



# MODE SHIFT REVENUE SUPPORT SCHEME (MSRS)

## RIVER FREIGHT ANALYSIS

### FINAL REPORT

1 JULY 2022



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# EXECUTIVE SUMMARY

# MSRS ANALYSIS FOR RIVER FREIGHT OVERVIEW

## Overview

On behalf of the Thames Estuary Growth Board (TEGB) and Port of London Authority (PLA), the purpose of this report is to develop a succinct evidence base that will underpin the case for the reform of the Mode Shift Revenue Support scheme (MSRS), to better support the movement of freight from roads on to rivers and inland waterways and ultimately increase the overall volumes of freight moved sustainably. The analysis within this report considers both light and heavy freight. This report will help inform a case for reform of river freight funding with the Department for Transport's Maritime Division.

The Mode Shift Revenue Support (MSRS) scheme has been developed with the aim of removing short term financial barriers preventing companies from utilising inland waterways or rail transport away from road transportation. The MSRS awards grant funding in order to assist companies with their operating costs (which can include leasing of capital items) associated with running inland water or rail freight transport instead of road, if deemed more expensive than by road.

MSRS is planned to operate until March 2025 and all contracts issued will provide support for a maximum of 3 years at any one time. We understand that there is a review of the scheme planned in 2024, which may be the first available opportunity to influence changes in the scheme.

There are several known barriers that waterborne operators face compared to rail and road freight operators such as up front costs, ease of operations, first and last-mile considerations as well as lack of promotion of the sector. However there are also a series of enablers that can help to use more water movements to transport freight, including focussing on net zero (such as environmental reporting), technology and innovation. This report will explore these in the context of MSRS and river freight funding.

As part of this report, we:

- Analyse the historic awards of MSRS grants and review the scale of the awards to the river freight sector.
- Provide feedback from key stakeholder discussions carried out as part of this project, with a focus on the MSRS application process.
- Review of the MSRS application requirements for grant awards and analyse the implications for river freight applications within, in particular why such a small proportion of grant funding is allocated to river freight.
- Analyse the cost-benefit equation for river freight routes for potential grant applications in order to assess the suitability of MSRS for these routes - both new and existing routes. These are split across light and heavy freight and we look at the different considerations of each.
- Provide conclusions and recommendations from the analysis.

# MSRS ANALYSIS FOR RIVER FREIGHT ASSESSMENT

## CRITERIA FINDINGS

### Alternative Funding Schemes

Various funding options have been explored to incentivise modal shift towards river freight in order to reduce the financial barriers and unlock the social, environmental, and economic benefits it offers. We have reviewed alternative active and inactive funding schemes and their appropriateness for alternatives to MSRS:

- Waterborne Freight Grant (WFG): With the focus on coastal and short sea shipping, this would not be an appropriate alternative to MSRS for river freight. However, some aspects of the application process and award criteria may be applicable as alternative to MSRS for river freight funding.
- Freight Facilities Grant (FFG): As this fund is no longer available in England, this would not be an appropriate alternative to MSRS for Thames river freight. In contrast to the MSRS, the FFG grant scheme did offer the positive of being able to cover the capital expenditure of up to 50% of a project scheme.
- UK Shore: There may be opportunities for river freight operators to utilise this funding route to fund innovative green shipping technologies. However, application requirements may require significant resources and it is not clear what the assessment criteria are for a competitive application.

### MSRS Historical Grant Awards

As with MSRS Intermodal, the majority of non-intermodal MSRS funding is for bulk rail services rather than river freight. With a low proportion of funding historically, MSRS is not currently being used as a method to support river freight.

### MSRS Application Process and Award Criteria

The key restricting factor for MSRS Bulk & Waterway applications is the requirement for commercial viability. Without viability, this renders an operators application ineligible. In addition, the MSRS does not cover capital expenditure, thus limiting the potential for both innovation and new routes where investment in infrastructure is required to unlock river routes.

A successful application to MSRS has two constraining factors:

- All applications need to achieve a minimum Benefit to Cost Ratio (BCR) of 2:1.
- To be competitive within the application process, a BCR of between 3:1 and 7:1 for an MSRS grant would be required.

### MSRS Cost Benefit Analysis

We analyse the implications of the Benefit Cost assessment criteria for river freight in order to:

1. Seek to explain, through quantification of benefits and costs, why awards of MSRS grants for river freight are very low compared with rail.
2. Quantify the financial need (shortfall in cost) of switching routes to river freight and compare to the estimated grant amount that can be achieved to achieve a competitive BCR.

### Route Analysis

In order to analyse these points, we have analysed four light freight and four heavy freight routes. These are a combination of existing, pilot or potential routes.

In this report, we focus on London routes. However, we acknowledge that given the low levels of inland waterway funding amounts through MSRS, that there is applicability of these issues to freight routes across the rest of the UK.

# MSRS RIVER FREIGHT CONCLUSIONS

## Light freight conclusions:

- For potential new routes, grant award funding levels are estimated to be significantly lower than the financial need.
- For the pilot and existing routes, this is also the case, implying that the movements are being subsidised for trialling innovative solutions rather than through funding support.
- With the MSRS not designed to support step changes in freight and logistics, as things stand it could provide some support for light freight. Light freight is often considered as supporting a “last mile” solution (or penultimate mile), and the analysis shows that it’s difficult to compete against intermodal rail operations. Restrictions in providing funding for operating costs only (and not CAPEX) are a particular barrier to developing light freight river movements given the funding need for infrastructures such as piers and vessels.

## Heavy freight conclusions:

- Heavy freight routes provide considerable financial benefits and analysis suggests that heavy river freight operators could be competitive in MSRS fund applications.
- However, if a route is already financially viable, it would not meet application criteria of demonstrating financial need.

- Routes for heavy river freight could provide considerable environmental benefits from shifting from road and with additional funding there could be opportunities to open new routes. However, heavy freight operators typically do not have the resources to apply to MSRS compared to rail companies and may not be considered eligible for funding given that financial viability may already exist, as is the case for a selection of existing routes.

## In general:

- The analysis and findings in this report highlight a number of issues with the current MSRS funding scheme as a way to facilitate river freight movements. In order to develop river freight as part of the answer for sustainable and innovative solutions, step changes would be required in some areas, particularly focused on environmental initiatives to unlock decarbonisation opportunities.
- The current MSRS environmental benefit estimates (per mile) for switching from road movements are estimated using rail cost alternatives, and therefore may underestimate the full benefit of removing road movements to river freight. The current mechanism may not be advantaging applications where a river freight solution is unlocking decarbonisation opportunities across the wider transport network.
- The restriction of MSRS being available for operating costs and not capital costs is a significant barrier for opening new river routes, which is not as much a barrier for rail operations with well-established networks and infrastructure.

# MSRS RIVER FREIGHT RECOMMENDATIONS

**Overall, we have identified several possible next steps forward to improve river freight funding opportunities and volumes to be shifted to river for both light and heavy freight. These are split into the following four proposed next steps:**

- 1. Changing the assessment criteria.** The current MSRS assessment criteria favours intermodal rail operations over waterways. For light freight, the financial need for potential new routes is significantly higher than the estimated financial viability gap and for heavy freight, existing routes are already financially viable and therefore not eligible for funding. For the existing MSRS scheme or a potential new funding scheme, the criteria could be relaxed or amended to encourage funding applications for river freight movements.
- 2. Encouraging innovation.** Particularly for light freight, encouraging innovation through either softening of criteria or providing alternative funding avenues. This could be in the form of funding specifically for innovative decarbonisation solutions using waterways rather than a combined rail and waterways scheme.
- 3. Development of a pilot study** to develop opportunities for light freight operations for specific movements, in order to test alternative mode shift support mechanisms or initiatives. A pilot study could include the following steps:
  - a. Defining the scope of the pilot
  - b. Shortlist potential movements/solutions
  - c. Specify KPIs to monitor as part of the pilot, to ensure benefits and costs are captured and measured.
  - d. Evaluation of the findings of the pilot to help to shape the scope and details of the funding mechanism with a view to scaling the process.
- 4. Allowing grant funding for the purposes of capital expenditure.** The MSRS scheme only allows for funding operating costs. This is a particular barrier for light freight river movements, with innovative light freight river movements typically requiring capital costs for new piers, infrastructure or vessels to support operations. Whereas, new rail movements can utilise established infrastructure.

# 1. INTRODUCTION

# INTRODUCTION

## REPORT OVERVIEW

### Overview

In 2020, TEGB adopted their Action Plan 'The Green Blue' which sets out the board's two year plan and strategic vision for the Thames Estuary over the next 10 years. The TEBG's vision is to deliver the world's greenest, most productive Estuary. The Action Plan identifies a number of infrastructure initiatives which will help to deliver sustainable growth across the Thames Estuary.

One of these foundational infrastructure initiatives is to "improve and increase use of the river and rail to carry more passenger and freight of all types". A key part of this is to explore how the River Thames can be better used for freight, moving it off London roads to ease congestion and air pollution, whilst also supporting regeneration and boosting economic growth.

This report follows on from a previous study in 2021 which looked at an objective assessment of the potential for increasing river freight movements on the Thames in the near term, by defining what a commercially viable river freight solution might look like, alongside a well costed business case.

The purpose of this report is to develop a succinct evidence base that will underpin TEGB and PLA's case for the reform of the Mode Shift Revenue Support scheme (MSRS), to better support the movement of freight from roads on to rivers and inland waterways and ultimately increase the overall volumes of freight moved sustainably. The analysis within this report considers both light and heavy freight. This report will help inform a case for reform of river freight funding with the Department for Transport's Maritime Division.

There are several known barriers that waterborne operators face compared to rail and road freight operators such as up front costs, ease of operations, first and last-mile considerations as well as lack of promotion of the sector. However there are also a series of enablers that can help to use more water movements to transport freight, including focussing on net zero (such as environmental reporting), technology and innovation. This report will explore these in the context of MSRS and river freight funding.

As part of this report, we:

- Analyse the historic awards of MSRS grants and review the scale of the awards to the river freight sector.
- Provide feedback from key stakeholder discussions carried out as part of this project, with a focus on the MSRS application process.
- Review of the MSRS application requirements for grant awards and analyse the implications for river freight applications within, in particular why such a small proportion of grant funding is allocated to river freight.
- Analyse the cost-benefit equation for river freight routes for potential grant applications in order to assess the suitability of MSRS for these routes - both new and existing routes. These are split across light and heavy freight and we look at the different considerations of each.
- Provide conclusions and recommendations from the analysis.

### Report Structure

This report is structured into the following sections:

1. Introduction (this section)
2. Analysis of River Freight Funding Schemes
3. Analysis of MSRS Grant Awards
4. MSRS Application Process
5. Cost Benefit Analysis
6. Conclusions

# INTRODUCTION

## THE MODE SHIFT REVENUE SUPPORT SCHEME (MSRS)

The Mode Shift Revenue Support (MSRS) scheme has been developed with the aim of removing short term financial barriers preventing companies from utilising inland waterways or rail transport away from road transportation. The MSRS awards grant funding in order to assist companies with their operating costs (which can include leasing of capital items) associated with running inland water or rail freight transport instead of road, if deemed more expensive than by road.

The scheme is designed to support modal shift and take advantage of the environmental and social benefits from reduced usage of lorries on road.

The scheme is segmented into two parts:

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

MSRS grants are available in England, Scotland and Wales and is managed differently according to the country in which the application is made. Below are details of the administrators, their respective locations and what borders they cover for the MSRS grant.

- Department for Transport (DfT): for flows within England and cross border flows in which the majority of environmental benefits fall in England

- Scottish Government: for flows within Scotland and cross border flows in which the majority of environmental benefits fall in Scotland
- Welsh Government: flows within Wales and cross border flows in which the majority of environmental benefits fall in Wales

MSRS is planned to operate until the 31<sup>st</sup> March 2025 and all contracts issued will provide support for a maximum of 3 years at any one time. We understand that there is a review of the scheme planned in 2024, which may be the first available opportunity to influence changes in the scheme.

Other grants which are part of the MSRS that are available include the Waterborne Freight Grant (WFG). The Scottish and Welsh governments also offer a Freight Facilities Grant (FFG). Both grants follow the same premise of MSRS.

MSRS Intermodal is designed to support the movement of intermodal containers by rail in Great Britain. The scheme provides support for sustainable deep-sea, domestic and short sea intermodal container businesses that move by rail.

