



Maritime &  
Coastguard  
Agency

MERCHANT SHIPPING NOTICE

# MSN 1668 (M) Amendment 1

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## The Merchant Shipping (Fire Protection) Regulations 2023: Fire integrity of bulkheads, decks and ventilation ducting in cargo ships

Notice to all Shipowners, Shipbuilders, Masters, Certifying Authorities and Surveyors

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### Summary

This Notice advises all Shipowners, Shipbuilders, Masters, Certifying Authorities and Surveyors of the requirements imposed by the Merchant Shipping Fire Protection Regulations 2023 for cargo ships constructed before 1<sup>st</sup> July 2002 for fire integrity of bulkheads, decks and ventilation ducting.

#### Key Points:-

This notice forms an integral part of the Merchant Shipping (Fire Protection) Regulations 2023 (SI 2023/568) (“the 2023 Regulations”)

Schedules contained in this Notice are invoked by those Regulations and are therefore a statutory obligation.

This amendment updates the text to reflect the 2023 Regulations and to update the format and references to the 2023 Regulations and to Merchant Shipping Notice 1900 (M) (“MSN 1900 (M)”).

### LIST OF SCHEDULES

Schedule 1 :

Fire Integrity of Bulkheads and Decks: Ships of Classes VII, VII(A), VIII, VIII(A), IX and IX(A) of 500 Tons and Over and Tankers of VII(T), VIII(T), VIII(A)(T) and IX(A)(T) of 500 Tons and over not carrying volatile cargoes

Schedule 2 :

Fire Integrity of Bulkheads and Decks: Tankers of VII(T), VIII(T), VIII(A)(T) and IX(A)(T) of 500 tons and over carrying volatile cargoes

Schedule 3 :

Fire Integrity of Ventilation Ducts



In this Merchant Shipping Notice:-

The references to the top right of each Schedule indicate where that Schedule is referenced.

A reference to a numbered paragraph is, unless otherwise stated, a reference to the paragraph of that number in that Schedule;

A reference to a numbered Schedule is, unless otherwise stated, a reference to the Schedule of that number in this Merchant Shipping Notice

In this Notice the following expressions have the following meanings –

“A” Class Division” means a bulkhead or part of a deck which is –

- (a) constructed of steel or other equivalent material;
- (b) suitably stiffened;
- (c) so constructed as to be capable of preventing the passage of smoke and flame to the end of the 60 minute standard fire test; and
- (d) so insulated where necessary with suitable non-combustible materials that if the division is exposed to a standard fire test the average temperature on the unexposed side of the division shall not increase more than 139°C above the initial temperature nor shall the temperature at anyone point, including any joint, rise more than 180°C above the initial temperature within the time listed below -

“A-60” standard, 60 minutes “A-30” standard, 30 minutes “A-IS” standard, 15 minutes “A-0” standard, 0 minutes;

“accommodation spaces” means

- (a) public spaces;
- (b) corridors and lobbies;
- (c) stairways;
- (d) lavatories;
- (e) cabins;
- (f) offices;
- (g) hospitals;
- (h) hairdressing salons;
- (i) pantries not containing cooking appliances;
- (j) lockers;
- (k) games and hobbies’ rooms;
- (l) spaces similar to any of the foregoing and trunks to such spaces allocated to passengers or crew;

“B” Class Division” means a bulkhead, part of a deck, ceiling or lining which is -

- (a) so constructed as to be capable of preventing the passage of flame to the end of the first 30 minutes of the standard fire test;
- (b) so constructed as to provide an insulation standard such that, if the division is exposed to a standard fire test, the average temperature on the unexposed side of the division shall not increase more than 139°C above the initial temperature, nor shall the temperature at anyone point, including any joint, rise more than 225°C above the initial temperature within the time listed below -

“B-15” standard, 15 minutes;

“B-0” standard, 0 minutes; and



(c) constructed of suitable non-combustible materials and all materials whose use is necessary for or ancillary to its construction and erection shall be non-combustible, with the exception that combustible veneers may be permitted provided that they meet the requirements of regulations 62, 80, or 97;

“C” Class Division” means a bulkhead, ceiling or lining which is constructed of suitable non-combustible materials not being an “A” Class Division or a “B” Class Division;

