

Title: Ship safety: Small Passenger Ship Bridge Visibility Regulations IA No: DfT00409 RPC Reference No: RPC-4360(1)-DFT-MCA Lead department or agency: Maritime and Coastguard Agency Other departments or agencies: Department for Transport	Impact Assessment (IA)		
	Date: 23/05/2019		
	Stage: Final		
	Source of intervention: Domestic		
	Type of measure: Secondary legislation		
Contact for enquiries: Joanna Dormon			
Summary: Intervention and Options			RPC Opinion: GREEN

Cost of Preferred (or more likely) Option			
Total Net Present Value	Business Net Present Value	Net cost to business per year (EANDCB in 2014 prices)	Business Impact Target Status
-£3.21m	-£3.21m	-£0.336m	NQRP

What is the problem under consideration? Why is government intervention necessary?

The Merchant Shipping (Bridge Visibility) (Small Passenger Ships) Regulations 2005 (“2005 Regulations”), implement Marine Accident Investigation Branch recommendations in relation to bridge visibility on passenger ships, set out in their report into the loss of the *Marchioness*. However, in the 2005 Regulations, there is:

- A regulatory gap that exists for vessels with a registered length of between 45m and 55m; and
- A perceived lack of clarity within the definition of enclosed passenger deck and the use of visual aids when determining sight lines.

Government intervention to address these regulatory gaps is necessary to ensure the policy intention of the 2005 Regulations is maintained, and the safety of small passenger ships is of an acceptable standard.

What are the policy objectives and the intended effects?

The policy objectives are:

- 1) To ensure that safety standards on small passenger ships are maintained to an acceptable level; and
- 2) To ensure there is a level playing field in terms of regulatory arrangements for passenger ships of different sizes, where the risks are similar.

The intended effects are:

- 1) To remove the regulatory gap which exists for vessels with a length of 45m – 55m;
- 2) To clarify the definition of an enclosed passenger deck; and
- 3) To clarify the rules on the use of visual aids when determining sight lines.

What policy options have been considered, including any alternatives to regulation? Please justify preferred option (further details in Evidence Base)

One policy option has been considered in detail in this impact assessment (in addition to doing nothing):

Option 1 – Revising the 2005 Regulations, by:

- 1) Extending their scope to vessels between 45m and 55m in length;
- 2) Clarifying the definition of an enclosed passenger deck; and
- 3) Clarifying rules on the use of visual aids when determining sight lines.

During both consultations (on the draft Regulations and then on the Impact Assessment), the Maritime and Coastguard Agency (MCA) received representations from the firm primarily affected by the regulations, to consider other non-regulatory means of maintaining safety. This has been considered further, but been deemed inappropriate for the safety risks at hand – this is detailed further in this impact assessment

Will the policy be reviewed? It will be reviewed. If applicable, set review date: September/2022

Does implementation go beyond minimum EU requirements?	N/A			
Are any of these organisations in scope?	Micro Yes	Small Yes	Medium Yes	Large Yes
What is the CO₂ equivalent change in greenhouse gas emissions? (Million tonnes CO₂ equivalent)	Traded: N/A		Non-traded: N/A	

I have read the Impact Assessment and I am satisfied that (a) it represents a fair and reasonable view of the expected costs, benefits and impact of the policy, and (b) that the benefits justify the costs.

Signed by the responsible SELECT SIGNATORY: Nusrat Ghani Date : 13th June 2019

Summary: Analysis & Evidence

Policy Option 1

Description: Address gaps in Merchant Shipping (Bridge Visibility) (Small Passenger Ships) Regulations

FULL ECONOMIC ASSESSMENT

Price Base Year: 2017	PV Base Year: 2017	Time Period Years: 10	Net Benefit (Present Value (PV)) (£m)		
			Low: -5.19	High: -2.84	Best Estimate: -3.21

COSTS (£m)	Total Transition (Constant Price) Years		Average Annual (excl. Transition) (Constant Price)	Total Cost (Present Value)
Low	0.01	1	0.33	2.84
High	0.04		0.60	5.19
Best Estimate	0.01		0.37	3.21

Description and scale of key monetised costs by 'main affected groups'

The monetised costs of the regulations are likely to affect a single company. The costs will depend on the company's response to the regulation, with 2 likely outcomes identified by the MCA; removing protective screens or hiring an additional lookout.

In Outcome 1 the costs are the result of time taken to remove protective screens, modifying screens, lost occupancy due to lack of shelter from inclement weather and costs of providing customers with protective materials. Outcome 2 assumes the operator successfully seeks exemption from the regulations subject to the condition they hire additional lookouts, entailing additional labour costs and the loss of 1 available seat per trip.

Other key non-monetised costs by 'main affected groups'

N/A

BENEFITS (£m)	Total Transition (Constant Price) Years		Average Annual (excl. Transition) (Constant Price)	Total Benefit (Present Value)
Low	0.00	0	0.00	0.00
High	0.00		0.00	0.00
Best Estimate	0.00		0.00	0.00

Description and scale of key monetised benefits by 'main affected groups'

Given the limitations of the available evidence base, it has not been possible to monetise any of the benefits.

Other key non-monetised benefits by 'main affected groups'

The policy will improve regulatory consistency on visibility and line of sight requirements for passenger vessels with an enclosed passenger deck. This will improve safety by reducing the likelihood of collisions for the one affected company. Due to the unpredictability of such events, no attempt has been made to monetise this.

