	8.1	1.4	29.1
2014-15	19.4	6.4	1.5	27.0
2015-16	24.5	5.8	1.5	31.4
2016-17	21.7	7.4	1.6	30.4
2017-18	16.2	7.5	1.6	24.9
2018-19	15.0	8.0	1.6	24.2
10-year change in volume				-50.2%

The table highlights that inland waters shipping has remained stable whilst coastal/short sea between UK ports and one port traffic has declined.

It should be noted that no grant support for waterborne freight has been awarded between 2015/16 and 2019/20.

¹⁷ Port Statistics and Barge Survey – Table PORT0701

7.3 Impact assessment

7.3.1 Overview

As previously stated, the study has looked at the impact of a tapering of the grants or full withdrawal in 2020. The tapering of the grants would be over a three-year period with support reducing to 75%, 50% and 25% before withdrawal. To determine the impact of these two scenarios, quantitative and qualitative assessments have been undertaken. The quantitative assessment estimates the employment and Gross Value Added (GVA) impacts. The qualitative assessment sets these in the context of the broader supply chain, environment and other impacts.

7.3.2 Scenario definition / basis of assessment

In the event that grants are tapered or removed, there are three possible responses by the industry for each freight movement which is currently supported by MSRS:

1. The movement continues to operate by rail and the increased costs have to be covered within the industry;
2. The movement ceases altogether as it is no longer viable; and
3. The movement continues to operate but transfers to road as road costs are cheaper.

Scenario 1 is not considered to be credible. Profit margins within the industry are low as competition focuses mainly on price. By definition, the costs of bulk movements are already known to DfT and therefore excess profit would render flows ineligible for grant. Therefore, the impact of removal of grant in total is extremely likely to have a direct impact on flow profitability. The only area where this may not be applicable is if wider commercial factors apply, such as the flow being an integral part of a wider and overall profitable contract, for example where a shipping line pays for a combination of flows from a port.

Scenario 2 is also considered unlikely. There are no cases in which rail has a market monopoly as, in all instances, road provides a competitive alternative. The grant provides for the movement of freight from road to rail, so without it, the flow may well switch back to road. As this switch is the core of the scheme, this is a reasonable assumption.

On this basis, it is believed that FOCs will only consider Scenario 1 if the margin being covered by grant is low, and then only for a proportion of cases. Scenario 2 is not a credible outcome.

In most cases, Scenario 3 is likely to be the outcome, with movements transferring to road.

7.3.3 Quantitative estimation of intermodal

In 2018/19, MSRS grants supported the movement by rail of around 903,000 intermodal containers and 372,000 tonnes of bulk freight, based on data provided by DfT.

Intermodal

In 2018-19, the following 17 routes were grant supported, with the table showing them ranked by highest support to lowest.

Table 36: Supported flows during 2018/19 (highest support to lowest)

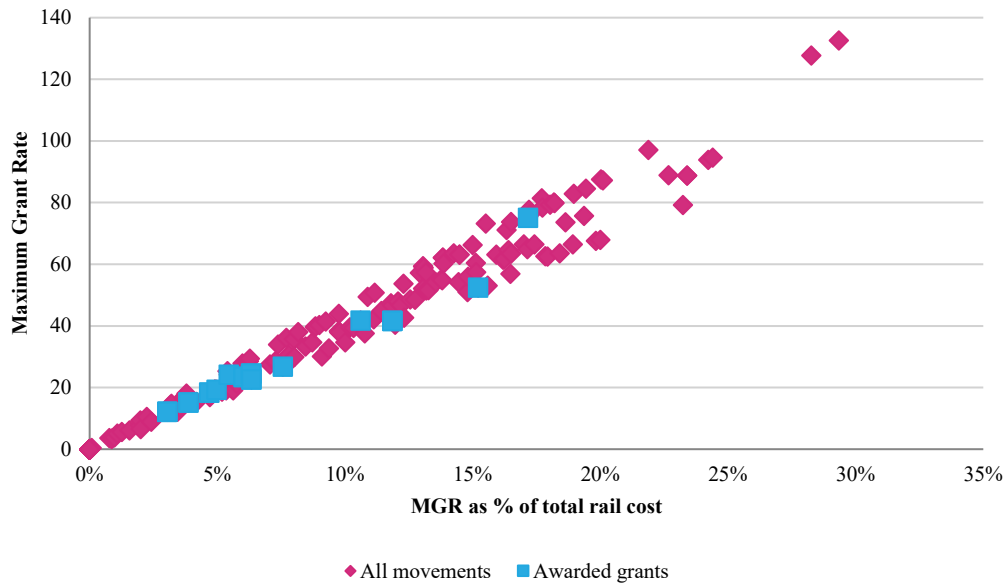
Origin	Destination	Type of flow
Felixstowe	West Midlands	Port
Felixstowe	Yorkshire	Port
Southampton	North West	Port
Southampton	West Midlands	Port
West Midlands	Central Scotland	Domestic
Southampton	Yorkshire	Port
London Gateway	Yorkshire	Port
London Gateway	North West	Port
Felixstowe	South West	Port
West Midlands	South Wales	Domestic
North East	Central Scotland	Port
London Gateway	South West	Port
Southampton	South Wales	Port
West Midlands	London	Domestic
London Gateway	West Midlands	Port
Yorkshire	London	Domestic
North West	Central Scotland	Port

The table indicates that the main flows supported are the mid-distance flows where rail is less competitive with road.

During 2018/19, 47 (42 port and 5 domestic) intermodal freight movements and 5 bulk movements were supported by the MSRS grant.

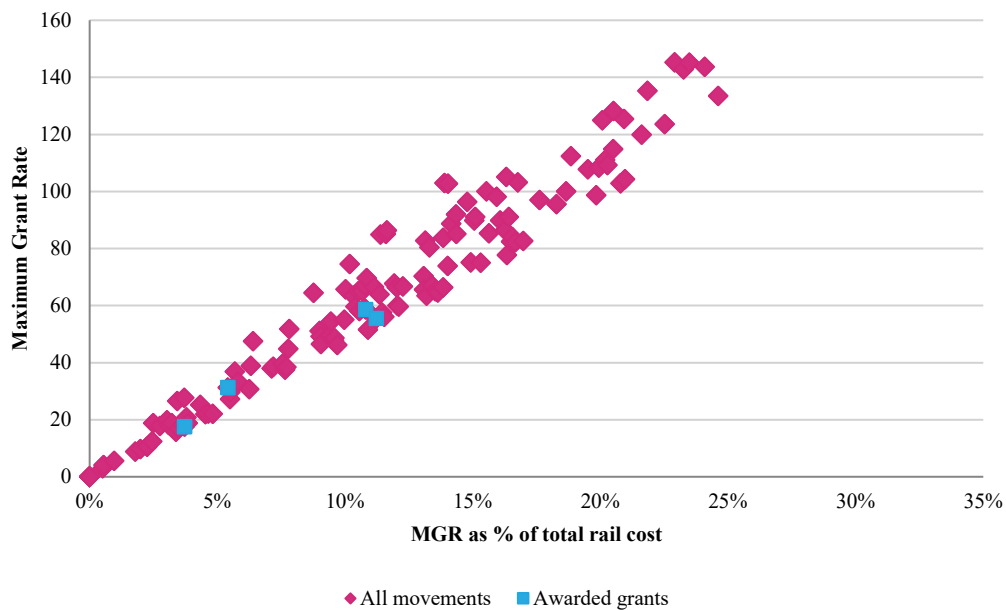
The following two figures show the grants awarded for port and domestic flows respectively for the 2018/19 financial year. In simple terms, the further to the right and higher the location on the graph, the higher the need for grant support and the higher the amount of grant being sought.

Figure 14: Grants awarded for port movements 2018/19



For port flows, maximum grant rates range from 1% to 29%, with MSRS funding as a proportion of total rail costs ranging from 3% to 17%.

Figure 15: Grants awarded for domestic movements 2018/19



For domestic flows, maximum grant rates range from 1% to 25%, with MSRS funding as a proportion of total rail costs ranging from 4% to 11%.

As is evident in the graphs, operators have not generally been awarded grant for movements where the maximum grant rate would only cover a very low proportion of their rail costs. They have also either not bid or bid but not been successful for the movements at the top of the range, where the maximum grant rate makes up the highest proportion of the rail costs. The belief is that this is

driven by the uncertainties of the grant award process, failure to win award because of exhaustion of the grant budget or prioritisation of awards to the flows with the highest BCRs, or other factors such as cross subsidy of some of these flows by profitable flows as part of the same contract grouping, or lack of candidate flows between zone pairs.

The higher the proportion of cost covered by the grant, the more vulnerable the flow will be to the removal of grant.

In the event that the grants were completely removed, those movements where the grant covers a higher percentage of total rail costs (towards the right of the graphs) would be the most likely to cease altogether or to switch to road, whilst those where the grant covers a lower percentage of costs (towards the left) would have some possibility of continuing, at least in the short term.

To highlight the impact of either tapering or removing the current grants, the movements which received grants in 2018/19 have been analysed and formed into six bands based on the percentage by which the operating cost would increase in the two scenarios. For each band, based on judgement, an estimate of the probability of a movement no longer operating by rail without a grant has been produced.

This gives the highest probability of loss to those in the largest cost increase category and implies that for cases where there is an increase of less than 10% of total costs, operators may make some attempt to retain business, even on a marginal cost basis, given that a contribution to wider business overheads remains. Up to this point, it is assumed an overall average of 50% of traffic flows will revert to road. Beyond a 10% increase in cost, operators are extremely unlikely to retain any traffic (and then only for reason of wider contractual fit). In this instance, fewer than 5% of flows are retained by rail.

This probability is applied to the flows falling into each category. Table 37 shows the number of movements in each category for tapering of the grant to 75%, 50% and 25% level before removal for port movements. The removal column would also apply if the grant ended at the end of March 2020. Table 38 shows the same for domestic movements.

Table 37: Likelihood that a freight movement will no longer operate by rail given an increase in cost when the grant is tapered or removed – Port movements

Cost increase		Port 75%	Port 50%	Port 25%	Port Removal	Likelihood change
0%	5%	24	18	17	8	30%
6%	10%	0	6	5	10	60%
11%	15%	0	0	1	4	95%
16%	20%	0	0	1	1	100%
21%	25%	0	0	0	1	100%
<26%		0	0	0	0	100%
Total		24	24	24	24	

Table 38: Likelihood that a freight movement will no longer operate by rail given an increase in cost when the grant is tapered or removed – Domestic movements

Cost increase		Domestic 75%	Domestic 50%	Domestic 25%	Domestic Removal	Likelihood change
0%	5%	6	4	4	2	30%
6%	10%	0	2	2	2	60%
11%	15%	0	0	0	2	95%
16%	20%	0	0	0	0	100%
21%	25%	0	0	0	0	100%
<26%		0	0	0	0	100%
Total		6	6	6	6	

This banding has been used in the tests to estimate the impact of the grant removal.

With some of the flows no longer profitable due to the cost increase, it is assumed that continuing demand would result in the movements transferring to road, and due to the cost imbalance, no other rail operator would seek to take them over. For the purposes of this calculation, it is assumed that no traffic flow would cease completely.

Table 39 shows the impact on flows switching to road with the grant reduction over three years and the grant being removed, for port movements. Table 40 shows the impact on domestic movements.

Table 39: Impact of tapering and removal of grants – Port movements

Impact	Port 75% Grant	Port 50% Grant	Port 25% Grant	Port Grant Removal
Continue by rail	17	15	14	10
Switch to road	7	9	10	14
Total	24	24	24	24

Table 40: Impact of tapering and removal of grants – Domestic movements

Impact	Domestic 75% Grant	Domestic 50% Grant	Domestic 25% Grant	Domestic Grant Removal
Continue by rail	4	4	4	2
Switch to road	2	2	2	4
Total	6	6	6	6

These results indicate that with the removal of the grants, approximately 60% of port traffic will switch to road and approximately 70% of domestic traffic. For the tapering, the reduction in port traffic is between 29% and 42% as the funding reduces, for domestic traffic, the reduction is around 30%.

Bulk

For bulk rail freight movements, there are no standard zone to zone costs and grant matrices as there are for intermodal movements. Instead, each grant submission is assessed on a case by case basis. Assessing the impact of removing or tapering the grants is therefore more judgemental than for the intermodal market as information is not available on the relative road and rail costs for each bulk movement receiving a grant, or on the proportion of this cost that is related to specific elements.

In order to assess the impact, it has been assumed that the proportion of bulk freight movements that would switch to road or cease to operate as a result of grant removal or tapering would be the same as that for intermodal. However, as each bulk application highlights the needs for grant to remove the flow from road, it could be assumed that every case would revert to road. Therefore, the analysis here may be optimistic.

Table 41 highlights the impact of the tapering or removal of the grants on the 5 bulk freight movements that received grant during 2018/19. As with the intermodal, no movement is proposed to cease.

Table 41: Impact of tapering and removal of grants – Bulk movements

Impact	Bulk 75% Grant	Bulk 50% Grant	Bulk 25% Grant	Bulk Grant Removal
Continue by rail	3	3	3	2
Switch to road	2	2	2	3
Cease	0	0	0	0
Total	5	5	5	5

7.3.4 Employment and GVA impacts

Intermodal rail

To estimate the employment impact, each of the 2018/19 intermodal rail freight movements receiving grants have been categorised as continuing by rail or switching to road based on the numbers shown in Table 39 and Table 40.

Utilising the latest model outputs, the cost per container in terms of employment has been calculated. For each movement where a grant awarded in 2018/19 would switch to road, a calculation of the reduction in rail employment costs has been made along with a corresponding calculation of the increase in road costs. Employment costs are generally higher for road than rail for the same volume of freight moved as road is more labour intensive, even though income per direct employee is lower.

The total change in employment costs has been converted into a change in employment income in terms of number of jobs by dividing by the average industry salaries for rail and road (£61,129 for rail and £38,956 for road¹⁸). By using the average, it provides an appropriate approximation to take account of all jobs impacted including management and yard staff and has been applied consistently across both road and rail sectors.

Table 42 demonstrates a potential small positive £6.9 million per annum employment impact from a tapering or removal of the grants. This is a combination of up to £188 million in negative rail employment impacts (equivalent to up to 3,080 direct jobs lost if grants are removed); offset by rises in road transport employment due to more lorries required to move the freight. The net impact is an additional 1,931 jobs.

¹⁸ Average rail driver's salary from FOC cost data supplied and FTA data for road.

Table 42: Employment impacts of grant taper and removal - Intermodal

Intermodal Employment Impact									
	Port			Domestic			Overall		
Grant taper	Rail Jobs Lost	Road Jobs Gained	Net Change	Rail Jobs Lost	Road Jobs Gained	Net Change	Rail Jobs Lost	Road Jobs Gained	Net Change
75%	-1,364	2,271	908	-235	393	159	-1,598	2,665	1,067
50%	-1,647	2,702	1,056	-271	445	174	-1,917	3,147	1,230
25%	-1,843	2,981	1,138	-271	445	174	-2,113	3,425	1,312
Removal	-2,767	4,506	1,740	-313	504	191	-3,080	5,011	1,931
Intermodal Employment Value £ millions									
	Port			Domestic			Overall		
Grant taper	Rail Industry	Road Industry	Net Impact	Rail Industry	Road Industry	Net Impact	Rail Industry	Road Industry	Net Impact
75%	-£83.4	£88.5	£5.1	-£14.3	£15.3	£0.99	-£97.7	£103.8	£6.12
50%	-£100.6	£105.3	£4.6	-£16.6	£17.3	£0.77	-£117.2	£122.6	£5.39
25%	-£112.6	£116.1	£3.5	-£16.6	£17.3	£0.77	-£129.2	£133.4	£4.24
Removal	-£169.1	£175.5	£6.4	-£19.1	£19.6	£0.51	-£188.3	£195.2	£6.94

Bulk

Utilising the latest bulk flows from DfT and past information on the equivalent number of lorry journeys, an estimate has been made on the employment cost of moving the bulk freight from rail to road. This has assumed that one lorry journey is equivalent to one intermodal container moved by road or rail with the costs taken from the intermodal section.

For bulk movements, the removal of the grant may result in a loss of £211,600, equivalent to 3 jobs based on the five flows which received funding during the 2018/19 financial year.

In a tapering scenario, this would result in a £148,000 loss to the rail industry, equivalent to 2 jobs for all 3 taper scenarios.

As with intermodal, this would result in a gain for road transport, with 3 to 5 jobs gained.

7.3.5 Monetised impacts

Intermodal and bulk rail

The impacts of MSRS withdrawal that are quantified and reported on in this section are:

- Additional congestion costs arising from rail to road transfer;
- Additional environmental costs arising from rail to road transfer;
- Employment impacts (section 7.3.4); and
- Exchequer impacts.

The movement of freight by rail rather than road provides substantial environmental benefits, which are monetised using the values in the DfT's Freight Mode Shift Benefits Values Refresh (December 2014) published by DfT, Scottish Government and Welsh Assembly. The majority of these benefits are congestion benefits.

