SAFETY REVIEW

SKELLIG MICHAEL WORLD HERITAGE SITE

FINAL REPORT, APRIL 2010
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ACKNOWLEDGEMENTS

In this Report, incidents involving fatal and non-fatal accidents in wild and rugged terrain are assessed as statistical data: events arising from the hazards that are common in such places. Amongst these data are the unfortunate deaths of two individuals on Skellig Michael in 2009 and another in 1995. The disappearance of a lighthouse keeper in 1957 is also mentioned, as are the reported deaths of lighthouse personnel and members of their families in the 19th century. Our analysis is intended to be objective and unbiased; consequently, it may appear cold and unfeeling. The descendants, families and friends of the deceased, in particular those connected with Ms. Rita Spooner, Mr. Joseph Gaughan and Frau Carola Korte, will not consider their deaths as mere entries in a data base. The members of the Byrne Ó Cléirigh Study Team, two of whom are active mountaineers who, themselves, have also lost close friends in this type of tragic circumstance, are very aware of the sense of loss that is felt by the bereaved.

The Study Team extends its gratitude to the following for their advice and cooperation.

The members of the Steering Committee representing the Department of Environment, Heritage and Local Government, the Office of Public Works and the State Claims Agency.

The members of OPW staff who participated in the Hazard Identification and Risk Assessment and those who provided other advice and assistance.

The independent boat operators who provide the ferry service to Skellig Michael.

Malachy Walsh & Partners, Consulting Engineers.

The lighthouse keeper for Skellig Michael and the Commissioners of Irish Lights.

Spórt Corrán Tuathail.
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EXECUTIVE SUMMARY

In late December 2009, Byrne Ó Cléirigh accepted an appointment from the National Monuments Division of the Office of Public Works to: ‘... examine, assess and review current Health and Safety regime, operational requirements, arrangements, controls and restrictions and staff structure as these relate to works, guides and visitors, and access in order to ensure, insofar as is reasonably practicable, a safe environment on Skellig Michael.’ This Review was, in part, prompted by two fatal incidents in mid-2009.

The results of our Review – which included a detailed Hazard Identification and Risk Assessment (HAZIDRA) exercise carried out in collaboration with OPW personnel – are presented in this Report, together with our conclusions and our recommendations.

OVERALL RISK PROFILE

This Review is primarily concerned with the risks to people and two distinct groups are identified. The first group is referred to as OPW personnel, who include all employees of and contractors to OPW as well as those visiting experts and others, including personnel from other government departments and agencies, who are invited to the Site. The second grouping, which we term recreational users, describes those who visit the Site, voluntarily and without invitation, for recreational purposes. Under legislation, OPW has a different duty of care to these two groups. The risks to the cultural heritage were also assessed but only insofar as these risks arise from the activities engaged in by these two groups.

There are three principal hazards presented by Skellig Michael: the wild, rugged terrain, the remoteness of the location and the surrounding sea. The highest risks are associated with the nature of the terrain and this dominates the risk profile, especially for recreational users. The Monastery and the South Peak Hermitage, which are the two principal features of the Monument, are perched high on the rock pinnacle and are accessed by roughly laid steps, and paths hewn from bedrock, over one thousand years ago. Similar man-made steps and paths exist in very many mountainous regions worldwide and negotiating these routes is a mountaineering activity. It is no different on Skellig Michael: once a person leaves the Lower Lighthouse Road, they are involved in mountaineering, in the general sense, and negotiating the standard route to the Monastery, via the South Steps (illustrated in the photograph below) is akin to a specific category known as scrambling, which may be described as easy, un-roped climbing, where the hands are occasionally used to provide balance.
This is not a reflection of how difficult it is to ascend and descend the standard route to the Monastery. For any reasonably fit person with a head for heights, it presents little difficulty. On a day’s outing, the average hill-walker in Ireland is likely to climb to significantly higher locations. However, in most cases the slope of the ground would not be so acute, the terrain would be far less rugged and the surface more forgiving. In most hill-walking situations, if a person slips or stumbles, the consequences – if any – are likely to be minor cuts or bruising, a sprained ankle or, at worst, a single fracture of the lower limb. On Skellig Michael, the steps on the standard route are very steeply inclined and include several sections that are severely exposed to height. Along these sections, a simple trip, which elsewhere would be of little consequence, is very likely to become a tumble or a free fall resulting in serious injuries or death. It is true that many recreational users will not consider themselves to be involved in a mountaineering activity when they visit Skellig Michael and this lack of awareness is, itself, another serious hazard.