Key assumptions/sensitivities/risks

Discount rate (%)

3.5

- Given the limitations of the evidence base, it has not been possible to monetise the benefits and the monetised costs are uncertain. Various scenarios have been modelled to reflect these uncertainties.
- It is assumed that only one firm will be affected. This is low risk, as during consultation no other firms were came forward, and no other affected vessels were identified by MCA surveyors.
- This firm has currently ceased operations on the water. There is a risk that the company will not operate on the water during the appraisal period and there will be no impact from the measures.
- It is assumed that the occupancy per tour is constant throughout the appraisal period.
- It is assumed that wages are constant over the appraisal period
- The percentage of tours the operator runs at full capacity is assumed to be directly correlated with occupancy and is adjusted from the operator's estimates in their consultation response.
- Exposure to inclement weather is assumed to cause a 9% reduction in occupancy per tour.
- It is assumed blankets need to be replaced after every 10 tours and that 50% of passengers come dressed in preparation for inclement weather and will not require protective materials.
- The overall low estimate is the costs of Outcome 2 using the low occupancy assumption, while the high cost estimate is the costs of Outcome 1 using the high occupancy assumption.
- The average of the low occupancy scenarios is used to calculate the best estimate as this is considered the most realistic estimate, given it has been calculated using more reliable data.

BUSINESS ASSESSMENT (Option 1)

Direct impact on business (Equivalent Annual) £m:			Score for Business Impact Target (qualifying provisions only) £m: Insert
Costs: 0.336	Benefits: 0.0	Net: -0.336	

Evidence Base

1 Rationale for Intervention

1.1 Background into 2005 Bridge Visibility Regulations

The Merchant Shipping (Bridge Visibility) (Small Passenger Ships) Regulations (“2005 Regulations”) were introduced as a direct result of the recommendations from the Marine Accident Investigation Branch (MAIB) investigation into the MARCHIONESS/BOWBELLE disaster in 1989.

1.1.1 Extract of findings:

18.1 The loss of the lives of the skipper and 50 passengers from the MARCHIONESS was the direct result of her foundering, and her foundering was a direct result of collision with mv BOWBELLE.

18.3 The collision occurred because neither vessel observed the other until too late. The salient point which stands out from the evidence is that no one in either vessel was aware of the other’s presence until very shortly before the collision. No one on the bridge of the BOWBELLE was aware of the MARCHIONESS until the collision occurred.

The immediate cause of the casualty was therefore failure of the look-out in each vessel.

18.4 The principal contributory factors were that: -

Visibility from the wheelhouse of each vessel was seriously restricted;

.....

18.7 In each vessel, the restricted visibility was caused by the position and design of the wheelhouse and stemmed from inadequate consideration of the needs of the navigator, at the design stage in BOWBELLE, and at the time of conversion in MARCHIONESS.

1.1.2 Recommendations:

*4 * The existing guide-lines on navigation bridge visibility for sea-going ships should be enforced if necessary by Regulations. While in the long term the aim should be to develop requirements which apply internationally, action in respect of United Kingdom ships should not await international agreement: provided that the requirements are set out clearly so that they can be taken into account at the design stage, they should not penalise domestic owners (The Department).*

** 5 Regulations should be introduced requiring minimum standards of visibility from the steering position of passenger launches. (The Department)*

1.2 Background to proposed regulations

This intervention covers proposed changes to the small passenger ship bridge visibility requirements, which are currently implemented via Merchant Shipping (Bridge Visibility) (Small Passenger Ships) Regulations 2005 (“2005 Regulations”). These changes are necessary to address:

- A regulatory gap that exists for vessels with a registered length of 45m or more.
- A perceived lack of clarity within the definition of enclosed passenger deck and the use of visual aids when determining sight lines.

The 2005 Regulations implement the recommendations of the Marine Accident Investigation Branch in relation to bridge visibility on passenger ships, set out in their report into the loss of the *Marchioness*.

The proposed regulations will revoke and replace the 2005 Regulations in order to address several issues as described in more detail below:

The 2005 Regulations made provision for bridge visibility for passenger ships of under 45 metres registered length; the proposed regulations extend that scope to passenger ships of under 55 metres length overall. The proposed regulations will thus address an inadvertent regulatory gap that has arisen following changes to the international requirements.

The proposed regulations also amend the concept of “enclosed passenger deck”, so that relevant sight lines are not permitted to pass through any deck space where side or end screens can be fitted, either to the deck or any other part of the ship. This goes further to clarify that lines of sight for all round visibility must be direct. This amendment is required to address a perceived lack of clarity resulting from a change to the definition between revisions of earlier Bridge Visibility Regulations.

2 Policy options considered

The MCA believes that the 2005 Regulations are insufficiently robust, and that in order to ensure the correct and understood application it is necessary to clarify the definition of enclosed passenger space in the statutory instrument (SI) as well as the acceptable usage of visual aids.

The consequences of doing nothing are that the existing regulations would remain in place, perpetuating the perceived lack of clarity and regulatory gap. This would mean that the application of the 2005 Regulations would remain insufficiently certain.

This uncertainty could mean that a space or passenger deck fitted with (flexible) screens without an attachment directly to the deck (e.g. to the top of a bulwark¹ or rail), instead of fixed windows, could be assumed not to qualify as an enclosed deck, even though the visibility is no better, and in most cases, is expected to be far worse, than that provided by a fixed window. Such an interpretation undermines the intent and purpose of the regulations, which have been applied and complied with consistently by other operators of small passenger vessels since 1992.

Furthermore, a non-regulatory approach would not address the regulatory gap for vessels between 45m registered length and 55m length overall and these vessels would continue to have no enforceable regulations pertaining to bridge visibility. This would leave a safety gap and also mean an unequal playing field for vessels of alternate sizes, although there has been no evidence of UK vessels exploiting this regulatory gap from surveys and certification of UK registered vessels.

3 Consultations

A twelve-week consultation was held on the draft amendment of the Regulations between 8 November 2016 and 7 February 2017. Two responses were received. One was a short endorsement from a non-operator stakeholder, the other was a detailed document opposing the changes from the single operator known to be affected by them. The opposition to the amendments included an estimate from the operator about the cost of the amendments that differed significantly from the initial figure in the RTA (which was made available as part of the consultation). As a result of the significant differences in both the viewpoint and costs between MCA and the operator it was decided that no response would be made to their points until a full impact assessment was undertaken and the likely costs determined. A full response to the points raised was published at the launch of the consultation on the Impact Assessment discussed below².