Congestion costs arising from road to rail transfer, although calculated as part of DfT's Mode Shift Benefits Values, are actually economic costs with real effects on economic productivity; they are therefore presented separately from environmental benefits. These reflect the costs imposed on other vehicles in the form of longer journey times and changes to vehicle operating costs resulting from additional HGV traffic joining a road. It also reflects the impact of increased traffic on journey time variability. The average congestion value, weighted by articulated goods vehicle kilometres and their use of the road network, is quoted as 57 pence per lorry mile (Table 2 of the Freight Mode Shift Benefits Values Refresh).

The analysis has built up these estimates of cost and benefit separately for the withdrawal of MSRS (I) and MSRS (B). These two sets of estimates follow the same logic but use different values for employment and productivity. The additional lorry miles, which drive these results, have been estimated from the

MSRS (I) model. For bulk freight, the equivalent lorry miles provided by DfT for each grant supported rail freight movement have been used. Removing the MSRS (I) scheme would result in 159 million additional lorry miles whilst tapering the scheme would result in a range from 86 million to 109 million additional lorry miles. Whilst representing a small percentage increase, this change could add exponentially to congestion costs on already overcrowded trunk roads such as the A34 or A14. However, our review cannot determine which flows would actually transfer, as we do not have the base data to judge the overall BCR of individual applications and levels of award.

To estimate the cost of the impact on congestion of the removal or tapering of the current grant scheme and the resulting switch of some rail freight traffic to road, the average congestion value was applied to the number of containers estimated to switch to road (as described in the intermodal section) and the distance for each movement that would transfer to road (based on the road distances in the current models).

This gives a total congestion cost resulting from the removal of the MSRS Intermodal scheme of £90.5 million and for the tapering of the grant scheme a range of £49 million to £62 million.

With most of the additional journeys starting at ports, and with these focused on a few key port gateways, there will be special pressure on local urban road systems in, for example, Felixstowe and Southampton.¹⁹

Environmental costs arising from road to rail transfer again come from the DfT's Mode Shift Benefits Refresh and produce a net environmental impact (after allowing for rail movement impacts on the environment) of 33.8 pence per mile (source Refresh Table 2).

This results in increased environmental impacts to society of between £29.58 million and £37.20 million in the case of tapered grant, and £54.24 million for full withdrawal.

Employment has already been reviewed in Section 7.3.4 and these figures provide an indication of the monetary impact of grant tapering or removal.

The **Exchequer impacts** have been estimated by multiplying the changes in lorry miles outlined above by the MSB taxation impact of 40.94p²⁰ to indicate additional government revenue derived from road transport movements, principally through the receipt of fuel duty. This process indicates a gain in tax revenues estimated at £35.8 million to £45.1 million (taper) and £65.7 million (withdrawal) per annum.

¹⁹ Average MSB values have been used; in practice these hide wide ranges and may disguise acute congestion on urban roads close to port gates. Trucks typically stack on the public highway, in order to meet pre-arranged 'slot' times; these additional costs and the benefits of journey time reliability are not reflected in this benefits quantification. (source Arup: A160 dualling: Economic Impact Report)

²⁰ Road pays duty of 50.68p per litre of diesel; rail pays 9.74p per litre (ignoring VAT). This equates to net taxation income of 40.94 pence per additional lorry mile from rail to road transfer. Source: Table A.1.3.7 TAG Data Book.

Wider taxation impacts (for example changes in corporation tax payment or income tax and NI changes) have not been evaluated for this assessment.

These impacts are summarised in Table 43.

Table 43: Impacts of grant tapering and removal

Additional lorry miles, million per annum			
Taper to Removal	Intermodal	Bulk	Total
75%	86.3	1.2	87.5
50%	100.5	1.2	101.7
25%	108.9	1.2	110.1
Removal	158.8	1.7	160.49
Impact to society			
	Environmental	Congestion	Tax Impact
Road cost per mile (pence)	41.8	57.0	51.0
Rail cost per mile (pence)	8.0	0.0	10.0
Net cost per mile to transfer to road (pence)	33.8	57.0	41.0
Total impact of additional road miles (£ million)			
Taper to Removal	Environmental	Congestion	Tax Impact
75%	-£29.58	-£49.88	+£35.8
50%	-£34.36	-£57.95	+£41.6
25%	-£37.20	-£62.73	+£45.1
Removal	-£54.24	-£91.48	+£65.7

7.3.6 Summary of quantitative impacts

In total the cumulative direct impacts of withdrawing or tapering the grant based on the 2018/19 flows (equivalent to £15.2 million) are shown in Table 44.

Table 44: Cumulative cost impacts of grant taper to removal (£ million) per annum

Grant Level (Taper to Removal)	Additional lorry miles	Environmental impact	Congestion impact	Overall societal Impact	Increased tax income	Reduced grant expenditure	Employment Impact	Total benefits	Net impact per annum
75%	87.5	-£29.58	-£49.88	-£79.45	£35.8	£3.8	£6.12	£45.7	-£33.7
50%	101.7	-£34.36	-£57.95	-£92.31	£41.6	£7.6	£5.39	£54.6	-£37.7
25%	110.1	-£37.20	-£62.73	-£99.93	£45.1	£11.4	£4.24	£60.7	-£39.2
Removal	160.5	-£54.24	-£91.48	-£145.72	£65.7	£15.2	£6.94	£87.8	-£57.9

The table demonstrates that even allowing for the saving of the grant there is a net worsening of up to £57.9 million per annum with full withdrawal. Tapering the grants still indicates a negative impact of between £33.7 million and £39.2 million per annum.

For all the scenarios tested, the congestion impacts are based on an average congestion value. In reality, particular routes may have higher or lower congestion impacts than this. The congestion costs shown here could therefore be an under or over estimate of the actual impacts depending on which flows transfer to road with the grant reduced or removed.

7.3.7 Qualitative estimation of industry response

A number of responses were provided by stakeholders on their thoughts on the MSRS scheme and the level of support it provided to FOCs. This section summarises these responses and provides some commentary on the potential impacts in the event that the scheme was to be discontinued.

Feedback in general supported the continuation of the scheme and it was felt that it provided a means for rail to compete with road prices.

A number of comments were received on the environmental benefits and how any reduction or ending of the scheme would impact on companies looking to reduce their carbon footprint. This should be considered in any move to reduce the level of grant available.

Comments also focused on how a reduction in grant might affect the scheme. The main concern being how the funding would be spread over the five-year period. There was also comment that there is little difference between grant reduction and removal in terms of supporting a flow if it makes the flow uneconomical. It was felt that the grant helps to demonstrate Government support to the rail freight industry.

Wider impacts

In addition to the direct impacts on the freight operators, the reduction or removal of the MSRS grant and resulting loss of rail freight movements currently supported by the grant may also result in wider impacts, these are outlined below:

- FOCs' wider intermodal business may be affected through inescapable shared costs being borne by a smaller traffic base. As a result formerly profitable flows may become unviable, which may cause additional flows that are currently profitable to cease. This is hard to quantify. Most operators suggest that if MSRS were not available or significantly reduced, (especially for the shorter distance port flows to the Midlands and Yorkshire) the remainder of the intermodal business might become unsustainable. This would be highly likely to lead to a decision to withdraw totally from the sector rather than continue to bear the remaining joint costs (locomotives and wagon provision, train planning and marketing offices) with a reduced traffic portfolio. At worst this would result in a complete withdrawal from container movement by the rail freight industry. However, this may be an extreme outcome and it could be that some core flows, particularly those to Scotland and direct contract services to shipping lines, would remain on rail. It must also be borne in mind that greater use of road transport actually generates a counterbalancing *increase* in employment, due primarily to the reduced labour productivity inherent in road transport movements.
- With less freight being moved by rail, there may be an impact on terminal operators, particularly where there is a high proportion of grant supported traffic. This in turn might result in the loss of further freight flows that are using these terminals. The terminal network has grown over the last 20 years and is starting to reach the point where some domestic intermodal flows are

becoming a practical proposition (with grant support). Daventry to Grangemouth is perhaps the best example of this, but other opportunities are also appearing. The belief is that rationalisation of flows will lead to closures or mothballing of many terminals with resulting economic and employment impacts.

- Local road hauliers could see a reduction in local distribution work from the rail freight terminal to the final destination. This would however be balanced by an increase in long distance road haulage work as freight would switch to road throughout. This would likely transfer jobs to port areas rather than lead to overall employment reductions. Clearly the transfer to end to end road movement creates significant additional environmental impacts, including carbon emissions, pollution and congestion.
- The wagon industry may see an impact as a result of the grant being removed and rail movements reduced. With fewer movements by rail, operators would have a reduced wagon requirement and would reduce orders and leases for these wagons. There would also be an impact on the need for wagon maintenance.
- Ports could also suffer reduced revenue as they would lose fees currently received from rail operators for port shunts. Ports charge rail operators for additional container handling, and it is suspected that this includes a profit element over and above their direct costs.
- Network Rail could be affected by the removal of rail freight traffic resulting in a reduction in track access charge revenues, though this should be balanced by a reduction in track wear and tear and might also generate pathing opportunities for other freight or passenger traffic. Given other pressures on the network this could be viewed as a neutral impact.
- Government investment in freight capacity and gauge enhancement would no longer deliver the anticipated benefits through the potential loss of intermodal traffic flows, and in some cases any reduction in grant may achieve the effect of terminating the traffic which the investment has been targeted to benefit. The significant investment on gauge enhancement has been predicated on the increasing importance of intermodal traffic. If there was significant retrenchment in the intermodal market the value of this investment might need to be reviewed. The transfer of freight traffic from rail to road and resulting impact on the strategic road network from increased HGV traffic could necessitate further government investment in road capacity which would offset savings in MSRS expenditure.

7.3.8 Summary

In summary, the tapering or removal of grants is expected to produce slightly positive net employment benefits due to the increase in road based jobs from the loss of rail movements. However, increased congestion on the road network and a substantial impact on the environment due to rail-based movements transferring to road overall would produce net negative benefits per annum.

8 Operator feedback on the functioning of the MSRS scheme

8.1 Introduction

Operator feedback on the functioning of the current MSRS scheme has been received through three routes:

- On January 24, 2019, the DfT wrote to all current rail grant recipients to request their views on the functioning of the current MSRS schemes. Responses were received from 8 operators;
- Through the course of the consultation undertaken through Phase 1 of this study (June to July 2019) views were collected from a further 12 operators; and
- A number of further operators provided feedback through Phase 2, at the workshops in September 2019 and in subsequent communications.

This section sets out the feedback provided, which is provided in full from Table 45 to Table 49.

This section does not restate the wider policy discussions raised at the workshop, which were covered in section 3.3.1.

8.2 Key themes

Overall, the consultation has revealed significant industry support for the scheme and a strong opinion that, given the short timescales for review, the current scheme should be extended beyond March 2020 ‘as is’, ideally with an increased level of funding to be made available. It was suggested that the grant scheme has had a genuinely positive impact, has boosted private investment, and provided excellent value for money in a manner which can be easily quantified in investment cases.

Length of awards and encouraging new flows

Beyond a general feeling that the MSRS system should be retained, the most commonly referenced topic concerned the length of grant awards and, linked with this, improving the level of support for new flows – topics referenced by 12 respondents. There was general agreement that some degree of certainty was required to allow investment cases to be made, but the most common proposal was for funding for specific flows to be time-limited, perhaps to three or five years. Some suggested that a funding taper could be introduced, when funding would decline as volumes on the new flow increase. Two respondents suggested a partitioning of the budget to focus on new flows, although one respondent also suggested that opportunities in respect to new services could be created as a result of the ‘claw back’ option, which ensures the budget is not under spent (however, the ‘claw back’ mechanism does not ring fence for new services). In most cases the stated intention of these proposals was to encourage innovation and

competition, and to avoid a situation whereby unprofitable flows are subsidised in perpetuity.

Encouraging competition

There were mixed views regarding whether the MSRS scheme encouraged competition (both in terms of bidding for grants and within the freight sector as a whole) in an effective way. Some respondents suggested that the capped budget and bidding rounds encouraged competition, although a small number of respondents suggested that it might be more effective if the efficiency of the rail freight operation could be improved in various ways, rather than government subsidising a suboptimal system.

Process

Seven respondents commented on the process by which applications can be made. Typically, organisations which rarely or never apply for MSRS funds perceived the process as long, complex or opaque; whilst in contrast one respondent found the online process straightforward and easy to manage. Another respondent suggested that the rules were complicated to understand and appeared weighted towards the intermodal sector.

Corridor based funding

Four respondents made proposals relating to corridor-based funding. Two respondents described the issue as being that different operators using the same route could be being awarded different levels of subsidy, a theme reflected by another respondent who suggested that no operator should have a financial advantage on a given route. A respondent highlighted the potential for the scheme to consider actual origins and destinations rather than the artificial zone structure, and another stakeholder suggested that an additional scheme (beyond the current MSRS) could be introduced to address routes with network constraints.

Commodities

Three respondents suggested that the MSRS scheme should be extended to cover other commodities, although one of these acknowledged the challenges in realistically accommodating the characteristics and complexity of different commodity sectors.

Box size

Two respondents suggested that the scheme could be more effective if it better reflected the mix of 20- and 40-foot boxes or was even redesigned to consider train movements instead.

Start-up costs

Two respondents highlighted the potential for high start-up costs for new entrants to the market, suggesting that additional funds could be made available to cover these.

Environmental impacts

Two respondents suggested that environmental impacts could be considered in a broader and more disaggregate manner. DP World suggested that the potentially more significant benefits of reducing HGV traffic from urban areas could be explicitly considered, and Stobart Energy suggested that wider factors such as reducing landfill and achieving renewable energy targets could be considered.

Other topics

Other topics were raised by single respondents and are set out in Table 45.

8.3 Industry views

Table 45: Views from rail operators

Comments
<ul style="list-style-type: none"> • Would welcome a methodology review, but, given the tight timescales for implementation by March 2020, overriding priority is to ensure the continuation of grant funding available. Comments stress its extreme importance to financial viability of services, enabling competition with road and thereby helping underpin modal shift away from this mode. • The scheme also provides confidence in the sector and underpins private sector investment by freight operators, customers and ports in terminals, rolling stock, plant and IT systems. • Highlighting of the economic benefits, including substantial productivity benefits, generated by the scheme, in addition to the track record of delivering high value for money compared to other government grant funding schemes. • The methodology which revolves around ‘value for money’ potentially results in funding allocation which isn’t best targeted for reducing HGV road mileage – shorter distance movements struggle to secure grant funding on a ‘value for money’ basis, but these journeys require greatest support to be competitive with road and play a key role in replacing HGVs on some of the most congested parts of the network • Potentially anti-competitive method of allocation, where the current scheme allows funding to be granted to one operator, whilst a competing operator, on the same corridor, receives nothing because they bid at a rate that offers lower value for money. Pros and cons of this method are set out, along with proposal of an alternative mechanism. • Current methodology largely supports existing flows to continue to use rail but does not aid creation of new rail flows. Proposal to allocate a small part of the existing budget to new to rail flows so that new flows can compete for fund allocation on a lower value for money basis.
<ul style="list-style-type: none"> • Hope that the demonstrated success of MSRS encourages funding extension to a level at least matching the current scheme. • Funding allocation methodology based on BCR values provides a challenge to rail operators to optimise efficiency. • The capped budget and set bid rounds create a competitive environment, driving best value from the scheme. Evidencing value for money for MSRS is more appropriate than historic schemes (including CNRS and REPS). • The online application process is straightforward and easy to manage. • Opportunities in respect to new services are created as a result of the ‘claw back’ option, which ensures the budget is not under spent. • Suggest a portion of budget is reserved specifically for new services. • Have found the ability to bid for funding under a two-year timescale very useful in facilitating the investment case for wagons and locos.

Comments
<ul style="list-style-type: none"> • Don't like the 'Dutch Auction' allocation process – through this methodology applicants bid for grants and if they are £1 under the cut off level they receive nothing. • BCR cut off is currently approximately 5:1 so money is spread a lot more thinly. • Believes that the rail cost base needs to be lower through reduced track access charges and improved pathing opportunities (which could lower costs via better use of rolling stock, for example).
<ul style="list-style-type: none"> • Has once previously applied for MSRS grant funding and found the application process long winded, in terms of lots of forms to fill in and obtaining quotes for equivalent road journeys, all for very little benefit.
<ul style="list-style-type: none"> • Supports the scheme and thinks that it is useful, however believes that its focus should change – long distance rail hauls should be sustainable without a grant, and grant support could assist new flows and the initial risk of running these services. • Could grant funding support underutilised rail movements – i.e. where a customer has booked 50% of a train but other 50% is empty/unsold. • Identifies discrepancy between grant service agreements for six-month periods versus the risk of hiring wagons on 12-month contracts. • Believes the grant should consider new container technologies for carrying other goods and include an 'other cargo' category (i.e. non-standard goods).