The OPW personnel engaged on conservation works do so at extremely exposed locations, such as the South Peak Hermitage, but they are fully aware of the hazards. They employ many of the safety techniques used in another facet of mountaineering – rock climbing – and they are supported by specialists in this activity.

One hundred and sixteen risk scenarios were identified and assessed in the course of this Review. Exactly one hundred represent risks to people and the other sixteen scenarios represent risks to the cultural or natural heritage. The risks to people are distributed amongst the two groups as follows:

- Seventy-three pose risks to OPW personnel, and
- Twenty-seven involve risks to recreational users.

The greater number of risk scenarios applying to OPW personnel is explained by their involvement in a wider range of activities on the Site, compared to recreational users, and the fact that the Review included their sea journey to and from the Site. The scope for recreational users was limited to their activities from the time they arrive at the landing pier on the Site, because OPW carries no responsibility for their safety during the sea voyage; this is the responsibility of the independent ferry operators.

Scenarios were categorised according to their risk level: Very High, High, Medium, Low and Very Low.

Very High Risks are always unacceptable, but none were identified in this Review.
For **High Risks**, substantial efforts should be made to reduce the risk to as low as reasonably practicable and it might be necessary to consider suspending or restricting the activity, or to apply interim control measures until this has been completed. Four High Risks events to recreational users were identified:

- A fall or tumble from an exposed height with fatal consequences,
- A similar incident resulting in serious injuries,
- A slip while transferring between a boat and the landing pier resulting in a serious injury from crushing or impact,
- Lack of awareness and preparedness on the part of some recreational users.

Two High Risks to OPW personnel were identified:

- Falling from a ladder when boarding a boat at Portmagee,
- Developing a serious medical condition while on the Site, where there is no medical support.

In the case of **Medium Risks**, consideration should be given as to whether the risks can be lowered, but cost benefit analysis should be employed to justify the additional effort in terms of time, money and effort. Three of the Medium Risk scenarios that were identified affect recreational users¹:

- Exposure to cold/wet and, potentially, hypothermia while transferring between a boat and the landing pier,
- Being struck by falling rock or stones with serious or fatal consequences,
- Incurring moderate injuries while wandering off the standard route.

The Medium Risks that impact on OPW are²:

- Transferring to or from a vessel via the pier steps at Portmagee,
- Sudden onset of a moderately serious medical condition with no convenient access to medical support,
- Incurring a moderately serious injury while carrying out repair work at the Monastery enclosure,
- Falling while maintaining the North, South and East Steps with serious injury or death as a consequence,
- Being struck by loose, overhead rock while maintaining steps,
- Being exposed to infection due to the absence of WC facilities for recreational users.

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¹ Four Medium Risks to recreational users were indentified in the course of the HAZIDRA; however, as is explained in the body of the Report, further analysis indicated that one should be downgraded to a Low Risk.

² Seven Medium Risks to OPW personnel were identified but one of these was also downgraded to a Low Risk after further analysis.
Two Medium Risks to the cultural and natural heritage were identified. Both arise as a consequence of carelessness or vandalism by trespassers during out-of-season access.

The remaining scenarios were all assessed as Low Risks or Very Low Risks. Such risks are considered to be acceptable, subject to close scrutiny of those where the consequences could be serious injury or a fatality, no matter how remote their likelihood of occurring is.

More detailed explanations of the risk management methodology employed in this Review are provided in Section 2 and in Appendix 1.

CONCLUSIONS

Due to its isolated location, and the difficulties in accessing Skellig Michael, there are very significant logistical constraints involved in managing the Site. There are very few degrees of freedom in reaching solutions to what are quite complex problems. Our opinion is that, from a risk perspective, OPW’s management of the Site is admirable, despite the recent unfortunate fatalities. The measures already in place for safeguarding the health and safety of OPW personnel and for controlling the risks to recreational users and to the natural heritage, during conservation or infrastructural works, are impressive. It is difficult for anyone who is not intimately familiar with the Site, or who has not studied the operations in detail, to fully comprehend the complexities.