A four-week consultation was held on this Impact Assessment between 19 June 2018 and 17 July 2018. Only one response was received to this consultation, again from the single operator affected. This response again opposed the proposed changes and reiterated many of the arguments presented in the initial consultation. The operator was provided with a full response to the points raised and invited to provide additional evidence to be considered for the finalised Impact Assessment in response to some of their comments, this full response was published on Gov.uk and is available at this link:
https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/761416/M

¹ the part of a ship's side above the deck, <https://www.collinsdictionary.com/dictionary/english/bulwark>

² https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/717317/Summary_of_consultation_responses_-_for_website.pdf

CA_response_table.pdf. The operator also provided new evidence for the impact assessment, including average wages for Boatmaster Licence holders and estimated costs to modify their vehicles' screens to make them more easily removable which have been incorporated in to this final impact assessment(?).

4 Monetised costs and benefits of policy options

4.1 Introduction

This IA assesses the additional costs and benefits of the proposed Regulations (Option 1) compared to the "Do Nothing" scenario; the "Do Nothing" scenario represents what would happen if the Government does not take any action. In line with the Better Regulation Framework Manual, a 10-year appraisal period has been used in this IA. The 10 years in the appraisal period are referred to as Year 1 to Year 10 below.

For the purposes of this IA, the additional costs and benefits of the proposed Regulations (Option 1) during the appraisal period have been monetised to the extent that is possible. Given the limitations of the available evidence base, it has not been possible to monetise some of the costs and benefits of the proposed Regulations (Option 1) that have been identified. Where it has not been possible to monetise a cost or benefit, a full qualitative description of the impact has been provided.

The regulation would have primarily affected one company who operated tours of London with a fleet of 9 amphibious vessels. They were the only company operating vessels in the UK which have been identified as being affected by the proposed Regulations (Option 1) as their vessels are fitted with flexible screens and therefore do not currently meet the requirements of bridge visibility and line of sight that would be imposed. This means the effects on business of the regulation are expected to only affect the operation of this particular company. Whilst efforts have been made, through promulgating the consultation and liaising with the MCA marine offices, to verify that only one company would be affected there is a possibility, albeit low, that there are other ships affected that the MCA haven't been able to identify.

However, as of September 2017, this company has ceased operating on the water for reasons unrelated to this regulation (due to compulsory purchase of the slipway used by the company). We do not know when or if the firm will resume trading in future. Therefore, there is a risk that the firm will not trade throughout the 10-year appraisal period. In this case there would be no monetised impact of the measures.

The specific costs and benefits incurred depend on the action taken by the company in response to the regulation. The two most probable outcomes are: Outcome 1 – the company complies with the regulation in its entirety without seeking a regulatory exemption, meaning the plastic screens on the vessels need to be removed for operation on water to provide a clear line of sight from the bridge; and Outcome 2 – the company satisfies the conditions to be granted an exemption from the regulation on the condition that an additional dedicated aft lookout is present on each voyage, allowing the passenger compartment to be enclosed by screens if desired. No other outcomes were identified that would allow the operator to continue to run its current operations in a legal manner. Option 1 is used as the High estimate and Option 2 is used as the Central estimate.

4.2 Monetised costs

It is not expected that there will be additional enforcement costs from these measures as they do not introduce new Regulations.

4.2.1 Costs of Outcome 1 (Policy High scenario)

Outcome 1 is the event that the regulation is enforced upon the operator without them seeking a regulatory exemption. This would mean the operator would need to remove the screens for operation on water, providing a clear line of sight from the bridge. As the vessels in question also operate on land, for which the operator is likely to want to have the screens in place, the screens would not be removed permanently, and removal and reinstallation would need to take place each time the vessels transfer between land and water.

The primary costs of this outcome are the loss of revenue from passengers who are deterred from the operator's services by the increased level of exposure to inclement weather, the cost of providing customers with protective materials in such weather, and the costs of removing and reattaching the screens.

As the operator has ceased operations on the water due to the compulsory purchase of the slipway used by the operator, there is a risk that the company will not be able to operate on the water during the appraisal period and there will be no impact from the measures.

4.2.1.1 Loss of occupancy costs

The loss in occupancy was calculated by estimating the occupancy per tour and subsequently applying a constant percentage reduction to these estimates. This reduction was applied to each tour across Y1-Y10 to estimate the total number of passengers lost, given the expected volume of tours. The cost of losing one passenger on a single tour was costed at the average ticket price of the operator's tours. There is no evidence of ancillary revenues, such as food and drink or merchandise sales that would be lost with fewer passengers, and information on revenue and the number of tours run provided by the operator indicate that these are not significant if they do exist.

The estimate for occupancy was formulated using figures provided by the operator for revenue, the average ticket price, and the number of tours run. In 2016, 6,565 tours were run, the average ticket price was £21.50, and the operator's revenue was approximately £2,300,000. Using these figures, the estimate for occupancy is 16.3 passengers per tour. This was calculated using the formula: occupancy = revenue / (number of tours x average ticket price). As a sensitivity test, the figure of 26 passengers per tour provided by the operator was also used. However, given the aforementioned revenue figures they provided, this level of occupancy appears unfeasibly high³.

In all scenarios occupancy is assumed to be constant across Y1-Y10. The number of tours is taken from modelling of future operations provided by the operator⁴ and increases from 9,339 in Y1 to a maximum of 11,406 annually in Y3 and is assumed constant from then on as the company is operating at full capacity.

The estimated loss of occupancy in inclement weather conditions is based on the consultation response in which the operator estimated that occupancy would fall by 9% as a result of having to remove the screens on their vessels and exposing customers to the weather. This was based on their passenger records which showed such a decrease between 2013 and 2014 when a similar restriction to the proposed Regulations (Option 1) was enforced by the MCA. However, the months they provided data for in 2014 (June to September) were the months immediately after the company resumed operating tours following a fire on board one of their vessels in 2013. It seems likely the 9% reduction in occupancy may overestimate the impact of the MCA intervention, as some customers may have been put off by the recent fire on board. Other tours that are exposed to the elements, such as open top buses, generally have an indoor area and are not easily comparable with the river tours run by the operator that responded to the consultation. Without additional evidence to estimate this more accurately, the conservative 9% reduction was used.