“cargo pump room” means a room in which any pumps used for loading, discharging or transferring cargoes are located;

“cargo spaces” are all spaces used for cargo including cargo oil tanks, slop tanks and trunks to such spaces;

“control stations” means spaces in which radio or main navigating equipment, or the emergency source of power, or the central fire recording equipment, or fire control equipment or fire-extinguishing installations are located or a control room located outside a propulsion machinery space;

“equivalent material” as used in the expression “steel or other equivalent material” means any non-combustible material which, by itself or due to insulation provided, has structural properties equivalent to steel at the end of an appropriate fire test;

“machinery space” means a space which contains propulsion machinery, boilers, oil fuel units, steam and internal combustion engines, generators and major electrical machinery, oil filling stations, refrigerating, stabilising, ventilation and air conditioning machinery and similar spaces and where the context so admits, any trunk to such a space;

“machinery spaces of Category A” means a machinery space which contains

- (a) internal combustion type machinery used either for main propulsion purposes, or for other purposes where such machinery has in the aggregate a total power output of not less than 375 kilowatts; or
- (b) any oil-fired boiler or oil-fired unit; and any trunk to such a space;

“main vertical zones” means the main vertical zones into which the hull, superstructure and deck houses of a ship are divided in accordance with regulation 54; except that in the case of ships constructed on or after 1st October 1994, main vertical zones are taken to be those sections into which the hull superstructure and deck houses are divided by “A” Class Divisions, the mean length and width of which on any deck does not in general exceed 40m;

“public spaces” includes halls, dining rooms, bars, smoke rooms, lounges, recreation rooms, nurseries, libraries, cinemas, sale shops and similar permanently enclosed spaces allocated to passengers or crew;

“ro-ro cargo spaces” means spaces not normally subdivided in any way and extending to either a substantial length or the entire length of the ship in which goods (packaged or in bulk), in or on rail or road cars, vehicles (including road or rail tankers), trailers, containers, pallets, demountable tanks or in or on similar stowage units or other receptacles can be loaded and unloaded normally in a horizontal direction;

“service spaces” include galleys, pantries containing cooking appliances, laundries, drying rooms, lockers and store rooms, paint rooms, baggage rooms, mail and specie



rooms, workshops (other than those forming part of machinery spaces) and similar spaces and trunks to such spaces;

“special category space” means any enclosed space above or below the bulkhead deck intended for the carriage of motor vehicles with fuel in their tanks for their own propulsion, into and from which such vehicles can be driven and to which passengers have access;

“standard fire test” means a test in which a specimen of the relevant “A” Class or “B” Class Division, having an exposed surface area of not less than 4.65 square metres and a bulkhead height or deck length of 2.44 metres, resembling as closely as possible the intended construction and including where appropriate at least one joint is exposed in a test furnace to a series of time temperature relationships defined by a smooth curve drawn through the following temperature points measured above the initial furnace temperature –

- At the end of the first 5 minutes, 556°C;
- At the end of the first 10 minutes, 659°C;
- At the end of the first 15 minutes, 718°C;
- At the end of the first 30 minutes, 821°C;
- At the end of the first 60 minutes, 925°C;

“Surface spread of flame” means the surface spread of flame classified as Class 1 or Class 2 within the meaning of British Standard 476: Part 7: 1971;

**regulation 13 of the 2023 Regulations and  
paragraph 8.6, 8.7, 8.9 and 8.24 in MSN 1900(M)**

## **1. Schedule 1 – Fire Integrity of Bulkheads and Decks**

**Ships of Classes VII, VII (A) and VIII of 500 tons or over and tankers of Classes VII(T), VIII(T), VIII(A)(T) and IX(A)(T) of 500 tons or over other than tankers to which Part 2 of the Merchant Shipping (Fire Protection) Regulations 2023 apply.**

1.1 The fire integrity of bulkheads and decks shall be as prescribed in Tables 1 and 2

1.1.1.1 Table 1 shall apply to the bulkheads and decks separating adjacent spaces;

1.1.1.2 Table 2 shall apply to decks separating adjacent spaces.

1.1.2 For the purpose of determining the appropriate fire integrity and insulation standards to be applied to boundaries between adjacent spaces, such spaces are classified according to their fire risk as shown in categories 1 to 11 below; where the contents and use of a space are such that there may be doubt as to its classification, it shall be treated as a space within the relevant category having the most stringent boundary requirements; the number in parentheses preceding each category refers to the applicable column or row in the Tables -