This is not to say that OPW should become complacent, especially in relation to fatalities, irrespective of how rare they are. We have made a series of recommendations that would mitigate some of the higher risks and ensure that the lower risks remain at this level.

However, a safe environment is one where the risks are at an acceptable level; safety does not imply the absence of risk. Recreational users visit the Site without invitation and the risks presented by the nature of the terrain and other natural hazards are undertaken voluntarily. It would not be valid to argue that easy access to Skellig for all should be provided, irrespective of fitness, agility etc., notwithstanding the monument’s archaeological, cultural, spiritual or environmental importance. It is critically important, therefore, that OPW makes every effort to ensure that this group is made fully aware of the risks. It is also very important to adopt a consistent approach when implementing measures to control risk.

Before listing our recommendations, we will examine how acceptable are the High and Medium Risks that were identified in the course of our Review.
**OPW National Monuments: Safety Review, Skellig Michael World Heritage Site**

**Risks to Recreational Users**

The current numbers visiting Skellig Michael as recreational users is estimated to be about 10,000 per annum and this is also considered to be the average over the past forty years, or so, since this group began visiting Skellig in significant numbers. On this basis, there have been of the order of 400,000 such visits. No official records are kept; for reasons that will become clear, OPW is not in effective control of the volume of such visitors.

During this period, there have been three incidents involving fatalities and five reported incidents involving moderate or serious injuries, one of which was to a member of the OPW guide service. One fatality occurred in 1995, when the casualty suffered a fall after leaving the standard route while descending from the Monastery. The two other fatalities occurred in 2009. Both died at the same location and they are reported to have fallen from the same place on the standard route, although the evidence for this is open to question. One of the 2009 incidents occurred out of season, when there was no OPW presence on the Site.

A high level of confidence can be placed on the number of reported fatalities because such incidents are investigated officially, but the number of injuries may not be quite so accurately reported. As with all outdoor activities, most injuries will go unreported although, given the remoteness of Skellig, anyone incurring even moderate injuries would have to be assisted off the island. Nevertheless, we have taken a conservatively cautious approach and increased the number of moderate or serious injuries from five to eight, for purposes of benchmarking and comparison.

On this basis, the fatality rate on the standard route is 1 in 200,000 or once every twenty years. If the third death, which occurred off the standard route, is counted then the fatality rate rises to once every thirteen years and this illustrates the very hazardous nature of the Skellig Michael terrain and the associated risks involved in straying from the standard route.

The rate for serious injuries on Skellig is 1 in 50,000 outings, after allowing for our conservatively cautious assumptions about under-reporting of less serious injuries.

In order to put these statistics into a relative context, we compared the fatality and injury rates with figures we extrapolated from a report for Scottish Sports Council (Sharp, 2007) which analysed over 2,000 incidents in Scottish mountains over the period 1996 to 2005 and also with work done for the UK’s Visitor Safety in the Countryside Group (VSCG, 2005).

Because of the choice of this location by the original builders of Skellig Michael, over a thousand years ago, visiting the legacy they left involves certain risks. In our opinion, the number of fatal and non-fatal incidents is consistent with what can be expected when people voluntarily engage in outdoor activities in other, similarly rugged terrain and the fact that two fatalities occurred in close proximity...
proximity to each other within a short period of time should be viewed as an unfortunate coincidence.

Apart from the ledge, from where these incidents are reported to have commenced, there are several other locations along the route where, in our opinion, the likelihood of a fall with serious or fatal consequences is the same or greater. There are locations along almost the entire steps which present a hazard of falling or tumbling a considerable distance. During the HAZIDRA exercise, the overall risk, in societal terms, was assessed as High, in that the likelihood is that a person will be killed as a result of a fall on Skellig Michael between once in 5 and once in 50 years. This is confirmed by the data from elsewhere. On an individual basis, however, the risk varies according to the agility, fitness and preparedness of the individual; consequently, for some, ascending to the Monastery represents a Very High risk.

In respect of the risks associated with the landing pier, we note that there have not been any serious injuries at this location; however, there have been some near misses. In the opinion of those OPW personnel most familiar with the Site, and others with whom we have consulted, this is probably fortuitous. We agree with this assessment.