The retained revenue per passenger is £17.92: equivalent to the ticket price of £21.50, less VAT at 20%, as the business will not retain this portion of the ticket price.

Given the estimates for occupancy, an average 9% reduction in passengers would result in a loss of 1.47 passengers per tour in the high scenario, and 2.34 in a 'maximum' cost sensitivity. With constant ticket prices this implies annual costs between £245,389 and £478,197 and a present value between £2.5m and £4.0m. This was calculated using the operator's provided figures for ticket prices and the number of tours.

Standard assumed occupancy loss per trip (High scenario)	1.47
Maximum cost sensitivity occupancy loss per trip	2.34
Average ticket price	£21.50
Average ticket price, less VAT at 20%	£17.92

FY	1	2	3	4	5	6	7	8	9	10
Number of trips	9,339	11,020	11,406	11,406	11,406	11,406	11,406	11,406	11,406	11,406
High scenario passenger loss	13,696	16,161	16,727	16,727	16,727	16,727	16,727	16,727	16,727	16,727
High scenario costs (£)	245,389	289,558	299,701	299,701	299,701	299,701	299,701	299,701	299,701	299,701
Max cost sensitivity passenger loss	21,853	25,787	26,690	26,690	26,690	26,690	26,690	26,690	26,690	26,690
Max cost sensitivity costs (£)	391,538	462,014	478,197	478,197	478,197	478,197	478,197	478,197	478,197	478,197

³ https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/761416/MCA_response_table.pdf

⁴ LDT Response to Proposed New SI the Merchant Shipping (Bridge Visibility) (Small Passenger Ships) Regulations 2017, January 2017

Figure 1 Estimated costs due to reduced occupancy in inclement weather

We have assumed the lost revenue for the company is equal to the lost profits as the costs are fixed for a single boat journey. It should be noted that we would expect the loss in revenue for this firm to be mostly offset by spending elsewhere in the economy as the passengers who choose not to travel will spend their money elsewhere. This would be an indirect impact and has not been monetised given the difficulties in calculating it without conducting primary research.

4.2.1.2 Cost of protective materials

The operator stated in their consultation response that protective materials would need to be provided for customers in bad weather, should they take the option of removing the screens while on the water. This would entail disposable ponchos in rainy weather, and blankets during especially cold or frosty weather. Data from the Met Office for London shows that annually 29.86% of days are affected by rain and 7.84% by frost⁵. We have no data to indicate that more tours take place on good weather days, and therefore assumed that an equivalent proportion of tours will be affected. From online marketplaces *Promoponchos* and *Discount Wholesale*⁶: ponchos are costed at £0.49 per unit, and blankets at £2.25 per unit.

Given that the estimated occupancy loss calculated above is down to inclement weather, it is assumed that all of this occupancy loss would only occur on days of rain or frost. Such days combined make up 138 days annually, or 37.8% of total days, although this may be an overestimate as we have not accounted for double counting of days of rain and frost or the fact that part of the day may be unaffected by rain and frost. Therefore the 9% occupancy loss across all tours is broken down into no loss on relatively warm and dry days, and a 23.8% loss on days of inclement weather (9% / 37.8%).

Occupancy on bad weather days would be therefore be 12.4 passengers per tour in the high scenario and 20.0 in the maximum cost scenario. That occupancy may be lower in such weather anyway is not accounted for, although the slight exaggeration of assuming that occupancy would only be lower on days of bad weather should offset this. Therefore, these are the occupancy figures used in calculating the costs of protective materials.

The ponchos are disposable and so a new one would be required for each individual customer. It is assumed that the blankets would be able to be reused on several tours but would need to be occasionally replaced. The frequency of their replacement cannot be estimated with great accuracy but was assumed in the analysis to be after every 10 uses. It is possible that the operator may incur some costs in laundering the blankets, but this has not been monetised. It is likely to be a small cost and may not be necessary at all given the assumption that the blankets are replaced after 10 uses.

Some customers would come dressed in anticipation of the inclement weather and would not require ponchos or blankets. This is another area that cannot be estimated with great accuracy despite being an important factor. For simplicity it has been assumed that 50% of passengers would be fully prepared for the weather and so would not need to be provided with the necessary materials.

Using the above estimates and assumptions the average annual cost of supplying ponchos is £10,176 in the high scenario and £16,236 in the max cost scenario. The average annual cost of supplying blankets is £1,222 in the high scenario and £1,949 in the max cost scenario. The total average annual cost of supplying protective materials is £11,397 under the standard occupancy assumption and £18,185 under the max cost occupancy assumption, with a PV cost of between £98k and £156k.

Cost per poncho (£) 0.49
Tours affected (%) 30

FY	1	2	3	4	5	6	7	8	9	10
Number of trips	9,339	11,020	11,406	11,406	11,406	11,406	11,406	11,406	11,406	11,406
Number of trips affected	2,799	3,303	3,419	3,419	3,419	3,419	3,419	3,419	3,419	3,419
High scenario (£)	8,515	10,047	10,399	10,399	10,399	10,399	10,399	10,399	10,399	10,399
Max cost sensitivity (£)	13,586	16,032	16,593	16,593	16,593	16,593	16,593	16,593	16,593	16,593

Figure 2 Estimated costs of purchasing ponchos to provide protection on rainy days

⁵ Met Office, London Climate, <http://www.metoffice.gov.uk/public/weather/climate/gcpvj0v07>

⁶ Promoponchos, Discount Wholesale, 2017

Cost per blanket (£)	2.25
Tours affected (%)	7.8

FY	1	2	3	4	5	6	7	8	9	10
Number of trips	9,339	11,020	11,406	11,406	11,406	11,406	11,406	11,406	11,406	11,406
Number of trips affected	732	863	894	894	894	894	894	894	894	894
High scenario (£)	1,022	1,206	1,248	1,248	1,248	1,248	1,248	1,248	1,248	1,248
Max cost sensitivity (£)	1,631	1,924	1,992	1,992	1,992	1,992	1,992	1,992	1,992	1,992

Figure 3 Estimated costs of purchasing blankets to provide protection on frosty days

4.2.1.3 Cost of screen removal

In order to comply with the proposed Regulations, the protective screens attached to the vessels will need to be removed in order to provide a clear line of sight from the bridge. However, this will mean the screens would be unavailable for road use and so the screens would need to be removed whenever the vessel needs to enter the water.