(1) control stations;

(2) corridors include -

corridors and lobbies;



(3) accommodation spaces are -

spaces as defined excluding stairways, corridors and lobbies;

(4) *stairways* include -

interior stairways, lifts and escalators (other than those wholly contained within the machinery spaces) and enclosures thereto; a stairway which is enclosed only at one level shall be regarded as part of the space from which it is not separated by a fire door;

(5) *service spaces of low risk* are -

(a) ***in a ship constructed before 1st February 1992***, lockers and storerooms having areas of less than 2 square metres, drying rooms and laundries;

(b) ***in a ship constructed on or after 1st February 1992***, lockers and storerooms not having provision for the storage of flammable liquids and having areas of less than 4 square metres, and drying rooms and laundries;

(6) *machinery spaces of Category A*;

(7) *other machinery spaces*;

(8) *cargo spaces* are -

cargo spaces including trunkways and hatchways to such spaces but excluding spaces in category 11;

(9) *service spaces of high risk* are -

(a) ***in a ship constructed before 1st February 1992***, galleys, pantries containing cooking appliances, paint and lamp rooms, lockers and storerooms having areas of 2 square metres or more, and workshops other than those forming part of the machinery spaces;

(b) ***in a ship constructed on or after 1st February 1992***, galleys, pantries containing cooking appliances, paint and lamp rooms, lockers and storerooms having areas of 4 square metres or more, spaces for the storage of flammable liquids, and workshops other than those forming part of the machinery spaces;

(10) *open decks* are -

open deck spaces and enclosed promenades having no fire risk; air spaces (the space outside superstructures and deckhouses);

(11) *ro-ro cargo spaces etc.* are -

ro-ro cargo spaces, other cargo spaces intended for the carriage of motor vehicles with fuel in their tanks for their own propulsion;

1.1.3 Continuous "B" Class ceilings or linings, in association with the relevant decks or bulkheads, may be accepted as contributing, wholly or in part, to the required insulation and integrity of a division;



1.1.4 External boundaries which are required in the Regulations to be of steel or other equivalent material may be pierced for the fitting of windows and sidescuttles. Similarly in such boundaries doors may be of materials to the satisfaction of the Secretary of State;

1.1.5 The integrity of "A" Class Divisions shall be maintained at the intersections and boundaries of such divisions;

1.1.6

1.1.6.1 Where superscripts a to i inclusive occur in Tables 1 and 2 the following shall apply

—

(a) no special requirements are imposed upon bulkheads in Method IIC fire protection (that is bulkheads may be combustible);

(b) no special requirements are imposed upon bulkheads in Method IIIC fire protection (that is bulkheads may be combustible) except that "A" Class bulkheads and/or "B" Class bulkheads shall be provided between spaces or groups of spaces of 50 square metres and over in area;

(c) regulation 75 of the Merchant Shipping (Fire Protection) Regulations 2023 applies;

(d) where spaces are of the same numerical category and superscription d appears, a bulkhead or deck of the rating shown in the Tables is only required when the adjacent spaces are for a different purpose;

(e) bulkheads separating the wheelhouse, chartroom and radio office from each other may be "B-0" standard;

(f) spaces for the storage of gas cylinders containing the fire extinguishing medium for cargo spaces shall not be located adjacent to such cargo spaces;

(g) for cargo spaces in which dangerous goods are intended to be carried, paragraph 3(m) of Merchant Shipping Notice MSN 1669 (M) applies;

(h) bulkheads and decks separating ro-ro cargo spaces shall be capable of being closed reasonably gastight and such divisions shall have "A" Class integrity in so far as is reasonable and practicable; and

(i) fire insulation need not be fitted if the machinery space in Category 7 has little or no fire risk;

1.1.6.2 Where an asterisk appears in the Tables, the division is required to be of steel or other equivalent material but is not required to be an "A" Class Division.