We consider that the lack of awareness and inadequate preparedness on the part of some recreational users is a very significant influence on the level of risk to which this group is exposed. This poses a very real dilemma for OPW which has absolutely no way of vetting, or monitoring or instructing those who wish to make a visit until they actually arrive at the landing pier, and by then they are already on the Site. Neither has OPW any control on the numbers landing, other than the permit system and this is not being operated fully. This lack of awareness may lead to a range of consequences: not bringing sufficient food or drink may cause slight discomfort only, while wearing unsuitable clothes or footwear could be more serious. At the extreme end, people who due to medical or other circumstances are not physically or mentally prepared for the voyage out, and the ascent and descent along the standard route, run the risk of exacerbating any inherent weakness. This may trigger a more serious event involving serious injury or death.

Loose rock and debris are features of all precipitous terrain. On Skellig Michael, they become dislodged due to natural causes: erosion following heavy rain, burrowing by rabbits and nest building. Some rock falls have been very significant and have caused major damage to the Lighthouse Road. Loose rock can also become dislodged by persons straying from the standard route. This also illustrates the hazardous nature of this activity, especially when there are others below. Careless behaviour by recreational users who climb on the dry stone walls or who throw stones from the Monastery enclosure places their own lives at risk and also present serious hazards to those who are on the road below them.
Risks to OPW Personnel

OPW personnel are ferried between the mainland and the Site from Portmagee Harbour. Almost all materials: water, food, fuel, personal items and some materials and equipment for conservation works are transported in the same ferry\(^5\). Because the size of any vessel servicing Skellig is quite small, and the landing pier on the Site is very exposed, all materials have to be manhandled on to and off the vessel.

The standard procedure for OPW personnel is to use the pier steps at Portmagee but these become slippery due to marine growth and it is considered that the existing mitigation measures are inadequate and this represents a Medium Risk.

When tidal conditions are low at Portmagee, it is not possible to board the boat using the steps; instead, a vertical ladder fixed to the quay wall is used. Carrying materials and equipment by hand up and down this ladder is a High Risk for the personnel involved.

The OPW works team on the Site are present from Monday to Friday and guides are present on all days during the open season, rotating every two weeks. Members of the works team do have WFR (Wilderness First Responder) training in first aid, but they are not present at weekends. If a medical emergency was to arise, it would be necessary to evacuate the casualty, but the emergency plan is still at the draft stage. Moreover, in certain weather conditions, it may be difficult to effect an emergency evacuation. Currently, there is no formal assessment carried out to determine if any individual member of OPW staff is at particular risk due to a medical condition.

The risks involved in repairing the Monastery, or of falling while maintaining the North, South and East Steps are all associated with the nature of the Site itself and the ruggedness of the terrain. There are very extensive and effective control measures in place and provided these are maintained, these risks may be considered acceptable.

Members of the OPW works team are at higher risk from loose overhead rocks than recreational users or members of the guide service. This too has to be accepted as a feature of the Site. Although additional control measures are recommended, it is acknowledged that carrying out these measures – surveying the more acute slopes before work commences below – may actually increase the risks because of the hazard for the personnel conducting such a survey.

The absence of toilet facilities for recreational users is often referred to as a serious deficiency and we agree that it can make for a very unpleasant experience for some. However, no matter how discomfiting this might be for recreational users, the principal risk is to OPW personnel, because recreational users use a secluded location near the accommodation huts to defecate and urinate. OPW personnel are left to clean up and this poses a Medium Risk of infection for them.

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\(^5\) Occasional heavy lifts of construction materials are made by helicopter.

Byrne Ó Cléirigh, April 2010
RECOMMENDATIONS

Before we list the specific recommendations that are given in Section 6 of this Report, we wish to emphasise two overarching general recommendations. The first relates to the voluntary nature of the risks undertaken by recreational users.

When Skellig Michael was inscribed on the World Heritage List in 1996, UNESCO described the Site as a ‘unique example of early religious settlement which illustrates, as no other site can, the extremes of Christian Monasticism’. It is reasonable to assume that those who originally chose Skellig rock as a location for their Monastery did so because of its remoteness and its inaccessibility. These are features of the monument which attract people to visit it. What is critically important is that recreational users should be made fully aware of the hazards to which they will be exposed when visiting Skellig Michael and the attendant risks, so that they can make an informed decision to accept these risks, or to stay away. Ensuring such awareness is extremely difficult for OPW because, due to the multiplicity of departure ports, there is no single centre where safety induction can be provided to recreational users prior to their voyage to the Site.