Under current operations, the crew already take time to prepare the vessel before entering the water; the vessel does not just drive in directly from the road. The removal of screens could add some additional time to this procedure. Based on feedback from the operator we have adjusted our previous assumption that one person would take a total of ten minutes to remove the screens. We now assume that the process would involve two people from the existing crew, taking ten minutes, totalling twenty minutes of staff time per trip with no need for additional staff to be recruited. Despite the operator's position that this would require two additional full-time staff to be employed exclusively for the task, we believe that ours is still a generous assumption because on some warm and dry days the side screens might not be required at all on the roads.

The cost of the twenty minutes per journey is assumed to be the opportunity cost of the crew's time, which is based on their hourly wage. The operator estimated the average salary of Boatmaster Licence holders at £41,410 per year, which, over 46 weeks and with a working week of 37.1 hours (also as estimated by the operator), equates to £24.27 per hour, meaning a cost per trip of £9.81 for 20 minutes of staff time, once non-wage labour costs of 21.2% have been included. Due to uncertainty about real wage growth over the appraisal period, wages are assumed to remain constant in real terms. These costs do not vary based on the occupancy scenario used, therefore over the ten-year period, this has an average annual cost of £109,432 and a PV cost of £939k.

It was suggested by the operator that an additional ten minutes that would need to be added onto each tour would mean that each vehicle would be limited to five tours per day instead of six due to timetabling pressure. We have not included this impact because – based on numbers provided to us by the operator – there appears to be some slack in the number of tours the operator plans to run. The highest number of tours in any year (11,406), run across 360 days using nine vehicles would average 3.5 tours per day per vehicle, so it is not considered reasonable to argue that ten minutes per tour would reduce the number of tours they operator has time to run.

Operator provided hourly earnings of BML holders (£; 2017)	24.27
Hours per trip to remove / attach screens	0.133
Non-Wage Uplift	21.2%
Total cost per trip	£9.81

FY	1	2	3	4	5	6	7	8	9	10
Number of trips	9,339	11,020	11,406	11,406	11,406	11,406	11,406	11,406	11,406	11,406
Cost of screen removal (£)	91,570	108,052	111,837	111,837	111,837	111,837	111,837	111,837	111,837	111,837

Figure 4 Estimated costs of removing and reattaching protective screens

4.2.1.4 Cost of Modifying Screens

Based on feedback from the operator we have included transition costs of modifying the screens in order to make them more easily removable. It was estimated that a custom rail system would be expected to cost £1,500 per vehicle and if this led to the side screens requiring replacing this could cost an additional £3,000 per vehicle. Therefore, the cost is between £1,500 per vehicle and £4,500 per vehicle. It has not been

possible to verify or cross check these estimates because it is a bespoke system for installation on highly unusual vehicles.

The operator uses nine vehicles, so there could be a one-off transition cost to business of £13,500 and £40,500. £13,500 is also the best estimate of the transition cost.

One off cost of upgrading to rail system	£13,500
One off cost of replacing curtains	£27,000
One-off cost of both upgrading to rail system and replacing curtains	£40,500

4.2.1.5 Total Outcome 1 costs

Under the assumption of constant prices, the undiscounted average annual cost of Outcome 1 across the appraisal period is £415k in the standard occupancy scenario and £600k in the maximum cost occupancy scenario. Transition costs are between £13,500 and £40,500. The present value cost is between £3.6m and £5.1m.

FY	1	2	3	4	5	6	7	8	9	10
Occupancy loss costs high scenario (£)	245,389	289,558	299,701	299,701	299,701	299,701	299,701	299,701	299,701	299,701
Occupancy loss costs max sensitivity (£)	391,538	462,014	478,197	478,197	478,197	478,197	478,197	478,197	478,197	478,197
Protective materials costs high scenario (£)	9,537	11,254	11,648	11,648	11,648	11,648	11,648	11,648	11,648	11,648
Protective materials costs max sensitivity (£)	15,217	17,956	18,585	18,585	18,585	18,585	18,585	18,585	18,585	18,585
Cost of screen removal (£)	91,570	108,052	111,837	111,837	111,837	111,837	111,837	111,837	111,837	111,837
Transition Costs (lower, £)	13,500	-	-	-	-	-	-	-	-	-
Transition Costs (higher, £)	40,500	-	-	-	-	-	-	-	-	-
Total costs high scenario (£)	359,995	408,864	423,185	423,185	423,185	423,185	423,185	423,185	423,185	423,185
Total costs max cost sensitivity (£)	538,824	588,022	608,618	608,618	608,618	608,618	608,618	608,618	608,618	608,618

Figure 5 Estimated overall costs of outcome 1

4.2.2 Costs of Outcome 2 (Central Scenario)

Outcome 2 is subject to the operator satisfying the conditions for the granting of an exemption from the proposed Regulations (Option 1), with the condition that an additional lookout is present on each tour.

This should provide similar benefits to visibility and line of sight to the full imposition of the regulations. This outcome would require the hiring of additional staff by the operator and the loss of one seat of passenger capacity on each tour. There is no clear reason why Outcome 2 would cause an additional loss of demand for each tour, as the screens would remain as they are, and therefore the assumptions from Outcome 1 about the effects of inclement weather on occupancy are not relevant in this case as the passengers are able to remain sheltered due to the screens being down if the weather is inclement.

As the operator has ceased operations on the water due to the compulsory purchase of the slipway used by the operator, there is a risk that the company will not be able to operate on the water during the appraisal period and there will be no impact from the measures.