**TABLE 2 - FIRE INTEGRITY OF DECKS SEPARATING ADJACENT SPACES**

Spaces below ↓	Space above →	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Control stations	(1)	A-0	A-0	A-0	A-0	A-0	A-60	A-0	A-0	A-0	*	A-60
Corridors	(2)	A-0	*	*	A-0	*	A-60	A-0	A-0	A-0	*	A-30
Accommodation spaces	(3)	A-60	A-0	*	A-0	*	A-60	A-0	A-0	A-0	*	A-30
Stairways	(4)	A-0	A-0	A-0	*	A-0	A-60	A-0	A-0	A-0	*	A-30
Service spaces of low risk	(5)	A-15	A-0	A-0	A-0	*	A-60	A-0	A-0	A-0	*	A-0
Machinery spaces of category A	(6)	A-60	A-60	A-60	A-60	A-60	*	A-60 <sup>i</sup>	A-30	A-60	*	A-60
Other machinery spaces	(7)	A-15	A-0	A-0	A-0	A-0	A-0	*	A-0	A-0	*	A-0
Cargo spaces	(8)	A-60 <sup>f</sup>	A-0	A-0	A-0	A-0	A-0	A-0	*	A-0	*	A-0
Service spaces of high risk	(9)	A-60	A-0	A-0	A-0	A-0	A-60	A-0	A-0	A-0d	*	A-30
Open decks	(10)	*	*	*	*	*	*	*	*	*	—	*
Ro-ro cargo spaces etc.	(11)	A -60 <sup>f</sup>	A-30	A-30	A-30	A-0	A-60	A-0	A-0	A-30	*	* <sup>h</sup>







## 2. Schedule 2 – Fire Integrity of Bulkheads and Decks

**Tankers of Classes VII(T), VIII(T), VIII(A)(T) and IX(A)(T) of 500 tons or over (carrying crude oil and petroleum products having a closed flash-point not exceeding 60°C and the Reid vapour pressure of which is below atmospheric pressure or other liquids having a similar or additional fire hazard; or which are gas carriers).**

2.1 The fire integrity of bulkheads and decks shall be as prescribed in Tables 3 and 4 –

2.1.1.1 Table 3 shall apply to bulkheads separating adjacent spaces;

2.1.1.2 Table 4 shall apply to decks separating adjacent spaces.

2.1.2 For the purpose of determining the appropriate fire integrity and insulation standards to be applied to boundaries between adjacent spaces, such spaces are classified according to their fire risk as shown in categories 1 to 10 below; the title of each category is intended to be typical rather than restrictive; the number in parentheses preceding each category refers to the applicable column or row in the Tables –

- (1) *control stations*;
- (2) *corridors* include -  
corridors and lobbies;
- (3) *accommodation spaces* are -  
spaces as defined as such in the Regulations excluding stairways, corridors and lobbies;
- (4) *stairways* include -  
interior stairways, lifts and escalators (other than those wholly contained within the machinery spaces) and enclosures thereto; a stairway which is enclosed only at one level shall be regarded as part of the space from which it is not separated by a fire door;
- (5) *service spaces of low risk* are -
  - (a) **in a ship constructed before 1st February 1992**, lockers and storerooms having areas of less than 2 square metres, drying rooms and laundries;
  - (b) **in a ship constructed on or after 1st February 1992**, lockers and storerooms not having provision for the storage of flammable liquids and having areas of less than 4 square metres, and drying rooms and laundries;
- (6) *machinery spaces of Category A*;
- (7) *other machinery spaces*;
- (8) *cargo pump rooms* are -

spaces containing cargo pumps and entrances and trunks to such spaces;

(9) *service spaces of high risk* are -

- (a) ***in a ship constructed before 1st February 1992***, galleys, pantries containing cooking appliances, paint and lamp rooms, lockers and storerooms having areas of 2 square metres or more, and workshops other than those forming part of the machinery spaces;
- (b) ***in a ship constructed on or after 1st February 1992***, galleys, pantries containing cooking appliances, paint and lamp rooms, lockers and storerooms having areas of 4 square metres or more, spaces for the storage of flammable liquids, and workshops other than those forming part of the machinery spaces;

(10) *open decks* are -

open deck spaces and enclosed promenades having no fire risk; air spaces (the space outside superstructures and deckhouses);

2.1.3 Continuous “B” Class ceilings or linings, in association with the relevant decks or bulkheads, may be accepted as contributing, wholly or in part, to the required insulation and integrity of a division;

2.1.4 External boundaries which are required in the Regulations to be of steel or other equivalent material may be pierced for the fitting of windows and sidescuttles. In such boundaries doors may be of materials affording similar protection;

2.1.5 Permanent approved gastight lighting enclosures for illuminating cargo pump rooms may be permitted in bulkheads and decks separating cargo pump rooms and other spaces provided they are of adequate strength and the “A” Class integrity and gastightness of such bulkheads and decks are not impaired

2.1.6 The integrity of “A” Class Divisions shall be maintained at the intersections and boundaries of such divisions;

2.1.6.1 .