Table 46: Views from transport logistics companies

Comments
<ul style="list-style-type: none"> • Grants should be awarded on time limited basis, requiring services to become commercially viable without grants within a given number of years. This would ensure funds could be redirected to support new projects, helping to shift more freight onto rail. Providing a grant longer term could become detrimental as the landscape changes, for example, a grant to support rail from Southampton to Liverpool may be discouraging businesses to use liner services directly into Liverpool which did not exist when the grant was first awarded. • Should the grant be paid to the FOC or the customer? In other sectors, such as the training sector, government funds are given to the customer, but the training operator helps the customer navigate through completing the application, etc. • Can the grants be more flexible regarding commodity? We anticipate more rail opportunities for waste to energy products, both from Scotland to NE and from the South to NE but these will invariably need some grant support to get off the ground. • We would like to be confident that grants for both rail and coastal shipping are available, easy to access and operated effectively when we try and access them.
<ul style="list-style-type: none"> • The MSRS grant scheme should continue in its current format beyond March 2020 and it is a necessity to ensure services continue. • Anticipates that, in the long term, road pricing will increase due to declining numbers of HGV drivers and this will mean established rail routes will not need revenue support. • Clarity and early guidance/communication from the DfT is vital if the industry is continuing to deliver investments such as more efficient wagons, new locomotives and terminal upgrades. • The DfT should ensure funds are apportioned equally between services operating on comparable pathing – i.e. no operator should have a financial advantage on a given route. • Additional dedicated funds should be made available to promote new services. The main obstacle to bringing a new service to fruition is customer confidence. Clients won't commit until a service is operational, proven and reliable, so rail providers have to accept they will lose significant amounts of money in the first 6 to 12 months. This level of risk often means services are never brought to market.

Comments

- This company have never applied for the grant – they believe that it is not easily understandable and in the main only applicable to freight operating companies, but they are potentially interested in the scheme.
 - How grant payed filters down to the price customers pay is not clear.
 - Price generally drives mode customers' mode choice, with reliability being a secondary key factor.
 - Even where rail is cheaper than road there are still service issues to consider – can the box be moved when required? Larger and less frequent ships cause wider variations in transport demand and creates situations when the container can't be moved immediately by rail.
 - Longer rail flows which travel from London/south-east to beyond Birmingham are generally more competitive. New purpose-built terminals such as East Midlands Gateway and iPort Doncaster, with adjacent warehouses, are helping make the rail offer more competitive.
 - The UK trade imbalance creates a need for re-positioning boxes (depending on the nature of the contract with the shipping line), so a grant only for movement of loaded boxes doesn't consider the complete picture. Costs associated with re-positioning empty boxes can potentially alter the mode choice.²¹
- This company have a contractual arrangement spanning a few years with a traction provider. They are obliged to pay the full 'train fee' whatever the train loading. Contracts with customers are shorter, typically only 3-9 months. The strategic decision to continue offering rail services is reviewed on an annual basis.
 - They cut back on their applications when the grant pool fell.
 - Grant application windows can be more than annual but should be defined and announced as far in the future as possible to help planning and negotiation with customers.
 - Proposal to consider a grant scheme based on train movements rather than per box. Deepsea intermodal is more commonly in 20ft containers whereas for domestic intermodal transport 40ft is the norm – as such, the more 20ft boxes the more remunerative for the FOC.
 - Suggest that grant aid should be capped at three to five years maximum, and if by that time the train operation is not making breakeven – then the volume of the flow, pricing, type of goods is not right – then the flow should stop.

Table 47: Views from trade bodies

Comments

- The MSRS scheme is really important for rail freight transport, especially for flows into the Midlands.
 - The scheme gives great value for money returns of 5:1 and 6:1 for government so there should be a strong case to expand budget for the scheme. At present the budget is too low which is a major drawback.
 - Long term changes to the scheme should be considered for the next review, but not within the timescales available on this occasion with funding ending March 2020. Due to the importance of the scheme to the industry, it should be rolled over 'as is' to safeguard its continuation and it is too big a risk to apply for State Aid approval for a different scheme.
- The MSRS scheme remains of the utmost importance to intermodal rail freight, underpinning services which would otherwise not be economic to operate.
 - The grant sends a strong message of confidence to the market, which helps to facilitate customer and operator investment in ports, terminals and equipment.
 - At present there is a great deal of uncertainty for shippers and rail operators arising from Brexit and from the Williams review, and avoiding any further unnecessary 'shock' to the

²¹ It is understood that the scheme is available for both empty and loaded boxes to assist with the imbalance of boxes and the need for re-positioning.

Comments

market, which might arise from any significant change in the structure or funding of MSRS, should be a priority. Strong preference for a continuation of the scheme ‘as is’ through this period of change.

- The allocation of grant on a value for money basis at each bid round has been an important measure for ensuring that the limited budget can be shared as effectively as possible. However, as a result, different applicants can and do receive different levels of grant for the same type of traffic moving on the same route – this could be considered anti-competitive and raise issues with future state aid clearances.
- The scheme does not target new services, which arguably need the most support. Some members feel that the grant should pay an increased amount in the early stages of a new service, with a taper to a lower level after an initial period. This could help offset the risks of starting new services, particularly in the domestic intermodal sector.
- The scheme achieves a lot for its budget allocation and could achieve a lot more if the budget allocation was increased. Freight sector margins are low and very small variations can make the shift from road to rail, so modest increases in grant budget could have a significant effect.
- MSRS could be used in a more focused manner to help attract volumes in the early stages as customer awareness rises and traffic builds.
- Potential case to look at the addressable market by origins / destinations and corridors rather than artificial zone boundaries as this would reflect actual traffic patterns.
- MSRS should be timed limited to a maximum of, perhaps, five years.

Table 48: Views from ports and shipping lines

Comments

- Enhanced grant support should be targeted at new-to-rail flows, with grant funding front-end loaded when the service commences and then tapering down after a period of six to nine months to ‘standard’ zonal rates.
- A separate grant funding stream, over and above the current zonal bids, could be considered on routes where network constraints exist (gauge clearance and train length constraints) and no other funding path can be identified to tackle said constraints.
- The high start-up costs for the purchase of rail wagons and container equipment can be a large barrier, which could be aided by freight facilities or equipment grants. Suggest exploration of whether the DfT or Network Rail could fund the development and procurement of new equipment on behalf of rail freight users within the intermodal market, possibly acting as a quasi-rolling stock leasing company and receiving rental income in return.
- Without good service reliability, people will prefer road transport in competitive scenarios and there would be little point in providing revenue support to try and grow the rail market share. Focused heavily on their processes to provide a very reliable feed to the rail terminals as this will help grow the rail market share.
- In general, the MSRS scheme has been very cost effective in moving containers from road to rail.
- Suggestion that value for money calculations should better consider that the positive environmental effect of road to rail mode shift is much higher for a port in a busy city as compared to ports in more rural areas. At present environmental benefits are allocated according to four different road types but is there a different methodology which would improve prioritisation of MSRS funding allocation so that more HGVs are removed from congested city routes.
- Even a modest increase of the MSRS grant on Southampton routes would deliver far more benefits for the environment than, for example, implementing a Clean Air Charging Zone for HGVs in Southampton. Strongly support an increase of the level of funding resource for the MSRS scheme.

Comments

- Believe that there is a direct correlation between the amount of funding available and the amount of goods moved by rail rather than road; with the reduced funding to operators in recent years has resulted in container rail volumes at Southampton decrease from almost 40% to 32% in 2017.
- Emphasise the importance of maintaining, and ideally increasing, the value of this grant funding to achieve the mode shift objective.
- MSRS grant is essential to this company which would like to grow its rail product year-on-year, but reductions in funding would inevitably impact their mode choice towards road movements.

Table 49: Views from other companies

Comments

- Acknowledged that there is very strong industry support for the scheme and that retaining it beyond March 2020, even with its current flaws, should be first priority.
- Review of the zonal map for the MSRS scheme should be undertaken, particularly the methodology of no grant within-zone which causes odd distortions e.g. proposals for movements from Workington to Teesport and St Bees to Redcar (West Cumbria) are not eligible.²²
- Dollands Moor and Dover should be added as a separate zone to streamline the process for obtaining grant support for freight movements through the Channel Tunnel.
- Believes that funding offers the opportunity to help new business, targeting more new traffic. Questions if money should be available specifically to assist with start-up costs pre-launch. At present it is apparent that some FOCs have been in receipt of MSRS for years and, as such, is being relied upon in their operating economics. Would support three- or five-year limit to encourage mode shift. If flows not viable after this length of time it's unlikely they will be.
- Questions whether the grant is driving sub-optimal behaviour – potentially reducing the FOCs incentive to innovate or make productivity improvements. Suggestions for alternative behaviours which could be 'rewarded' instead include: investment in optimised wagon sets, benchmarking against an 'optimal' reference train or bespoke packages for train load traffic.
- Highlights distortion in the grant funding awarded, because of structural shifts changing the percentage of different box lengths used for the Deepsea Intermodal versus Domestic Intermodal market segments (previously equal split between 20- and 40-foot boxes, now 40 foot predominates). Suggests that the grant pot could go further if more was paid for longer boxes and proportionally less for shorter boxes.
- Expresses that the grant is hard to explain to end applicants and that the award process is perceived as opaque.
- Express concern that grants impact on operations in a manner which decreases efficiency and reduces the incentive to innovate.
- Suggest the restoration of the higher gross weight limit for lorry movements to/from intermodal terminals, which used to exist in the UK. This 'concession' helps balance the additional unavoidable cost of the lift on/off operation at the rail terminal and, dependent on the source/destination for the goods, the additional time/distance to go to/from the rail terminal – which a pure road movement does not face.
- Questions whether money could be better spent by intervening in the rail network, terminal design and/or wagon design to raise the productivity of the train operation instead.
- The grant system could be deployed more towards start-up traffic, so that funding is tapered out in parallel with service volumes increasing. This would help reduce the risk on new services which haven't initially got the volume to be commercially viable during the 'traffic build-up phase'.

²² Intra-zone flows would be eligible but assessed on a case by case basis.

Comments

- Suggests that guidance literature should be made clearer, in addition to having DfT staff who can advise companies effectively about the scheme.
- Would propose that wider social and environmental factors are considered in the grant assessment process (e.g. avoiding land fill and achieving UK government targets for Renewable Energy).
- Believes that the MSRS scheme 'rules' and operation are complicated to understand and appear weighted towards the intermodal sector rather than the needs of the bulk sector.
- Questions whether one model can realistically accommodate the characteristics and complexity of the different commodity sectors.
- Should the MSRS grant support be awarded with a profile weighted towards the early years, then taper and phase out after an agreed period. There is a balance to be struck between reflecting the 'gap in costs' and not losing incentivisation to seek out and secure efficiency gains which typically accrue in the early years of a new operation.
- The hardest part of making a mode shift is getting the new operation going in the first place. Before mode shift takes place, internal business cases must be prepared/evaluated and significant engagement with Network Rail and the freight operating companies is required. Significant early costs involved can include a connection agreement with Network Rail (if this is a new connection) or internal terminal works to prepare/adapt a current site to undertake the dispatch/ receiving of product. The flow tends to remain in place even if the cost of rail becomes less competitive than road, which in part arises due to the 'sunk costs' of the initial establishment of the flow.
- Found the experience of the application process time consuming.
- The grant funding is needed to address the financial difference with road transport and make the mode price competitive in a way which does not happen within a free market system.
- Highlights the practical physical differences between the logistics process for road verses barge and the problems this creates, meaning switching mode often requires changes in freight handling as well.

9 Operator feedback on the coastal shipping grant support strategy

9.1 Introduction

Views from the coastal shipping industry were sought primarily at the Workshop held during Phase 2 of the Study.

Some industry views regarding coastal shipping were also received while collecting feedback regarding potential improvements or changes to the current rail scheme. A combination of these views is summarised in the following section and set out in detail in Table 50. Some of these comments refer to the existing Waterborne Freight Grant scheme rather than the potential coastal shipping scheme.

9.2 Key themes

The key stakeholder views can be grouped into the six key themes set out below.

Length of award

Length of award was the key theme emerging from the submissions and was raised by three respondents. All suggested that the three-year limit on the length of the grants was too short and did not provide a sufficient period over which to effectively build a strong business.

Practicality

Three respondents did not believe an MSRS-style scheme for coastal shipping could be practical, primarily because the market interest in using coastal shipping would be limited, given the longer journey times, lower frequencies and need to fill larger vessels. One respondent was more concerned about the differences between vessels and utilisation levels which would create challenges to introducing standard zonal grant rates.

Additionality to rail scheme

Two respondents stressed the need for any coastal shipping scheme to be genuinely additional to the current MSRS rail scheme so as not to compete with it to secure a share of a fixed budget and dilute the overall level of funding available.

Commodities

Two respondents suggested that the potential coastal shipping scheme should cover other commodities in addition to intermodal.

Process

Two respondents suggested that the process was too complicated, particularly the need to form a separate company. One respondent highlighted that the UK's port

sector responds quickly and flexibility to demand signals from Beneficial Cargo Owners (BCOs). Targeting the application of the coastal shipping MSRS towards BCOs may be an effective way of driving change and alignment ‘from the top down’ in supply chains. It also suggested that ports could apply a per box subsidy / discount on a ‘back to back’ basis with the MSRS scheme, citing similar mechanisms in European ports for applying ‘green discounts’ on port fees.

Zones

The same two respondents referred to the zone system, although had different views. One suggested that a simple zonal system could be beneficial, whereas the other did not see the benefits in replicating the zonal rail scheme, suggesting instead that such a system ignores the diverse characteristics of individual flows, and that it would be more sensible to focus on the most viable routes.

Other topics

Other topics were raised by single respondents and are set out in Table 50.

9.3 Industry views

Table 50: Operator feedback on the potential coastal shipping grant support strategy

Comments
<ul style="list-style-type: none"> • Would be very concerned if a new coastal shipping scheme detracted from, or was shared with, the current MSRS budget award.
<ul style="list-style-type: none"> • Interested, but tentative costs on feeder ships suggest it would increase costs and take longer. Frequency of feeder vessels might not co-ordinate with deep sea arrival rotations, thus further extending transit times. Also, would need to consider vessel size – typically in the range of 300 to 1,000 TEU, a lot bigger than a train.
<ul style="list-style-type: none"> • Do not see much scope for a coastal shipping scheme. The size of vessel for operating viability relative to customer freight volume requirement, sailing frequency, and transit times would render this a much less competitive option than either road or rail.
<p>There is clear evidence of very low levels of WFG applications and consequently very few awards being made. Our research from public information showed that between 2009-2016 a total of three applications were made, all of which were successful and resulted in four awards. There are three improvements that should be considered for the WFG scheme to increase uptake:</p> <ul style="list-style-type: none"> • Grants should be made available for longer than three years (as in the MSRS scheme). • The scheme in England should include funding for capital costs as is the case in Scotland. • There should be more active engagement between grant fund managers and the industry to try to increase the accessibility and publicity surrounding the schemes, to increase the number of successful applications.
<ul style="list-style-type: none"> • Would not support modelled standard rates for container movements between zones – each route needs to be done on a case by case basis as now. Costs vary so much according to vessels deployed and utilisation achieved. • Subsidising intermodal coastal shipping will nearly always cause a competitive problem in the sector. Subsidising a Southampton to Liverpool route could undermine direct calls in Liverpool, could undermine rail from Felixstowe and changes the competitive position of Southampton on deep sea routes. It also makes environmental benefits hard to calculate as the road journey may not be from the port which is the loading / unloading point.

Comments

- Strongly oppose any international grant funding – believe such services should be commercially viable without subsidy given that a maritime leg is compulsory
- Would be interested in this scheme if it could be made commercially viable.
- Believes that there is scope to modify government support to coastal shipping which would take timber freight traffic off rural roads. There are substantial volumes of timber grown in coastal areas of Scotland, particularly in the west, and many of the major timber processing sites are also located on the coast.
- Consider moving away from the MCA smooth water line definition which is currently used as one of the eligibility conditions of grants. Suggestion that ‘sea zones’ including sea lochs and coastal channels, for example like those used for ‘Calmac Ferries Ltd.’, could be more appropriately used as the basis for application
- Government should request from EU the removal of the three-year cap on WFG.
- Should consider a simple standard zones approach to grant aiding coastal shipping (as per rail MSRS) taking account of the impacts on road maintenance costs on minor road networks.

Timberlink Case Study

- The Timberlink coastal shipping service was originally established in 2000 for the transport of roundwood from Argyll to Ayrshire, supported by a Freight Facilities Grant award (operated by Scottish Government) to ABP Ayr. By 2005 it was no longer viable and in need of support if it was to continue, although normally such subsidy would not be allowed due to state aid regulations.
- Forestry Commission Scotland (FCS) sought an exception based on an EU derogation for peninsulas where the road deviation to serve this route was considerably longer than the direct sea route; in this case about 160-270km by road compared with 57-65km by sea. The proposal was that removing trucks off the road would not only produce environmental benefits in terms of reduced emissions but also reduce traffic on and damage to rural roads by heavy lorries.
- FCS obtained permission from the EC to tender a Public Service Contract. Approval was granted in 2005 on the basis that the contract be awarded via an openly competitive tender at the European level. The service has operated since then, paying the difference between road haulage and intermodal transport by sea across the Firth of Clyde.
- Support is provided through the Strategic Timber Transport Fund up to a maximum of £1m per year, and it usually requires about £800,000/yr. ABP won the initial contract in 2006, and again in 2012 and 2017. The service operates around 8-9 trips per month, collecting roundwood from Campbeltown, Ardrishaig and Sandbank piers; it is a public service that is open to processors in Ayrshire.
- Other domestic processors outside Ayrshire would be keen to ship timber from Argyll rather than haul by road, if similar support were available. Currently expansion of the Timberlink service to other parts of the west coast where the peninsular derogation may not apply would not be permitted under State Aid rules.