4.2.2.1 Extra staff costs

To satisfy the requirements of Outcome 2, the operator has stated that 4 additional full-time crew members, trained as lookouts, would have to be hired by the operator. The operator also added that 3 additional part-time workers would also need to be hired during high season to meet the increased demand. This season is assumed to last 22 weeks between April and August. These assumptions came from the consultation provided by the operator and can be reasonably considered to be correct. Although the operator operates 9 vehicles, they are not all in use concurrently, therefore each vehicle will not require additional crew.

It is assumed that the full-time workers would be more experienced than the part time workers, and it is therefore estimated that the full-time workers' annual salary would be £41,410 and the part time workers would be paid an hourly wage of £14.00. These figures were provided by the operator in a consultation response. The 2017 ONS Annual Survey of Hours and Earnings¹ shows that full time employees in the Water Transport sector work on average 37.5 hours per week, while part time employees work on average 20 hours per week.

It is estimated the wage costs of employing the additional full-time workers would be £165,642 in the first year. The annual wage costs of hiring 3 part time workers in high season is estimated at £18,480. To cover non-wage costs of the new employees such as National Insurance, admin, uniform and training costs, wage costs are uplifted by 21.2%, or £39,034 annually. It is not anticipated that newly recruited look-outs would need extensive or costly training beyond what is covered by this non-wage uplift. Due to uncertainty about real wage growth over the appraisal period, wages are assumed to remain constant in real terms. This gives a total annual cost of hiring new employees of £223,156. This is uplifted over the appraisal period in line with the forecast growth in tours as estimated by the operator in their consultation response. Of the estimates of the costs of both outcomes, the estimates for the costs of additional workers are the ones that carry the least uncertainty as to their accuracy.

Annual salary of full time staff (£; 2017)	41,410
Hourly wage of part time staff (£, 2017)	14
Weekly hours worked - full time employee	37.5
Weekly hours worked - part time employee	20

FY	1	2	3	4	5	6	7	8	9	10
Full time worker wage costs (£)	165,642	195,458	202,304	202,304	202,304	202,304	202,304	202,304	202,304	202,304
Part time worker wage costs (£)	18,480	21,806	22,570	22,570	22,570	22,570	22,570	22,570	22,570	22,570
Non-wage costs (£)	39,034	46,060	47,673	47,673	47,673	47,673	47,673	47,673	47,673	47,673
Total costs (£)	223,156	263,324	272,548	272,548	272,548	272,548	272,548	272,548	272,548	272,548

Figure 6 Estimated costs of hiring additional staff to act as lookouts

4.2.2.2 Lost capacity costs

¹ ONS, Annual Survey of Hours and Earnings 2017 (revised), Table 4.10a

<https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/earningsandworkinghours/datasets/industry2digitsicashetable4>

The extra employee on each voyage would reduce the capacity for passengers on each tour by 1 seat, potentially leading to a loss of revenue. The lower capacity would only cost the operator when the full 30 seats would have otherwise been occupied by paying customers. In their consultation response the operator stated this would be approximately 50% of their tours. This was under the assumption of an occupancy of 26 therefore it is maintained in the maximum cost scenario estimates. Under this assumption 5,383 tours would be affected annually on average.

It is assumed that the percentage of tours at full capacity is correlated with occupancy rates. Therefore, the percentage change in occupancy between the high and low estimates is replicated when calculating the equivalent estimates for the percentage of tours at full capacity. This is an approximate decrease of 37.7%, so it follows that 31.3% of tours are run at full capacity. Under both estimates the seat loss would cost the operator £17.92, the average ticket price less VAT at 20%, on each fully occupied tour operated. Under constant prices the average annual cost of the lost seats is £63k in the standard occupancy scenario (which is used as the central estimate) and £100k in the maximum cost occupancy scenario. The present value over ten years is between £538k and £858k.

Standard assumed trips at full occupancy (%) - CENTRAL SCENARIO	31.3
Maximum sensitivity trips at full occupancy (%)	50.0
Average ticket price	£21.50
Ticket price, less VAT at 20%	£17.92

FY	1	2	3	4	5	6	7	8	9	10
Number of tours	9,339	11,020	11,406	11,406	11,406	11,406	11,406	11,406	11,406	11,406
Number of tours affected central scenario	2,927	3,453	3,574	3,574	3,574	3,574	3,574	3,574	3,574	3,574
Central scenario costs (£)	52,434	61,871	64,039	64,039	64,039	64,039	64,039	64,039	64,039	64,039
Number of tours affected max cost scenario	4,670	5,510	5,703	5,703	5,703	5,703	5,703	5,703	5,703	5,703
Max cost scenario costs (£)	83,662	98,721	102,179	102,179	102,179	102,179	102,179	102,179	102,179	102,179

Figure 7 Estimated costs of the lost capacity due to additional crew on board

As above, we have assumed the lost revenue for the company is equal to the lost profits as the costs are fixed for a single boat journey. It should be noted that the loss in revenue for this firm will be mostly offset by spending elsewhere in the economy as the passengers who choose not to travel will spend their money elsewhere. This would be an indirect impact and has not been monetised given the difficulties in calculating it without conducting primary research.

4.2.2.3 Total costs of Outcome 2

The total cost in the instance of Outcome 2 is the combined cost of hiring new employees and the lost capacity of the seat they would occupy on tours on which the seat would otherwise be occupied by a paying customer. Under constant prices the estimated average annual cost of Outcome 2 is between £329k and £367k.

FY	1	2	3	4	5	6	7	8	9	10
Cost of additional workers (£)	223,156	263,324	272,548	272,548	272,548	272,548	272,548	272,548	272,548	272,548
Lost capacity costs central scenario (£)	52,434	61,871	64,039	64,039	64,039	64,039	64,039	64,039	64,039	64,039
Lost capacity costs max scenario (£)	83,662	98,721	102,179	102,179	102,179	102,179	102,179	102,179	102,179	102,179
Total costs central scenario (£)	275,590	325,195	336,586	336,586	336,586	336,586	336,586	336,586	336,586	336,586
Total costs max scenario (£)	306,818	362,045	374,726	374,726	374,726	374,726	374,726	374,726	374,726	374,726

Figure 8 Estimated overall costs of outcome 2

4.2.2.4 Summary of final estimates

The costs of the two outcomes modelled above all arise from the same policy option. Therefore, the range of costs for Option 1 will be taken from the range of scenarios modelled across both outcomes. The low scenario in the final monetised estimates is the costs of Outcome 2 under the low occupancy assumption.

