



MCIB

Marine Casualty Investigation Board
Bord Imscrúdú Taisní Muirí



**REPORT OF AN INVESTIGATION
INVOLVING THE MERCHANT VESSEL**

“ARKLOW CLAN”

**AT THE PORT OF ABERDEEN,
SCOTLAND**

11 AUGUST 2021

**REPORT NO. MCIB/315
(No.5 OF 2022)**

The Marine Casualty Investigation Board (MCIB) examines and investigates all types of marine casualties to, or onboard, Irish registered vessels worldwide and other vessels in Irish territorial waters and inland waterways.

The MCIB objective in investigating a marine casualty is to determine its circumstances and its causes with a view to making recommendations to the Minister of Transport - for the avoidance of similar marine casualties in the future, thereby improving the safety of life at sea and inland waterways.

The MCIB is a non-prosecutorial body. We do not enforce laws or carry out prosecutions. It is not the purpose of an investigation carried out by the MCIB to apportion blame or fault.

The legislative framework for the operation of the MCIB, the reporting and investigating of marine casualties and the powers of MCIB investigators is set out in the Merchant Shipping (Investigation of Marine Casualties) Act, 2000.

In carrying out its functions the MCIB complies with the provisions of the International Maritime Organisation's Casualty Investigation Code and EU Directive 2009/18/EC governing the investigation of accidents in the maritime transport sector.



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Glossary of Abbreviations and Acronyms

AB	Able Bodied Seaman
CCTV	Closed Circuit TV
COSWP	Code of Safe Working Practices for Merchant Seafarers
COVID	Coronavirus Disease (COVID-19)
IMO	International Maritime Organisation
ISM Code	International Safety Management Code
MAIB	Marine Accident Investigation Branch
MCIB	Marine Casualty Investigation Board
MMSI	Maritime Mobile Service Identity
P&I	Protection and Indemnity
PPE	Personal Protective Equipment
OOW	Officer of the Watch
SMS	Safety Management System
SO	Standing Orders
STCW	International Convention on Standards of Training, Certification and Watchkeeping for Seafarers
UK	United Kingdom
UTC	Co-ordinated Universal Time
Kilowatts	kW
Metres	m
Tonnes	t

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29th November 2022.

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1. SUMMARY

- 1.1 The general cargo vessel “*Arklow Clan*”, berthed alongside at the Port of Aberdeen, Scotland, United Kingdom (UK) during the afternoon of 11 August 2021, in ballast condition, and scheduled to commence loading a cargo of scrap metal in bulk the following morning. At around 17.49 hours (hrs), three crewmembers commenced lowering the walkway handrails in preparation for loading operations. Whilst lowering the handrails, the Second Officer lost his footing, falling around 3.6 metres (m) from the walkway to the quay below. As a result of the impact the Second Officer sustained serious injuries to both his legs, necessitating an extensive period of hospitalisation, multiple surgeries, and rehabilitation.

Note: Times are local time = UTC + 1 (Co-ordinated Universal Time + 1 hour).

2. FACTUAL INFORMATION

- 2.1 The vessel is a general cargo ship constructed with a single hold and fitted with portable bulkheads for cargo separation. The accommodation and machinery spaces are located abaft (behind) the hold. Weather deck protection is provided by pontoon type steel hatch covers.

See Appendix 7.1 - Annotated Vessel General Arrangement Plan “*Arklow Clan*”.

2.1.1 Vessel Details

Vessel Name:	“ <i>Arklow Clan</i> ”.
Vessel Type:	General Cargo Ship.
Year and Builder:	2017, Ferus Smit, Netherlands.
Flag:	Irish.
Port of Registry:	Arklow.
Official Number:	404992.
Maritime Mobile Service Identity (MMSI) Number:	250004424.
International Maritime Organisation (IMO) Number:	9757113.
Length Overall:	87.40 m.
Breadth Moulded:	14.99 m.
Depth Moulded:	7.12 m.
Summer Draught:	6.26 m.
Summer Deadweight:	4,990 tonnes (t).
Gross Tonnage:	2,999 t.
Net Tonnage:	1,692 t.
Main Engine:	MAK 6M25 rated at 1740 kW.
Propulsion:	A single variable pitch propeller.
Service Speed:	11.0 knots.

Classification:	Bureau Veritas.
Entry Number:	29099G.
Number of Crew:	7.
Owner/Operator	Arklow Shipping ULC.

2.1.2 Walkway Handrails

Two elevated grated walkways (catwalks) run parallel forward and aft on the port and starboard sides of the vessel. The walkways are located approximately 0.4 m below the top of the hatch covers in the closed position. They are accessed at the stern from the raised quarter deck and forward via the forecastle deck. Fall protection whilst using the walkway is provided by means of handrails, approximately 1.2 m in height. As the handrails extend above the hatch coamings, to facilitate certain cargo operations they must be lowered approximately 180° from the upright vertical position, to the downward ‘hanging’ position. The operation is not routine, and the handrails are only infrequently lowered for certain cargoes or port requirements.

See Appendix 7.2 - Photographs of the Handrails Lowered in the Down Position (photographs taken post incident).

2.1.3 A safety wire runs the length of each walkway directly atop of the metal walkway grating. The carabiner of a fall restraint harness and lanyard can be clipped into the wire, providing crew with a means of fall arrest when the handrails are either lowered or when engaged in the lowering or raising operation.

2.1.4 To lower the handrails, securing nuts and bolts are removed from the top, middle and bottom sections of the handrails, a total of five for each railing. The handrails are then lowered by means of a rope to control the downward speed. Typically, the operation involves two or three crewmembers.

See Appendix 7.3 - Photographs Evidencing the Correct Procedure and Safety Equipment to be used when Lowering the Handrails.

2.2 Crew Details

2.2.1 The Second Officer, a 29 year old Polish National, had two years’ service with Arklow Shipping. It was his second contract onboard “*Arklow Clan*”, having previously completed a four and a half month contract on the vessel. During the preceding contract he had been promoted from Able Bodied Seaman (AB) to Second Officer. He holds an International Convention on Standards of Training, Certification and Watchkeeping for Seafarers (STCW) II/1, Officer of the Watch (OOW) Certificate of Competency issued in August 2019. He joined the vessel on 16 July 2021, after a three-month period of leave.