# INTRODUCTION

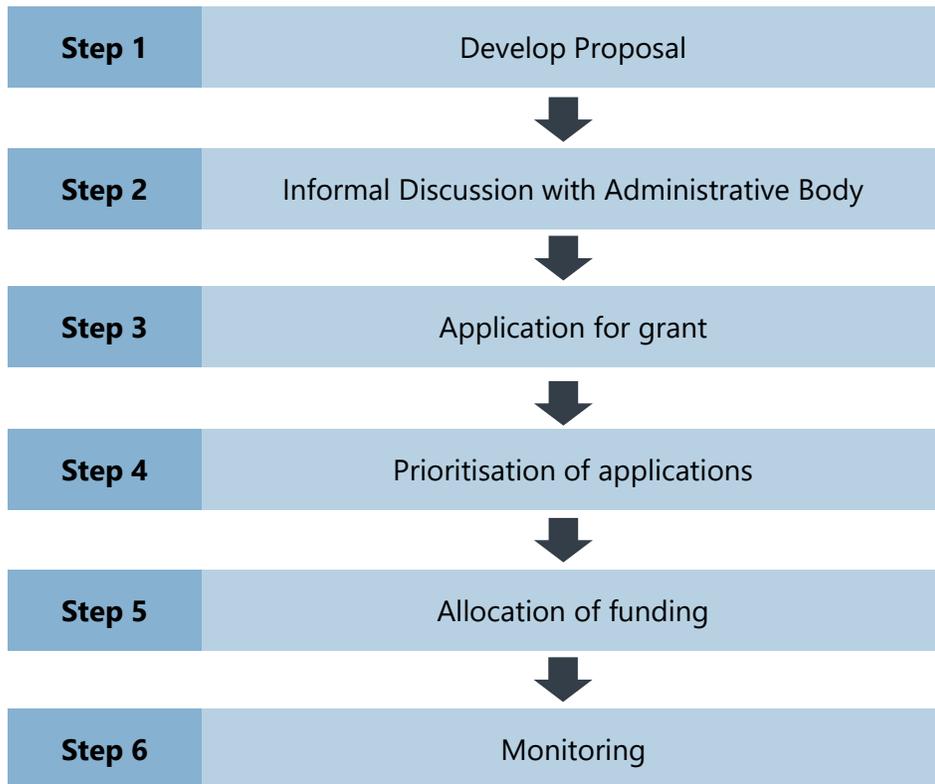
## MSRS GRANT FUNDING PROCESS

### MSRS Grant Funding Process

Both MSRS Intermodal and MSRS Bulk and Waterway follow the same steps for applying for the grant funding; however, the specific requirements for information may vary as award criteria differ.

Figure 1-1 demonstrates the application process of MSRS for both Intermodal and Bulk and waterways. The following commentary describes the steps required for the process.

**Figure 1-1: MSRS Application Process**



**Step 1 – Develop Proposal:** Those who are interested in MSRS must develop a proposal that identifies the traffic to be moved, the origin and destination and the freight operator who will carry the goods.

**Step 2 - Informal Discussion:** Discussions with Administrative Bodies will be conducted. This will allow those in interest to discuss their proposal in more detail as well as find out the necessary information required. The Administrative Body will want to know the following items:

- Type of Traffic and volumes
- Nature of the service
- Origins and destinations of traffic with ports and terminals being used
- Discussions with rail or water freight operating companies, ports and terminals operators
- Details of how the grant will benefit the claim if successfully awarded.

Once successful, an annual volumes cap will be established for the operator to ensure that there has not been an overestimated volume figure. If there is an excess of volume, the administrator has the powers to reallocate the volume to other operators, subject to discussions with the grantee.

**Step 3 – Grant Application:** Application forms are completed

**Step 4 - Prioritisation:** Allocation of funding is decided within 6 weeks.

**Step 5 – Allocation of funding:** If successful, the Administrative body will draw up the contract which must be signed before grant funding is released. The contracts will specify the rate of the units that have been provided.

**Step 6 - Monitoring:** Traffic moved under the MSRS contracts will be closely monitored. Where traffic levels are lower than the forecasts provided at the time of the agreement of the contract, adjustments may be made in order to reallocate budget. The administrative body has powers to claim back volumes if traffic falls 5% or more below the approved forecast levels.

# INTRODUCTION

## DEFINING FREIGHT TYPES

### Freight Types

Within this report, we define Heavy Freight as freight transport carrying large volumes of bulk materials, aggregate and cement materials and scrap metals. On roads, these would be transported by Heavy Goods Vehicles.

Light Freight typically involves transporting parcels, food and drink and other consumer goods. These can be transported in smaller goods vehicles for local distribution and collection, typically over shorter distances than heavy freight and can also connect with bikes for last mile delivery. Food and beverages are also transported by HGVs, however, this is to move larger quantities between depots and hubs or between distribution centres and retail outlets.

The movement of heavy freight usually involves the transport of a full HGV load of product between an origin and destination. A typical light freight delivery will involve many stops at different locations on a single journey – up to 200 in a day for parcels.

To date, the vast majority of freight movements utilising the River Thames have been focused on bulk goods including construction materials and waste by-products.

These operators transport large volumes of bulk materials and aggregates to multiple locations which include, for example; Northfleet, Dagenham and Peruvian Wharf from the Isle of Grain and Cliffe.

We have undertaken an analysis to see how the MSRS assessment criteria impacts the likely success of applications using examples of existing light and heavy freight operations using an Environmental Benefit-Cost analysis. This analysis is covered in section 5 of the report.

## Light Freight

### 1. Parcels



### 2. Food



### 3. Beverages



### 4. Retail Goods



## Heavy Freight

### 1. Bulk Materials



### 2. Aggregates



### 3. Cement



### 4. Scrap Metals



## 2. RIVER FREIGHT FUNDING SCHEMES

# RIVER FREIGHT FUNDING SCHEMES

## WATERBORNE FREIGHT GRANT

Various funding options have been explored to incentivise modal shift towards river freight in order to reduce the financial barriers and unlock the social, environmental, and economic benefits it offers. The following three pages we review examples of alternative active and inactive funding schemes and their appropriateness for alternatives to MSRS.

### Waterborne Freight Grant (WFG)

WFG aims to assist companies with operating costs associated with running waterborne freight transport rather than on the road where this is not cost effective. The scope of the grant is narrow, and limited to coastal and short sea shipping, only a small amount of operations fall under this category, therefore limited numbers of applications have been made. The grant is open until the 31st of March 2026.

If an application is successful, the applicant organisation can receive a grant limited to the lowest value of either:

- The value of the environmental benefit generated by transferring the freight from road to water;
- Awarded based on the gap, identified through financial appraisal, between the costs of transporting equivalent freight on the water to road;
- 30% of the total operating costs of a proposed water movement; or
- € 2,000,000

**With the focus on coastal and short sea shipping, this would not be an appropriate alternative to MSRS for river freight. Data is not available to assess the level of funding awards, however, some aspects of the application process and award criteria may be applicable as alternative to MSRS for river freight funding.**



# RIVER FREIGHT FUNDING SCHEMES

## FREIGHT FACILITIES GRANT

The Freight Facilities Grant (FFG) aims to take freight off congested roads and move it by rail or water to unlock both social and environmental benefits. The move to rail or water can be more expensive so the FFG has been created to assist the extra costs by offsetting the capital costs of providing the handling facilities.

Any company who wants to move freight by rail or water rather than road within both Scotland and Wales can apply to invest in the new freight handling services. The grants awarded are up to 50% of the capital expenditure and are ongoing as of June 2022. The scheme was dropped from England in 2011, however still runs in Wales and Scotland.

- The amount of FFG that can be offered is dependent on the following items:
- The value of the environmental benefit which is calculated similarly to MSRS

The additional costs of moving freight by rail or water as determined by a financial appraisal of the project comparing costs to road alternatives.

FFG will not be paid where the freight facility can be commercially justified or would have the capabilities of proceeding without FFG. Grants were allowed to cover a maximum of 50% of capital expenditure costs.

### FFG Historical Award Amounts

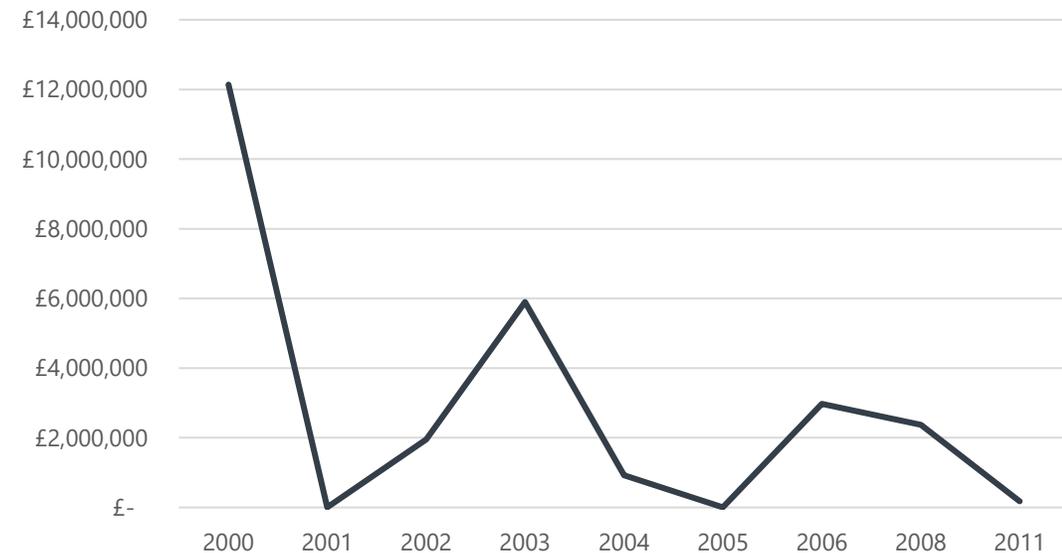
- The average award for FFG from 2000 to 2011 was £3.8m. However, as Figure 2-1 shows, the annual amounts were variable. The most grants awarded were in 2000 with a total amount of £12.1m.
- FFG awards decreased from 2011 for rail, only three grants were awarded for freight transported using water.
- Out of the 39 grants awarded, 13 grants (£23,878,474 accumulated) were given to freight transported by water. This indicates that the FFG is not utilised as much as rail and may not be an appropriate alternative to MSRS for funding river freight movements.
- The DFT announced that the FFG grant was to be scrapped in 2011 for England, but is still used in Scotland and Wales, predominantly for rail freight funding.

**Based on conversations in the stakeholder interviews, the experience of FFG often did not meet expectations to support the needs of small or medium-sized river freight operators as grants were generally awarded to larger companies. Although, the requirements state that funding will be given to those who can prove the need for financial aid.**

**In contrast to the MSRS, the FFG grant scheme did offer the positive of being able to cover the capital expenditure of up to 50% of a project scheme. Offering to fund for CAPEX would likely be attractive to operators for alternative funding or amendments to the MSRS process in order to unlock innovative projects for river freight movements.**

**As this fund is no longer available in England, this would not be an appropriate alternative to MSRS for river freight on the Thames.**

**Figure 2-1: Freight Facilities Grant Amounts Awarded per Year, 2000-2011**



# FUNDING OPTIONS

## NEW FUNDING OPTIONS TO INCENTIVISE RIVER FREIGHT

### New Funding Schemes introduced by Department for Transport (DfT)

The DfT has proposed a new scheme to aim for climate change and tackle shipping emissions. “UK SHORE” has been developed to accelerate technological advances in order to help with sustainable shipping.

### UK Shipping Office for Reducing Emissions (UK SHORE)

The objective of the UK SHORE programme is to make thousands of ships, cruises and vessels greener. The investment is also set out to support zero-emission sailing and increase the number of skilled maritime jobs as part of the shipbuilding strategy.

UK SHORE aims to do this by introducing research and development programmes. The aim is to work in partnership with the industry to solve supply and demand issues and help increase green vessels. The total funding pot is £206 million, allocated from March 2022.

UK SHORE Funding Amount	Start Date	End Date
£206million	March 2022	Not confirmed

The first tranche of funding from this scheme totalling £12m was active in May 2022 for a “Clean Maritime Demonstration Competition”. This has the aim of “accelerating the research and development of zero emission maritime technologies”, for projects costing £100k to £1m. The focus of the applications is for technology and products which deliver reduction in emissions for maritime. The application requirements include demonstration of technical and economic feasibility for a proposed technology.

**There may be opportunities for river freight operators to utilise this funding route to fund innovative green shipping technologies. However, application requirements may require significant resources and it is not clear what the assessment criteria are for a competitive application.**



### 3. ANALYSIS OF MSRS GRANTS

# MSRS FREIGHT GRANTS

## SUMMARY FINDINGS

### Overview of MSRS Grant Historical Data for Intermodal and Bulk and Waterway

This section covers analysis of the MSRS grants that have been awarded since 2015. The historical data includes the following details, which has been used for the analysis:

- Awards are divided into two categories: "Intermodal," and "Bulk and waterway".
- Amount awarded per application, by Month awarded date, which have been aggregated by year.
- Name of company awarded the grant.
- Origin and destination of the awarded flows.