The current coastal shipping MSRS approach has experienced low levels of applications and take up. Any review of coastal shipping MSRS must consider the main factors that have produced this situation and not be limited to a narrow focus on detail around cost modelling. In particular:

- The complexity of application and the processes required by the applicant (e.g. forming a separate company, chartering vessels) is a considerable deterrent.
- The current three-year time horizon is insufficient to provide necessary confidence to build significant additional traffic. The MSRS should act to ‘level the playing field’ with road transport, addressing structural imbalances such as the lack of priced-in externalities (e.g. market entry and environmental costs) in road transport. It’s a mistake to see it as a transitional measure or to rely on it as such.
- The short-sea shipping market is not always a ‘pure’ GB port-to-port model. Whilst those services do exist, a significant proportion of the market incorporates legs of a rotation that

Comments

include ports across the North and Irish Seas. The MSRS review should help unlock these short sea crossings – exchanging UK road miles (and emissions) for sea miles from closer to the point of cargo origination / destination.

In terms of any possible future coastal shipping scheme:

- The focus should be on a smaller number of commercially viable routes (primarily north-south along the east and west coasts), rather than attempting to mimic the zonal rail scheme.
- More informative to aim for a position of ‘minimum viable volume’ to encourage a shipper to run a service, rather than setting the bar at a compelling economic case.
- The use of single nominated ports and freight nodes with blanket assumptions about road legs is problematic. There are very different characteristics of freight movement at different nodes – including the provision of port-centric logistics services which in themselves provide environmental benefits. Better to focus on routes, rather than generic ‘zones’, which reduces the number of pairings or rotations and should allow for more specific modelling.
- Excluding rotations with EU stops limits demand (given that some new / growth rotations would involve EU calls) and seems to miss the point the aim of the scheme – i.e. modal shift. Including EU calls could increase the amount of freight moving from ports closer to points of origination / delivery, rather than being trucked significant distances in the UK. The benefits of this approach could be reflected via recognising the sea miles of the coastal / short sea journey within UK coastal waters and / or by allocating a share of the cargo carried to the UK. Both approaches are accepted methodologies within environmental assessment (e.g. emissions).
- It seems strange and even perverse that the environmental benefits of modal shift to shipping (and indeed rail) are not factored into the MSRS. For example, there is no reflection of the cost of carbon in the current MSRS. Doing so perhaps on a tonne / KM basis would more firmly support the scheme’s environmental goals.
- The current MSRS road to shipping (or rail) approach does not properly reflect the higher start-up or market entry costs of shipping (or rail). Establishing and maintaining a service on shipping (or rail) is a much greater financial and organisational challenge than for road haulage where the relationship between cost and volume is more linear and infrastructure costs are subsidised by the (largely free) public provision of road capacity.
- The focus on container traffic misses an important potential opportunity in bulk and project cargos, and such cargos should be brought within the scope of the scheme.

Some specific suggestions on operationalising a revised MSRS coastal scheme:

- The UK’s port sector is a competitive and customer orientated one which responds quickly and flexibility to demand signals from Beneficial Cargo Owners (BCOs). Targeting the application of the coastal shipping MSRS towards BCOs may be an effective way of driving change and alignment ‘from the top down’ in supply chains.
- An alternative improved approach to application (as opposed to forcing scheme participants to set up separate companies, etc.) would be for the port to apply a per box subsidy / discount on a ‘back to back’ basis with the MSRS scheme. There are similar mechanisms in European ports for applying ‘green discounts’ on port fees for example.
- Alternatively, a market price benchmarked approach could be adopted whereby awards would be supported by contract obliging BCO to provide auditable evidence of price quotes by coastal ship, rail and road.
- An incentive complexity to be aware of is the impact of restitution charges. These impact the economics of empty box movement and at the very the DfT should consider how these are factored into the MSRS model and potentially into wider thinking about freight operations.
- The existing funding for MSRS has been cut substantially in recent years. If an upgraded coastal shipping scheme was to take a larger share of the existing diminished pie the ‘slices’ of such pie would struggle to be meaningful for any applicant. If we are to be serious about improving the environmental sustainability of freight, then meaningful funding must be restored for modal shift overall.

Comments

- Notes that such a scheme would not be applicable to inland waterways operators unless there was a connection from coast to inland waterway.

10 Other EU modal shift subsidy models

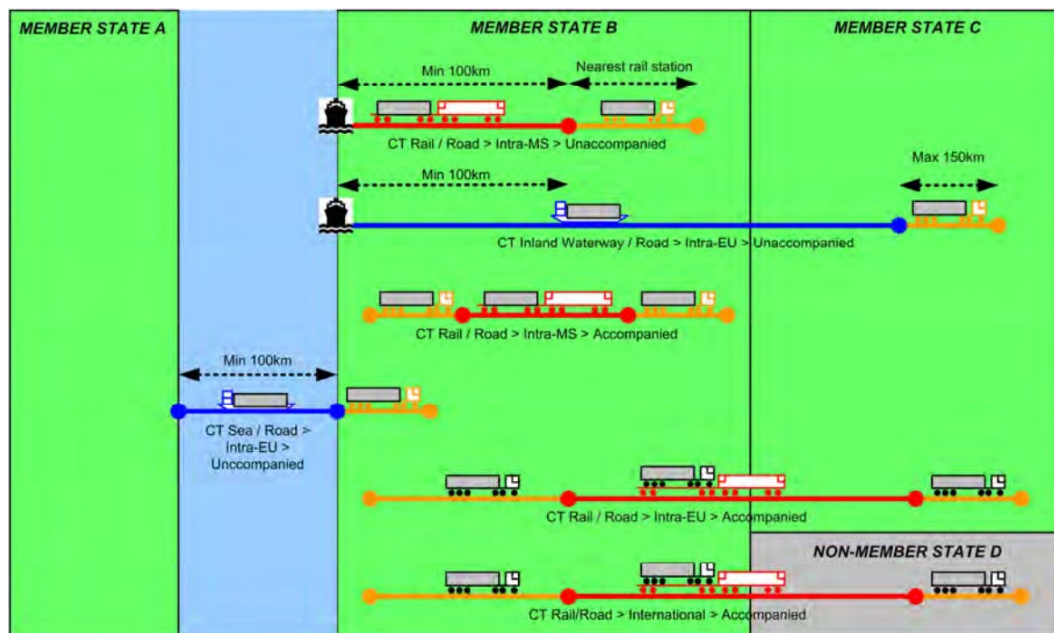
10.1 Introduction

This section draws comparisons with other EU Member States' modal shift subsidy models which achieve the same objectives as MSRS (Intermodal), i.e.:

- Transfer from road to rail;
- Provide support where there is a Financial Need in commercial terms (rail more expensive); and
- Achieve environmental benefits from transfer.

Moving away from road freight transport and shifting towards more environmentally friendly and sustainable freight solutions is a key goal for EU policy. Plans to support Combined Transport (CT) are approached at both a cross-border pan-European and Member State level. CT is defined as intermodal transport with strictly limited road movement, on the initial and/or final leg of the journey, where the major part of the transport is carried out by rail, inland waterway or maritime modes²³.

Figure 16: Selected examples of CT market segments schematic diagram



Key: blue = inland waterway, red = rail, orange = road, black / grey = CT load unit

There are three main CT modal combinations:

- Rail / road;
- Inland waterway / road; and

²³ <https://ec.europa.eu/transport/sites/transport/files/themes/strategies/studies/doc/2015-01-freight-logistics-lot2-combined-transport.pdf>

- Short sea / road.

The share of total CT rail/road is estimated at 15% to 18% of the relevant road freight market. The share taken by CT short sea/road is at 20% of total short sea container traffic and the share of CT inland waterway/road operations amounts to 9% to 11% of total inland waterway traffic.

10.2 The EU rail freight market

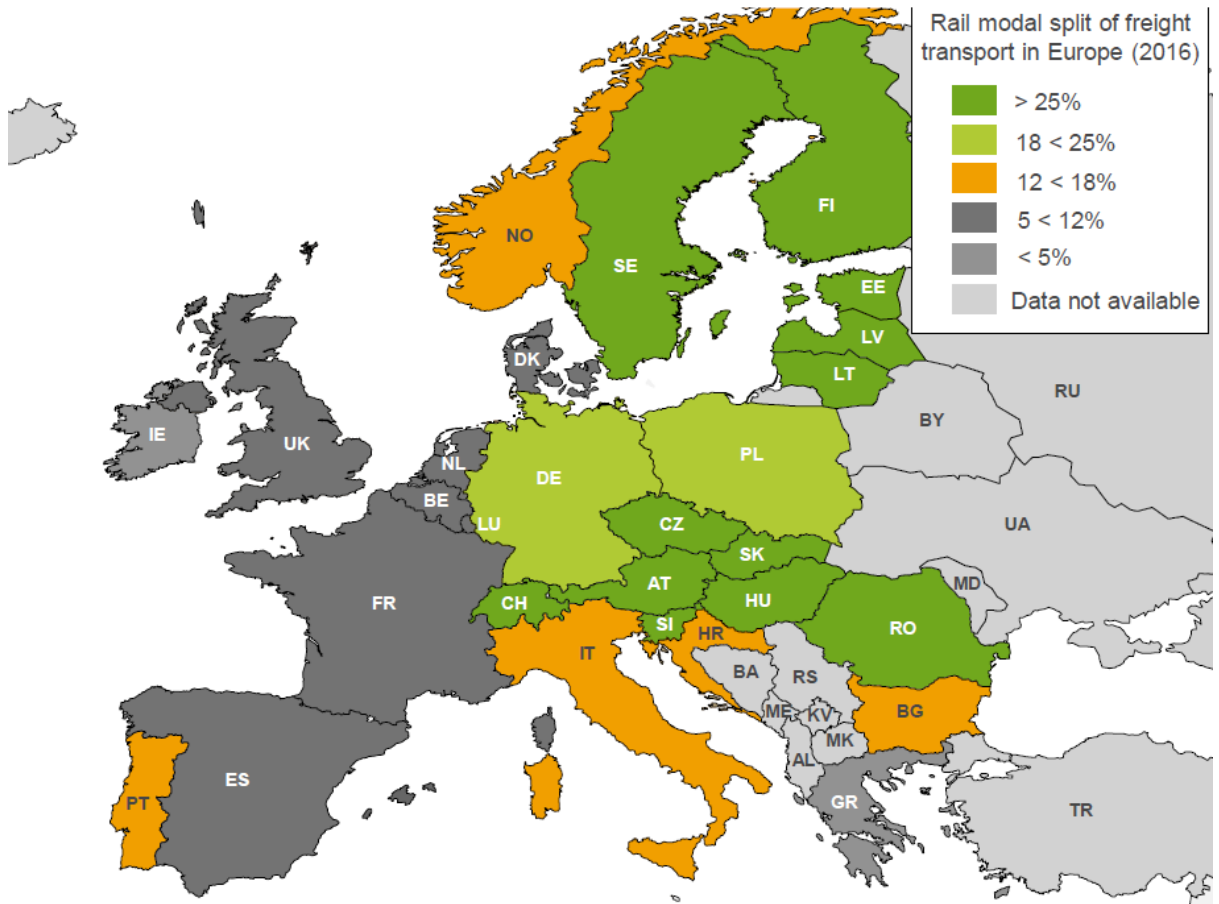
The 7th edition of the Report on Combined Transport in Europe (recently published in January 2019 by the International Union of Railways and BSL Transportation Consultants)²⁴ focuses on rail/road CT activities across Europe. Selected figures showing rail and intermodal transport modal splits in the European freight market are extracted below. These make use of data from the Eurostat (2018) database.

Between 2005 and 2016 the rail transport mode share across Europe has remained relatively stable, ranging between a minimum of 16.9% in 2009 and a maximum of 18.7% in 2011, as has the total amount of goods transported by rail (aside from some fluctuations because of the global financial crisis in 2009) which shows a growth of 1.3% over the 11-year period.

However, as Figure 17 demonstrates, there are significant differences between the rail mode shares between countries (shown in tonne-km) – ranging from a 1% rail share in Ireland and Greece to 65% in Lithuania.

²⁴ International Union of Railways and BSL Transport Consultants (2019) *2018 Report on Combined Transport in Europe* <https://uic.org/spip.php?action=telecharger&arg=2861>

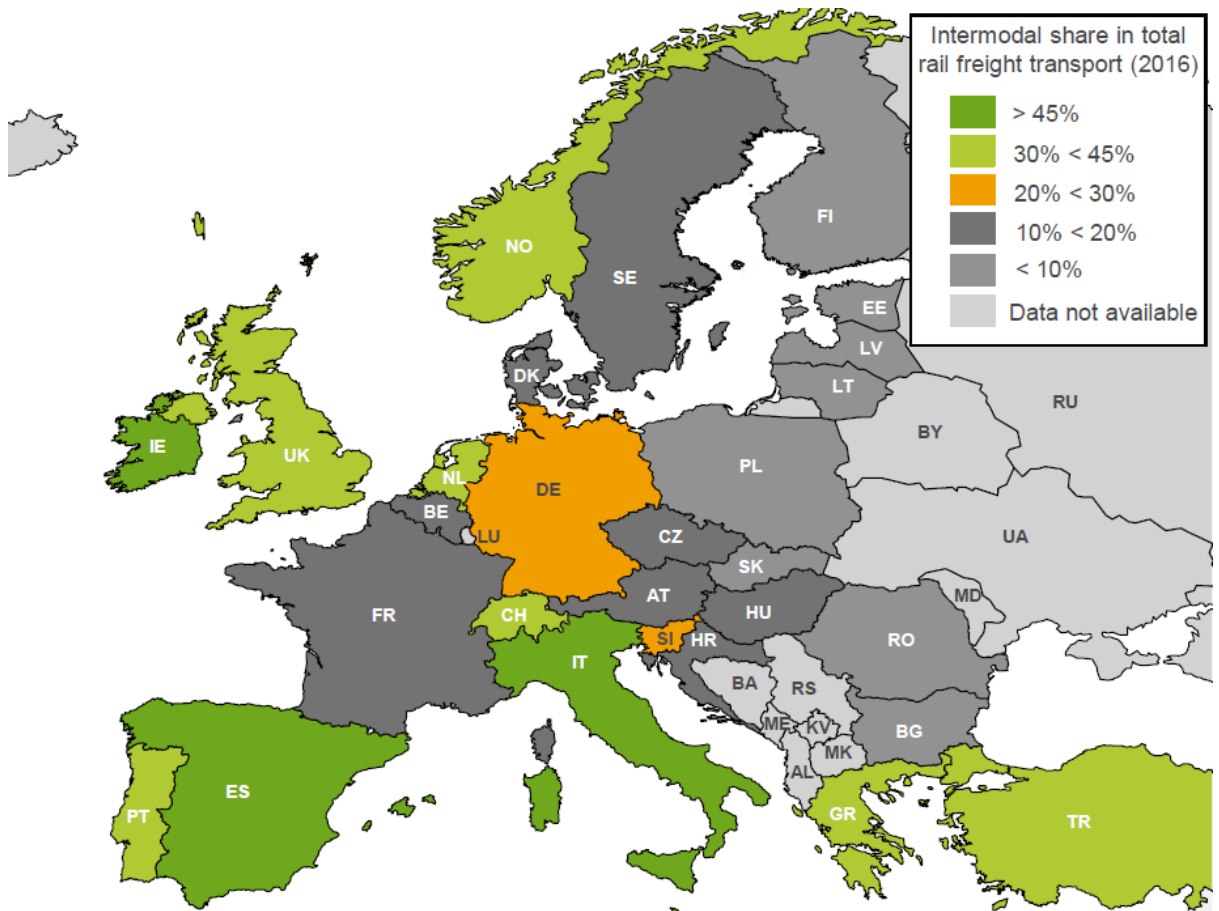
Figure 17: Map of rail modal split of freight transport in Europe by country (% in total inland freight tonne-km) in 2016 (source: Eurostat (2016))



However, over the 2005-16 period the intermodal rail freight sector has experienced a much higher level of growth than rail freight overall – growing at 32.5% (in terms of tonne-km) vs. 1.3% for all rail commodities.

Figure 18 shows that, in many countries, rail transport plays a particularly strong role for intermodal. For example, Ireland or Greece have a comparably small total rail volume, but a high rail mode share for intermodal transport. The significance of intermodal transport is particularly high in Western and Southern Europe, with the exceptions of France and Belgium.