The high scenario is the costs of Outcome 1 under the high occupancy assumption, although this result is not considered very likely as the high occupancy assumption appears to be unrealistic. The best estimate is the average of the costs of the low scenarios for Outcome 1 and Outcome 2 as the assumption of occupancy is these scenarios is considered far more realistic. This is an average annual cost of £397k and a present value over 10 years at a 3.5% discount rate of £3.2m.

FY	1	2	3	4	5	6	7	8	9	10
Outcome 1 central scenario costs (£) - POLICY HIGH	359,995	408,864	423,185	423,185	423,185	423,185	423,185	423,185	423,185	423,185
Outcome 1 max scenario costs (£)	538,824	588,022	608,618	608,618	608,618	608,618	608,618	608,618	608,618	608,618
Outcome 2 central scenario costs (£) - POLICY CENTRAL	275,590	325,195	336,586	336,586	336,586	336,586	336,586	336,586	336,586	336,586
Outcome 2 max scenario costs (£)	306,818	362,045	374,726	374,726	374,726	374,726	374,726	374,726	374,726	374,726
Best Estimate costs (£)	317,793	367,030	379,886	379,886	379,886	379,886	379,886	379,886	379,886	379,886

Figure 9 Annual monetised costs summary

4.3 Non-monetised costs

4.3.1 Familiarisation costs

There is likely to be a minor cost to the operator of familiarising themselves with the regulations, once they come into place. However, given the changes to the regulations are relatively minor and we only expect them to affect one firm, and that the operator was substantially engaged in the initial consultation process and is already aware of the regulatory changes, the burden of familiarisation is likely to be too small to accurately monetise. Surveyors already check compliance with bridge visibility requirements during their annual survey of each vessel so they will not incur any additional costs.

4.4 Costs to the MCA

It is not considered that there would be any significant costs to the MCA as a result of the imposition of the proposed Regulations (Option 1). The MCA may be required to carry out additional tasks as part of their regular checks upon the operator to ensure the regulations are being adhered to in full, although this is not expected to add significant burden and is therefore not monetised.

4.5 Benefits

Given the limitations of the available evidence base and the small number of affected vehicles identified, as well as their unusual operational methods, it has not been possible to monetise any benefits of Option 1.

The principal benefit of the proposed regulations will be to maintain and increase safety by improving bridge visibility reducing the risk of a collision. This benefit has not been monetised as it is not possible to predict the impacts or costs involved in any possible collision, or the change in the likelihood of such a collision as a result of the proposed Regulations in such a small sub-sector of the transport system.

4.6 Key assumptions

As well as the assumptions in Figure 10 a key assumption is that the only operator affected is the single operator on which this impact assessment is based.

Assumption/Scenario	Max	Standard
Occupancy per tour	26.0	16.3
Occupancy loss per tour (Outcome 1)	2.34	1.47
Percentage of tours operated at full capacity	50.0%	31.3%
Occupancy loss per tour percentage (Outcome 1)	9%	
Average ticket price	£21.50	
Time taken to remove and reattach screens (per trip)	20 minutes	
Less experienced workers' hourly wage (2017)	£14.00	
More experienced workers' annual wage (2017)	£41,410	
Percentage of passengers needing protective materials	50%	
Number of trips before replacing blankets	10	

Figure 10 Summary of assumptions across scenarios

5 Analytical approach

The intention of these Regulations is to fix the regulatory gaps in the Merchant Shipping (Bridge Visibility) (Small Passenger Ships) Regulations 2005 for vessels with a registered length of between 45m and 55m; and to clarify the definition of an enclosed passenger deck and the use of visual aids when determining sight lines. Evidence on impacts was sought through a public consultation following an initial Regulatory Triage Assessment (RTA).

The response to this consultation from the operator primarily affected by these regulations led DfT and MCA to agree that a full impact assessment was a more appropriate means of assessing the impacts of these Regulations. The evidence submitted both during the consultation and through follow-up discussions with stakeholders is reflected in this impact assessment.

While the costs remain low in absolute terms, the MCA will continue to work within industry to minimise unnecessary impacts and will review the Regulations within five years.

5.1 Risks and assumptions

Failure to implement the Regulations would mean that the definition of an enclosed passenger deck and the application of the current Regulations would remain insufficiently certain. This could undermine the intent and purpose of the regulations, which have been applied and complied with consistently by operators of small passenger vessels since 1992.

A non-regulatory approach would also not address the regulatory gap for vessels between 45m registered length and 55m length overall and a vessel between these lengths would continue to have no enforceable regulations pertaining to bridge visibility. This would leave a safety gap and also mean an unequal playing field for vessels of alternate sizes, although no vessels have been identified that fall within this gap at this time.

There is a risk that there is a firm that has not been identified but would be affected by the regulations. Efforts have been made, through promulgating the consultation and liaising with the MCA marine offices, to verify that only one company would be affected.

As the operator has ceased operations on the water due to the compulsory purchase of the slipway used by the operator, there is a risk that the company will not be able to operate on the water during the appraisal period and there will be no impact from the measures.

Due to uncertainty about real wage growth over the appraisal period, wages are assumed to remain constant in real terms.

The main assumptions used in the analysis of costs and benefits have been set out in section 4.6, and the analysis uses a range of sensitivities in order to capture the uncertainty around the assumptions.

5.2 Direct costs and benefits to business calculations (following BIT methodology)

The direct costs and impacts have been appraised in section 4. The costs which have been monetised are all direct costs to business. There are no direct benefits to business which have been monetised in this IA.