2.2.1 AB 1, a 26 year old Filipino National, had seven months service onboard “*Arklow Clan*”, his second contract with Arklow Shipping. He holds a STWC AB Certificate of Competency issued in November 2017.

2.2.3 AB 2, a 43 year old Filipino National, had six months service onboard “*Arklow Clan*”. He holds a STWC AB Certificate of Competency issued in January 2016.

2.3 Code of Practice and Relevant Legislation

2.3.1 Code of Safe Working Practices for Merchant Seafarers (COSWP), 2015 edition - Amendment 6, October 2021. The COSWP is incorporated into Irish Law through the Merchant Shipping (COSWP) Regulations, 1988. Chapter 17 of COSWP provides guidance for safe working practices when working from height. The fundamental principal is that anyone working in a location where there is a risk of falling may be regarded as working at height.

2.3.2 Safety, Health and Welfare at Work (General Application) Regulations 2007 (2007 Regulations). The 2007 Regulations impose a duty on employers to ensure appropriate Personal Protective Equipment (PPE) is provided and that the PPE meets European Standards. PPE must be maintained, and crew given instruction in its use. Part 4 details measures to be followed when working at height.

2.3.3 Safety, Health and Welfare at Work (Work at Height) Regulations 2006 (2006 Regulations). The 2006 Regulations require employers to ensure that work at height is properly planned, appropriately supervised and carried out in a manner that is, so far as is reasonably practicable, safe and without risk to health.

2.3.4 Safety, Health and Welfare at Work Act 2005 (2005 Act). The 2005 Act requires employers to ensure adequate provisions are in force in the workplace to protect the safety, health and welfare of persons at work. The employer’s duties include effective hazard identification and risk assessment, protective and preventative measures and instruction, and training and supervision of employees.

2.3.5 Merchant Shipping (Health and Safety: General Duties) Regulations, 1988 (1988 Regulations). The 1988 Regulations require employers to exercise a general duty of care towards employees and other persons aboard ship. This includes ensuring instruction, training and supervision of employees.

2.4 Safety Equipment

The vessel carried four full body fall arrest harnesses manufactured by Climax, attached to a Kransos lanyard and carabiner. The date of manufacture of the harnesses and lanyards was July 2016. Certificates for the harnesses were unavailable onboard the vessel. The harnesses were visually inspected each month, with the last inspection prior to the incident recorded on 27 July 2021,

with the harnesses listed in good condition. Crew had been given onboard instruction in use of the equipment and they were familiar with its safe use. The harnesses have since the incident, been replaced with new harnesses and lanyards.

2.5 Voyage Particulars

The incident occurred whilst the vessel was tied alongside at the Port of Aberdeen, UK, the vessel having arrived from the port of Immingham, Lincolnshire, UK.

2.6 Marine Incident Information

2.6.1 Type of Casualty: The incident is classed as a serious marine casualty due to the serious injuries sustained by a crewmember.

Date: 11 August 2021.

Time: 17.49 hrs.

Position: Latitude 57° 08.57' North, Longitude 002° 05.00' West.

Wind Speed: Beaufort Force 3, 7 - 10 knots.

Wind Direction: South West.

Sea State: Calm.

Swell: None.

Visibility: Good.

Tide Information: High Water 16.25 hrs.

2.7 Emergency Response and Shore Authority Involvement

2.7.1 An ambulance attended on scene at 18.06 hrs, 17 minutes after the fall. After emergency surgery in the local hospital the Second Officer was repatriated to Poland via a specially chartered medical flight.

2.7.2 Investigations into the cause of the incident were undertaken by Arklow Shipping, the vessel's crew and Port of Aberdeen staff. The Marine Accident Investigation Branch (MAIB) and Marine Casualty Investigation Board (MCIB) were both notified by the Master/Ship Operator, with the MCIB subsequently investigating the incident. Due to the Coronavirus Disease (COVID -19) restrictions in force at the time, an Arklow Shipping superintendent did not attend at Aberdeen, but rather he spoke extensively with the Master by telephone. A lawyer appointed by the

vessel's Protection & Indemnity (P&I) insurers attended and took contemporaneous witness statements from AB 1, AB 2 and the Chief Officer.

2.8 Vessel Inspections

2.8.1 The Last Flag State Inspection was conducted at Warrenpoint, Co Down on 5 July 2019. The Surveyor commented "Good condition throughout. Well maintained." Two minor items required actioning. An inspection of the safety harnesses used for working at height is not a specific item on the checklist.

2.8.2 Port State Control Inspections were conducted at Fos-sur-Mer, north west of Marseille, France on 28 May 2017, Klaipeda, Lithuania on 29 March 2018, Great Yarmouth, Norfolk, UK on 28 March 2019, Lisbon, Portugal on 29 January 2020 and Ayr, Scotland on 5 January 2021, all without any deficiencies noted.

3. NARRATIVE

3.1 The vessel departed in a ballast condition from the port of Immingham, Lincolnshire, UK on 10 August 2021. The Pilot boarded at 10.15 hrs, before disembarking at 12.40 hrs. The vessel then proceeded on passage north towards Aberdeen, Scotland.

3.2 On departing Immingham the Second Officer reported to the Bridge at 12.00 hrs, for the 12.00 hrs to 16.00 hrs watch. He felt well rested after having a full night's sleep the night before whilst the vessel was moored alongside in port; a total of 18 hours rest in 24 hours. During the short voyage to Aberdeen the weather was favourable, with variable winds of a maximum of Beaufort Force three, good visibility and slight seas. The benign weather conditions and sea passage allowed the Second Officer two further periods of uninterrupted rest; eight hours after completing his afternoon watch on 10 August 2021 and then a further eight hours rest after finishing his night watch which lasted from 00.00 hrs to 04.00 hrs on 11 August 2021.

See Appendix 7.4 - STCW Hours of Work for the Second Officer for July and August 2021.

3.3 The vessel passed the Aberdeen Fairway Buoy at 09.30 hrs and anchored at 09.45 hrs awaiting the boarding of a pilot. The Second Officer reported for duty on the bridge again at 12.00 hrs and for the duration of his watch the vessel lay at anchor. The crew commenced heaving anchor at 16.20 hrs and by 16.50 hrs the Pilot was onboard.