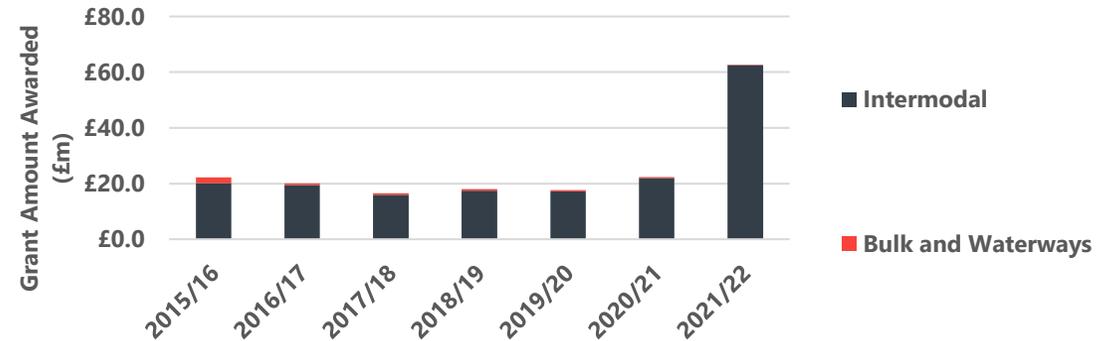
### MSRS Grants Summary Findings

- Total MSRS awards amounted to £179m since 2015/16. From 2015/16 to 2020/21, it averaged around £20m per annum. In 2021/22, it increased to £63m. The significant majority of this has gone to intermodal funding.
- River freight applications have been awarded just 0.2% of the total funding available since 2015/16.

#### Findings:

**With such a low proportion of funding, MSRS is not currently being used as a method to support river freight. The reasons for this are analysed in Sections 4 and 5.**

**Figure 3-1: MSRS Total Grant Amounts per year, 2015-2022**

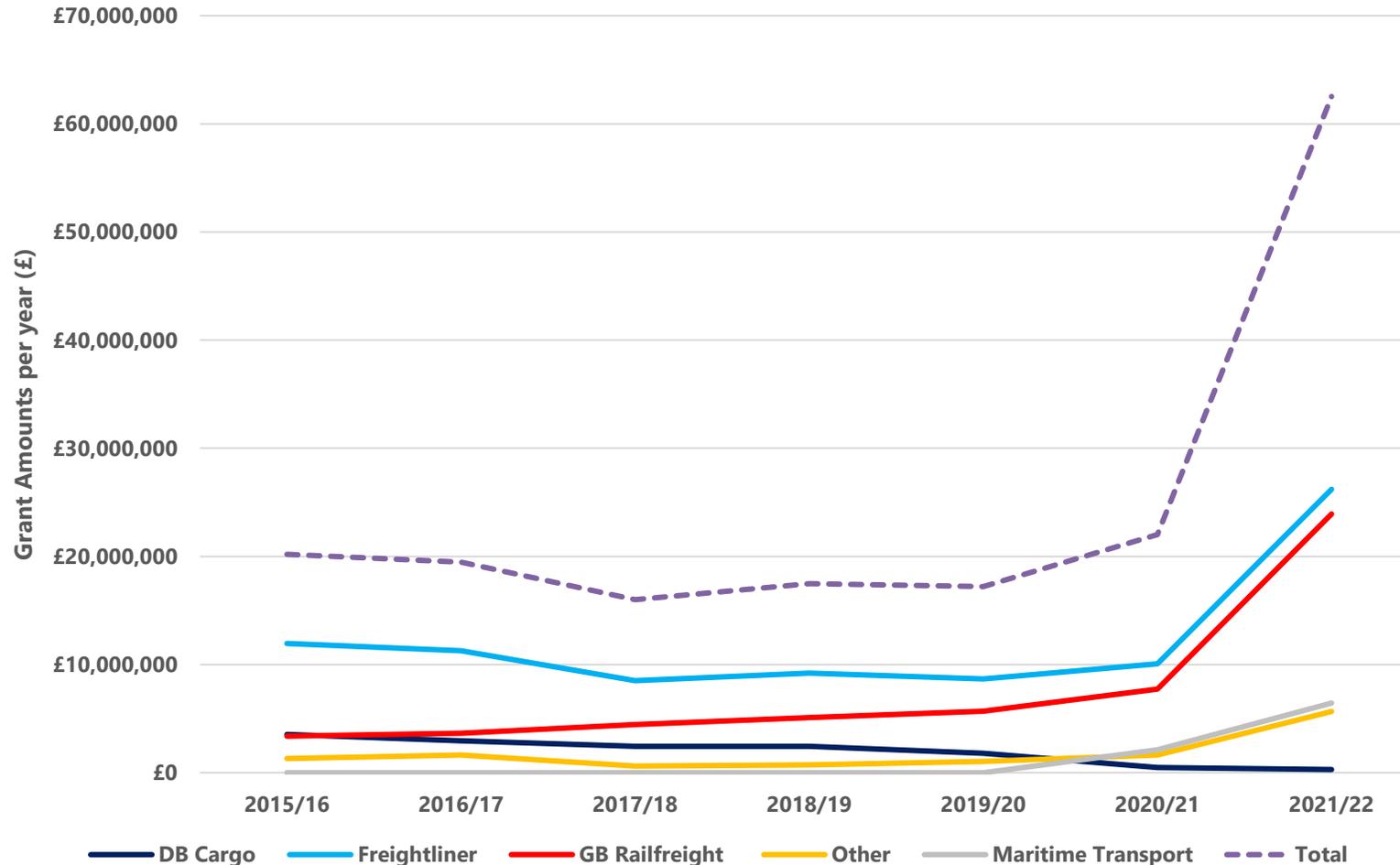


Grant Amounts (£m)	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	Total
River	0.3	-	-	-	-	0.1	-	0.4
Rail	21.9	20.1	16.5	18.0	17.7	22.2	62.6	179.1
River %	1.6%	0.0%	0.0%	0.0%	0.0%	0.3%	0.0%	0.2%

# MSRS GRANTS

## INTERMODAL GRANT AMOUNTS

Figure 3-2: MSRS Intermodal Grant Amounts per year, 2015-2022



### MSRS Intermodal Grant Amounts:

The chart shows Intermodal grant amounts awarded per year since 2015/16.

Two of the UK's major rail freight operating companies dominate the funding awards: Freightliner (49% of total amount awarded since 2015/16) and GB Railfreight (31%).

DB Cargo historically received a similar volume to GB Railfreight, but this has significantly decreased.

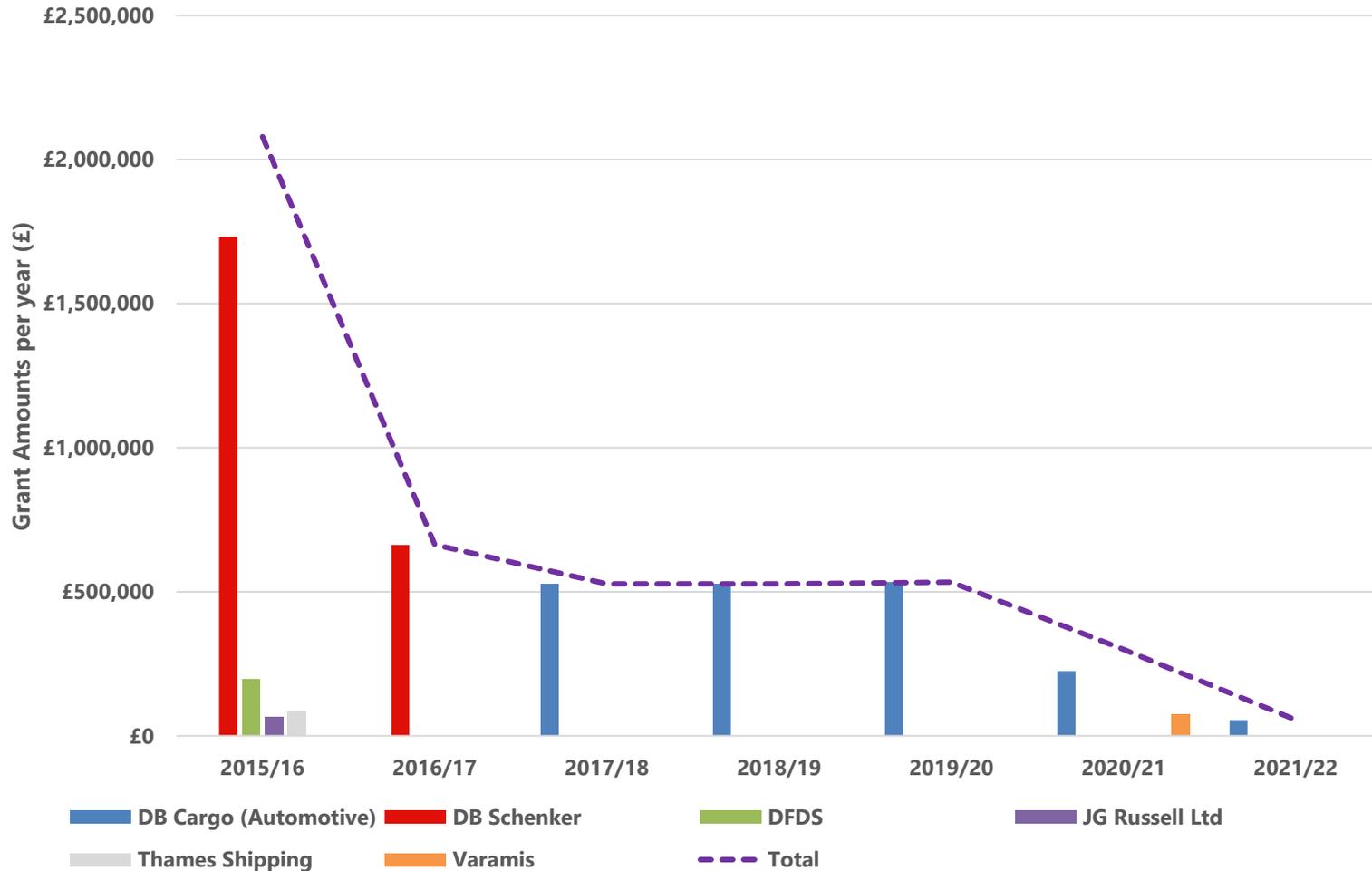
This demonstrates the hold that large companies have on MSRS funding. Our stakeholder engagement suggests that successful MSRS applications require significant resources and knowledge of the process. As SMEs with limited prior experience of MSRS, river operators are at a disadvantage.

**Large companies dominate the MSRS funding awards, with SMEs a much smaller proportion. The reasons for this centre around the eligibility and assessment criteria, which are discussed and analysed in Sections 4 and 5.**

# MSRS GRANTS

## BULK AND WATERWAYS GRANT AMOUNTS

Figure 3-3: MSRS Bulk and Waterways Grant Amounts per year, 2015-2022



### MSRS Bulk and Waterway (B&W) Grant Amounts:

The chart shows Bulk and Waterway grant amounts awarded per year since 2015. This can be claimed for freight movements by non-intermodal rail or by inland waterway. The chart shows that:

- Historically, only DB has received significant funding. This supported bulk rail freight rather than rail. Even then, their grant funding amounts have declined in recent years with marked decreases since 2019/20.
- Small amounts were awarded to other companies (all less than £200k per year).
- Total amounts awarded under the Bulks and Waterways pot have declined to below £200k in 2021/22.