The second concerns the issue of consistency. Even for those who remain on the standard route, a slip or stumble is likely to become a free fall, or tumble, with serious injury or death as a consequence. This is the case not only at those locations where incidents involving serious injury or fatalities are reported to have happened in the past, but at several locations along the route. Consistency in implementing risk mitigation measures is very important; it contributes to a safer environment by enabling people to know what to expect and to make informed judgements about what level of risk they wish to accept. Protecting any section of the route just because it is feasible to do so would create a false sense of security; it would encourage some people to expect similar protection at other exposed sections where this might not be feasible.

The following extract from the VCSG publication (VSCG, 2005) is very relevant to Skellig Michael:

‘The use of modern safety precautions may conflict with conservation, recreation or landscape objectives. For example, it would be possible to reduce risk when crossing historical aqueducts by erecting railings. Handrails and steps could reduce risk on steep mountain descents. Fencing might lessen risk if erected at the edge of a cliff or water. However, the application of such control measures could fundamentally detract from the historical integrity of the structure and inherent attraction of the landscape. A balance must be achieved between risk and the impact of safety measures.’

The following is a full list of all the specific recommendations we have made. Of necessity, it is only possible to provide a short summary of some of the more complex items. Anyone considering the implementation of any of the following must consult Section 6 on Recommendations for Controlling & Mitigating Risk where the reasoning which underlies our recommendations is also provided.

1. The material in the current Visitor’s Guide should be updated to provide a more stark description of the risks involved in a visit to Skellig Michael. This description should also be published on the dedicated website that is proposed for the Site.
2. A design for a standardised notice, using graphical images and a minimum of words, should be commissioned. Copies should be displayed at all tourist information offices that promote visits to Skellig Michael and on board all boats that are permitted to land passengers there. Copies should be sent to all walking groups, diving schools and other interest groups who are known to frequent the Site.

3. A safety video should be commissioned featuring the hazardous nature of the terrain, advice on how to prepare for the visit and the precautions necessary. It should be a condition of any permit issued to a boat operator to land people on Skellig that, if they advertise this service on the web, they must include a hyperlink to the safety video.

4. A notice drawing attention to the date on which the Site officially closes should be placed in the national and local newspapers each year. This notice should also be published on the dedicated Skellig Michael website.

5. The fact that fatalities have occurred on the Site should be acknowledged in all promotional literature and on the standardised notice.

6. No permanent fencing should be erected other than that necessary to protect sensitive areas of the monument or the natural heritage, or as is required when works are being carried out.

7. Appropriate warning notices as to the nature of the terrain should be erected but it would not be necessary to have a proliferation of these.

8. In our opinion, there is no need to protect the exposed ledge from where two recent fatalities are reported to have fallen. Instead, the steps leading immediately to the ledge on the descent route should be realigned, making them easier to negotiate. Such a realignment would significantly reduce the hazard presented at this location.

9. If, despite this opinion, OPW wishes to respond to the calls for some more tangible form of protection at the exposed ledge, then an alternative to a guard rail would be to fix a steel chain to the inner wall along the ledge, using eyebolts grouted into the bedrock. However, because it is not possible to provide this level of protection at all exposed locations, this would introduce the type of inconsistency we have advised against.

10. The provision of a composting toilet for use by recreational users is under consideration by OPW, but given the enormous constraints imposed by the location and the costs and logistical difficulties involved in maintaining, cleaning and emptying a composting toilet — without any assurances that it will operate effectively — the basis for any objections to a facility discharging directly to the sea should be challenged.
11. OPW should request the permitted boat operators to propose a set of criteria for governing the safe transfer of passengers at the landing pier, to be reviewed by an independent mariner with suitable experience.

12. The matter of recreational users being required to wear lifejackets should be discussed with the boat operators and, unless there are convincing reasons for not doing so, this should be made a condition of a permit to land passengers on Skellig.