3.4 "*Arklow Clan*" proceeded into the port and the Albert Basin which lies at the southern section of the Inner Harbour. After completing a starboard swing the vessel manoeuvred portside alongside Pacific Wharf. The handrails were in the upright position throughout the approach. High-definition closed circuit TV (CCTV) footage evidenced weather conditions consisting of drizzle, a south westerly breeze (blowing the vessel on to the dock), calm seas, cloudy overcast skies and good visibility in daylight conditions. Four large offshore vessels moored on the opposite side of Albert Basin to "*Arklow Clan*" provided a degree of lee from the wind. At the time of the incident no other vessels were manoeuvring in the Basin and the vessel lay steadily alongside the dock.

See Appendix 7.5 - Annotated Plan of Aberdeen Inner Harbour.

3.5 The Second Officer was responsible for aft mooring operations, and he was assisted by an AB. The vessel was moored with two headlines, two stern lines and two springs, and it was all fast, port side to, by approximately 17.40 hrs. The vessel was scheduled to commence loading a cargo of scrap metal in bulk the following morning on 12 August 2021; no cargo operations were planned overnight.

- 3.6 The vessel is equipped with four full body harnesses to provide fall protection when working at height (aloft). The vessel's Safety Management System (SMS) contained Company Standing Orders (SO) detailing standard operating procedures. Working at height was covered in section 2.27 of SO - Part 2 - General:

2.27 Working Aloft and Over side

"A safety harness, safety line and where appropriate a fall arrestor, must be used at all times by any person working aloft or working over side. No person shall work over side when the vessel is underway. The use of safety gear should only be used for its intended purposes".

- 3.7 The SMS did not state the requirement for a risk assessment and permit to work to be completed prior to crew commencing lowering the handrails. The general practice onboard "Arklow Clan" was that crew did not don safety harnesses prior to lowering the handrails and on this occasion no harnesses, risk assessment or permit to work were in use. No toolbox talk was carried out prior to starting the lowering operation.
- 3.8 As this was his second contract onboard the vessel as Second Officer, he was already very familiar with cargo operations and the required preparations onboard "Arklow Clan". No formal order was given to the Second Officer and two ABs' (AB 1 and AB 2) to commence lowering the handrails, but rather through experience they understood the requirement when loading a cargo of scrap metal and therefore they decided to commence the task. All three crewmembers had lowered the handrails before, and they were familiar with the operation.
- 3.9 Almost immediately after completing mooring operations, starting at approximately 17.40 hrs working from aft and moving forward on the port side of the vessel, the Second Officer and AB 1 commenced removing the five nuts and bolts for each handrail section, each working on alternate bolts. AB 2 followed behind lowering the handrails with a rope. The witness accounts differ as to the exact sequence of events which followed. At around 17.49 hrs the Second Officer recalled standing up from the crouched position and losing his footing, in a bid to steady himself he grabbed the nearest handrail, but as the nuts and bolts had been removed the handrail gave way, causing him to fall overboard. AB 1 and AB 2 recalled observing the Second Officer leaning against a loosened handrail, before losing his balance and falling overboard.
- 3.10 The net result was the same, at 17.49 hrs the Second Officer found himself falling towards the tarmacked quay below, a height of approximately 3.6 m. In a split second, he made the decision to rotate his torso and take the impact with his legs extended.

See Appendix 7.6 - Photographs of Pre and Post Fall Positions of the Second Officer.

- 3.11 After witnessing the fall AB 2 ran to the accommodation to raise the alarm with the Chief Officer, whilst AB 1 descended the gangway. The Second Officer knew that he had suffered leg injuries and so he requested AB 1 to gather the vessel's stretcher. This task was duly completed with the assistance of the Cook and Chief Officer. The crew commenced administering basic medical treatment. A dockworker had witnessed the fall and already called for the assistance of an ambulance, with one arriving on the scene at 18.06 hrs, 17 minutes after the fall.
- 3.12 After stabilising the Second Officer's injuries, at 18.54 hrs the ambulance departed the scene. Two crew recommenced lowering the handrails, but they now wore the full body harnesses. During the lowering operation, at times they unclipped their lanyards to move, not fully utilising the safety wire and therefore limiting the effectiveness of the fall arrest protection, notwithstanding that crew had received onboard training in the use of harnesses when joining the vessel.
- 3.13 The Second Officer was taken to hospital where emergency surgery was required. The high energy blunt trauma caused by impact with the quay had dislocated his right knee and caused a popliteal artery injury. Without immediate surgery there was a significant risk his right leg would have required amputation due to restricted blood flow and therefore a vein graft was required from his left thigh. Other injuries included two fractured bones in his left foot and four fractured bones in his right foot. The Second Officer was subsequently repatriated via a specially chartered medical flight. His recovery required a further five surgeries and 12 months off work undergoing rehabilitation.

Actions Post-Incident

- 3.14 The Arklow Shipping investigation identified areas for improvement. Another incident involving walkway handrails had occurred onboard "Arklow Vanguard". While discharging wheat at Cerestar, Manchester, the crew started to prepare the handrails for lowering in preparation for loading her next cargo, scrap metal, at Irwell Park, Manchester, UK. Stevedores were still onboard the vessel discharging the grain cargo and they correctly objected that their safety was being compromised when the crew were slackening and removing the securing bolts, rendering the handrails unfit for safe use.
- 3.16 On 31 August 2021 Arklow Shipping distributed a Fleet Circular Letter advising all crew of the incidents at Manchester and Aberdeen with the walkway handrails. The Circular acknowledged the inadequacies of the procedures for lowering the handrails and set out new requirements:

"Prior to lowering or raising the handrails for the walkways a formal risk assessment must be conducted to identify all potential risks and hazards including the presence of personnel working in the vicinity of the walkway. All reasonable steps must be implemented to reduce the consequences of the identified risks and hazards. No work on handrails is permitted if cargo operations are on-going. Following completion of the risk assessment a permit

to work, as per our Safety Management System, must be completed. Full PPE must be used, including safety harness, at all times when raising or lowering the safety rails”.

See Appendix 7.7 - Arklow Shipping Fleet Circular Letter.