**The grant amounts for B&W are significantly lower than Intermodal. Intermodal rail transport dominates the MSRS application process.**

# MSRS GRANTS

## ROUTES FOR INTERMODAL GRANTS AWARDED

**Table 3-1: MSRS Routes for Intermodal Grants Awarded 2018-22 (% of total)**

From \ To	W Yorks	Lanarkshire	Merseyside	Midlands	Others	Total
London	4%	0%	5%	2%	0%	11%
East Anglia	26%	0%	0%	23%	5%	54%
Midlands	0%	5%	0%	0%	0%	5%
Southampton	6%	0%	10%	9%	2%	27%
Others	0%	1%	0%	1%	1%	3%
<b>Total</b>	<b>36%</b>	<b>6%</b>	<b>15%</b>	<b>35%</b>	<b>8%</b>	<b>100%</b>

### MSRS Intermodal Grant – Key Flows Awarded

- Around 50% of MSRS Intermodal is for traffic from Felixstowe to the East Midlands and from Felixstowe to the North East, with 23% and 26% of the total respectively.
- 25% is traffic from Southampton to the East Midlands, North West and North East.
- Only 11% is from London Gateway / Tilbury / other London railheads

**Findings:**  
**MSRS largely supports intermodal traffic from the UK's deep sea container ports to main centres of demand. Only 8% of MSRS funding has supported freight from origins other than deep sea container ports.**



# MSRS GRANTS

## ROUTES FOR BULK & WATERWAY GRANTS AWARDED

Table 3-2: MSRS Routes for Bulk and Waterways Grants Awarded 2018-22 (% of total)

From \ To	London	Lanarkshire	Midlands	Southampton	Others	Total
London	5%	8%	0%	5%	3%	21%
Yorks & Humber	0%	0%	24%	0%	2%	26%
Merseyside	0%	0%	0%	27%	4%	31%
Others	8%	0%	5%	3%	6%	22%
<b>Total</b>	<b>13%</b>	<b>8%</b>	<b>29%</b>	<b>35%</b>	<b>15%</b>	<b>100%</b>

### MSRS Bulk and Waterways Grant – Key Flows Awarded

- The two biggest flows for Bulk and Waterways awards are **Yorkshire to the Midlands** and **Merseyside to Southampton**, with 24% and 27% of the total respectively.
- There were several routes **from London** awarded, spread across the country, which made up 21% of the total.
- There are also several international movements for bulk and waterways, which are not included here.

**Findings:**  
As with MSRS Intermodal, the majority of non-intermodal MSRS funding is for bulk rail services rather than river freight.



## 4. MSRS APPLICATION PROCESS

# MSRS APPLICATION PROCESS

## ELIGIBILITY - INTERMODAL

### MSRS Intermodal Process

MSRS intermodal is designed to support the movement of intermodal containers by rail in Great Britain. The scheme has operated since 2010 and continues to this day. The scheme provides support for short sea, sustainable deep sea, short sea and domestic intermodal container business that moves by rail. There are a number of requirements for operators to meet in order to ensure that the application is eligible for MSRS intermodal funding.

### Eligible Traffic

Traffic that is eligible for MSRS intermodal includes the standard intermodal units such as containers, swap bodies or trailers on railway infrastructure. Examples of eligible MSRS intermodal grants include the following:

- Services conveying deep-sea containers from ports to customers in an inland city.
- Services conveying supermarket products in containers between two distribution depots within GB.

### Ineligible Traffic

MSRS intermodal grants are not available for the following traffic types:

- Movement by rail of non-intermodal traffic;
- Movement of bulk commodities in full or part trainload services where the party has chosen to use an intermodal unit;
- Any movement of traffic by inland waterways, movement of traffic through the Channel Tunnel (as these are covered by MSRS Bulk and Waterway).

**Table 2.1 Examples of commodities ineligible for MSRS (Intermodal)**

Commodity	Examples
Automotive	Finished cars/vans, car parts/panels where flows typically move in clearly defined part or full trainload volumes
Chemicals	Where flows typically move in clearly defined part or full trainload volumes
Conventional wagonload traffic	All commodities
Construction materials	Cement, clay, stone, granite, sand, timber etc.
Metals	Coil, bar, aluminium, scrap etc.
Minerals	Coal, lime potash, gypsum, rock salt etc.
Paper and paper products	Where flows typically move in clearly defined part or full trainload volumes
Petrochemicals	Where flows typically move in clearly defined part or full trainload volumes
Waste	Industrial, domestic, nuclear, etc. where flows typically move in clearly defined part or full trainload volumes

# MSRS APPLICATION PROCESS

## ELIGIBILITY – BULK AND WATERWAY

### MSRS Bulk and Waterway

MSRS Bulk and Waterway is designed to support the movement of non-containerised freight by rail and all freight on inland waterways where, if the MSRS grant was not provided, then the freight movement under consideration would move by road. The grant is slightly different to MSRS Intermodal as the grant is limited to the value of environmental benefits alongside the financial need for the grant which is demonstrated by the operator during a financial appraisal with the administrator. Each application made by operators is assessed on an individual basis.

### Eligible Traffic

MSRS Bulk and Waterway have two eligible traffic modes, rail and Inland waterways:

- **Rail:** Traffic that moves on railways infrastructure which is defined in the Railway Infrastructure Regulations 2005.
- **Inland Waterways:** Traffic that moves on inland waterway infrastructure between two ports and wharves remains within the Smooth Water Line. Traffic should not travel further along the coast beyond the Smooth Water Line.

### Ineligible Traffic

MSRS Bulk and Waterway grants are not available for the following types of freight movements:

- Traffic that is eligible for MSRS Intermodal (applies only to rail traffic);
- Starting point or destination is beyond the first available domestic port beyond the Smooth Water Line for the route in question (applies only to waterway traffic);

- Best alternative mode of transport is other than by road (e.g. coastal shipping);
- Service can be commercially justified without MSRS Bulk and Waterways support or would proceed in any event without it;
- Use of rail or inland waterways is a planning or other legal requirement on the site from where the freight is to be carried.

### Costs

The MSRS grant funding is designed primarily for the funding of operating costs. There is some allowance for capital expenditure, but limited to a limit of £30k:

“Capital investment eligible under FFG rules can be included in the financial appraisal up to a value of 1% of the total door to door costs of the rail or water option, up to a maximum of £30,000. In instances where the capital investment required exceeds £30,000, an application for FFG should be made in parallel with the application for MSRS (Bulk and Waterways).”

### Findings:

- **The key restricting factor for MSRS B&W applications is the requirement for commercial viability. Without viability, this renders an operators application ineligible.**
- **In addition, the MSRS does not cover capital expenditure, thus limiting the potential for both innovation and new routes where investment in infrastructure is required to unlock river routes.**

# MSRS APPLICATION PROCESS

## BENEFIT-COST RATIO ASSESSMENT

### Benefit-Cost Ratio (BCR)

The benefit-cost ratio (BCR) is simply the benefits divided by the costs of a proposed project. The BCR is used as an assessment measure for the purposes of:

1. Filtering projects that meet a minimum BCR level
2. Ranking between applications to prioritise funding awards.

MSRS guidance states that the minimum BCR to be eligible for funding is 2:1. A number of applications have been passed with a BCR of 3:1, whilst the recent average is 7.24:1:

*“Recent grant awards are expected to remove the need for 1,239,710 lorry journeys and reduce carbon dioxide (CO2) emissions by 79,936 tonnes. The environmental BCR is expected to be 7.24:1”*

### Findings:

#### A successful application to MSRS has two constraining factors:

- **All applications need to achieve a minimum Benefit to Cost Ratio (BCR) of 2:1.**
- **To be competitive within the application process, a BCR of between 3:1 and 7:1 for an MSRS grant would be required.**

As an illustrative example, we have estimated that the average cost per parcel via road across London delivery routes is £0.30 (30p). To achieve a BCR of 2.0, this would require a maximum claim per parcel of 15p.

$$\text{Benefit Cost Ratio} = 2.0 = 30\text{p} / 15\text{p}$$

To achieve a competitive BCR of between 3.0 and 7.0, this would require a maximum claim of between 4p and 10p per parcel.

$$\text{Benefit Cost Ratio} = 3.0 = 30\text{p} / 10\text{p}$$

$$\text{Benefit Cost Ratio} = 7.0 = 30\text{p} / 4.3\text{p}$$

More detailed analysis of the BCR equation for light and heavy freight routes and the challenges that the BCR assessment has for waterways are covered in Section 5.

In this report, we focus on London river routes. However, we acknowledge that given the low levels of inland waterway funding amounts granted through MSRS, that there is applicability of these issues to freight routes across the rest of the UK.

In addition, there are likely similar issues faced by shifting existing road routes to short-sea shipping routes. In some cases there would likely be significant environmental benefits of shifting to sea, however there are similar issues around providing upfront investment and commitment to justify a long term charter of such routes. For example, London to West Yorkshire road freight route replaced by short sea London to Teesside.

## 5. COST BENEFIT ANALYSIS

# COST BENEFIT ANALYSIS

## OVERVIEW OF APPROACH

### Purpose of Analysis

A key requirement of the MSRS process is assessing the Benefit-Cost Ratio (BCR). As part of this report, we analyse the implications of the BCR assessment criteria for river freight. In particular, this is to:

1. Seek to explain, through quantification of benefits and costs, why awards of MSRS grants for river freight are very low compared with rail.
2. Quantify the financial need (shortfall in cost) of switching routes to river freight and compare to the estimated grant amount that can be achieved to achieve a competitive BCR.

### Categories for Analysis

In order to analyse these points, we have broken down the analysis into the following categories:

- By freight type: light and heavy freight separately
- By route type: existing/pilot routes and potential delivery routes

In this report, we focus on London routes. However, we acknowledge that given the low levels of inland waterway funding amounts through MSRS, that there is applicability of these issues to freight routes across the rest of the UK.

### Cost Benefit Analysis

For each route, we take the following steps to assess the routes competitiveness for the MSRS application:

- Estimate the environmental benefits of taking a truck route from the road
- Calculate the financial need of mode shift using estimates for the current total route cost of making the freight trip by road compared to river
- Compare the financial need for mode shift against the BCR requirements to compete for grant awards. Assess how the financial gap between road and river compares to the MSRS requirements and whether they would be competitive against rail applications.

### Light Freight Routes

For the light freight route analysis, we have assumed the road route is with a 3.5 tonne vehicle, carrying 200 parcels for each route.

We have chosen four light freight routes, two new routes and two pilot/existing routes as follows. The new routes are based on the analysis we have undertaken as part of our initial river freight study.

1. New route example 1: Weybridge depot to London Bridge
2. New route example 2: Bow depot to Battersea
3. Pilot route: NHS Trust Pilot Study for the delivery of Medical Supplies (from Dartford logistics centre)
4. Existing route: DHL currently operate a riverboat services in the mornings, from Wandsworth Riverside Quarter Pier to Bankside Pier.

For the two new route examples, we compare the road costs against using a river route from Tilbury to the destination pier. It should be noted that, the MSRS application is done on a per tonne basis, but for light freight we have used analysis per parcel, based on 200 parcels per route.

### Heavy Freight Routes

For the heavy freight routes, we have analysed three existing routes using origin-destination and annual tonnage information for the following:

1. Isle of Grain to Dagenham - carrying 350k tonnes per annum of aggregates
2. Isle of Grain to Northfleet – carrying 350k tonnes per annum of aggregates
3. Cliffe to Peruvian Wharf – carrying 330k tonnes per annum
4. Dagenham to Fulham – carrying 300k tonnes per annum

*Note: The river route cost data is commercially sensitive for this existing operational route. Therefore, rather than calculating actual BCRs we have identified the maximum funding award available per route.*

# MSRS COST BENEFIT ANALYSIS

## ENVIRONMENTAL BENEFITS

The “Benefits” side of the BCR calculation is based on Mode Shift Benefits (MSB). MSB puts a monetary value on the environmental benefits of taking a lorry off the road. The level of environmental benefits varies by road category as shown in the information to the right. This information is an extract from the MSRS guidance documentation, which shows a worked example of how environmental benefits are calculated for an indicative logistics company route.

The MSB values take into account the following benefits from diverting road freight:

- Congestion
- Greenhouse gases
- Air quality
- Infrastructure (road maintenance)
- Accidents
- Noise
- Taxation impacts
- The net rail/waterway externalities associated with diverting road freight to alternative modes are also taken into account within the MSB values.

In order to assess how the current MSRS process works for potential river freight routes, we have applied this six step method for estimating environmental benefits for each of the routes highlighted in slide 22 above. The results of this analysis are presented in subsequent slides.

There are potential limitations with using this method in order to demonstrate the full environmental benefits of river freight movements compared to road. This is because:

- The environmental benefit estimates per mile are based on assumptions for switching to rail movements (by netting off the environmental cost of an equivalent rail movement) and these benefit values are then applied to waterway movements on an equivalent per mile basis.
- The latest estimates being used under the categories above may underestimate environmental benefits, for example, a recent study on road vehicle tyre wear found that tyre particulates are significantly higher than exhaust emissions per mile on more modern vehicles.

### Environmental Benefit Worked Example

Using the above step by step approach the following example aims to show how fictitious company Admin Logistics (AL) calculates its environmental benefits.