Figure 18: Map of intermodal share of rail freight transport in Europe by country (% in total rail freight tonne-km) in 2016 (source: Eurostat (2016))



10.3 Legislative context

At EU level, the legislative framework directly supporting intermodal transport is provided by the Combined Transport Directive (Council Directive 92/106/EEC) which aims to increase the competitiveness of CT, compared to long distance road freight, by enabling regulatory advantages and incentives. This regulatory instrument is currently undergoing significant review, for the first time since its adoption in 1992, aimed at simplifying the existing rules and make CT more attractive by means of economic incentives. A briefing paper was released by the European Parliamentary Research Service (EPRS) in April 2019 ('Combined Transport Directive Review – getting more goods off EU roads') which provides a summary of the context, existing legislation, changes the proposals would bring, stakeholders' views, and the legislative process.

According to the 'Report on Combined Transport in Europe', proposed changes to the Directive include an emphasis on the need for national support measures for CT, including expanding the currently limited scope for economic support. The proposal says that 'member states should implement additional economic support measures in addition to the existing ones, targeting the various legs of a combined transport operation, [...]. Such measures may include the reduction of certain taxes or transport fees, grants for intermodal load units effectively transported in

combined transport operations, or the partial reimbursement of transshipment costs.’ It also specifies that implementation of support measures must comply with the current European State Aid rules, be coordinated between Member States and the Commission and be reviewed by them on a regular basis. Implementation of the revised directive would provide further stimulation to the national funding landscape for CT.

In 2019 the EU Directorate-General for Mobility and Transport (DG MOVE) re-issued the External Costs Handbook alongside a study on the Internalisation of Transport Externalities²⁵.

Transport activities give rise to effects, such as environmental impacts and accidents, the costs of which are generally not borne by the transport users – these are known as transport externalities. The internalisation of externalities means shifting the burden of cost from outside to inside, under the ‘user pays, polluter pays principle’. This means the price of transport as charged to users should reflect the real costs to society. Thus the internalisation of external costs through taxation, could offer an alternative approach to MSRS grant.

A useful starting point has been a research report for the European Parliament²⁶. This states that ‘Despite the partly negative experience at EU level, some grant schemes applied at national and regional level have been successful. This is the case of Italy’s experience with Ferrobonus and Marebonus to shift goods away from road, which so far have proved to be effective and, though outside the EU, the Swiss approach’. Ferrobonus aims to shift goods from road to rail; Marebonus from road to water; and the ‘partly negative experience’ refers to the EU Marco Polo programme which was discontinued after a 2013 report by the European Court of Auditors assessed it as ineffective.

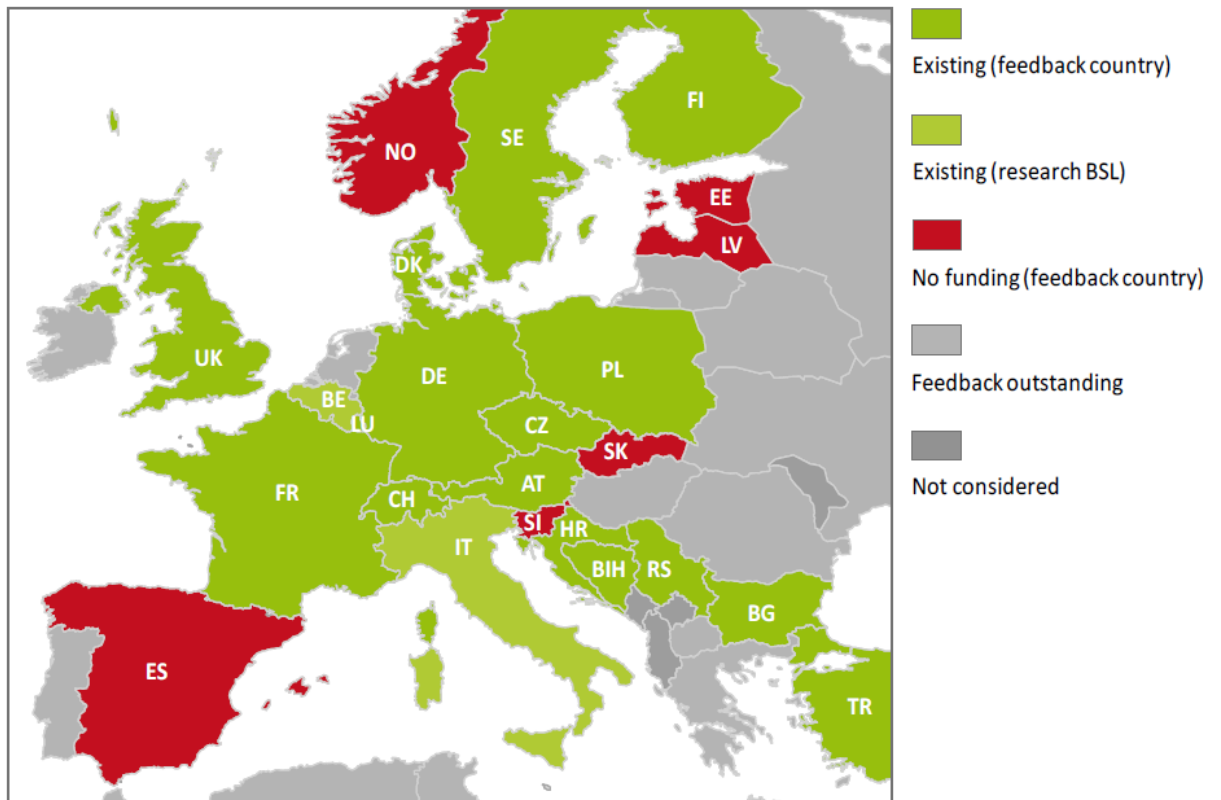
10.4 National support measures for CT

Chapter 4.4 of the 7th edition of the Report on Combined Transport in Europe focuses on providing an overview of current national initiatives to promote CT. This is a complex area and it is challenging to get a complete picture because ‘the current status of combined transport, types of measures, political objectives, funding volumes, responsible bodies and authorities as well as requirements and periods of validity, but also the publications and marketing of the different initiatives, differ significantly’. A research survey was carried out in which 35 countries were contacted and 24 of these responded to provide information on their national CT funding; 18 countries reported current national programmes supporting CT and 6 countries with no support were identified (Estonia, Latvia, Norway, Slovakia, Slovenia and Spain), as shown in Figure 19.

²⁵ https://ec.europa.eu/transport/themes/sustainable-transport/internalisation-transport-external-costs_en

²⁶ Research for TRAN Committee- Modal Shift in European transport: a way forward. TRT and TEPR November 2018

Figure 19: Overview of countries with current national CT funding measures



Source: BSL Transportation analysis, based on feedback of national authorities and BSL market research.

The figure below shows a summary of the existing national CT funding programmes, according to the funding sector. The following funding sectors have been identified:

1. Operation measures (support of operation and traction) with focus on:
 - a. Funding per km
 - b. Support of processes
 - c. Technology support
2. Infrastructure measures with focus on support of:
 - a. Rail track infrastructure
 - b. Terminal infrastructure
3. Support regarding rolling stock (intermodal wagons)
4. Support regarding intermodal loading units (ILUs)
5. Research on CT (support of studies and development activities)
6. Fiscal support (tax exemptions, reduced charges for CT etc.)

As shown in Figure 20, the MSRS scheme falls within the first category of operational measures.

Figure 20: Analysis of existing national CT funding programmes by funding sector (2019) (source: BSL Transportation analysis, national authorities)

National Funding measures or programmes for Combined Transport										
	Operational (Funding per km)	Operational (Processes)	Operational (Technology)	Infra- structure (Rail)	Infra- structure (Terminal)	Wagons	Intermodal loading units	Research	RoLa / Rolling motorway ²⁾	Fiscal support ¹⁾
Austria	x	x	x	x	x	x	x	x	x	x
Belgium	x					x	x			x
Bosnia and Herzegovina	x			x	x					
Bulgaria	x			x	x					
Croatia	x									x
Czech Republic			x		x		x			
Denmark	x									
Finland	x								x	x
France	x	x	x	x	x		x	x	x	
Germany		x	x	x	x		x	x		
Italy	x								x	
Luxembourg	x									
Poland				x		x	x			
Serbia			x		x	x	x			
Sweden	x									
Switzerland	x	x		x	x				x	x
Turkey		x		x	x					x
United Kingdom	x								x	

A seminal study in the development of the CT Directive was carried out for the European Commission and published in 2015²⁷. This provides comprehensive insight into the economic and legal state of CT operations in the European Union (EU) including all CT sectors and combinations. Having established an extensive statistical database on CT operations, the study displays the industry economics with respect to business models, cost structures and socioeconomic benefits. One of its key elements is examination of the wide range of MS national incentives applied to promote use of CT, aimed at identifying best practice solutions and highlighting less successful examples. Based on its findings, the study provides recommendations for how the regulatory framework may be enhanced to support CT at both an EU and MS level.

Chapter 5 of the Analysis of the EU Combined Transport (2015) is dedicated to examination of CT support programmes. This is founded on a comprehensive survey among all MS to collect data and analyse respective incentive schemes and case studies of the situations in Switzerland and the United States. The following types of CT incentives implemented in EU MS are examined and shown in the summary table below:

- Exemption from road vehicle tax;
- Exemption from road infrastructure charges;
- Derogation from Directive 96/53/EC (HGV 40 tonnes weight limit);
- Exemptions from driving bans for road vehicles;
- Reduced rail network access charges;
- Aids (direct grants) for CT operations;

²⁷ Analysis of the EU Combined Transport (Contract No FV355/2012/MOVE/D1/ETU/SI2.659386)

- Aid (direct grants) for investments in CT terminal infrastructure;
- Aid for investments in CT equipment; and
- Measures specifically targeted at accompanied CT rail/road services.

Figure 21: Analysis of existing national CT funding programmes by funding sector (2015)

Member State	Reimbursement vehicle tax	Exemption vehicle tax	Exemption road toll	Derogation from Dir. 96/53/EC	Exemption from road driving bans	Reduced rail network access charge	Direct grants for			Measures for accompanied CT
							CT operations	CT terminal investment	CT equipment investment	
Austria	X 1)	X		X	X		X	X		X
Belgium							X 2)	X 3)		
Bulgaria			X			X				
Croatia	X 1)				x					
Cyprus	X 4)									
Czech Republic	X 5)	X			X	X		X	X 2)	
Denmark						X		X		
Estonia	X									
Finland	X 6)									
France	X 7)						X	X	X 2)	
Germany	X 1)	X		X	X			X		
Greece	X									
Hungary	X 9)			X			X 2)			
Ireland										
Italy	X				X		X			
Latvia	X 10)						X			
Lithuania										
Luxembourg	X 17)									
Malta										
Netherlands	X 10)							X		
Poland	X 1)					X		X		
Portugal				X						
Romania	11)									
Slovakia	X 12)			X 13)	X		X 14)	X	X 14)	
Slovenia				X	X		X 15)		X 15)	
Spain				X 16)			X 2)			
Sweden	X 1)									
United Kingdom							X	X		

Notes:

- 1) Tax can be reimbursed up to 100%.
- 2) Support scheme expired.
- 3) Aids granted for individual measures
- 4) Max 80% of tax paid
- 5) Max 90% of tax paid
- 6) € 50 refund per rail journey
- 7) Max 75% of axle tax paid
- 8) *deleted*
- 9) Max 20% of tax paid
- 10) Reimbursement in proportion of days spent in CT on rail (in LV), or on rail or water (in NL)
- 11) Vehicle tax reimbursement scheme foreseen but not implemented due to overriding principle of state debt reduction.
- 12) Max 50% of tax paid
- 13) 44t for all types of CT load units. Further vehicles carrying 45' containers may have 15 cm more total length.
- 14) Incentives legally prepared but not implemented yet due to lack of budget according to Ministry of Finance.
- 15) Incentive legally prepared but not implemented yet due to lack of budget since 2003.
- 16) 44t/42t increased gross weight and increased max height of 4.5m.
- 17) €3 per initial or final leg of CT operations by rail or inland waterway.

10.5 Recommended support measures for CT

The Analysis of the EU Combined Transport (2015) concludes with recommendations on CT support programmes. The study conclusions focus on the measures set out in Table 51. Interestingly the study does not recommend direct

grants for CT operations – equivalent to the MSRS scheme – because they do not encourage viable new services and have the potential to distort competition.

Table 51: Recommended support measures for CT

Measure	Good Practice	Application Geography	Pros	Cons
Direct grant aids for CT operations	No	All MS	Low administration costs for both applicants and authorities when T&Cs and documentation are standardised and the requested evidence is minimised	Temporary aid often does not lead to viability of CT services, so not considered good value for money Permanent aid does not incentivise enhancements of service efficiency Potentially distorts the competition between CT service providers
Direct grants for construction of CT terminal infrastructure	Yes	All MS	Enables prices to be reduced for both terminal handling and terminal-to-terminal transport and has a long-lasting effect of reducing the costs of CT supply chains If the support programme requires investors guarantee non-discriminatory access to the terminal, aid fosters greater competition between users of the facility which strengthens the entire industry	Significant effort is required for the assessment and administration and applicants must submit comprehensive documentation Risk of a misallocation of funds - market changes can evaporate market potentials and the CT terminal may not match the planned transshipment volumes, or the CT terminal may be operated inefficiently
Increased gross weight of 44 tonnes	Yes	Depends on the specific legal and economic situation in the MS	Fairly cost-efficient administration for approval process and licensing	Only relevant in MS which have a weight limit of 40 tonnes for national road haulage Additional costs for checks of vehicles by authorities

Measure	Good Practice	Application Geography	Pros	Cons
Reduction of rail infrastructure access charges	Yes	Depends on the specific legal and economic situation in the MS	Measure is easy to implement and administer after approval by rail regulator	Only stimulates rail/road CT if the reduction in charges is sufficiently large to allow CT providers to offer more cost-competitive services

These measures all reduce the total costs of CT operations, thereby compensating for the disadvantages inherent to CT such as transshipment costs. They are believed to deliver strong growth effects for CT through enhancing the competitiveness of service offerings, although some are considered more sustainable than others and the value for money is complex to assess.

10.6 Subsidy model case studies

10.6.1 Belgium

The modal share for freight transport by rail in Belgium is much lower than the EU average, whereas the modal shift for inland waterways is around three times the EU average.

Belgium offers two subsidy systems which aim to maintain or increase the share of rail in the transport of goods, one of which is applicable to CT. This has been available since 2005 and on 6 June 2017 the European Commission approved the continuation of ‘Aide fédérale au transport combiné et trafic diffus’ for the 2017-2020 period. The beneficiaries of this measure are the CT operators transporting goods by rail and they are required to pass this on in the form of reduced-price services for their customers.

Aid relates to costs incurred by the CT operator for train operation, infrastructure access, wagon, terminal and administration. Three measures are supported: aids for (1) and (2) refer to existing and new volumes of domestic CT and are composed of a fixed amount per load unit (for handling) and an amount related to load unit – kilometres moved. Aid for (3) is composed of fixed amounts per train and every load unit carried (max €1,000) and limited for to a maximum of three years.

More recently, following the approval of the rail freight subsidy in the Netherlands (July 2019), road lobby group Febetra and the Belgian Rail Freight Forum are lobbying for a subsidy of €40 per container to compensate for the additional cost of sending goods by rail instead of road. This cost differential is in addition to the investments they believed were needed in specific cargo handling equipment.

Belgium also operates a ‘support scheme for intermodal transport of containers on waterway in the Brussels Region for the period 2016-2020’. The scheme offers a direct grant for each transhipped container of €17.5/TEU to a maximum of 30% of the transport costs.

A scheme also operates for the ‘scheduled services of container transport by inland waterways’. These apply only to operators of a regular line of fluvial container transport from a Walloon terminal connected to the waterway, with the amount of the subsidy being: 12 euros for 20 foot containers, 20 euros for 30 foot containers, 36 euros for 40 foot containers and 40 euros for 45 foot containers. The subsidy is limited to 30% of the operating costs of the regular line for a small or medium-sized company and 20% for a large company.

10.6.2 Germany

Germany has many forms of subsidy intended towards removing HGVs from the highway network.

Since 1998, Germany has offered direct grant funding in support of CT terminal infrastructure development (current aid term 2017-2021) through the Directive on the Promotion of Transshipment Facilities for Combined Transport (‘Richtlinie zur Förderung von Umschlaganlagen des Kombinierten Verkehrs’). As part of this programme investments by non-federal companies in the construction, upgrading or expansion of CT handling facilities will be financially supported and, of the eligible capital expenditures, up to 80% will be paid as a non-repayable grant.

With respect to competition between CT inland waterway/road services and road transport, subsidies are particularly important for the feasibility of lower-density and shorter distance CT services which might not be feasible without them. Between 1998 and 2011, some 57 inland terminal projects with waterway access were supported. In total terminal operators received grants of €320m. With savings of €22 per TEU arising from inland terminal investment subsidies in Germany, an absence of such support would mean a cost increase of approximately 10%.

In December 2018, the European Commission approved a significant new German aid scheme to reduce track access charges to promote shift of freight transport from road to rail. Financed by German federal budget funds, from 1 July 2018 to 30 June 2023, €350 million per year will be available under the scheme to compensate rail freight operators for about 40-45% of their track access charges. Rail freight operators benefiting from the scheme are expected to inform their customers of the aid and must pass on the benefits to them through lower prices.