3.17 A review of walkway handrails across the Arklow Shipping fleet identified that the walkways of 16 vessels were not fitted with a safety wire, meaning continuous fall arrest protection could not be assured when the handrails were lowered. A safety wire was retrofitted to each vessel. The absence of a safety wire had never been identified during any Flag State or Port State Control vessel inspection onboard an Arklow Shipping vessel not fitted with such a safety wire.

3.18 The Arklow Shipping Company Standing Orders were amended to include new safety requirements relating to the walkway handrails:

“A safety harness, safety line and where appropriate a fall arrestor, must be used at all times by any person working aloft or working overside. No person shall work overside when the vessel is underway. The use of safety gear should be only used for its intended purposes. At all times prior to working aloft or overside a formal risk assessment must be carried out, followed by issuing a Permit to Work”.

See Appendix 7.8 - Arklow Shipping Company Standing Orders - SO - Part 2 - General.

3.19 A rolling installation program of forward-facing CCTV cameras was implemented across the Arklow fleet. The cameras allow the use of safety harnesses by crew to be monitored. Arklow Shipping superintendents regularly visit vessels and ensure risk assessments and permits to work are being issued. The Fleet Training Master has been tasked with ensuring all crew are familiar with the correct procedure for lowering or raising the handrails during vessel training visits. The SMS is kept under continuous review and updated as required.

4. ANALYSIS

4.1 Environmental Factors

At the time of the incident there was a light drizzle falling, meaning surfaces on the vessel were wet and had the potential to be slippery. The wind was blowing the vessel on to the dock and no other vessels passed at the material time, meaning the vessel was not moving to a degree that should have contributed to crewmembers losing balance. Based on the witness evidence the Second Officer did not slip or trip, but either lost his balance when attempting to stand from the crouching position or leaned on a loosened railing. The environmental conditions are therefore not deemed a causative factor.

4.2 Fatigue

4.2.1 University research has identified that crew fatigue is a common issue for crew operating vessels in the near sea sector due to limited crew numbers and frequency of port operations. Working hours are the strongest predictors of fatigue. Sleep, job demands, stress, age, vibration/motion, the physical working environment, having to stand watch and the increased use of caffeine can all contribute to fatigue.

4.2.2 The STWC hours of work sheets in Appendix 7.4 evidence that in the 24 hrs directly preceding the incident, the Second Officer had the opportunity to take 14 hrs of rest, with eight hours of uninterrupted rest before starting duty at 12.00 hrs on 11 August 2021. On 9 and 10 August respectively, he had rest periods totalling 18.0 hrs and 16.5 hrs; in other words, his working hours were limited prior to the incident.

4.2.3 The Second Officer had been onboard the vessel for his present contract of employment for slightly over one month and by his own account he felt relatively fresh. Based on the evidence reviewed, at the time of the incident the Second Officer was unlikely to have been suffering from excessive fatigue; however, the core working hours of the 00.00 hrs to 04.00 hrs and 12.00 hrs to 16.00 hrs watch system, known as the 12 to four, entail working a split night shift. A degree of fatigue may therefore have been a contributory factor in any momentary loss of concentration suffered by the Second Officer.

4.3 Code of Practice and Relevant Legislation

4.3.1 Health and safety onboard Irish Registered vessels is highly regulated through legislation and guidance, including the provisions for safely working at height under the 2006 Regulations and Chapter 17 COSWP. Full body harnesses and lanyards were provided onboard “*Arklow Clan*”, but the systems in place to

ensure their correct usage were inadequate. The absence of an appropriate risk assessment, permit to work for the operation or “toolbox talk” (crew safety briefing) was the main contributory factor to the incident. If these three control measures were in operation as required under the 2006 Regulations, then in all likelihood the crew would have recognised the potential dangers of the operation and would have donned the harnesses prior to lowering the handrails.

4.3.2 Ensuring that crew are adequately trained and understand when to use safety equipment is a requirement of the 2007 Regulations. Arklow Shipping has subsequently improved crew training across the fleet through onboard training conducted by the Fleet Training Master.

4.3.3 During Arklow Shipping’s own investigation it was identified that 16 Arklow Shipping vessels were not fitted with a safety wire on the walkways. These deficiencies have been rectified, but nevertheless, it is surprising that the risks associated with fitting lowerable handrails were not adequately identified during any Port State, Flag State or Classification Society Inspection on the 16 vessels in the Arklow fleet. Provision of a safety wire is a logical control measure and its absence appears to have been overlooked across the fleet during numerous surveys.

4.4 Culture and Compliancy

4.4.1 Working at height remains one of the biggest causes of fatalities and major injuries onboard vessels. All the major P&I clubs (vessel insurers) have issued loss prevention circulars identifying the dangers of working at height both above and below deck. A failure to adequately identify work hazards, poor planning and supervision remain contributory factors in the majority of working at height incidents. Onboard “*Arklow Clan*” it was common practice not to wear harnesses when dropping the railings. This culture and compliancy does not appear to be limited to the vessel, as an incident regarding lowered walkway handrails also occurred onboard “*Arklow Vanguard*”.

4.4.2 The lack of safety wires onboard 16 other vessels in the Arklow fleet is persuasive evidence that the risks associated with handrail lowering operation were not appreciated by the crews or the vessel operator. In other words, the lack of a wire was not reported or deemed to constitute a hazard. A culture had developed that harnesses were not required for the handrail lowering/raising operation. The lack of reported incidents associated with the operation may have created a degree of complacency amongst crews as to the dangers associated with the operation.

- 4.4.3 Procedures for lowering the handrails continue to be included in Arklow fleet training, with Fleet Training Officers and Superintendents confirming procedures are being followed during ship visits. Examples of permits to work, “toolbox talks” and risk assessments covering the handrail operation were provided during the investigation, indicating a cultural change led by Arklow Shipping’s senior management.

5. CONCLUSIONS

- 5.1 At 17.49 hrs on 11 August 2021, while the “*Arklow Clan*” was moored alongside at the Port of Aberdeen, the Second Officer fell approximately 3.6 m from a walkway to the quay. In doing so he sustained serious and potentially fatal injuries.
- 5.2 Environmental factors, such as weather and movement of the vessel are unlikely to have been contributing factors. The Second Officer was not suffering from excessive fatigue, but fatigue associated with working at night and keeping the 12 to four watch may have caused him to momentarily lose concentration.
- 5.3 Full body harnesses were available onboard the vessel and had they been correctly used the incident would have been avoided. The root cause of the incident was a failure to follow safe systems of work applicable for working at height including adequate risk assessment, completion of a permit to work and “toolbox talks”. These deficiencies were quickly identified post incident by Arklow Shipping and rectified.