#### Step 1: Identifying flow details

AL is interested in applying for support through MSRS (Bulk and Waterways). The company runs a service between X and Y currently carrying 20,000 tonnes a year. It is expected that this will rise to 40,000 tonnes in year 2 and 50,000 tonnes in year 3. The company has identified that the lorries have a payload of 25 tonnes and for each trip the lorries return empty.

#### Step 2: Understanding Mode Shift Benefit Values

AL has read and understood the MSB values, how they have been derived and is now ready to calculate the total mileage for each of the identified road types.

#### Step 3: Calculating total mileage for each road type

Routing software is used to identify the route the lorry would take and the distances travelled on different roads. Any high value motorway mileage is identified using the tables at D1.2. This is then summarised into a table.

#### Step 4: Using MSBs to calculate the route value

Now that the mileage on different road types has been established, AL is able to use the MSBs to calculate the route value. This is then pulled together into a table like the one shown below.

Road Type	Mileage	MSB Value	Route Value
Motorways standard	26	£0.11	£2.86
Motorways High Value	0	£1.61	£0.00
A Roads	35	£1.23	£43.05
Others	21	£3.38	£70.98
<b>Total</b>	<b>82</b>		<b>£116.89</b>

#### Step 5: Calculating the number of removed lorry journeys

Using the payload information and tonnage that the company identified through step 1, the number of lorry journeys can be calculated. In this case there are no return journeys.

#### Step 6: Calculating the environmental benefit

The final step for the company is to calculate the value of the environmental benefits. This is done by multiplying the route value, already identified in step 4, by the number of lorry journeys as identified in step 5. This can then be divided by the tonnage to give a benefit per tonne figure. The information is then pulled together into a table like the one below.

Year	Tonnage	Payload	Lorry Journey	Route Value	Benefit per tonne
1	20,000	25	800	£116.89	£4.68
2	40,000		1,600		£4.68
3	50,000		2,000		£4.68
<b>Total</b>	<b>110,000</b>		<b>4,400</b>		

The example above shows the environmental benefits are valued at £4.68 per tonne. However, this is not an indication of the level of grant that may be offered but is the ceiling above which no offer can be made. Other elements of the application will determine the exact amount of grant offered, including the financial appraisal, minimum value for money, prioritisation and budget availability.

In this case the financial need was assessed at £1.50 per tonne for year 1 (see Annex E). The applicant could apply for grant at £1.50 per tonne moved. The value for money on that basis would be a benefit/cost ratio (BCR) of 3.12:1 (£4.68 benefit/£1.50 cost).

### Findings:

**The current MSRS environmental benefit estimates (per mile) for switching from road movements are estimated using rail cost alternatives, and therefore may underestimate the full benefit of removing road movements to river freight. The current mechanism may not be advantaging applications where a river freight solution is unlocking decarbonisation opportunities across the wider transport network.**

# COST BENEFIT ANALYSIS

## LIGHT FREIGHT OVERVIEW

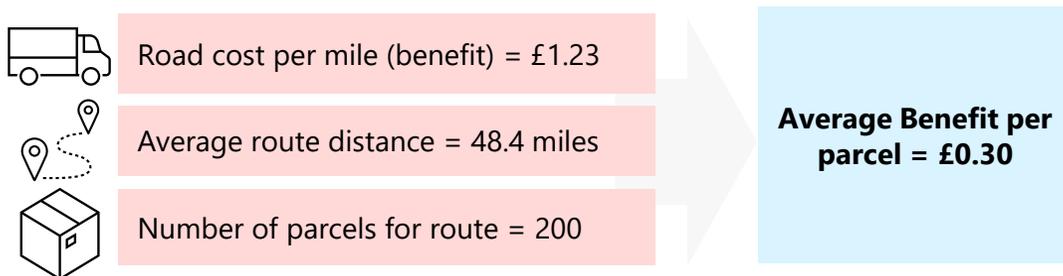
### MSRS Light Freight – London Routes

The MSRS uses environmental benefit estimates on a per mile basis by road category as below. Whilst road freight routes will commonly use a combination of motorways, A roads and Other roads, for the purposes of the analysis of benefits, we have taken the Mode Shift Benefit (MSB) Value for A Roads as a representative average of a freight route in and around London.

Road Type	MSB (Env Benefit, £/mile)
Motorways Standard	£0.11
Motorways High Value	£1.61
<b>A Roads</b>	<b>£1.23</b>
Other Roads	£3.38

### Average of London Routes

If we assume a benefit of £1.23 per mile for taking a lorry off the road (A roads), this equates to an average for London delivery routes of:



### Implications for MSRS Grant Applications

The minimum BCR to be eligible for MSRS funding is 2:1. A number of applications have been passed with a BCR of 3:1, whilst the recent average is 7.24:1. This would indicate that a competitive BCR is between 3.0 and 7.0.

To achieve a competitive BCR of between 3.0 and 7.0, for the average of London delivery routes, this would require a maximum claim of between 4p and 10p per parcel:

**Benefit Cost Ratio = 3.0 = 30p / 10p**  
**Benefit Cost Ratio = 7.0 = 30p / 4.3p**

**Implication: For the average of London delivery routes, a funding level of between 4p and 10p per parcel for a grant award would be required.**

Under this equation, for an application to achieve a BCR of 7.0, the amount of 4.3p would be the maximum amount that could be received from a grant award.

The below table shows the maximum funding award per parcel for each BCR across the range:

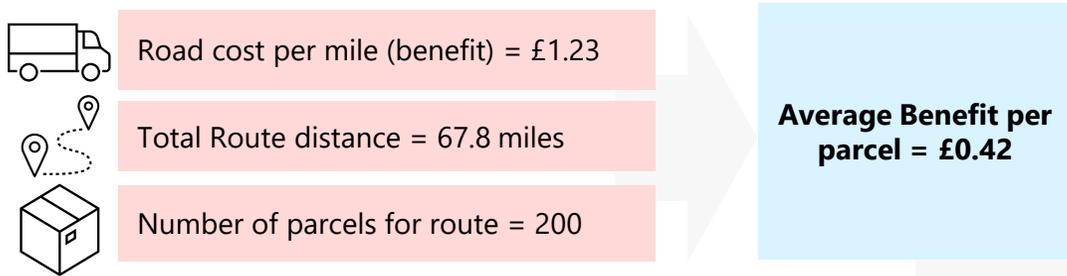
BCR	7.0	6.0	5.0	4.0	3.0	2.0
Funding level for grant award	4.3p	5.0p	6.0p	7.5p	10.0p	15.0p

# COST BENEFIT ANALYSIS

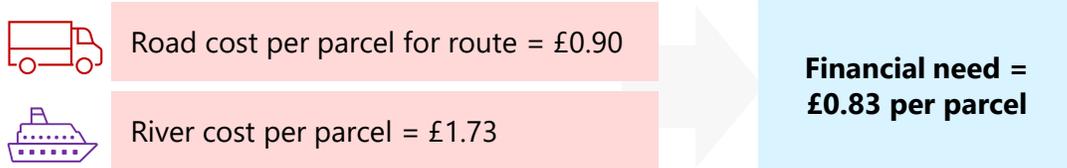
## LIGHT FREIGHT - NEW ROUTE EXAMPLE 1

### Weybridge Depot to London Bridge

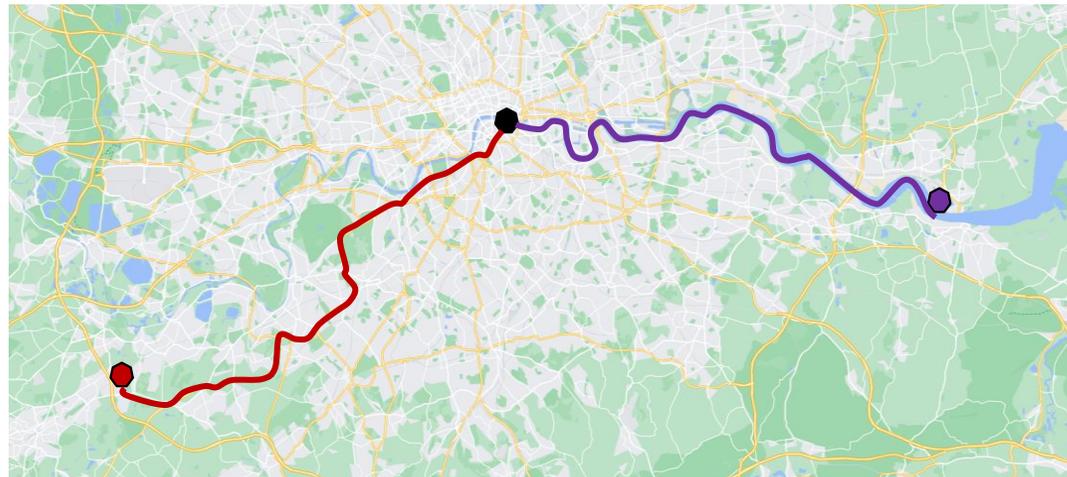
#### Current Road Route – Environmental Benefits:



#### Financial need for route mode shift:



**BCR = 0.50**



### With this maximum financial need request, the BCR = 0.50

This will not receive MSRS funding, for two reasons as set out below. Note that the applicant does not have to apply at the maximum level of financial need.

1. All applications need to achieve a minimum Benefit to Cost Ratio (BCR) of 2:1. This would require a maximum claim per parcel of £0.21 – lower than the financial need of £0.83:

$$\text{BCR} = 2.0 = \text{£}0.42 / \text{£}0.21$$

2. To achieve a competitive BCR of between 3.0 and 7.0, this would require a maximum claim of 6p-14p per parcel:

$$\begin{aligned} \text{BCR} = 3.0 &= 42\text{p} / 14\text{p} \\ \text{BCR} = 7.0 &= 42\text{p} / 6\text{p} \end{aligned}$$

**6p-14p per parcel**  
Funding Level for Grant Award

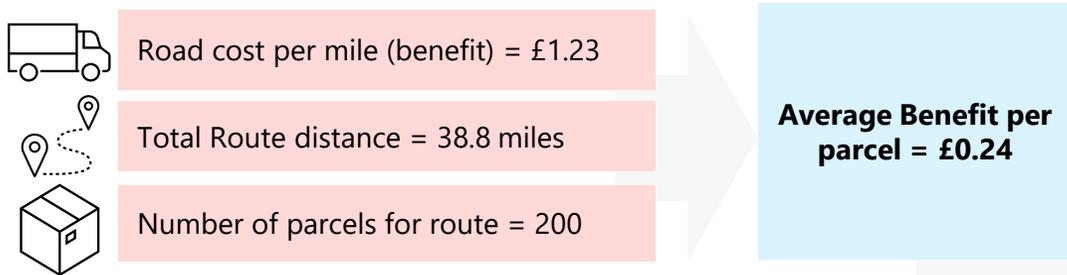
**Outcome:**  
Funding level for a competitive BCR is significantly lower than estimated financial need of 83p

# COST BENEFIT ANALYSIS

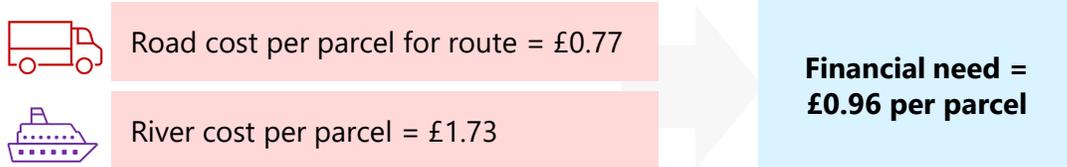
## LIGHT FREIGHT - NEW ROUTE EXAMPLE 2

### Bow to Battersea

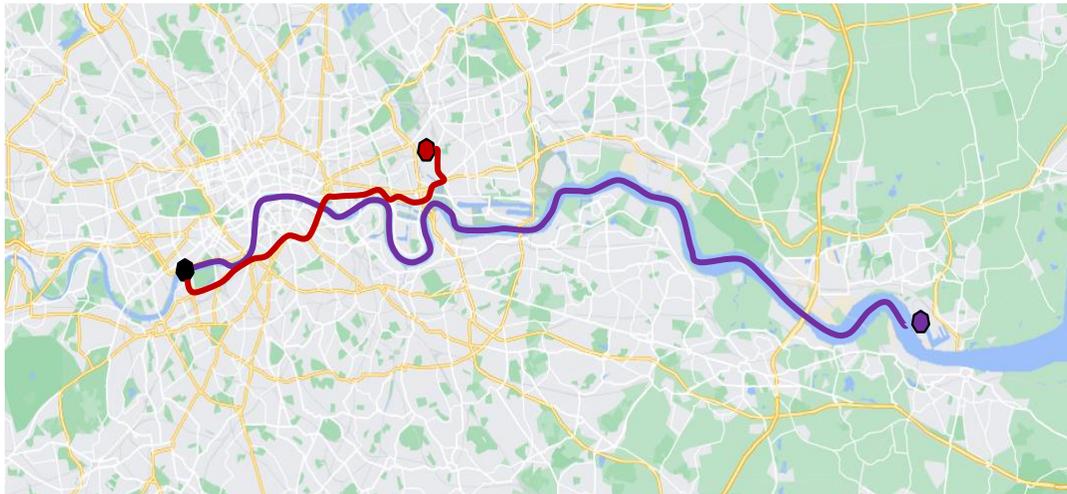
#### Current Road Route – Environmental Benefits:



#### Financial need for route mode shift:



**BCR = 0.25**



### With this maximum financial need request, the BCR = 0.25

As with example 1, this will not receive funding, for the same two reasons as set out below. With this example, the benefits are lower and therefore, it would be more difficult to achieve a competitive BCR for grant funding award. In addition, with a lower benefit amount, the financial claim is lower.