Commissioner Margrethe Vestager in charge of competition policy, said: *‘Promoting the shift of freight transport from road to rail is one of many measures that Europe needs to take to help improve reduce our environmental footprint. The German aid scheme does exactly that – it supports this shift, ensures benefits are passed to customers and will contribute to meeting the EU’s environmental and transport objectives, without unduly distorting competition’.*

The combined mode share of rail and inland waterway freight transport in Germany is currently slightly higher than the EU average.

In addition, the German Federal Ministry of Transport and Digital Infrastructure ('Bundesministerium für Verkehr und digitale Infrastruktur', BMVI) is running the 'Digitalisierung intermodaler Lieferketten – KV4-0' ('Digitization of intermodal supply chains – KV4-0') programme from 2017 to 2020. They are part-funding the €5.87m project through their mFund research initiative. The overall objective of the project is to make CT logistics processes more transparent across the entire intermodal transport chain, including across national borders, with the help of a newly developed common data hub and standardized interfaces.

10.6.3 Italy

Italy's Ferrobonus received 'no objection' on State Aid grounds in a communication from the European Commission dated 24 November 2016²⁸. It takes the form of a subsidy set at a level that reflects the savings in external costs that rail transport allows compared to road. The scheme aims to strengthen the intermodal transport chain in Italy and develop modal shift of freight traffic from road to rail; with the ultimate objective of reducing the environmental health and social impact of road traffic by promoting the development of combined transport and optimising in Italy.

The Scheme may be extended until 2020, a duration of five years. The initial budget was set at €20 million/year for three years. The subsidy paid is €2.50 per train km.

It is reported in Italy that around 100 undertakings could benefit from the incentive. These fall into two categories:

- Users of railway services, these being companies that order block trains²⁹ from railway undertakings through railway service agreements for intermodal or transhipped rail transport services; and
- Multi-modal transport operators; legal persons which conclude a multimodal transport agreement on their own behalf.

Other eligibility criteria include:

- That block trains commissioned run with electric traction; and
- Where the beneficiary is a multi-modal operator, that this operator allocates at least 50% of the subsidy to its customers (the users of rail transport services).

Average train payload is estimated at 382 tonnes and average truck payload at 17.1 tonnes; and the external costs differential is estimated at € 9.42/train km³⁰. Economic analysis³¹ has reported that the aid amount will fall well below 30% of the total cost of rail transport. The guidelines specify that:

²⁸ EC Communication C (2016) 7676 final. Subject SA.44627- Italy- 'Ferrobonus' incentive for rail transport

²⁹ Means a train which entire capacity has been purchased by a single client

³⁰ See <http://ec.europa.eu/transport/themes/sustainable/studies/doc/2014-handbook-external-costs-transport.pdf>

³¹ Price Waterhouse Coopers (PWC) Report. Available at: www.mit.gov.it

- For each beneficiary aid is limited to 30% of the average cost of rail transport nationwide including ancillary expenses such as inspection, train assembly and disassembly and operation. The granting authority will verify compliance with this limit.
- The aid will be disbursed based on an annual reporting of train km achieved by the applicant during the reference period. Copies of contracts are to be provided as well as evidence of the methodology used to demonstrate discounts paid to customers.
- Cumulation with other EU State or regional grants granted on the basis of external cost savings (as excise duty exemption on electricity consumption) is possible provided the cumulated amounts do not exceed 50% of the eligible costs and 30% of the total transport cost.

A similar scheme ‘Marebonus’ applied to short sea shipping received no objection on State aid grounds in a communication of 19 December 2016.³² The Marebonus incentive is dedicated to ship owners proposing three-year projects for the development of new Ro-Ro and Ro-Pax maritime services or projects for the enhancement of services on existing routes. Over €130 million was distributed between 2016 and 2018 from this fund. It is estimated that as a result investment in hold capacity will create an increase of 104,800 additional linear meters per week (+7.5%) allowing removal of 190,000 trucks per year, with an annual saving of €45.72 million from negative externalities.

10.6.4 Netherlands

In July 2019 the European Commission approved €70 million of state aid for boosting rail freight in the Netherlands. The funds are available from 2019 to 2023 and are open to all railway companies operating in the Netherlands that have an access agreement with the rail infrastructure manager ProRail. The package will reduce track access charges to bring them into line with those in Germany, with a higher rate of subsidy available for intermodal and wagonload freight. The initiative is expected to increase Dutch rail freight from 41.5 million tonnes in 2018 to between 54 million and 61 million tonnes by 2030.

In return for aid, operators must agree to the following four actions:

- Participate in pilot schemes to improve port logistics efficiency;
- Participate in research into the cause of vibration from freight trains and study cost-effective ways to reduce vibration;
- Use modern wagons and locomotives equipped with technology to reduce noise and vibration and sensors to monitor equipment status – for example, the freight fleet should be 90% low noise within five years compared with around 50% today; and
- Save energy and experiment with clean fuels.

³² C (2016) 8459 final. State Aid SA 44628 (2016/N) Italy ‘Marebonus’ scheme to incentivise the highways of the Sea.

The Netherlands also offers a subsidy scheme for development of public inland terminals ('Subsidieregeling Openbare Inland Terminals') which was introduced in 2002. At the request of a transshipment company, subsidy may be granted for initial or expansion investments of a transshipment terminal and for investments in infrastructure as well as in fixed and mobile equipment required for the transshipment of goods. The subsidy may only be granted if:

- The transshipment company is a company primarily focused on making a profit;
- It has been demonstrated that the continuity of the transshipment company is sufficiently guaranteed; and
- At least 50% of the total project costs are financed by private legal persons.

The subsidy for a project can amount to a maximum of 50% of the eligible parts of the project, up to a maximum of 25% of the total project costs, or up to a maximum of €2,268,901 per project.

10.6.5 Norway

There has been a strong political objective to transfer freight from road to rail in Norway. However, this has been challenged recently, mostly because of technological progress. Environmental benefits are seen as the most uncertain of benefits due to continuous improvements in combustion technology and other modes such as hybrid and electric.

And, in addition, 'road trains' of up to 25.25m length can drive on more and more Norwegian roads. The Norwegian government³³ has developed a potential scheme to subsidize freight transport by rail but this is not implemented yet. The scheme has been approved by the European Union Agency for Railways (ERA)³⁴

The National transport plan³⁵ contains investments targeting this objective explicitly but does not specify a specific subsidy.

10.6.6 Switzerland

The Alpine Initiative was approved by Swiss voters in 1994. This principle has been enshrined in the Federal Constitution, to transfer transit freight traffic through the Alps from road to rail. The Federal Council and Parliament ensured that this resolution could be implemented within a market economy framework and without discrimination against foreign hauliers.

³³ The departments involved were the Norwegian DfT (Ministry of Transport) and the Norwegian Ministry of Trade, Industries and Fisheries. Implementing bodies are Norwegian Railways and Bane NOR, the Norwegian infrastructure manager

³⁴ <https://www.era.europa.eu/>

³⁵ <https://www.regjeringen.no/no/aktuelt/mer-gods-fra-vei-til-sjo-og-bane/id2575336/>
(Norwegian only)

The Goods Traffic Transfer Act provides that the number of journeys by domestic and foreign lorries and semi-trailers through the Swiss Alps should be reduced from 1.4 million in 2000 to 650,000 per year.

This can be regarded as a ‘mixed instrument’ approach – various instruments have been approved and implemented. These include infrastructure works to accommodate optimal rail freight gauge through alpine tunnels, liberalising the rail freight market and the following additional policy measures:

- Distance-related heavy goods vehicle charge (HGVC): Since the beginning of 2001, lorries on all Swiss roads pay a distance-, weight- and emissions-related charge. Two thirds of the revenues from the LSVa are allocated to the Rail Infrastructure Fund (RIF), from which the NRLA is being financed, among other things.
- Land Transport Agreement between Switzerland and the EU: This secures the Swiss modal shift policy vis-à-vis Europe; the EU recognises Swiss goals and instruments, in particular the HGVC.
- Supporting measures: Operating subsidies and investment grants for unaccompanied combined transport and the Rolling Highway support and strengthen the modal shift.

The FOT implements the principle enshrined in the Federal Constitution of transferring transalpine freight from road to rail. The framework conditions are intended to enable sustainable development of domestic, import and export traffic. The railways play an important role in carrying freight: for transport through the Alps they have a market share of about 70%. The market share of rail in domestic, import and export traffic is about a quarter.

The FOT establishes framework conditions for the sustainable development of freight transport and efficient collaboration between all modes of transport. One of the tools for this is the ‘Konzept für den Gütertransport auf der Schiene’ (Plan for freight transport by rail, in German). The Confederation also participates, via investment credits, in the construction, extension and renewal of suitable freight facilities such as feeder tracks and transshipment terminals for combined transport and ensures non-discriminatory access to these facilities. The Confederation is also able to award investment grants for technical innovations in rail freight transport.

Using the ‘Network usage concept’ and ‘Network usage plan’, the Confederation also ensures that there are attractive rights (train paths) for freight traffic on the rail network, and that it is not displaced by the expansion of passenger traffic.

Favourable framework conditions should make rail freight services economically viable. Accordingly, the operating subsidies are time-limited: for single wagonload traffic and services in non-transalpine combined transport, they are limited to the end of 2018; for transalpine combined transport to 2023; and for the Confederation’s participation in the Cantons’ orders (freight transport by narrow-gauge railways) to 2027.

11 Recommendations

11.1 Introduction

This section makes recommendations to changes to the existing MSRS scheme, and proposals on the potential coastal shipping scheme, drawing on feedback from stakeholders, the views of experts within Arup, AECOM and PCLP and discussions with the DfT. These are summarised in Table 52.

Table 52: Summary of recommendations

Scheme	Recommendation	Time horizon
Existing rail	Retain MSRS scheme subject to enhancements	Less than 1 year
Existing rail	Programme of communications explaining the MSRS scheme	Less than 1 year
Existing rail	Review of application process	1 to 3 years
Existing rail	Review of zones and nodes	1 to 3 years
Existing rail	Consider how to better accommodate mix of box sizes	1 to 3 years
Existing rail	Consider how to more effectively incentivise new flows	5+ years
Potential coastal shipping	Introduce MSRS-style scheme for coastal shipping subject to close monitoring	1 to 3 years
Potential coastal shipping	Provide ringfenced, additional, budget for coastal shipping scheme	1 to 3 years
Potential coastal shipping	Ensure review of zones and nodes includes zones problematic for coastal shipping scheme	1 to 3 years
Potential coastal shipping	Consider appropriateness of local distribution adjustments for coastal shipping	1 to 3 years
Potential coastal shipping	Implement time limit consistent with rail scheme to encourage development of new flows	1 to 3 years
Potential coastal shipping	Consider approach to capturing environmental externalities and approach to trade-off between rail and coastal shipping benefits	1 to 3 years

Our overarching recommendation is that the scheme should be retained, subject to relatively minor amendments to enhance its effectiveness.

11.2 Changes to the MSRS schemes

In this section we consider short, medium- and longer-term recommendations in turn.

11.2.1 Short term interventions (less than 1 year)

In the short term, the DfT might want to consider a programme of communications explaining the MSRS scheme, its benefits, and how to navigate

the application process. This should help to allay the concerns of occasional applicants that the process will be overly complex and time consuming.

11.2.2 Medium term reviews (1 to 3 years)

Linked with the short-term recommendations, the DfT could consider commissioning a review of the application process and the webpages used by applicants. This could identify any elements in the process which might be unnecessarily complicated with scope for simplification.

Before the next update to MSRS, the DfT should consider commissioning a detailed review of the nodes and zone structure used in the models, an improvement proposed by several operators. This would provide an opportunity to better reflect currently operational container ports and terminals and could facilitate the capturing of demand for flows within large zones which cannot currently apply for funding, for example the east-west flow within Zone 6. Similarly, Zone 8 could benefit from a split between the east and west coasts. The review could also correct for issues such as the port at Garston in Zone 11 not being able to handle containers.

There may be some value in exploring how the scheme could better reflect the mix of 20- and 40-foot boxes, although no obvious solutions to this issue can be identified at present. One stakeholder comment was for the incentivisation to adopt optimal domestic intermodal platforms – but the small volumes preclude a launch of a wagon in this area.

11.2.3 Longer term structural changes (5+ years)

There was some debate between stakeholders on the topic of preventing specific flows from being subsidised in perpetuity – i.e. by ensuring that operators do not reapply for the same flow once the three-year limit has been reached. A potentially workable solution could be for the scheme to prohibit consecutive applications for the same flow (assuming the award was for the full length of the current funding round), even if a different operator makes the second application. This should help ensure that the focus of the schemes is on mode shift and encouraging innovation. Ideally this stipulation should be made consistent between the MSRS and WFG / potential future coastal shipping scheme, and the same time limits should apply to both. Although five years could be a more realistic limit, the scope to increase this will be limited by state aid guidance.

11.2.4 Potential changes not recommended for implementation

The primary change not recommended for implementation relates to the introduction of corridor-based schemes. These would add complexity and administrative burden to the process in that, for longer flows, applications would potentially have to be made for multiple corridors. It is also unclear how such a scheme would be administered where more than one potential routing existed. The certainty and simplicity provided by the standard maximum grant rates between pairs of zones would be lost, and the time needed by DfT to evaluate applications could increase significantly.

We would also not recommend the extension of the MSRS scheme to cover other commodities, as suggested by some stakeholders. This would also require a departure from the simple matrix of standard grant rates. There could however be value in considering whether the MSRS (Bulk and Waterways) is sufficiently broad in scope to cover the full range of possible commodities for which there could be environmental and externality benefits in switching from road to other modes.

We do not consider start-up costs to be significant enough issue to warrant further consideration, in light of the limited number of references by stakeholders and the reality that most equipment can be leased, thus lowering possible barriers to entry (although access to terminals could still be an issue). If the DfT believed that there was a case for subsidising start-up costs, introducing an equivalent to the Freight Facilities Grants (FFGs) offered by Welsh Government and Transport Scotland would seem more appropriate.

We consider that the scheme considers environmental benefits at a sufficient level of detail and would not recommend introducing further complexity in this regard. Although not visible to grant applicants, the process by which the Mode Shift Benefit Values are calculated is comprehensive:

- For road traffic removed, this considers the benefits of decongestion (removal of lorries reduces congestion for other vehicles), environmental (impacts on air quality and greenhouse emissions), taxation loss, and a few other such as accidents, noise, infrastructure.
- For new rail traffic, this considers the environmental impact of the additional freight trains, the impact from additional Noise and the change in taxation revenue.
- The Benefit Values are then the net of these (road freight benefits – minus rail freight dis-benefits).

Again, this was an issue raised only by a very limited number of stakeholders.

11.3 Potential coastal shipping scheme

In considering stakeholder suggestions for a proposed coastal shipping scheme one has to be mindful of:

- The overall aim of introducing consistency with the MSRS for rail; and
- The specific State Aid guidelines which apply for coastal shipping.

The DfT's objective in exploring the scope for a MSRS-style scheme for coastal shipping is to provide consistency with the approach adopted in the current MSRS rail scheme, an intrinsic part of which is the zoning structure and availability of standard grant rates.

Commission communication C (2004) 43 sets out the State Aid guidelines which apply for coastal shipping. It includes a series of stipulations on short sea shipping, the most relevant of which include:

- the aid must not exceed three years in duration and its purpose must be to finance a shipping service connecting ports situated in the territory of the Member States;
- the service must be of such a kind as to permit transport (of cargo essentially) by road to be carried out wholly or partly by sea, without diverting maritime transport in a way which is contrary to the common interest;
- the purpose of the aid must be to cover, either up to 30% of the operational costs of the service in question (4), or to finance the purchase of trans-shipment equipment to supply the planned service, up to a level of 10 % in such investment; and
- the service which is the subject of the project must be of a kind to be commercially viable after the period in which it is eligible for public funding.

Cumulation rules also have some relevance to way in which the grants are awarded.

11.3.1 Recommendations

We would recommend the introduction of an MSRS-style scheme for coastal shipping as a means to provide a simpler alternative for the transport of intermodal freight by water. Despite some concerns regarding the feasibility of extending MSRS to coastal shipping, this view was not held by all stakeholders and should not necessarily preclude the scheme's introduction. Assuming a coastal shipping scheme is introduced, the DfT should continually review its operation in the early years in order to test the assumed costs, grant rates and process.

The MSRS coastal shipping scheme should be provided with its own budget which would be additional to the budget for the existing rail scheme. However, for consistency with the MSRS for Bulk and Waterways, the MSRS (Intermodal) rail scheme could support more efficient outcomes if a requirement were added which specified that the rail grant would not be paid if coastal shipping offered a better alternative than road transport. The definition of 'better' could be clarified to include cost considerations as well as feasibility.

The same zoning structure should apply as for the MSRS (Intermodal) rail scheme, subject to the review of the zones and nodes recommended in section 11.2. The division of zone 8 (Central Scotland) to allow the specific treatment of east and west coast shipping would be a key priority.

There may also be some value in re-examining the road distribution adjustments applied to reflect the final leg of the journey, to ensure this was as an accurate a reflection as possible of the inland movements made in reality.