6. SAFETY RECOMMENDATIONS

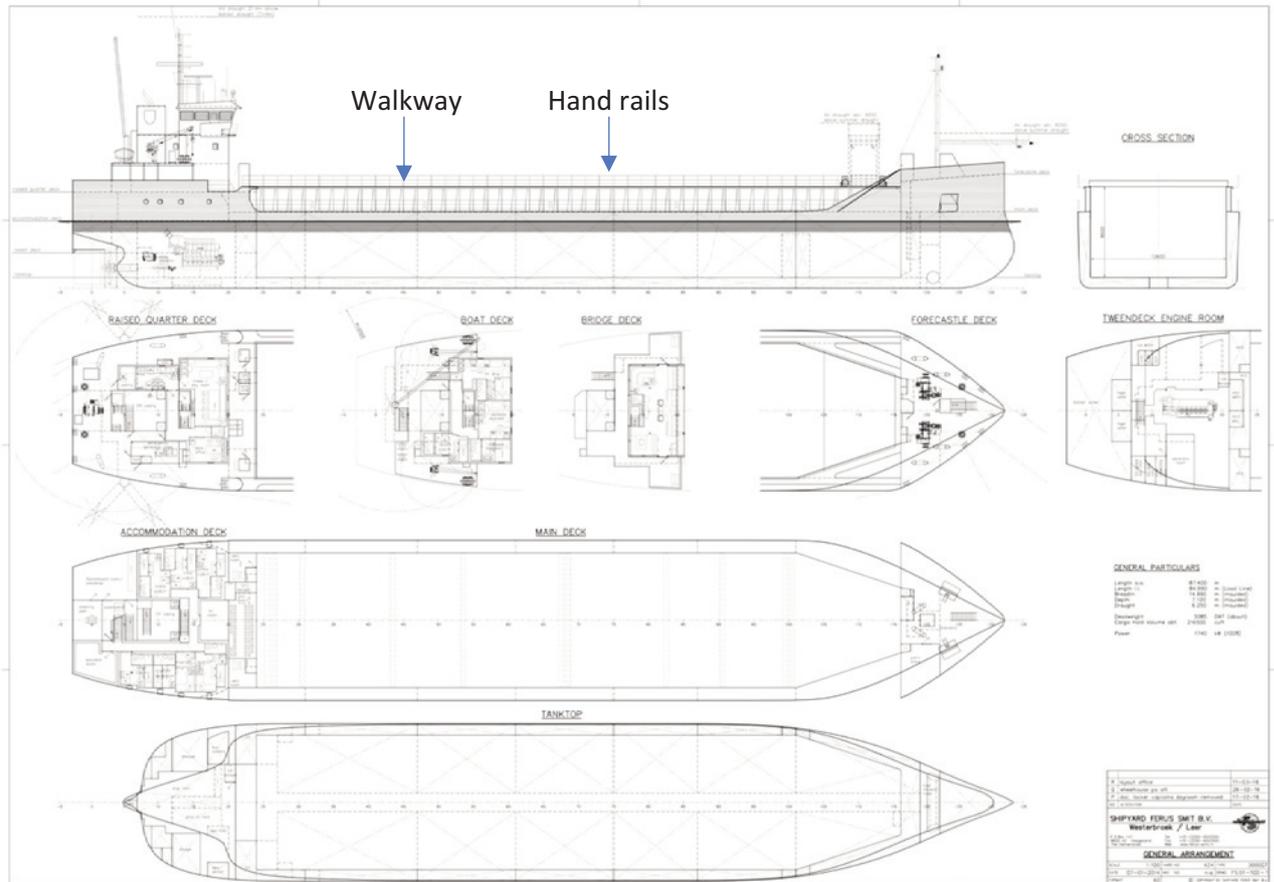
- 6.1 The Minister for Transport should issue a Marine Notice to remind all crews and vessel operators of the potential dangers of working at height and their obligations to follow existing legislation and guidance in order to reduce any risks. This includes ensuring the task is risk assessed, subject to a permit to work, that crew are provided with a “toolbox talk” prior to commencing the task and the appropriate PPE is available. Crew must be provided with training in the correct use of PPE and the PPE must be subject to regular inspections and recorded in a planned maintenance system, as per International Safety Management (ISM) Code (applicable to passenger ships and cargo vessels over 500 Gross Tonnes).

7. APPENDICES

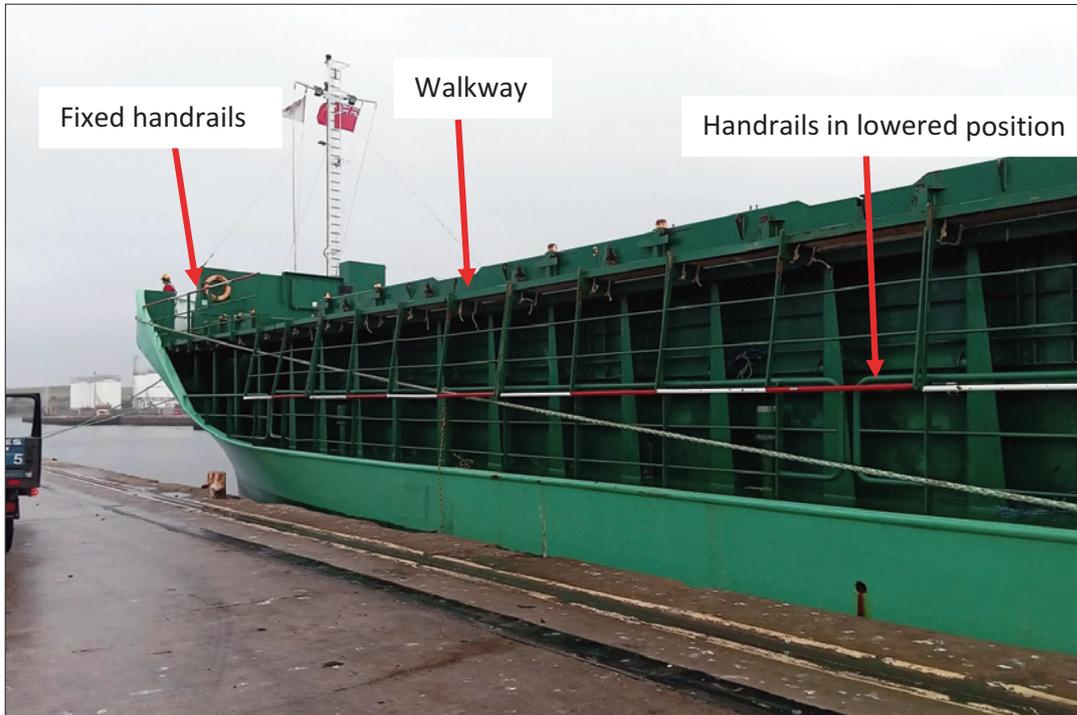
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APPENDIX 7.1