13. The pier steps at Portmagee should be inspected visually before any materials or equipment is carried aboard by hand. There should be a weight limit on each individual item carried on to the boat by hand: to be determined in consultation with the boat operator.

14. A procedure prohibiting OPW personnel from carrying anything except a personal rucksack while climbing up or down the quay-wall ladder at Portmagee should be implemented. The practice of dropping objects on to the vessel should be reviewed and an appropriate limit should be set. All other materials should be loaded on to a boat by rope.

15. The embryonic emergency plan that is currently in place should be fully developed, tested, validated and adopted. Even if a full scale emergency exercise cannot be scheduled for some time, table-top test exercises should be carried out. It should be brought up-to-date regularly.

16. The Chief State Medical Officer should be consulted on the need for medical and psychiatric assessment before appointing new guides or members of the OPW maintenance staff who are expected to stay on the island for prolonged periods, or renewing existing contracts.

17. A person specification, identifying the personal attributes, training and experience required of people who may be expected to remain on Skellig Michael for several days or weeks in what is a very unique role, should be prepared.

18. A sufficient number of guides should be trained to WFR (Wilderness First Responder) level in first aid to ensure that there is always an OPW person with this level of training present on site. If followed, this recommendation would also improve the level of response in the case of an accident to a recreational user.

19. A survey should be carried out regularly to identify any obviously loose rock and propose a method for safely dislodging, or otherwise stabilising them. It is acknowledged that even conducting such a survey is, in itself, a hazardous activity. It may well be determined that the level of mitigation that could be achieved by such a survey could not be justified.
20. The matter of some recreational users refusing to heed the guides’ warnings about stone throwing should be discussed with An Garda Síochána.

21. OPW should consult with the HSA to determine how it can meet the requirements of the Construction Regulations.

22. OPW should examine the option of extending the number of hours during which the permitted boats may land passengers and take them off again, while allowing a minimum of two-and-a-half hours for each visit. The implications of such an extension on the guide service must also be considered.

23. Although the Permit System has been in place since 1995 and it has been effective in controlling numbers, in recent years a number of issues of contention have arisen between OPW and the boat operators which have impacted on its effectiveness. It is imperative that this system is fully reinstated.

24. OPW should commit itself to seeking a resolution of the problem concerning the multiplicity of departure points to the Site, with all the stakeholders involved, so that a single centre for the safe induction of recreational users can be established on the mainland.

25. A revised job description, specific to the role and functions required of a guide on Skellig Michael should be drawn up. Those who currently hold posts as guides should be consulted. Possible changes to the roles and responsibilities arising out of the recommendations in this Report should be identified. This should be done in tandem with the recommendation on preparing a person specification. This may lead to a reallocation of resources.

26. It should be made clear in the promotional literature that the primary role of the existing guides is to protect the Monument and to interpret the heritage. It is not their function to lead people up and down the route to the Monastery.

27. Efforts should be made to recruit two people with Mountain Leader qualifications as guides (one per shift).

28. Irrespective of the success with the previous recommendation, the guides should be given some preliminary training in instructing inexperienced arrivals on how to negotiate the ascent and descent.

29. Risk Assessment is a dynamic process. OPW must now appoint an appropriate person to take ‘ownership’ of the HAZIDRA model and continue the process.
30. A safety Management System to BS 18000 or similar standard should be implemented. This will need to be tailored to include the management of risk for both OPW personnel and recreational users.

31. A checklist of all the notices, cautions etc., which we have suggested is provided in Appendix 2. OPW may wish to add to this list.
1 INTRODUCTION

In late December 2009, Byrne Ó Cléirigh (BÓC) was appointed by the National Monuments Division of the Office of Public Works (OPW) to conduct a safety review at Skellig Michael World Heritage Site in Co. Kerry, Ireland. The scope of the review, which was in part prompted by two fatal incidents that occurred on the Site in mid-2009, is defined as follows:

‘To examine, assess and review current Health and Safety regime, operational requirements, arrangements, controls and restrictions and staff structure as these relate to works, guides and visitors, and access in order to ensure, insofar as is reasonably practicable, a safe environment on Skellig Michael.’