The grant should continue to be awarded on a time-limited basis to encourage the development of new services. Ideally the length of award should be made consistent with the MSRS rail schemes, for which some stakeholders suggested a five-year limit. The scope to extend beyond the current three-year limit will depend on the applicability of current state aid guidelines.

Although not a topic raised by stakeholders, the mode shift benefit values used in the coastal shipping model should be adjusted to account for the emissions impact of the ships which operate in place of the lorries diverted from the roads. This would also necessitate a revision of how the rail and coastal shipping grant rates are combined, where both rail and coastal shipping are eligible to receive grant payments. Currently the coastal shipping model calculates a combined matrix of rates by comparing the coastal shipping and rail financial need values after both have been capped by the same environmental benefit values. Were a revision to the environmental benefits for shipping to find lower net benefits when compared with rail, this would increase the likelihood that the overall rate would be capped by an even lower coastal shipping rate, in spite of its smaller environmental benefit. A more effective approach could be to compare the ratio of benefits to financial need to determine which mode the rate should be based on for each zone pair.

11.3.2 Potential changes not recommended for implementation

The overarching suggestions made by several stakeholders of dispensing with the zonal matrix and introducing a simpler system focused on the most viable flows would be entirely inconsistent with the core requirement to introduce a consistent approach between the rail and coastal shipping modes. We do not therefore recommend pursuing this option.

For similar reasons, to extend the MSRS coastal shipping scheme to cover other commodities in addition to intermodal would not be consistent with the principles of ease of application and consistency with the MSRS (Intermodal) scheme. A review of the WFG could be undertaken to address the low take-up of the scheme and minimise inconsistencies with the MSRS scheme where achievable within the relevant state aid guidelines.

We do not recommend that the coastal shipping model should be extended to consider international flows – this would introduce funding for non-GB flows where there is no road alternative and consequently no mode shift benefit to be gained. However, this should not preclude an individual ship serving both a supported intra-GB flow a linked international leg.

Appendix A

Engagement packs



Department for Transport

Grant recipients
(By email)

Catharine Parton
HEAD OF FREIGHT GRANTS
DEPARTMENT FOR TRANSPORT
3/28
GREAT MINSTER HOUSE
33 HORSEFERRY ROAD
LONDON
SW1P 4DR
DIRECT LINE:
DIVISIONAL ENQUIRIES: 07825 011561
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Web Site: www.dft.gov.uk

10 June 2019

Dear Grantee,

Review of the future of freight grants

I am writing to let you know that, as part of the Department's review of the future of freight grants beyond March 2020, we have commissioned research from Ove Arup & Partners Ltd (Arup).

The research will:

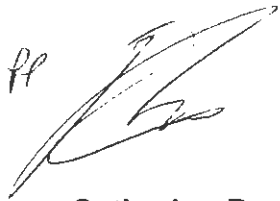
- collect evidence of the marginal costs of moving intermodal freight by rail in comparison with road and identify changes to the "financial need" for grants since the modelling work on this was done for the current MSRS (Intermodal) rail scheme
- collect evidence for Great Britain on the costs of intermodal freight by coastal shipping and use this information and the road comparison to validate and update the cost information in the generic models developed in the Options for Changes to Revenue Support Freight Grant Schemes research. It will also estimate the potential overall cost of an MSRS style intermodal scheme.
- consider the financial need for MSRS Bulk and Waterways and Waterborne Freight Grant
- evaluate the existing schemes' effectiveness in maximising the environmental and congestion benefits of modal shift, including an international comparison with similar EU member states' modal shift subsidy models.
- assess the potential impact on the freight industry of grant funding ending in March 2020 or of it being phased out over 3 years
- make recommendations for any changes to schemes beyond March 2020 in order to maximise the environmental and congestion benefits of modal shift, including suggesting alternatives and considering ideas for future alternatives as suggested by stakeholders.

I hope you will be able to provide input to the research. A member of the Arup team (which also includes AECOM, PCLP and Transport Economics Limited) will be contacting you from the week starting 10 June with a checklist of questions and information requirements. Your prompt response would be appreciated. Any data you provide will be treated in strict confidence and will only be used for this assessment and not for any other purpose without your prior agreement. This will also provide an opportunity for grantees to comment on the effectiveness of current grant schemes.

Arup will be arranging a workshop later in the project to present an interim determination of maximum grant rates and as a further opportunity for stakeholders to contribute comments on the current schemes.

In the meantime, please let me know if you have any questions or concerns about the research or wish to nominate an alternative contact.

Yours sincerely,

A handwritten signature in black ink, appearing to be 'Catharine Parton', written in a cursive style. To the left of the signature, there are two small, handwritten initials 'PP'.

Catharine Parton

Spreadsheet for submission of cost data

Costs should be provided in 2019 £ unless stated

Legend

Heading 3

END

1 Costs

Truck type	Type 1	Type 2	Type 3	Type 4	Type 5
Description					

1.1 General information

Item	Units	Type 1	Type 2	Type 3	Type 4	Type 5
Annual distance	km					
Life - tractor	Years					
Life - trailer	Years					
Life - tractor	km					
Replacement cost - tractor	£					
Replacement cost - trailer	£					
Fuel consumption	km per gallon					
Annual fuel used	litres					
Fuel price	£ per litre					

1.2 Standing costs

Item	Units	Type 1	Type 2	Type 3	Type 4	Type 5
VED and RUL	£ per km					
Insurance	£ per km					
Depreciation - tractor	£ per km					
Depreciation - trailer	£ per km					
Total	£ per km	-	-	-	-	-

1.3 Running costs

Item	Units	Type 1	Type 2	Type 3	Type 4	Type 5
Fuel	£ per km					
Tyres - tractor	£ per km					
Tyres - trailer	£ per km					
Maintenance - tractor	£ per km					
Maintenance - trailer	£ per km					
Total	£ per km	-	-	-	-	-

1.4 Total vehicle cost

Item	Units	Type 1	Type 2	Type 3	Type 4	Type 5
Employment cost of driver	£ per km					
Cost of vehicle and driver	£ per km	-	-	-	-	-

1.5 Overheads

Item	Units	Type 1	Type 2	Type 3	Type 4	Type 5
Transport	£ per km					
Business	£ per km					
Total	£ per km	-	-	-	-	-

1.6 Total cost

Item	Units	Type 1	Type 2	Type 3	Type 4	Type 5
Total cost	£ per km	-	-	-	-	-

END

1 Volumes

1.1 Train configurations

Please indicate the configurations of the trains you operate. As examples, here are the train configurations currently in the model: if you operate these indicate the numbers of train services running at each configuration per week:

Numbers of each wagon type per train configuration

Wagon type	Configuration number				
	1	2	3	4	5
Standard	18	12	21	-	-
Lowliner	6	6	-	-	-
Megafret	-	-	-	20	26
Other	-	-	-	20	26
Total wagons	24	18	21	40	52
Trains per week	-	-	-	-	-
Max containers/train	42	30	42	20	26

Please add any additional train configurations you currently operate

Wagon type	Configuration number				
	6	7	8	9	10
Standard	-	-	-	-	-
Lowliner	-	-	-	-	-
Megafret	-	-	-	-	-
Other	-	-	-	-	-
Total wagons	-	-	-	-	-
Trains per week	-	-	-	-	-
Max containers/train	-	-	-	-	-

1.2 Intermodal train services provided each week

Service	From	To	One-way distance (km)	Trains/week	Loco type	Train configuration	Max containers/train	Actual containers/train	Notes
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									
16									
17									
18									
19									
20									

1.3 Loco fleet

	Loco type	Owned or leased?	Number in fleet	Weight (tonnes)	Fuel type	Fuel units per km	Notes
1	[e.g. 66]						
2							
3							
4							
5							
6							
7							
8							
9							
10							
Total							

1.4 Intermodal wagon fleet

	Wagon type	Owned or leased?	Number in fleet	Weight (tonnes)	Notes
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
Total					

1.5 Depots

	Depot name	Owned or leased?	Lift Per box	Lift per annum	Notes
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
Total					

1.6 Staff/labour structure

Total staff

	Number (FTE) staff	Number (FTE) outsourced	Notes
Senior management			
Middle management			
Junior			
Technical			
Train drivers			
Depot staff			
Security			
Other			
Total			

Staff by flow

Service	From	To	Driver hours	Ground staff hours
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
Total				

END

2 Costs

2.1 Locomotives

	Loco type [e.g. 66]	Owned or leased?	Purchase cost (£)	Annual leasing cost (£)	Annual maintenance cost (£)	Annual depreciation cost (£)	Fuel cost (£/unit)	Notes
1		-	-	-	-	-	-	
2		-	-	-	-	-	-	
3		-	-	-	-	-	-	
4		-	-	-	-	-	-	
5		-	-	-	-	-	-	
6		-	-	-	-	-	-	
7		-	-	-	-	-	-	
8		-	-	-	-	-	-	
9		-	-	-	-	-	-	
10		-	-	-	-	-	-	

2.2 Wagons

	Wagon type	Owned or leased?	Purchase cost (£)	Annual leasing cost (£)	Annual maintenance cost (£)	Annual depreciation cost (£)	Notes
1		-	-	-	-	-	
2		-	-	-	-	-	
3		-	-	-	-	-	
4		-	-	-	-	-	
5		-	-	-	-	-	
6		-	-	-	-	-	
7		-	-	-	-	-	
8		-	-	-	-	-	
9		-	-	-	-	-	
10		-	-	-	-	-	

2.2 Depots

	Depot name	Owned or leased?	Approx owned operational cost (£)	Access charge per train (£)	Shunt charge per box (£)	Notes
1		-	-	-	-	
2		-	-	-	-	
3		-	-	-	-	
4		-	-	-	-	
5		-	-	-	-	
6		-	-	-	-	
7		-	-	-	-	
8		-	-	-	-	
9		-	-	-	-	
10		-	-	-	-	

1.7 Other overheads

	Item	Annual cost (£)	Notes
1	Buildings		
2	Security		
3	etc		
4			
5			
6			
7			
8			
9			
10			

2.3 Drivers

Item	Value	Units	Notes (Arup)	Notes (respondee)
Driver salary - basic		£/year		
Driver basic days/year		days		
Driver salary - overtime		£		
Driver overtime days/year		days		
Driver additional costs		£/year	Overnight accommodation, communications etc.	
Driver add % for NIC and pension		%		
Depot ground staff costs		£/year	Basic Salary + Pension & NI	
Overhead costs		£/year	Allocation of company overhead cost (£) to intermodal railfreight business. State assumptions.	

2.4 Other staff/labour (inclusive of NIC and pension)

	Annual cost (£)	Notes
Senior management		
Middle management		
Junior		
Technical		
Train drivers		
Depot staff		
Security		
Other		

2.6 Other unit costs

	Item	Unit cost (£)	Notes
1	Container lift		See Table 1.5
2	Port shunt		See Table 1.5
3	Cost of local road distribution at end of rail trip		
4	Access charge per container to non Network Rail sidings and terminals		See Table 1.5
5			
6			
7			
8			
9			
10			

END

3**Productivity related assumptions/costs**

This section presents calculations to assess levels of productivity/efficiency

3.1 Achieved utilisation

Utilisation is defined as actual containers per train/ maximum possible containers/train

Service	From	To	Trains/week	Distance band	Utilisation
1	-	-	-	-	
2	-	-	-	-	
3	-	-	-	-	
4	-	-	-	-	
5	-	-	-	-	
6	-	-	-	-	
7	-	-	-	-	
8	-	-	-	-	
9	-	-	-	-	
10	-	-	-	-	
11	-	-	-	-	
12	-	-	-	-	
13	-	-	-	-	
14	-	-	-	-	
15	-	-	-	-	
16	-	-	-	-	
17	-	-	-	-	
18	-	-	-	-	
19	-	-	-	-	
20	-	-	-	-	

3.2 Driver and wagon efficiency

The current model estimates these efficiencies according to three distance bands :<300km, 300-600 km, >600km (round trip distances)

% total trips in each band

Band	km	% total
A	<300	0%
B	300-600	0%
C	>600	0%

Efficiency by band

	Distance band	Distance band	Distance band
	A	B	C
drivers/trip			
loco trips/day			
wagon trips/day			
loco operating days/year			

END

Subject Review of Revenue Support Freight Grant Schemes

Date 10 June 2019

Job No/Ref Question List

Introduction

As part of the Department for Transport's review of the future of freight grants beyond March 2015, Arup have been commissioned to undertake research to collect evidence of the marginal costs of moving intermodal freight by rail in comparison with road and to identify changes to the "financial need" for grants since the original modelling work on this was done. The research will also consider the financial need for MSRS Bulk and Waterways and Waterborne Freight Grant (WFG).

As set out in Catharine Parton's letter of 9 August 2013, we would like your input into the research in the form of a telephone interview and will be in touch shortly to arrange a convenient date. The topics below are intended to give an indication of the likely areas of discussion during the interview with you to discuss the freight grants schemes. This is only a guide and the interview will focus most on the areas of particular relevance to your business or group. If you are able to collate the data contributions under question 5 ahead of the interview and have this information to hand then this would be helpful. Any data provided will be treated in strict confidence and will only be used for this assessment and not for any other purpose without your prior agreement. We would anticipate that the interview will take no more than an hour.

Subject Review of Revenue Support Freight Grant Schemes

Date 10 June 2019

Job No/Ref Question List

1 Company information

1.1 Please provide any background information which describes your business which you believe would be relevant for this research – for example annual reports or website information.

2 Scheme design and functionality

2.1 Are you aware of the MSRS and the WFG?

2.2 Have you considered applying for the grants in the past? What was your experience of the process?

2.3 Are there any changes which should be made to the schemes to improve their effectiveness in future?

2.4 If a similar scheme were to be introduced for coastal shipping would you use it? Do you have any views on how the scheme should be designed to ensure it operates effectively?

3 Operating cost data

3.1 Please provide the information requested in the accompanying Excel files for the modes of transport you operate or use on a regular basis.

4 Other comments

4.1 Are there any other comments you would like to add?

Appendix B

Peer review

Appendix A Peer Review

The review of the intermodal Mode Shift Revenue Support (MSRS) scheme has two main areas of focus:

- **Rail:** To collect evidence on the difference in the cost of moving intermodal freight by rail compared to road, estimate the level of grant support needed, and use this to either update existing spreadsheet models or produce a suitable replacement.
- **Coastal Shipping:** To collect evidence on the difference in the cost of moving intermodal freight by coastal shipping compared to road and use this to validate the cost models developed in the Options for Changes to Revenue Support Freight Grant Schemes research, as well as to estimate the costs of an intermodal coastal shipping scheme (paralleling the existing rail scheme).

In addition, the review aims to evaluate the impact of the scheme at present by comparing the environmental and congestion benefits to similar EU modal shift subsidies, and also to assess the future impact of two scenarios:

- Stopping all grant funding in March 2020;
- Tapering funding off over a period of 3 years from March 2020.

The review concludes with recommendations for the future of the scheme beyond March 2020.

Operator Feedback

Policy

Feedback was received through two workshops (for the Rail and Coastal Shipping schemes respectively), written responses, and consultations held in both Phase 1 and Phase 2. The overall industry perception of the scheme is very positive, with feedback stating that the scheme provided quantifiable benefits and excellent value for money, and that it should be extended beyond March 2020.

Attendees raised a number of queries and comments in the workshops, although it was noted in **Section 3.4** that several of these lay beyond the scope of this study, and that responsibility for decisions in the following areas lay with the Department for Transport:

Rail

- The incentivisation of new flows;
- The reopening of cost modelling assumptions during the 5-year period;
- Zones and node structure.

Coastal Shipping

- Zones and node structure, including the suggestion to focus on only the most viable flows;
- Considerations of the recipient in the decision to award grants;

- Additional funding for the coastal shipping grant scheme (rather than the reallocation of MSRS funds).

However, there was no indication as to whether there are any plans for the Department for Transport to reshape existing policies to address these concerns, or whether the current system was set in stone for any future extension of the scheme.

Rail Scheme Feedback

The Rail Workshop included a number of queries regarding the policy decisions that shape the distribution of grants. Some of these were particularly pertinent considering that a review of modelling evidence is one of the primary objectives of this study.

- It was queried whether longer-term averages were a more suitable measure of fuel cost than the point-estimates that were currently used;
- It was suggested that train lengths had generally increased to try and embrace productivity. However, this has coincided with a reduction in the usage of 20-foot containers, and that the mix of 20- and 40-foot containers should be considered, in reviewing the efficiency of traditional rolling stock.

The report discusses the cost modelling methodology used in these cases, with the latter point causing a change whereby operator-supplied data has been adopted for the ports model to reflect the attendees' suggestions. There was, however, another point raised that was not discussed as thoroughly:

- Concerns were raised that the model identified a need for funding in flows with viable (and successful) rail links. **Section 3.4.2** states that the support for successful routes was reviewed but found to be 'marginal and only a small change from the previous iteration', lacking much of the detail and justification that was provided for some of the other concerns discussed in this section.