Appendix 7.1 Annotated Vessel General Arrangement Plan “Arklow Clan”



Appendix 7.2. Photographs of the Handrails Lowered in the Down Position (photographs taken post incident)



Photograph No. 1 - Taken by Vessel Crew on 11/08/2021 Post Incident



Photograph No. 2 - Taken by Vessel Crew on 11/08/2021 Post Incident

APPENDIX 7.3

Appendix 7.3 Photographs Evidencing the Correct Procedure and Safety Equipment to be used when Lowering the Handrails



Photograph No. 1 - Crewmember Correctly Wearing PPE

Appendix 7.3 Photographs Evidencing the Correct Procedure and Safety Equipment to be used when Lowering the Handrails



Photograph No. 2 - The Correct Method for Lowering Handrails

APPENDIX 7.4

Appendix 7.4 STCW Hours of Work for the Second Officer for July and August 2021

RECORD OF HOURS OF REST
 JUL 2021
 IMO STCW 2010 +Manila

Vessel: Arklow Clan Seafarer (Full Name): [REDACTED]
 IMO No: 9757113
 Flag: Ireland Position (Rank): Second Officer
 Watchkeeper: YES

July 2021		Periods of work are shaded																								Hours of work in 24h period	Hours of rest in 24h period	Comments	NOT TO BE COMPLETED BY THE SEAFARER		
Date	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24				Hours of rest in any 24h period	Hours of rest in any 7d period	
16/07/2021																											5.0	15.0		N/A	N/A
17/07/2021																											9.0	15.0	DRILL	15.0	N/A
18/07/2021																											8.5	15.5		15.5	N/A
19/07/2021																											9.0	15.0		10.5	N/A
20/07/2021																											9.0	15.0		14.5	N/A
21/07/2021																											9.0	15.0		14.5	N/A
22/07/2021																											12.0	12.0	DRILL	12.0	N/A
23/07/2021																											9.0	15.0		14.0	101.5
24/07/2021																											9.0	15.0		11.0	98.5
25/07/2021																											9.0	15.0		14.5	98.5
26/07/2021																											10.0	14.0		14.0	102.0
27/07/2021																											9.5	14.5		14.0	101.5
28/07/2021																											7.0	17.0		17.0	103.5
29/07/2021																											9.0	15.0		11.5	103.5
30/07/2021																											9.0	15.0		14.5	102.5
31/07/2021																											9.0	15.0		14.5	105.5
																											141.0	243.0			

The following national laws, regulations and/or collective agreements governing limitations on working hours or minimum rest periods apply to this ship:

Irish Department of the Marine and National Resources, European Labour Laws

I AGREE THAT THIS RECORD IS AN ACCURATE REFLECTION OF THE HOURS OF WORK OR REST OF THE SEAFARER CONCERNED.

Name of master or person authorized by master to sign this record: [REDACTED]

Signature of master or authorized person: _____

Signature of seafarer: _____

A copy of this record is to be given to the seafarer. This form is subject to examination and endorsement under procedures established by:

Ireland
(name of competent authority)

Hours of rest for Second Officer Jul 2021

RECORD OF HOURS OF REST
 Aug 2021
 IMO STCW 2010 +Manila

Vessel: Arklow Clan Seafarer (Full Name): [REDACTED]
 IMO No: 9757113
 Flag: Ireland Position (Rank): Second Officer
 Watchkeeper: YES

August 2021		Periods of work are shaded																								Hours of work in 24h period	Hours of rest in 24h period	Comments	NOT TO BE COMPLETED BY THE SEAFARER			
Date	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24				Hours of rest in any 24h period	Hours of rest in any 7d period		
01/08/2021																											8.0	16.0		14.5	106.5	
02/08/2021																												11.5	12.5		12.5	105.0
03/08/2021																												13.0	11.0		11.0	94.0
04/08/2021																												9.0	15.0		11.0	96.5
05/08/2021																												11.0	13.0		13.0	97.5
06/08/2021																												13.5	10.5		10.5	93.0
07/08/2021																												0.0	16.0		10.0	93.0
08/08/2021																												6.0	16.0		17.0	97.0
10/08/2021																												7.5	16.5		16.0	99.0
11/08/2021																												10.0	14.0		14.0	103.5

The following national laws, regulations and/or collective agreements governing limitations on working hours or minimum rest periods apply to this ship:

Irish Department of the Marine and National Resources, European Labour Laws

I AGREE THAT THIS RECORD IS AN ACCURATE REFLECTION OF THE HOURS OF WORK OR REST OF THE SEAFARER CONCERNED.