We commenced the Review with a Briefing Meeting on 22nd December. Throughout the remainder of December and early January, we read through the file records and held consultations with OPW and State Claims Agency (SCA) personnel who provided us with the report of a review on visitor risk management at OPW Heritage Sites (State Claims Agency, Apr. 2009).

By mid January, we had developed a procedure for conducting an in-depth Hazard Identification and Risk Assessment (HAZIDRA) (Byrne Ó Cléirigh, Jan. 2010) of all the activities that involve the undertaking of risk while on the Site. In the third week of January, we held discussions with those OPW personnel who are responsible for maintenance and conservation works at the monument. We subsequently met the operators who are permitted by OPW to ferry passengers to the Site, in Caherciveen.

Over a two day period towards the end of January, together with a team from OPW, SCA and the safety contractor for the Site, we carried out a comprehensive exercise at which the hazards presented to people were identified and the risks assessed.

The hazards and risk to the cultural and natural heritage were subsequently reviewed with personnel from OPW and National Parks & Wildlife Service. The study team then compiled all the assessments into a HAZIDRA Report (Byrne Ó Cléirigh, Mar. 2010). The HAZIDRA Report established the risk profile for the Site, identifying those risk scenarios that may be encountered on Skellig Michael and the level of risk they pose.

On February 19th, we visited Skellig Michael and inspected the various areas where OPW personnel and those who visit Skellig Michael uninvited, for recreational purposes are exposed to the various hazards that had been identified.

Throughout this period, we carried out desk research and consultations to uncover relevant statistical data on fatal and non-fatal incidents at similarly remote locations in order to benchmark the risks on Skellig Michael.
Draft issues of this Report were reviewed with the Steering Committee on 16\textsuperscript{th} and 26\textsuperscript{th} March 2010.

Our findings, our conclusions and our recommendations are presented in this Final Report.
2 OVERALL RISK PROFILE

The extent to which people are put at risk while engaged in the various activities: conservation works, guiding service, recreation while on Skellig Michael is presented in this section. Essentially, there are two distinct groups at risk. The first group is referred to in this Report as **OPW personnel** which includes direct employees of and contractors, professional advisors and visitors to OPW, as well as personnel from the Department of Environment Heritage and Local Government. The second are those who visit the Site, voluntarily and without invitation, for recreational purposes. We refer to this group as **recreational users**.

For recreational users, we limited the boundaries for risks to this group to their time on the island, from their transferring from a boat to the landing pier until they re-embarked for the return journey to the mainland. The risks attendant on the sea voyage undertaken by this group is not a responsibility of OPW. For OPW personnel, the journey to and from the Site, whether by boat or helicopter is a matter of OPW responsibility and the risks associated with these activities have been included in our Review.

2.1 TERMINOLOGY

Before we present the risk profile, it would be useful to explain how certain words and phrases in this report should be interpreted. The following are the precise definitions that were included in the formal procedure used by the HAZIDRA team:

- **Acceptable Risk**: a risk that has been reduced to a level that can be tolerated by OPW having regard to its legal obligation and its own Health and Safety policy.
- **Consequence**: the outcome of an event. It can be expressed qualitatively or quantitatively as a loss, injury, disadvantage or gain.
- **Hazard**: a source, situation or act with potential for harm in terms of human injury or ill health, damage to the cultural and natural heritage, or a combination of these.
- **Hazardous Event**: occurrence that results in, or has the potential to result in, an **incident**.
- **Incident**: event in which injury or ill health, or other loss occurred or could have occurred, regardless of severity.
- **Likelihood**: the chance of something happening.

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6 As defined in the Occupiers’ Liability Act 1995; OPW has a different duty of care towards its employees and its visitors under the Safety, Health and Welfare at Work Act 2005.
NOTE: In implementing this procedure, it is expected that, for most incidents, Likelihood will be determined subjectively. It will, therefore, be expressed in general terms (unlikely, likely, etc.). However, in order to ensure consistency between the assessment of different incidents, these general terms shall be referenced to frequency bands such as “between once per day and once per month” etc.

- **Risk**: the combination of the severity of the harm or loss caused by a **hazardous event** and the associated **likelihood** of occurrence.

### 2.2 Levels of Risk

Safety does not mean the absence of risk, it means that the risks are at an acceptable level. Throughout this Review, we have categorised risk scenarios according to the level of risk they present: Very Low, Low, Medium, High and Very High.