2.1.6.1.1 Where superscriptions a to e inclusive occur in Tables 3 and 4 the following shall apply –

(a) regulation 92 of the Merchant Shipping (Fire Protection) Regulations 2023 applies;

(b) where spaces are of the same numerical category and superscription b appears, a bulkhead or deck of the rating shown in the Tables is only required when the adjacent spaces are for a different purpose;

(c) bulkheads separating the wheelhouse, chartroom and radio room from each other may be “B-0” standard;

(d) bulkheads and decks between cargo pump rooms and machinery spaces of Category A may be penetrated by cargo pump shaft glands and similar glanded penetrations, provided that gastight seals and efficient lubrication or other means of ensuring the permanence of the gastight seals are fitted in any of the bulkheads and decks; and

(e) fire insulation need not be fitted if the machinery space in Category 7 has little or no fire risk;

2.1.6.1.2 Where an asterisk appears in the Tables, the division is required to be of steel or other equivalent material but is not required to be an "A" Class Division.

**regulation 13 of the 2023 Regulations and paragraph 8.18 and 8.27 in MSN 1900 (M)**

### **3. Schedule 3 – Ventilation Ducts – Fire integrity of ventilation ducts**

**Ships of Classes VII, VII (A), VIII, VIII (A), IX and IX (A) and Tankers of VII(T), VIII(T), VIII(A)(T) and IX(A)(T) of 500 Tons and Over**

3.1 Ventilation ducts except those in cargo spaces, shall be constructed as follows –

- 3.1.1 Ducts not less than 0.075 square metre in sectional area and all vertical ducts serving more than a single between-deck space shall be constructed of non-combustible material;
- 3.1.2 subject to the requirements of subparagraph 3.1.2 and of paragraphs 3.5 and 3.6, ducts of less than 0.075 square metre in sectional area other than vertical ducts referred to in subparagraph 3.1.1 shall be constructed of non-combustible materials; where such ducts penetrate "A" Class divisions or "B" Class Divisions, the fire integrity of the division shall be maintained;
- 3.1.3 ducts, not exceeding 0.02 square metre in section area nor 2 metres in length, need not be non-combustible provided that the following conditions are satisfied –
  - 3.1.3.1 the ducts shall be constructed of material which has low flame spread characteristics;
  - 3.1.3.2 the ducts are used only at the terminal ends of the ventilation system; and
  - 3.1.3.3 the ducts are not located closer than 0.6 metre along their lengths to penetrations of "A" Class Divisions or "B" Class Divisions.
- 3.2 Ducts provided for the ventilation of machinery spaces of Category A, galleys, ro-ro cargo spaces or cargo spaces intended for the carriage of motor vehicles with fuel in their tanks for their own propulsion shall not pass through accommodation spaces, service spaces or control stations unless the ducts are either –
  - 3.2.1.1 Constructed of steel having a thickness of at least 3 millimetres and 5 millimetres for ducts the widths or diameters of which are up to and including 300 millimetres and 760 millimetres and over respectively and, in the case of such ducts, the widths or diameters of which are between 300 and 760 millimetres having a thickness to be obtained by interpolation;
  - 3.2.1.2 suitably supported and stiffened;
  - 3.2.1.3 fitted close to the boundaries penetrated with automatic fire dampers, which are also capable of being closed manually; and
  - 3.2.1.4 insulated to "A-60" standard from the machinery space, galley, ro-ro cargo space or cargo space intended for the carriage of motor vehicles with fuel in their tanks for their own propulsion to a point at least 5 metres beyond each fire damper; or

### 3.2.2

3.2.2.1 constructed of steel in accordance with subparagraph 3.2.1.1 and 3.2.1.2; and

3.2.2.2 insulated to "A-60" standard throughout the accommodation spaces, service spaces or control stations.