Name of master or person authorized by master to sign this record: [REDACTED]

Signature of master or authorized person: _____

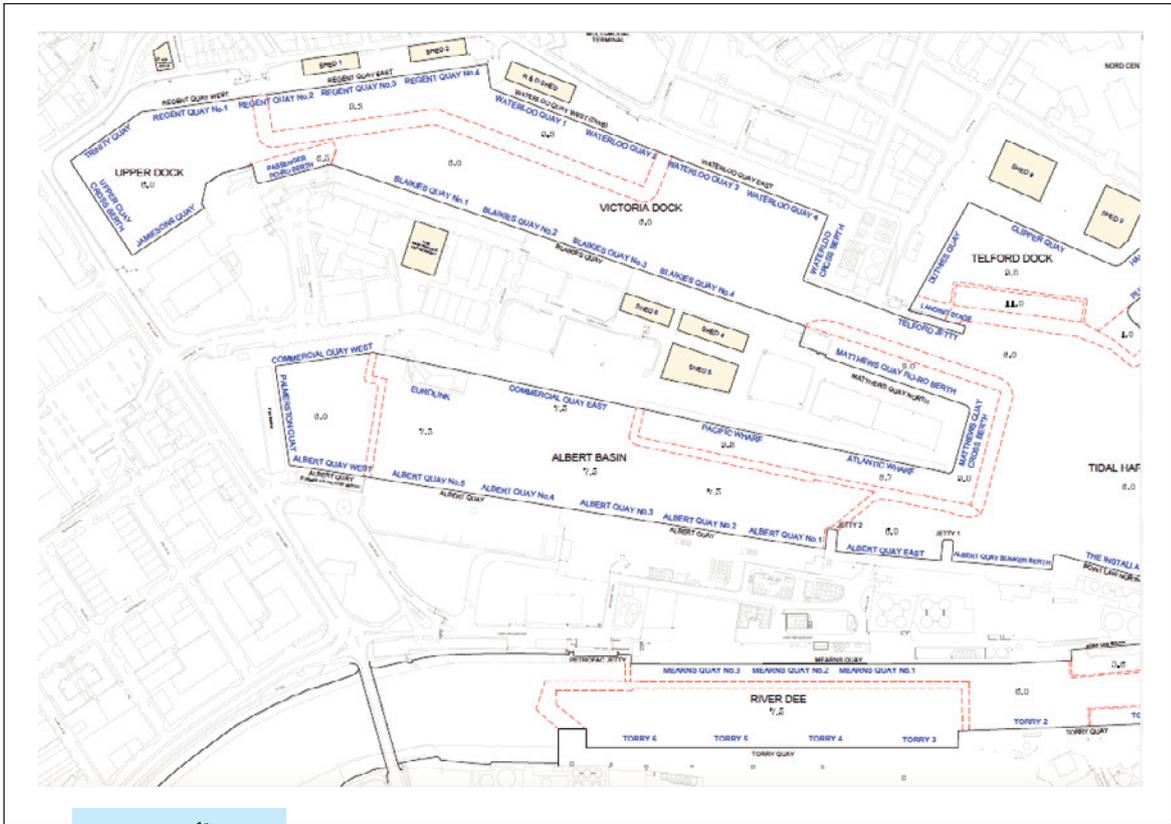
Signature of seafarer: _____

A copy of this record is to be given to the seafarer. This form is subject to examination and endorsement under procedures established by:

Ireland
(name of competent authority)

Hours of rest for Second Officer August 2021 – three days prior to incident highlighted in yellow.

Appendix 7.5 Annotated Plan of Aberdeen Inner Harbour



APPENDIX 7.6

Appendix 7.6 Photographs of Pre and Post Fall Positions of the Second Officer



Photograph No. 1 - Crew Working on Deck Pre-fall



Photograph No. 2 - Second Officer Receiving Medical Attention on the Quay on Post-fall

Appendix 7.6 Photographs of Pre and Post Fall Positions of the Second Officer



Photograph No. 3 - Position of Railings Post-fall. Partially in Down Position



Photograph No. 4 - Crew Resume Lowering Handrails Post-fall

Appendix 7.7 Arklow Shipping Fleet Circular Letter



Arklow Shipping

Fleet Circular Letters - Safety & Security

Number:	FCL-S-2021/02
Date:	31.08.2021
Issued by:	Marine Superintendent/ Fleet Safety Officer
For attention of:	Masters and all Crew
Subject:	Raising/Lowering handrails of coaming walkways

We had two incidents recently involving the walkway handrails.

In the first incident on Arklow Vanguard, while discharging wheat at Cerestar, Manchester, the crew started to prepare the handrails for lowering in preparation for loading her next cargo, scrap metal at Irwell Park. Stevedores still on board discharging the grain cargo correctly objected that their safety was being compromised when the crew were slackening and removing the securing bolts rendering the handrails unfit for safe use.

The second incident happened on board Arklow Clan at Aberdeen. The crew were lowering the walkway handrails in preparation for loading operations in the morning when the second officer fell from the walkway to the quay wall, sustaining serious injuries to his legs.

Investigation of these two incidents clearly indicate that our procedure for this operation is inadequate and a full review with corrective actions is being implemented as a result of the findings and consequent recommendations.

Prior to lowering or raising the handrails for the walkways a formal risk assessment must be conducted to identify all potential risks and hazards including the presence of personnel working in the vicinity of the walkway. All reasonable steps must be implemented to reduce the consequences of the identified risks and hazards.

No work on handrails is permitted if cargo operations are on-going.

Following completion of the risk assessment a permit to work, as per our Safety Management System, must be completed. Full PPE must be used, including safety harness, at all times when raising or lowering the safety rails.

Every vessel must have available on board a minimum of four safety harness's, in good order, complete with a lanyard of length not less than 1.50m and not greater than 1.80m, these lanyards must not include shock absorbers. Should any vessel believe they require more than the Company minimum of four harness's they should discuss and agree any increase with their Technical Superintendent. All safety harness's should be replaced as required following inspection should their condition be deemed to be unsatisfactory and all harness's must be replaced after a maximum of five years in service. Permanently rigged safety lines will be maintained in good order and ready for immediate use along all hatch coaming walkways.

When raising/lowering the handrails the assigned crew will act as a team dealing with one section of handrail at a time. Each section of handrail must be raised/lowered and secured before moving on to the next section of handrail. The raising/lowering of each section should be controlled from the walkway with the use of a manrope secured to the handrail.

Slackening/removing of bolts from more than one section of handrail in preparation for lowering is unsafe practice and is not permitted.