1. All applications need to achieve a minimum Benefit to Cost Ratio (BCR) of 2:1. This would require a maximum claim per parcel of £0.12:

$$\text{BCR} = 2.0 = \text{£}0.24 / \text{£}0.12$$

2. To achieve a competitive BCR of between 3.0 and 7.0, this would require a maximum claim of 3p-8p per parcel:

$$\begin{aligned} \text{BCR} = 3.0 &= 24\text{p} / 8\text{p} \\ \text{BCR} = 7.0 &= 24\text{p} / 3\text{p} \end{aligned}$$

**3p-8p per parcel**  
Funding Level for Grant Award

**Outcome:**  
Funding level for a competitive BCR is significantly lower than estimated financial need of 96p

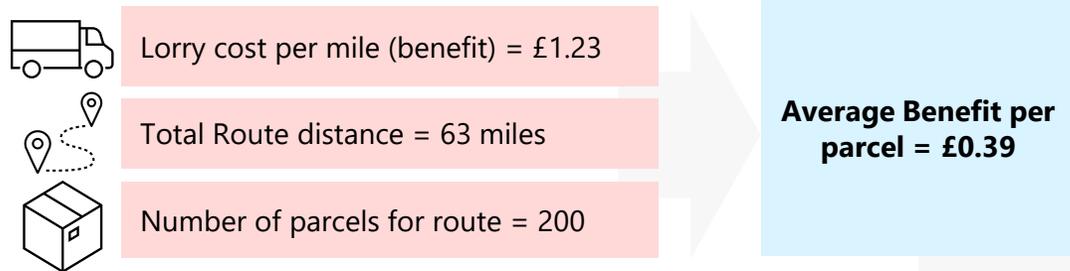
# COST BENEFIT ANALYSIS

## LIGHT FREIGHT - PILOT ROUTE EXAMPLE

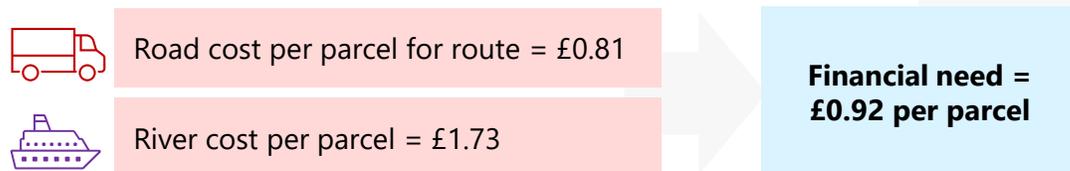
### NHS Trust Pilot Study – Delivery of Medical Supplies

Guy's and St Thomas' NHS Foundation Trust has teamed up with CEVA Logistics and Livett's Group to trial a riverboat delivery service of medical services, with three a month pilot study due to commence in June 2022. We analyse the benefit-cost equation for this route below, using Dartford logistics centre to St Thomas' Hospital as the route.

#### Current Road Route (Dartford to St Thomas' Hospital) – Environmental Benefits:



#### Financial need for route mode shift:



**BCR = 0.42**

### With this maximum financial need request, the BCR = 0.42

Under the MSRS requirements, given the BCR is lower than 2.0 this proposed pilot would not receive funding and the financial need is significantly higher than a competitive BCR of 3.0-7.0.

1. All applications need to achieve a minimum Benefit to Cost Ratio (BCR) of 2:1. This would require a maximum claim per parcel of £0.19. Assuming an average parcel of PPE of 5kg, this would equate to 95p per 25kg of PPE:

$$\text{BCR} = 2.0 = \text{£}0.39 / \text{£}0.19$$

2. To achieve a competitive BCR of between 3.0 and 7.0, this would require a maximum claim of 6p-13p per parcel, significantly lower than the financial need of 92p. Assuming an average parcel of PPE of 5kg, this would equate to 30-65p per 25kg of PPE:

$$\begin{aligned} \text{BCR} = 3.0 &= 39\text{p} / 13\text{p} \\ \text{BCR} = 7.0 &= 39\text{p} / 6\text{p} \end{aligned}$$

**6p-13p per parcel**  
Funding Level for Grant Award

**Outcome:**  
Funding level for a competitive BCR is significantly lower than estimated financial need of 92p per parcel

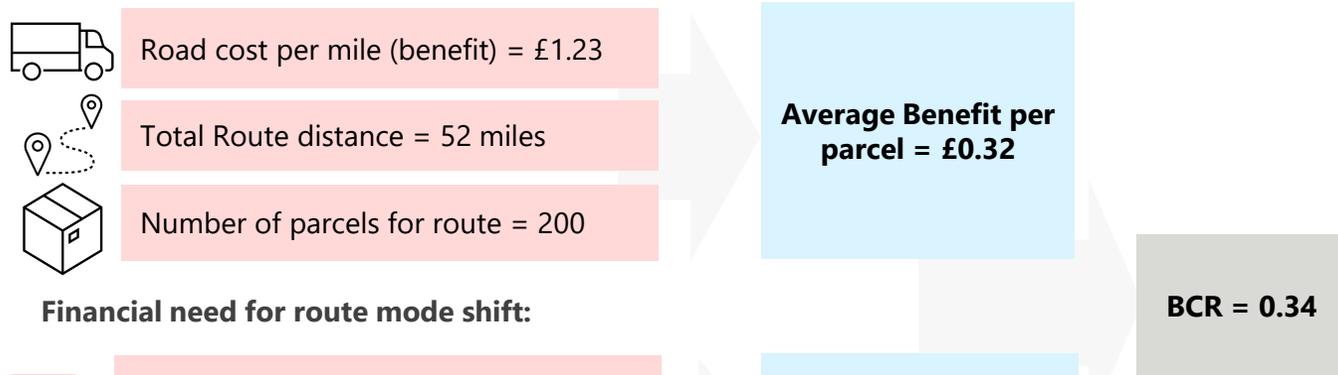
# COST BENEFIT ANALYSIS

## LIGHT FREIGHT - EXISTING ROUTE EXAMPLE

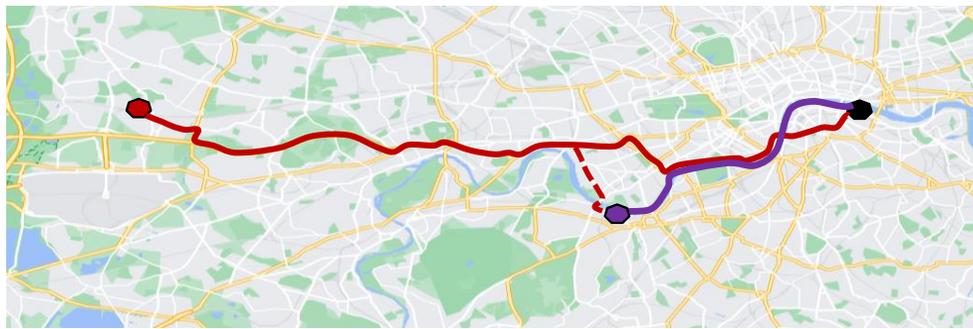
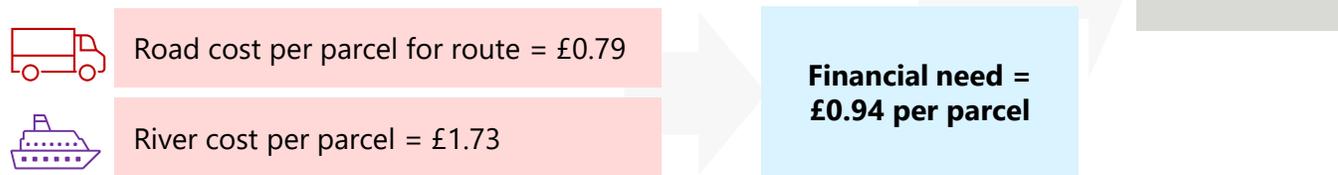
### DHL Courier Delivery on the Thames

DHL currently operate riverboat services in the mornings, from Wandsworth Riverside Quarter Pier to Bankside Pier. "Electric vehicles move the shipments from a DHL hub to the pier and final delivery takes place via DHL courier bicycles". We analyse the benefit-cost equation for this route below, to see how a route like this would compete for grant funding under MSRS.

#### Current Road Route (Hayes to London Bridge) – Environmental Benefits:



#### Financial need for route mode shift:



### With this maximum financial need request, the BCR = 0.34

Similarly to the NHS pilot route on the previous slide, the BCR is lower than 2.0 and therefore would not receive funding under MSRS. In addition, financial need is significantly higher than a competitive BCR of 3.0-7.0.

1. All applications need to achieve a minimum Benefit to Cost Ratio (BCR) of 2:1. This would require a maximum claim per parcel of £0.16:

$$\text{BCR} = 2.0 = \text{£}0.32 / \text{£}0.16$$

2. To achieve a competitive BCR of between 3.0 and 7.0, this would require a maximum claim of 5p-11p per parcel, significantly lower than the financial need of 94p:

$$\begin{aligned} \text{BCR} = 3.0 &= 32\text{p} / \mathbf{11\text{p}} \\ \text{BCR} = 7.0 &= 32\text{p} / \mathbf{5\text{p}} \end{aligned}$$

**5p-11p per parcel**  
Funding Level for Grant Award

**Outcome:**  
Funding level for a competitive BCR is significantly lower than estimated financial need of 34p

# COST BENEFIT ANALYSIS

## HEAVY FREIGHT OVERVIEW

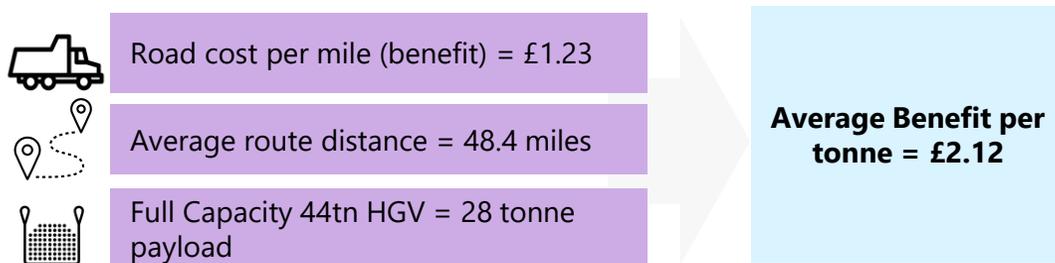
### MSRS Heavy Freight – London Routes

The MSRS uses environmental benefit estimates on a per mile basis by road category as below.

Road Type	Env Benefit (£/mile)
Motorways Standard	£0.11
Motorways High Value	£1.61
<b>A Roads</b>	<b>£1.23</b>
Other Roads	£3.38

### Average of London Routes

If we assume a benefit of £1.23 per mile for taking a lorry off the road (A roads), this equates to an average for London delivery routes of:



### Implications for MSRS Grant Applications

To achieve a competitive BCR is between 3.0 and 7.0, a grant award for the average of London delivery routes would equate to:

**Benefit Cost Ratio = 3.0 = £2.12 / £0.71**  
**Benefit Cost Ratio = 7.0 = £2.12 / £0.30**

**Implication: For the average of London delivery routes, a funding level of 30p-71p per tonne would be required for grant award.**

For an application to achieve a BCR of between 3.0 and 7.0, for the average of London routes, 30p-71p would be the maximum funding amount that could be received from a grant award.