6 Wider Impacts

6.1 Equalities Assessment

The proposed bridge visibility and line of sight Regulations will affect all UK vessels to which the Regulations apply. The impacts of the Regulations are not going to vary depending on the age, ethnic origin, gender, nationality, race, sexual orientation or disability of any persons involved. These proposals are therefore considered to have no adverse impact as regards to statutory equality duties.

6.2 Competition Assessment

The Regulations will create a “level playing field” among UK vessels with an enclosed passenger deck preventing one business from gaining an advantage over another because of a regulatory inconsistency. Extending the scope of the 2005 Regulations will harmonise regulations for vessels of various lengths which also promotes fair competition.

6.3 Small and Micro Business Assessment

There is no specific exemption for small firms, and it is likely that the Regulations will have an impact on one small firm. While we don't have exact data on the size of the current operator affected by these Regulations, their consultation response indicated that they are most likely a small firm. It is therefore reasonable to assume that all the impacts of these Regulations will be borne by small businesses.

6.4 Environmental Impact Assessment

These Regulations are not expected to have any environmental impacts.

6.5 Health Impact Assessment

These Regulations are not expected to have any adverse health impacts. Reducing the risk of collision due to impaired visibility on waterways also leads to a reduction in the risk of injury or death, although this is a minor change to a very low risk level.

6.6 Human Rights

There are no human rights compatibility issues arising from these regulations.

6.7 Justice System

Enforcement of the Regulations will be through inspection of vessels by MCA surveyors, with the possibility of criminal sanctions for breaches of operator duties. These criminal offences already exist under the current Regulations, so it is unlikely that there will be a significant change in the number of prosecutions.

7 Summary of preferred option and description of implementation plan

As described in section 2, the counterfactual option of no action leads to risks of legal challenge and maintains an existing safety gap. Therefore, the preferred option is to implement the proposed Regulations to extend the scope of the 2005 Regulations to vessels between 45m and 55m in length, clarifying the definition of an enclosed passenger deck and clarifying rules on the use of visual aids when determining sight lines.

The regulations will be made as soon as possible. The MCA will continue to work with the industry and will keep the guidance under review to ensure practical implementation.

8 Post implementation review

1. **Review status:** Please classify with an 'x' and provide any explanations below.

<input type="checkbox"/>	Sunset clause	<input checked="" type="checkbox"/>	Other review clause	<input type="checkbox"/>	Political commitment	<input type="checkbox"/>	Other reason	<input type="checkbox"/>	No plan to review
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Regulations to be reviewed every five years to ensure continued suitability.

2. **Expected review date** (month and year, xx/xx):

<input type="text"/>	<input type="text"/>	/	<input type="text"/>	<input type="text"/>	Five years from when the Regulations come into force
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3. **Rationale for PIR approach:**

Circle the level of evidence and resourcing that will be adopted for this PIR (see Guidance for Conducting PIRs): **low**

Please justify why you propose a low/medium/high evidence approach referring to the PIR guidance. When considering your proposal please note that the approach chosen should be proportionate to the scale of the regulation and that a lack of existing evidence is not a sufficient rationale alone for adopting a low evidence PIR.

The Regulations have been in force in some form since 1992. Most new vessels being built do not rely on the Regulations for their bridge visibility requirements but rather the requirements are an integral part of the code that they must be built to. This means that the number of vessels needing to refer back to these bridge visibility Regulations is low. The Regulations do need to be reviewed from time to time to ensure continued fitness for purpose and also to take account of future technological advances that could, at some stage, alter the need for the prohibition of visual aids. Noting that there will only be a small number of vessels that would ever need to comply with these regulations that do not already do so – for example an existing boat moving from non-tidal to tidal operations – it is suggested that a low evidence approach is proportionate.

As the costs of these regulations are minor, a low evidence approach is appropriate as collecting new data would not be proportionate.

Key Objectives, Research Questions and Evidence collection plans

Key objectives of the regulation(s)	Key research questions to measure success of objective	Existing evidence/data	Any plans to collect primary data to answer questions?
<p>For ships to be constructed so that the helmsman has all round visibility over a 360° arc without sightlines passing through enclosed passenger spaces</p>	<p>Have the regulations affected the arrangements for visibility on your ships(s)?</p> <p>Do you feel the Regulations are implemented effectively?</p> <p>Can you identify any areas where you think the Regulations could be improved?</p> <p>Are you aware of any new technology that you feel should be considered as an acceptable visual aid? For example, advances in autonomous operation?</p> <p>Have there been any unanticipated effects that have occurred as a result of the regulations?</p> <p>Are you able to provide any information about the impact of the bridge visibility Regulations on UK business?</p> <p>When reviewing regulations it is standard practice to assess if these have had a disproportionate impact on businesses with less than 50 employees. Do you think this is an issue of concern for the bridge visibility Regulations?</p> <ul style="list-style-type: none"> - Yes - No - Not Sure <p>What are the reasons for your answer:</p> <p>What would your recommendations be for the next steps of the regulation?</p> <ul style="list-style-type: none"> <input type="checkbox"/> Keep the regulations as they are <input type="checkbox"/> Make changes to the regulations <input type="checkbox"/> Remove or replace with something else <input type="checkbox"/> Don't know <p>If you have suggested changes, removal or replacement, please could you provide the reasons for your response here:</p> <p>Do you have any other general comments?</p>	<p>Data is available from the following:</p> <ul style="list-style-type: none"> - Collision statistics for certain specific areas e.g. PLA reports. - Serious collision data for UK as a whole – MAIB - Safety record of individual vessels - Results of targeted ad-hoc inspections when vessels are operating. <p>These data sources reference variable timeframes but generally are based on an annual assessment. Where an ad-hoc inspection has identified a compliance issue this would be dealt with at the time.</p>	<p>a) Primary data will be collected via engagement with stakeholders. This will be achieved via a questionnaire sent to targeted stakeholders, including operators of vessels in scope of the Regulations, harbour authorities and industry bodies.</p> <p>b) It is suggested that the questionnaires would be sent out directly to identified stakeholders and a period of 4 weeks given for response.</p> <p>c) It is not considered proportionate to collect new data as the costs of these Regulations are minor.</p>