Marine Superintendent

Arklow Shipping Unlimited Company trading as Arklow Shipping, North Quay, Arklow, Co. Wicklow, Y14 TW68, Ireland
 Directors: Sheila M Tyrrell, James S. Tyrrell, James A. Tyrrell, Patrick Corcoran, Joseph Nelson, James Kavanagh, Adrian Teggin,
 Peter Schalk (NL), Piet Govers (NL), Floris Deckers (NL)

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Document Reference: FCL-S-2021/02
 Date Approved: 01/09/2021, Version: 1

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Appendix 7.8 Arklow Shipping Company Standing Orders - SO - Part 2 - General



Arklow Shipping

Company Standing Orders

SO - Part 2 - General

26. Pilot Ladder

- 26.A. The rigging of the pilot ladder and the embarkation of a pilot shall be supervised by a responsible officer who shall be positioned at that boarding point, during pilot transfer and having means of communication with the navigation bridge and who shall also arrange for the escort of the pilot by a safe route to and from the navigation bridge. Prior to rigging a pilot ladder for use, the Officer responsible shall satisfy themselves that the ladder is in a fit condition.
- 26.B. A Lifebuoy, complete with light and a heaving line shall be kept ready for use at the pilot transfer station. At night a light shall be rigged at the pilot boarding station shining down to the water so as to illuminate the full length of the ladder down the ships side
- 26.C. Means shall be provided to ensure safe unobstructed passage from the head of the pilot ladder, or any accommodation ladder, to the ship's deck. Where such passage is by means of;
 - a gateway in the rails or bulwark, adequate handholds shall be provided;
 - a bulwark ladder, two handhold stanchions rigidly secured to the ship's structure at or near their bases and at a higher point shall be fitted. The bulwark ladder shall be securely attached to the ship to prevent overturning.
 - if it is necessary to move laterally from a pilot ladder to access an accommodation ladder or the ship's deck, a horizontal platform, complete with stanchions and manropes, must be provided. Such platform must be made secure to the ship's side.
- 26.D. All pilot ladders used for pilot transfer shall be clearly identified with tags or other permanent marking so as to enable identification of each appliance for the purposes of survey, inspection and record keeping. A record shall be kept on the ship as to the date the identified ladder is placed into service and any repairs effected. Only emergency repairs are permitted and any damaged/repaired pilot ladder must be replaced without any unnecessary delay.
- 26.E. Please refer to SOLAS Ch.V regulation 23 and IMO Resolution A.1045(27)

27. Working Aloft and Over side

- 27. A safety harness, safety line and where appropriate a fall arrestor, must be used at all times by any person working aloft or working over side. No person shall work over side when the vessel is underway. The use of safety gear should be only used for its intended purposes. At all times prior to working aloft or over side a formal risk assessment must be carried out, followed by issuing a Permit to Work. The raising/lowering of safety rails of the hatch coaming walkways must be considered as working aloft and all appropriate safety measures must be at all times employed. The use of safety harness tethered to appropriately rigged safety lines is mandatory. Please refer to Fleet Circular Letter S-2021/02

28. Enclosed or Confined Spaces

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Document Reference: SO-Part-2
Date Approved: 01/09/2021, Version: 14

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SECTION 36 PROCESS

Section 36 of the Merchant Shipping (Investigation of Marine Casualties) Act, 2000

It is a requirement under Section 36 that:

- (1) Before publishing a report, the Board shall send a draft of the report or sections of the draft report to any person who, in its opinion, is likely to be adversely affected by the publishing of the report or sections or, if that person be deceased, then such person as appears to the Board best to represent that person's interest.
- (2) A person to whom the Board sends a draft in accordance with subsection (1) may, within a period of 28 days commencing on the date on which the draft is sent to the person, or such further period not exceeding 28 days, as the Board in its absolute discretion thinks fit, submit to the Board in writing his or her observations on the draft.
- (3) A person to whom a draft has been sent in accordance with subsection (1) may apply to the Board for an extension, in accordance with subsection (2), of the period in which to submit his or her observations on the draft.
- (4) Observations submitted to the Board in accordance with subsection (2) shall be included in an appendix to the published report, unless the person submitting the observations requests in writing that the observations be not published.
- (5) Where observations are submitted to the Board in accordance with subsection (2), the Board may, at its discretion -
 - (a) alter the draft before publication or decide not to do so, or
 - (b) include in the published report such comments on the observations as it thinks fit.'

The Board reviews and considers all observations received whether published or not published in the final report. When the Board considers an observation requires amendments to the report, those amendments are made. When the Board is satisfied that the report has adequately addressed the issue in the observation, then no amendment is made to the report. The Board may also make comments on observations in the report.

Response(s) received following circulation of the draft report (excluding those where the Board has agreed to a request not to publish) are included in the following section.

The Board has noted the contents of all observations, and amendments have been made to the report where required.

8. MSA 2000 - SECTION 36 OBSERVATIONS RECEIVED

	PAGE
8.1 Observation from Arklow Shipping and MCIB response	32

Note: The names and contact details of the individual respondents have been obscured for privacy reasons.

OBSERVATION 8.1

8.1 Observation from Arklow Shipping and MCIB response

MCIB RESPONSE:
The MCIB notes the contents of this observation.

Arklow Shipping

NORTH BEACH, ARKLOW, CO WICKLOW, Y14 A729
TELEPHONE: +353 (0) 402 39901., EMAIL: chartering@asl.ie

01 November 2022

To: The Marine Casualty Investigation Board
Leeson Lane
Dublin 2

Attn: The Secretary

Dear [REDACTED]

Thank you for the draft report of your investigation into the marine casualty involving our vessel Arklow Clan at Aberdeen on the 11th of August 2021.

We have reviewed the contents of this draft and we accept, in general, its contents and findings.

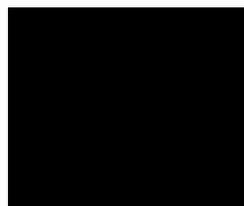
There are however some factual errors which we believe should be corrected before the final report is published.

Page 4 Section 2.1.1 Vessel Details:

Maritime Mobile Service Identity (MMSI) is incorrect, should read 250004424.

Owner/Operator is incorrect, should read Arklow Shipping ULC.

Yours sincerely,



Arklow Shipping



Arklow Shipping Unlimited Company trading as Arklow Shipping
Directors: Sheila M Tyrrell, James S Tyrrell, James A Tyrrell, Joseph Nelson,
Iain Shirley, Adrian Teggan, Patrick Corcoran, Peter Schalk (Dutch), Piet Govers (Dutch), Floris Deckers (Dutch)
Registered in the Republic of Ireland, No 23605 Registered Office - North Beach, Arklow, Co Wicklow, Y14 A729



Leeson Lane, Dublin 2.
Telephone: 01-678 3485/86.
email: info@mcib.ie
www.mcib.ie