With lower BCR's this would increase up to £1.06 with a BCR of 2.0:

BCR	7.0	6.0	5.0	4.0	3.0	2.0
Funding level for grant award	£0.30	£0.35	£0.42	£0.53	£0.71	£1.06

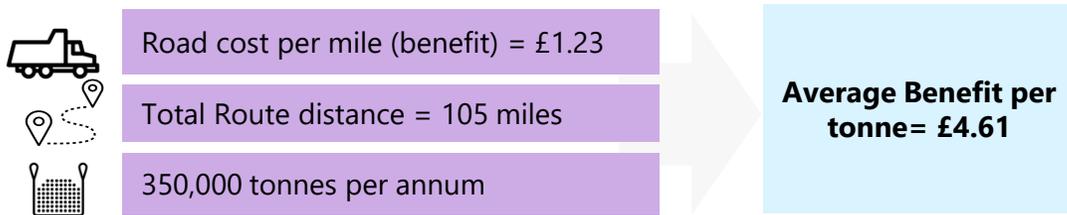
# COST BENEFIT ANALYSIS

## HEAVY FREIGHT - ROUTE EXAMPLE 1

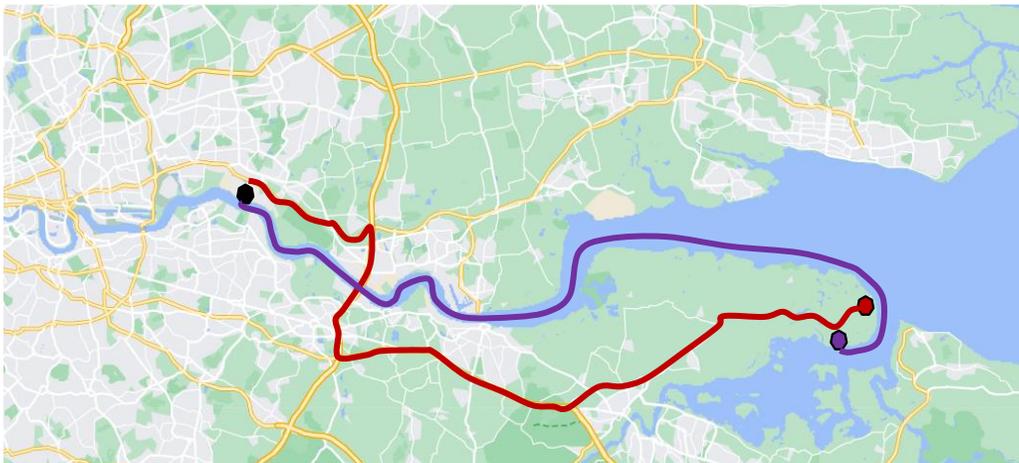
We have used details from stakeholder research, to analyse four existing heavy freight routes.

### Route 1: Isle of Grain to Dagenham Pier

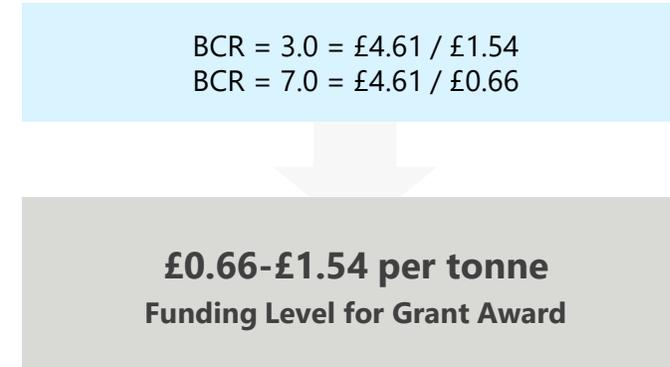
#### Current Road Route – Environmental Benefits:



*Note: The river route cost data is commercially sensitive for this existing operational route. Therefore, heavy freight river route costs are not available to be able to calculate the financial need for this route.*



To achieve the a competitive BCR of 3.0-7.0, this would require a maximum claim of £0.66-£1.54 per tonne:



#### Outcome:

- With volumes of 350k tonnes per annum, implies a significant level of grant funding of 200-400k could be possible.
- If route already financially viable, would not meet application criteria of demonstrating financial need.

With lower BCRs which could result in successful grant awards, these BCRs would require the following financial claims:

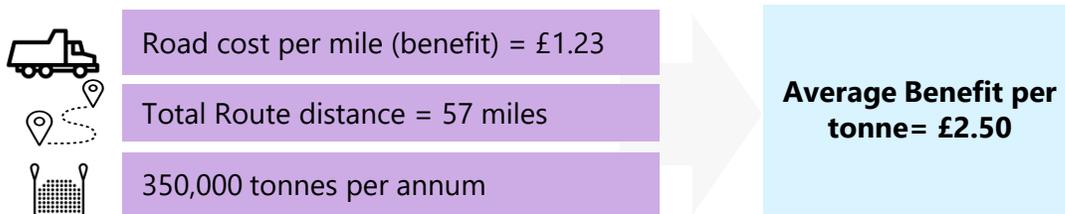
BCR	7.0	6.0	5.0	4.0	3.0	2.0
Funding level for grant award	£0.66	£0.77	£0.92	£1.15	£1.54	£2.31

# COST BENEFIT ANALYSIS

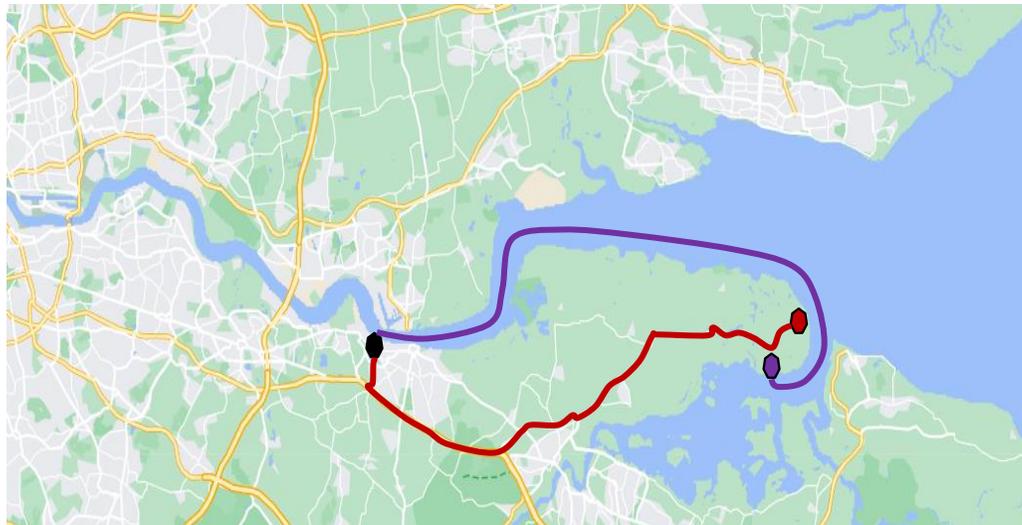
## HEAVY FREIGHT - ROUTE EXAMPLE 2

### Route 2: Isle of Grain to Northfleet

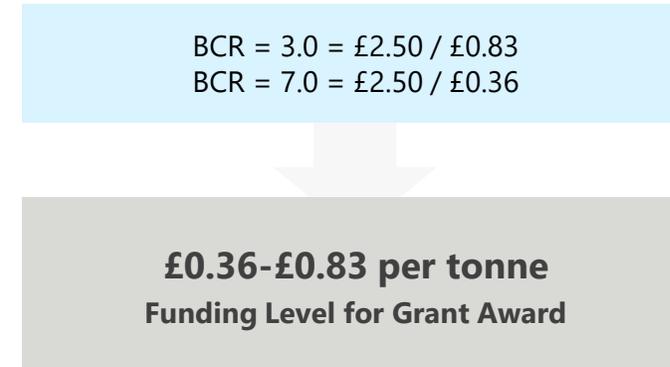
#### Current Road Route – Environmental Benefits:



*Note: The river route cost data is commercially sensitive for this existing operational route. Therefore, heavy freight river route costs are not available to be able to calculate the financial need for this route.*



To achieve the a competitive BCR of 3.0-7.0, this would require a maximum claim of £0.36-£0.83 per tonne:



#### Outcome:

- With volumes of 350k tonnes per annum, implies a significant level of grant funding of 100-250k could be possible.
- If route already financially viable, would not meet application criteria of demonstrating financial need.

With lower BCRs which could result in successful grant awards, these BCRs would require the following financial claims:

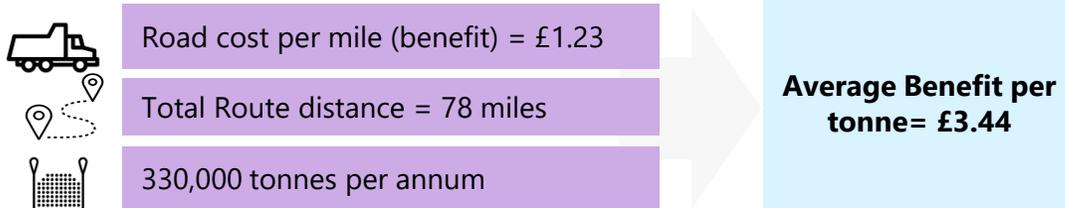
BCR	7.0	6.0	5.0	4.0	3.0	2.0
Funding level for grant award	£0.36	£0.42	£0.50	£0.63	£0.83	£1.25

# COST BENEFIT ANALYSIS

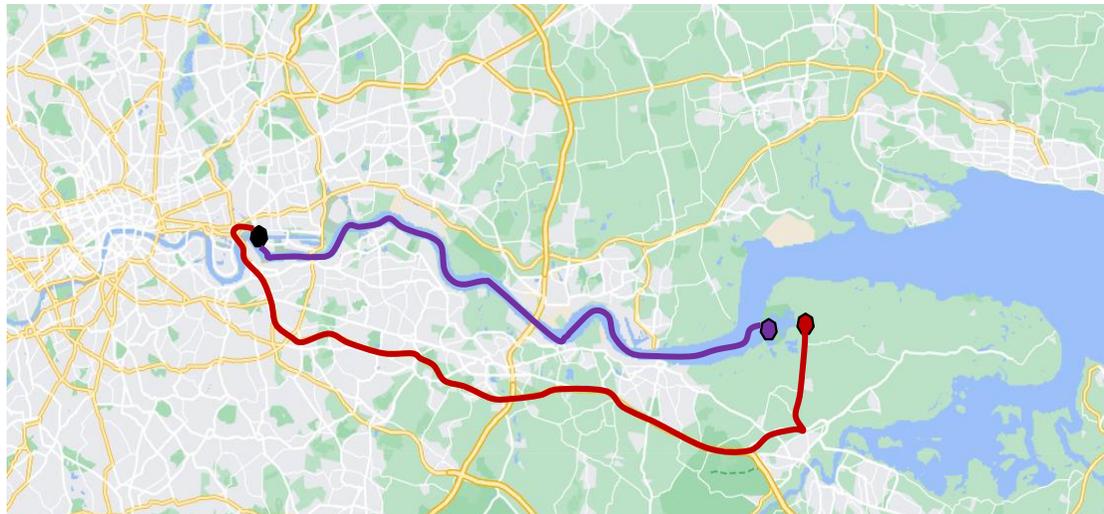
## HEAVY FREIGHT - ROUTE EXAMPLE 3

### Route 3: Cliffe to Peruvian Wharf

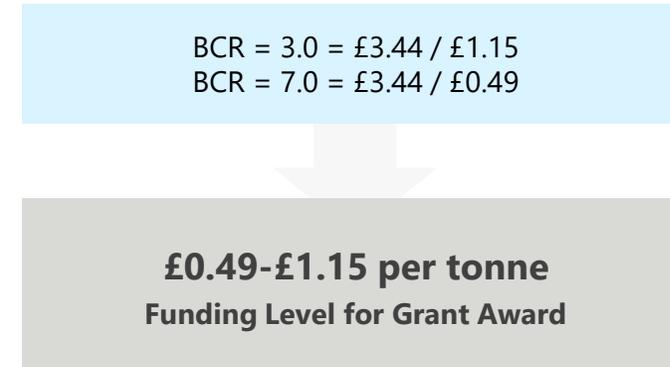
#### Current Road Route – Environmental Benefits:



*Note: The river route cost data is commercially sensitive for this existing operational route. Therefore, heavy freight river route costs are not available to be able to calculate the financial need for this route.*



To achieve the a competitive BCR of 3.0-7.0, this would require a maximum claim of £0.49-£1.15 per tonne:



#### Outcome:

- With volumes of 330k tonnes per annum, implies a significant level of grant funding of 150-300k could be possible.
- If route already financially viable, would not meet application criteria of demonstrating financial need.