3.3 Ducts providing ventilation to accommodation spaces, service spaces or control stations shall not pass through machinery spaces of Category A, galleys, ro-ro cargo spaces or cargo spaces intended for the carriage of motor vehicles with fuel in their tanks for their own propulsion unless either –

3.3.1.1 The ducts where they pass through a machinery space of Category A, galley, ro-ro cargo space or cargo space intended for the carriage of motor vehicles with fuel in their tanks for their own propulsion are constructed of steel in accordance with subparagraphs 2(a)(i) and (ii);

3.3.1.2 automatic fire dampers, which are also capable of being closed manually, are fitted close to the boundaries penetrated; and

3.3.1.3 provided that the integrity of the boundaries of the machinery space, galley, ro-ro cargo space or cargo space intended for the carriage of motor vehicles with fuel in their tanks for their own propulsion is maintained at the penetrations; or

### 3.3.2 .

3.3.2.1 the ducts where they pass through a machinery space of Category A, galley, ro-ro cargo space or cargo space intended for the carriage of motor vehicles with fuel in their tanks for their propulsion are constructed of steel in accordance with subparagraphs 3.2.1.1 and 3.2.1.2; and

3.3.2.2 are insulated to "A-60" standard within the machinery space, galley, ro-ro cargo space or cargo space intended for the carriage of motor vehicles with fuel in their tanks for their own propulsion

3.4 Exhaust ducts from galley ranges, where they pass through accommodation spaces or spaces containing combustible materials, shall be constructed of "A" Class Divisions. Every such exhaust duct shall be fitted with –

3.4.1 a grease trap readily removable for cleaning;

3.4.2 an automatic fail-safe fire damper located in the lower end of the duct;

3.4.3 arrangements, operable from within the galley, for shutting off the exhaust fan; and

3.4.4 a fixed means of extinguishing a fire within the duct using either carbon dioxide, or a water spray system.

In addition to complying with subparagraph 3.4.2 galley ventilation ducts shall also comply with paragraph 3.2.

3.5 Where a ventilation duct of sectional area exceeding 0.02 square metre passes through an "A" Class bulkhead or deck, the opening in the bulkhead or deck shall be lined with a steel sleeve unless the duct, where it passes through the bulkhead or deck,

is constructed of steel. At the penetration the sleeve or duct shall comply with the following specification

- 3.5.1 The duct or sleeve shall have a thickness of at least 3 millimetres over a length of 900 millimetres and as far as possible one half of that length shall be on each side of the bulkhead or deck; the duct or sleeve shall be insulated so as to maintain the standard of fire integrity of the bulkhead or deck; and
- 3.5.2 every duct shall be fitted with a fire damper which is capable of being closed manually from each side of the division unless otherwise exempted by approval of the Secretary of State; in every duct of sectional area exceeding 0.075 square metres, the fire damper shall also operate automatically; the manual operating position shall be readily accessible and be marked in red light-reflecting colour; the damper shall be fitted with a visible indicator showing whether the damper is in the open or shut position; fire dampers are not required, however, where ducts pass through spaces surrounded by "A" Class Divisions without serving those spaces, provided that those ducts have the same fire integrity and insulation value as the divisions which they pierce; where divisions have differing "A" Class standards, the ducts shall be of the higher standard.
- 3.6 Where a ventilation duct of sectional area exceeding 0.02 square metre passes through a "B" Class Division, the opening shall be lined with a steel sleeve of 900 millimetres in length unless the duct, where it passes through the division, is constructed of steel. One half of this length shall as far as possible be on each side of the division.

## More Information

Ship Standards  
Maritime and Coastguard Agency  
Bay 2/23  
Spring Place  
105 Commercial Road  
Southampton  
SO15 1EG

Tel: +44 (0) 203 81 8172000  
e-mail: [marinetechology@mcga.gov.uk](mailto:marinetechology@mcga.gov.uk)

Website Address: [www.gov.uk/government/organisations/maritime-and-coastguard-agency](http://www.gov.uk/government/organisations/maritime-and-coastguard-agency)

General Enquiries: [info@mcga.gov.uk](mailto:info@mcga.gov.uk)

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