Section 8.2 summarises the most frequently-seen consultation responses from operators, and **Tables 38 - 42** show the full set of responses received. This includes a number of observations and suggestions regarding the grant policy that may be insightful and important enough to warrant more detailed attention and responses, including:

Routes

- The allocation of funding to routes with the best value for money tends to exclude shorter routes that require the most support to compete with road, and have greater potential for replacing HGVs in congested areas.
- Complementing this, long-distance rail freight should not be the primary grant recipient because it is the strongest sector for rail.
- Whilst funding for new routes is considered to be beyond the scope of this study, it is notable that there were multiple suggestions that grants must also be made available to mitigate the risk associated with new routes and help offset start-up costs, as the lack of consumer confidence generally result in rail providers losing money in the initial 1-2 years of running a new service.

Eligible Goods

- Several operators stated that consideration should be given to a wider range of goods and new container technologies

Grant Timescales

- There is a disparity between 6-month grant service agreements and standard 12-month wagon hire contracts'; alignment of timescales would be good;
- Introducing limited time grants would free up funding to support new projects;
- At least one operator and many other stakeholders believe grants need to extend past March 2020 in order to ensure services continue. There is a real risk that some services would cease and movements revert to road which would be worse for the environment;
- The scheme 'as-is' achieves an excellent BCR of 5:1 – 6:1 and should be expanded in future. Although the March 2020 deadline is too close to try and change the system at present, it should be rolled-over in order to safeguard its continuation in the short term.

Funding Areas

- In order to reduce high start-up costs, funding could be made available for the development and procurement of new equipment to be leased to operators. This could help with the cost of introducing new low floor and different, more flexible length wagons to suit the changing needs of industry;
- Funding could be assigned based on additional criteria, including optimised wagon sets and bespoke packages for train load traffic in order to encourage innovation and increased productivity rather than subsidising suboptimal services;
- Funding may be more effective if some of it is used for rail network improvements or terminal/wagon design to raise productivity, instead of being provided directly to operators;

Funding Distribution

- Funding must be distributed evenly on comparable routes so that no operator has a financial advantage on a particular route;
- The scheme is highly important in improving confidence within a market that is currently experiencing Brexit-related uncertainty, although adjustments need to be made to ensure that new routes are supported, and funding is distributed evenly on comparable existing routes;
- It is believed that there is a direct correlation between the amount of funding available and the quantity of goods shifted from road to rail. Reduced funding for operators has seen rail container volumes at Southampton fall from 40% to 32% in 2017, meaning that increased funding may be required in order to achieve mode shift objectives;
- The modelling behind the grant design does not consider the changes in freight handling that can be required when switching modes.

Zonal System

Whilst changes to the zonal system are currently considered beyond the scope of this review, they could be relevant assuming the scheme continues beyond March 2020 and may benefit from an updated format.

- A number of specific issues with the zonal system have been identified, particularly due to the policy of no grants can be made available within-zone movements, including movements from Workington to Teesport and St Bees to Redcar;
- In addition to the first point, Dollands Moor and Dover could be separated from their current zone in order to simplify Channel Tunnel-based freight funding.

Coastal Shipping Scheme Feedback

Section 9 containing operator feedback regarding the coastal shipping grant and this mirrored some of the rail feedback in **section 8**. This smaller set of responses had a number of key themes that are brought out in **Section 9.2**, including a mixed opinion of the usage of a zonal system for coastal shipping, with UKMPG suggesting that the scheme should instead focus on the most viable individual routes. In addition, there were a number of specific comments that are worth highlighting:

- The scheme in England should include funding for capital costs, as is the case in Scotland;
- There should be more engagement between the grant fund managers and the industry to raise the profile of the scheme and drive more successful applications;
- UKMPG (UK Major Ports Group) considered the three-year timeframe to be too short to build confidence and gain additional traffic;
- Excluding routes that include EU ports limits the ability of the scheme to achieve the ultimate goal of modal shift, and excludes a large quantity of existing and new-growth freight;
- The focus on container traffic misses a large quantity of construction materials and project cargo;
- There was also a call for additional overall MSRS funding, suggesting that the upgraded coastal shipping scheme may consume too much of the available funding pool, resulting in insignificant grants being distributed for the rail sector.

Application Process for Grants

Rail Scheme Feedback

Feedback to the application process was very mixed, with some positive and negative comments from regular users highlighted. It was stated that one operator considered the process to be “weighted towards the intermodal sector”, but the veracity claim was not assessed further using the responses from different sectors.

The application process for the MSRS scheme was mentioned repeatedly in **Tables 38 – 42** by a variety of companies, with feedback including:

- There are some operators who have very negative views of the length, complexity and transparency of the application and award processes.
- Not only is the application process complicated, it is also weighted towards the intermodal sector over the bulk sector;
- There is a negative view of the strict cut-offs that must be met in grant bids in order to receive any funding;
- The Department for Transport should supply guidance literature and support staff to advise companies. This is seen to be especially important for a first-time applicant.

Coastal Shipping Scheme Feedback

The coastal shipping scheme feedback in **Table 43** had a number of responses concerning the application process, with multiple responses suggesting that the process was too complicated, particularly because it required the applicant to form a separate company. It was also stated that streamlining the application to target Beneficial Cargo Owners (BCOs) could be an effective way to drive change in supply chains.

Additionally, in order to avoid having to set up a separate company, ports could apply a per-box subsidy on a ‘back to back’ basis with the MSRS scheme. This sort of system has already been used to apply ‘green discounts’ on port fees in Europe.

Costs: Road vs Sea & Rail

Rail Scheme Feedback

In general, there was a consensus among workshop attendees that operating costs had typically increased. Attendees expressed surprise that the model showed a general reduction in lease costs, but the evidence and calculations that lead to these results were subsequently verified and have not been changed.

In addition to the workshop feedback, the consultations saw multiple suggestions that MSRS funding should be provided to cover high start-up costs for new entrants into the market, which had not previously been considered. In addition, individual responses regarding the cost of transport included:

- The cost base of rail freight is too high, and track access charges and pathing opportunities must be improved in order to compete with road freight.
- The methodology used to quantify the financial value of environmental effects of reducing the number of HGVs (through mode shift) in different sizes/types of road may be insufficient.

The latter point could potentially warrant a future review of the congestion assessment, based in 2025 rather than 2020 to better reflect the future benefits of the scheme.

Coastal Shipping Scheme Feedback

There were also some comments on transport costs from the coastal shipping consultations:

- UKMPG stated that the grants needed to ‘level the playing field’ with road transport, as the market entry and environmental costs of coastal shipping are significantly higher;
- A point was raised that the coastal shipping model does not include the cost of the port-to-inland terminal leg of the journey, whereas the MSRS model does. **Section 3.3.2** states that “the group agreed that there could be value in comparing the grant rates with and without inland movements”, but **Table 8** notes that there is “insufficient data on ultimate origin / destination of coastal shipping flows” to consider the inclusion of an inland rail leg, although there is no discussion of what efforts were undertaken to gather evidence in accordance with the review objectives. Clearly for a meaningful end-to-end comparison to happen, the final road leg needs to be included as this can be at a disproportionately high cost meaning the shipping service may need a subsidy to compete.

It is notable that the review makes very little mention of the cost models developed in the Options for Changes to Revenue Support Freight Grant Schemes research, although the verification of these models is one of the key objectives.

Funding Withdrawal Assessment

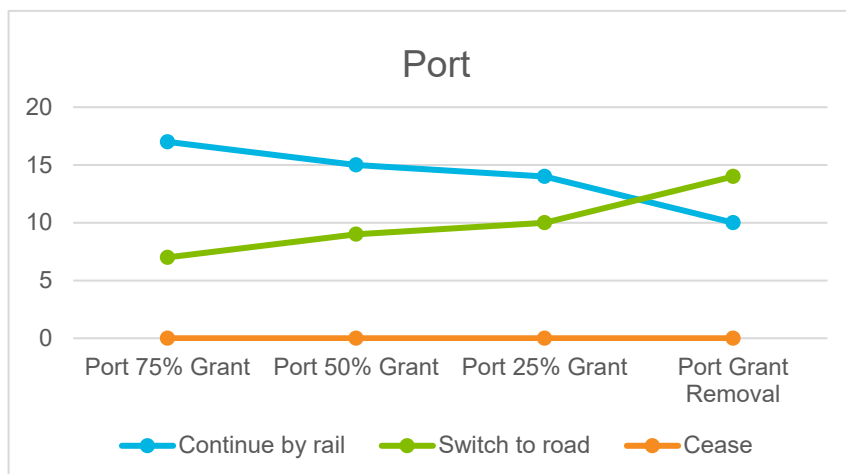
In **Section 7.3** there is an impact assessment of the current policy that aims to withdraw all grants from March 2020, or to taper them off over a period of 3 years. In each case, the number of flows that will revert to road (considered to be the most likely response to reduced profitability), and the economic impact of this change has been quantified.

All scenarios are well documented, meeting the objectives set out for the review. There is, however, one key assumption that is not fully discussed: the value assigned to the likelihood of each movement changing mode (or continuing to use rail) is stated to be ‘based on judgement’, which could imply an evidence gap in the forecasting approach and may not necessarily reflect the opinions of operators within the industry.

Although the value to the change in mode hasn’t been documented, **Section 7.3.3** shows the impact of withdrawing the grant shows a significant switch for port movements. Highlighting a gradual shift as the grant is reduced and a switch of 58% when the grant is subsequently removed. This results in an additional 14 billion tonne - kilometres on the road once the grant has been withdrawn.

Table A 1: Impact of tapering and removal of grants – Port movements

Impact	Port 75% Grant	Port 50% Grant	Port 25% Grant	Port Grant Removal
Continue by rail	17	15	14	10
Switch to road	7	9	10	14
Cease	0	0	0	0
Total	24	24	24	24



Rail moved by both domestic and bulk shows an initial reduction once the grant begins to decrease however remains static during the reduction of 25%, 50% and 75%. A switch of 67% and 60% is shown for domestic and bulk respectively once the grant has been removed. This results in an additional 4 billion tonne-kilometres of domestic movements and 3 billion tonne-kilometres of bulk movements on the road once the grant has been withdrawn.

Table A 2: Impact of tapering and removal of grants – Domestic movements

Impact	Domestic 75% Grant	Domestic 50% Grant	Domestic 25% Grant	Domestic Grant Removal
Continue by rail	4	4	4	2
Switch to road	2	2	2	4
Cease	0	0	0	0

Total	6	6	6	6
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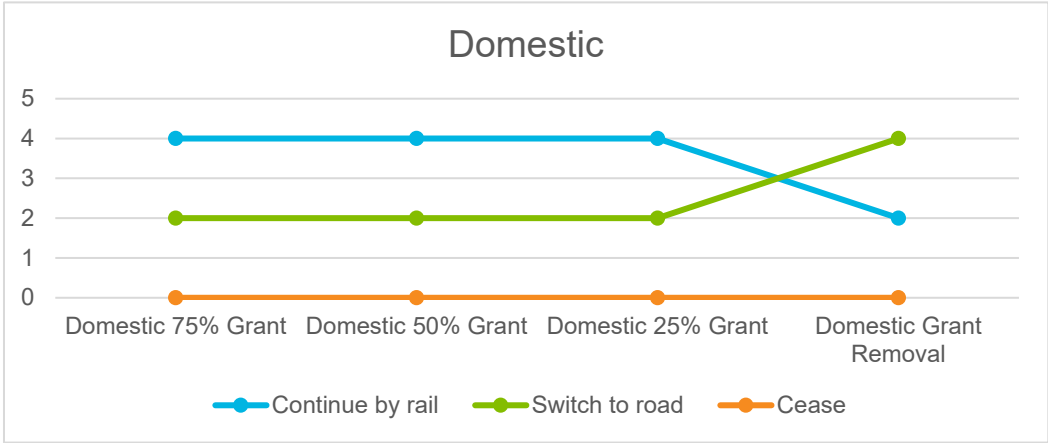
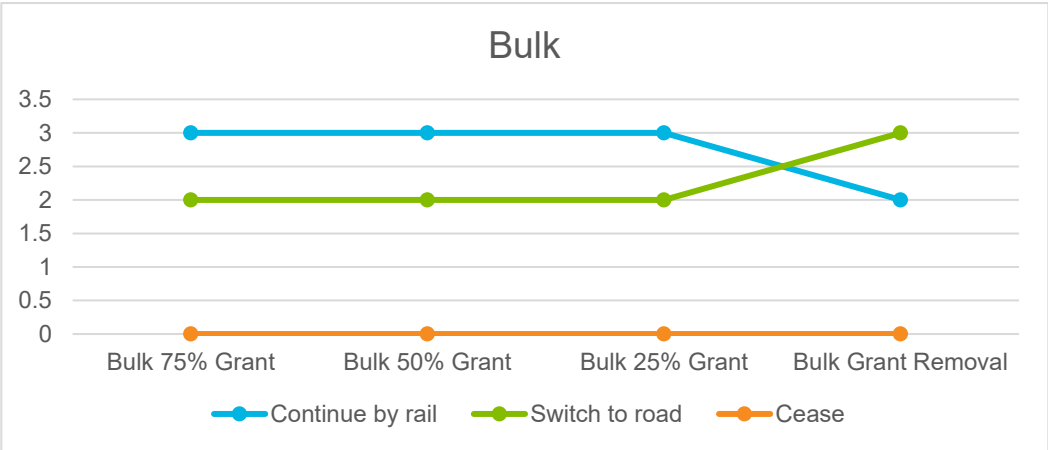


Table A 3: Impact of tapering and removal of grants – Bulk movements

Impact	Bulk 75% Grant	Bulk 50% Grant	Bulk 25% Grant	Bulk Grant Removal
Continue by rail	3	3	3	2
Switch to road	2	2	2	3
Cease	0	0	0	0
Total	5	5	5	5



Recommendations

Rail Scheme

Short Term

There is a consensus that especially with growing concerns about the environment and air quality that modal switch to rail and water is sensible. The BCR of encouraging modal switch are really positive and not only need to continue but should be expanded and new start-up services encouraged. The short-term objective of providing additional guidance for the application process is a clear priority, considering the frequency with which it has been mentioned in the operator feedback.

Medium Term

Again, the simplification of the application process is a clear target for improvement.

It is stated in **Section 11.2.2** that the small volumes of freight in intermodal platforms preclude the launch of a wagon, but it is noted that a wagon type is available but has not been adopted.

Coastal Shipping Scheme

Recommendations

It is possible that running a pilot scheme may be preferable to a full-scale MSRS-style scheme for coastal shipping, considering the feasibility concerns of some stakeholders. In either case, however, the proposal for the MSRS coastal shipping scheme to be provided with its own budget (in addition to the rail scheme) is considered the most appropriate solution.

The UK is an increasingly congested country and the fact it has a network of shipping lanes and commercial ports is a major advantage. Much more needs to be done to encourage the use of coastal shipping where it is feasible to be done.

Revenue Support Freight Grant scheme – model audit summary note

7 November 2019

Introduction

This note summarises the model audit that has been performed in support of the recent review of the Revenue Support Freight Grant scheme undertaken by the Arup, AECOM and Port Centric Logistics Partners (PCLP) consortium. This note briefly summarises the audit process that was followed and the results obtained from the audit.

Audit process

The following three models were audited:

Filename	Date	Time	Size
191024 MSRS DOMESTIC model with DfT updates.xlsx	25/10/2019	14:54	599 KB
191024 MSRS PORT as Origin model with DfT update.xlsx	25/10/2019	14:54	603 KB
191024-MSRS Coastal Shipping Model Arup.xlsx	05/11/2019	17:15	368 KB

A number of detailed checks were performed, including the following:

- Review of summary financial values, comparative review and “sense-check” of values and consistency.
- Detailed check-through of sample output figures associated with one specific Origin-Destination pair per model, to review and validate the calculation logic and components.
- Review of input datasets feeding into the model, validation of sources, checking of correct integration approach into subsequent calculations, e.g. distance matrices figures, train composition data, zonal and ports geographical inputs, cost inputs.
- Review of logic in terms of how input factors were combined and applied, checking alignment of output figures with input variables.
- Flagging of “hard-coded” / untraceable input values; investigation and review to ensure their correct application.
- Review and checking of potential outliers and formulaic inconsistencies.
- General evaluation of model quality, robustness, and recommendations for improvement.

The audit results for each of the three models listed above are summarised in the following audit summary notes:

- Model Audit Table 15, Review of Revenue Support Freight Grant Schemes.docx
- Model Audit Table 15, Review of Revenue Support Freight Grant Schemes.docx

- Model Audit Table 22 and 23, Review of Revenue Support Freight Grant Schemes.docx

Summary of audit results

The results of the audit of the three models indicated above are summarised as follows.

- The models have not been built using FAST standards, but they are reasonably clear and easy to understand
- The flow chart for the models help to explain their underlying logic
- Consistent row/columns numbers for O-D tables in the respective models would increase model transparency and reduce likelihood of errors
- Sources of inputs are not clearly indicated in many cases.
- Units for values are not always indicated.
- In principle, all inputs required for a calculation should be brought forward to the calculation sheet to improve model transparency – it is complicated to verify a calculation when inputs are coming from multiple separate sheets

Please refer to the individual audit notes referenced above for full details.