With lower BCRs which could result in successful grant awards, these BCRs would require the following financial claims:

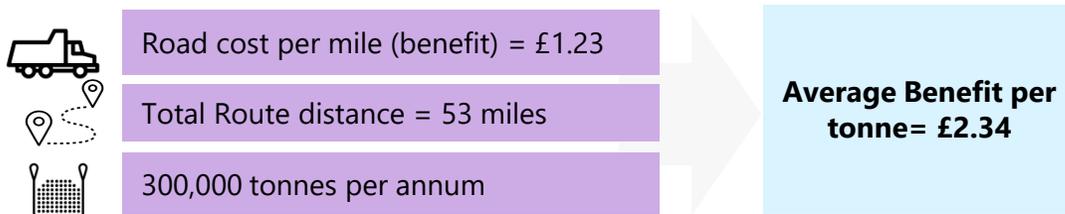
BCR	7.0	6.0	5.0	4.0	3.0	2.0
Funding level for grant award	£0.49	£0.57	£0.69	£0.86	£1.15	£1.72

# COST BENEFIT ANALYSIS

## HEAVY FREIGHT - ROUTE EXAMPLE 4

### Route 4: Dagenham to Fulham

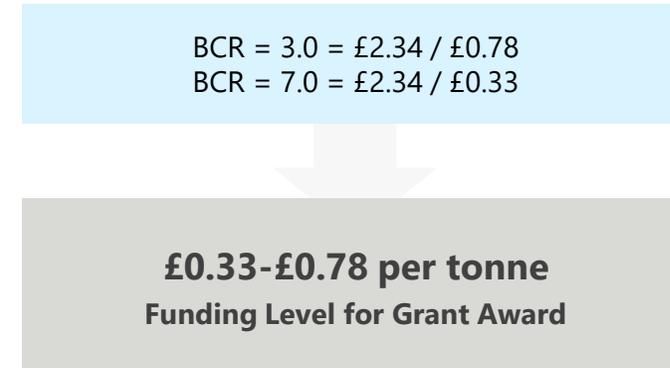
#### Current Road Route – Environmental Benefits:



*Note: The river route cost data is commercially sensitive for this existing operational route. Therefore, heavy freight river route costs are not available to be able to calculate the financial need for this route.*



To achieve the a competitive BCR of 3.0-7.0, this would require a maximum claim of £0.33-£0.78 per tonne:



#### Outcome:

- With volumes of 300k tonnes per annum, implies a significant level of grant funding of 100-200k could be possible.
- If route already financially viable, would not meet application criteria of demonstrating financial need.

With lower BCRs which could result in successful grant awards, these BCRs would require the following financial claims:

BCR	7.0	6.0	5.0	4.0	3.0	2.0
Funding level for grant award	£0.33	£0.39	£0.47	£0.59	£0.78	£1.17

# ROUTE ANALYSIS SUMMARY

**Table 5-1 Route Analysis Summary**

Route	Freight type	Route Description	Environmental benefit	Financial need per parcel / tonne	Funding level for grant award
Weybridge Depot to London bridge	Light	Potential new river route	£0.42	83p / parcel	6p-14p / parcel
Bow to Battersea	Light	Potential new river route	£0.24	96p / parcel	3p-8p / parcel
Dartford to St Thomas' Hospital	Light	Pilot river route - NHS and CEVA Logistics	£0.35	93p / parcel	6p-13p / parcel
Hays to London Bridge	Light	Existing light freight river route (DHL)	£0.32	94p / parcel	5p-11p / parcel
Isle of Grain to Dagenham	Heavy	Existing heavy freight river route	£4.61	n/a*	£0.66-£1.54 / tonne
Isle of Grain to Northfleet	Heavy	Existing heavy freight river route	£2.50	n/a*	£0.36-£0.83 / tonne
Cliffe to Peruvian Wharf	Heavy	Existing heavy freight river route	£3.44	n/a*	£0.49-£1.15 / tonne
Dagenham to Fulham	Heavy	Existing heavy freight river route	£2.34	n/a*	£0.33-£0.78 / tonne

### Light Freight Route Analysis Findings:

- For potential new routes, grant award funding levels estimated to be significantly lower than financial need.
- For the pilot and existing routes, this is also the case, implying that the movements are being subsidised for trialling innovative solutions rather than through funding support.

### Heavy Freight Route Analysis Findings:

- Heavy freight routes provide considerable financial benefits and analysis suggests that heavy river freight operators could be competitive in MSRS fund applications.
- However, if a route is already financially viable, it would not meet application criteria of demonstrating financial need.

*\* Note: The river route cost data is commercially sensitive for this existing operational route. Therefore, heavy freight river route costs are not available to be able to calculate the financial need for this route.*

## 6. CONCLUSIONS

# MSRS CONCLUSIONS

## LIGHT FREIGHT FINDINGS

- **MSRS is not sufficient to close the viability gap for light freight as things stand:** the financial need for potential new delivery routes is significantly higher than the estimated funding per parcel that could be achieved with a competitive application.
- **MSRS could provide some support for existing activities (e.g. DHL):** the MSRS could provide a limited amount of funding to existing light freight operations (DHL, CEVA). However, DHL will need to prove that the route is not “financially viable” (see heavy freight findings) – they would need to provide evidence that as currently operated, the route is not breaking even.
- **MSRS cannot provide funding for capital expenditure:** light freight is new to the Thames and will require significant upfront capital expenditure on piers and vessels. The MSRS will not fund this expenditure.
- **MSRS favours existing operations:** the MSRS guidance states that factors that will be considered in determining funding recipients include “previous record of the applicant, and the deliverability of the traffic volumes contained in the application for grant”. This disadvantages light freight, which does not yet exist in a significant capacity on the Thames.

### Light Freight Conclusions:

- **The MSRS is not designed to support innovative step changes in freight and logistics. As things stand, it could provide some support to light river freight operations, but not enough to close the viability gap.**
- **The restriction of MSRS to provide funding of operating costs only and not to fund capital expenditure is a particular barrier for light freight river movements, given requirement to fund costs on piers and vessels to support operations.**
- **In particular, light river freight can be considered as a “penultimate mile” solution, by connecting to and unlocking last mile solutions. As things stand, it cannot compete against the environmental benefit calculations delivered by “middle mile” intermodal rail operations.**
- **We recommend engagement with DFT on this issue to identify alternative funding sources to unlock a step-change in investment. A parallel would be the step-change in intermodal rail freight traffic seen from 2008, which aligns with the rail freight funding boost introduced in 2007.**

# MSRS CONCLUSIONS

## HEAVY FREIGHT FINDINGS

### Heavy Freight Findings

- **Heavy freight routes provide considerable financial benefits:** our analysis suggests that heavy river freight operators could be competitive in the fund, receiving funding of c£150k per annum for certain routes.
- **Heavy freight operators may not be considered as eligible for funding:** river freight applicants to the MSRS must demonstrate “financial need”, where costs of river freight movements exceed road equivalents. However, existing river freight operations happen because they are already financially viable and therefore may not be considered eligible. This does not appear to be a hurdle that intermodal applicants have to face. Intermodal rail applicants instead have a menu of maximum grant rates to bid against, which appears to implicitly consider intermodal rail freight as having a “financial need”.
- **Heavy freight operators do not have the resources to apply to MSRS:** river freight operators are SMEs with limited capacity to consider a lengthy application process. SMEs cannot commit resources to developing an application for funding that is highly uncertain. However, the scale of HGV commodity freight movements in London would indicate that there is a significant opportunity for river (126m tonnes to/from/within London based on 2014 DfT data). Capturing a small % of this scale of tonnage could represent a significant opportunity.

**Two heavy river freight operators have stated that they would be interested in working with TEGB on developing an MSRS application. Our analysis suggests that they would be able to access significant funding (c£150k for certain indicative routes). While significant for river freight on the Thames, it is small in the overall level of funding seen in MSRS, which totalled nearly £63m in 2021/22.**

### Heavy Freight Conclusions:

**The key will be to provide evidence of “financial need”. We consider there to be two approaches to financial need:**

- 1. With additional funding, an operator would be able to open new routes**
- 2. The current cost of river transport does not reflect the true costs of operation – i.e. it would need to be more to upgrade the fleet to be net zero / clean propulsion**

**One stakeholder believes the second point would be an easy argument to make. They provide the example of a tug being between £90,000 and £150,000 per annum short of covering her costs of operation plus interest and capital repayments throughout the first 10 years of her life. This will only become more difficult with additional costs (50% - 150%) for a hybrid or clean tug.**

**We propose to engage with DfT on taking these applications forward.**

# MSRS RIVER FREIGHT CONCLUSIONS

## Light/heavy freight conclusions:

- **Light freight:** With the MSRS not designed to support step changes in freight and logistics, as things stand it could provide some support for light freight. Light freight is often considered as supporting a “last mile” solution (or penultimate mile), and the analysis shows that it’s difficult to compete against intermodal rail operations. Restrictions in providing funding for operating costs only (and not CAPEX) are a particular barrier to developing light freight river movements given the funding need for infrastructures such as piers and vessels.
- **Heavy freight:** Routes for heavy river freight could provide considerable environmental benefits from shifting from road and with additional funding there could be opportunities to open new routes. However, heavy freight operators typically do not have the resources to apply to MSRS compared to rail companies and may not be considered eligible for funding given that financial viability may already exist, as is the case for a selection of existing routes.

## In general:

- The analysis and findings in this report highlight a number of issues with the current MSRS funding scheme as a way to facilitate river freight movements. In order to develop river freight as part of the answer for sustainable and innovative solutions, step changes would be required in some areas, particularly focused on environmental initiatives to unlock decarbonisation opportunities.
- The current MSRS environmental benefit estimates (per mile) for switching from road movements are estimated using rail cost alternatives, and therefore may underestimate the full benefit of removing road movements to river freight. The current mechanism may not be advantaging applications where a river freight solution is unlocking decarbonisation opportunities across the wider transport network.
- The restriction of MSRS being available for operating costs and not capital costs is a significant barrier for opening new river routes, which is not as much a barrier for rail operations with well-established networks and infrastructure.

# MSRS RIVER FREIGHT RECOMMENDATIONS

**Overall, we have identified several possible next steps forward to improve river freight funding opportunities and volumes to be shifted to river for both light and heavy freight. These are split into the following four proposed next steps:**

- 1. Changing the assessment criteria.** The current MSRS assessment criteria favours intermodal rail operations over waterways. For light freight, the financial need for potential new routes is significantly higher than the estimated financial viability gap and for heavy freight, existing routes are already financially viable and therefore not eligible for funding. For the existing MSRS scheme or a potential new funding scheme, the criteria could be relaxed or amended to encourage funding applications for river freight movements.
- 2. Encouraging innovation.** Particularly for light freight, encouraging innovation through either softening of criteria or providing alternative funding avenues. This could be in the form of funding specifically for innovative decarbonisation solutions using waterways rather than a combined rail and waterways scheme.
- 3. Development of a pilot study** to develop opportunities for light freight operations for specific movements, in order to test alternative mode shift support mechanisms or initiatives. A pilot study could include the following steps:
  - a. Defining the scope of the pilot for adapting the existing mechanism or define a new mechanism and the types of light freight movements to be targeted under a pilot.
  - b. Through discussion with operators and stakeholders, shortlist potential movements/solutions and estimate operating and capital costs for investment in these.
  - c. At the outset, specify KPIs to monitor as part of the pilot, to ensure benefits and costs are captured and measured as part of a funding award process for the mechanism.
  - d. An evaluation of the findings (after a set period of operations) with key stakeholders, in order to help to shape the scope and details of the mechanism with a view to scaling the process.
- 4. Allowing grant funding for the purposes of capital expenditure.** The MSRS scheme only allows for funding operating costs. This is a particular barrier for light freight river movements, with innovative light freight river movements typically requiring capital costs for new piers, infrastructure or vessels to support operations. Whereas, new rail movements can utilise established infrastructure.

## APPENDIX: STAKEHOLDER OUTREACH

# STAKEHOLDER OUTREACH

## PURPOSE AND TARGETED STAKEHOLDERS

As part of this study, we have carried out a series of interviews with key stakeholders. These are to help inform our understanding of:

- Experiences of applying for MSRS grants
- Why river freight are such a low proportion of the MSRS funding awards
- Ideas and suggestions for improving river freight opportunities for grant funding, either through MSRS or otherwise

We have engaged with different types of companies and bodies including river operators and freight operators.

The stakeholder engagement process has been iterative throughout the study process and has helped inform the analysis and findings contained within this report.

We engaged the following parties as part of our stakeholder engagement:

- Thames Shipping
- GPS Marine
- Livett's
- Thames Clippers
- DHL
- The Chartered Institute of Logistics and Transport
- Department for Transport