**Very Low Risks** are considered acceptable and no further action is necessary.

**Low Risks** are also considered acceptable and no additional mitigating measures (controls) are required, unless they can be implemented at no, or very low cost in terms of time, money and effort.

For **Medium Risks**, consideration should be given as to whether the risks can be lowered, but cost benefit analysis should be employed to justify the additional effort in terms of time, money and effort.

Where the activity involves a **High Risk**, if the activity is new, it should not be started until the risk has been reduced to as low as reasonably practicable. If the activity is an existing one, substantial efforts should be made to reduce the risk and it might be necessary to consider suspending or restricting the activity, or to apply interim risk controls, until this has been completed.

**Very High Risks** are always unacceptable.

More information on risk levels and how individual scenarios were assessed is provided in Appendix 1 to this Report.

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7 For a more detailed description of Risk Levels and scenarios categorised according to these levels, the reader should consult Annex 1.
2.3 **The Principal Hazards**

There are three features of Skellig Michael that present serious hazards: the remote location, the extremely rugged nature of the terrain and the surrounding sea which must be crossed to gain access to the Site.

For OPW personnel, the hazards are first presented at Portmagee Harbour where they board the outbound ferry. For recreational users, in the context of this Review, the hazards associated with the sea are limited to their transferring between a ferry boat and the landing pier at Blind Man’s Cove.

As will become apparent throughout this Report, however, it is the hazards associated with the terrain that are most numerous. Skellig Michael is a precipitous rock pinnacle rising 218 metres directly above the ocean. The ground is very uneven and acutely inclined. Some areas are exposed to height and others are exposed to loose, overhead rock. Despite its relatively low elevation above sea level, it is a mountainous region – a continuation of the range that stretches along the Iveragh Peninsula – with most of its bulk under the sea.

According to the current lighthouse keeper (Foran, 2010), prior to OPW’s taking responsibility for the Site in 1880, three fatalities had already occurred. In the 1820’s a lighthouse keeper named Whitehart was killed in a fall, reportedly while cutting hay. In the 1830’s, two members of the Redmond family, a son and a nephew of the lighthouse keeper, fell from a cliff and were killed. There was another incident involving lighthouse personnel in August 1957 when Mr Séamus Rohu disappeared without trace on the island.

The Monastery and the South Peak Hermitage, which are the two principal features of the Monument, are located high above the Lower Lighthouse Road, which skirts around the base of the Rock and are accessed by roughly laid steps, and paths hewn from bedrock, over one thousand years ago. Man-made steps and paths such as these are to be found in very many mountainous regions worldwide where, over the centuries, they were used to facilitate primitive mining, pilgrimage or trade, or for purely military reasons, as in the Dolomite Alps. Similarly laid routes are still constructed today in many national park areas, where the numbers using the paths cause serious erosion; examples are to be found in the Lake District and in Snowdonia. Negotiating these routes is a mountaineering activity and it is no different on Skellig Michael. Anybody leaving the Lower Lighthouse Road is, perforce, involved in mountaineering.

*Mountaineering* is a widely used, generic term and is generally understood to include four broad categories: hill walking, scrambling, rock climbing and snow & ice climbing. It is important to understand the relevance of these broad categories in the context of Skellig Michael.

- *Snow & ice climbing* is not relevant and need not be considered further.
• **Hill walking** can extend from relatively easy walking on soft, undulating terrain – the area close to Sally Gap in the Wicklow Mountains, for example – to the more challenging routes in the McGillicuddy Reeks, many of which will also involve some scrambling.

• **Rock climbing** involves the use of the hands and feet and a person’s weight will often be taken on the hands. Participants normally climb in groups of two or three, with a leader: they wear a harness, they are roped together and they use a variety of devices and techniques to protect them if they fall. A helmet is also often worn.

• **Scrambling** is an activity that fits between hill walking and rock climbing. It may be described as easy, un-roped climbing, where the hands are occasionally used to provide balance.

In our opinion, the standard route taken by recreational users to and from the Monastery, via the steps, involves some scrambling, albeit at the easier end of the range for that category. This is not a reflection of how difficult it is to climb the six hundred odd steps. For any reasonably fit person with a head for heights, it presents little difficulty. What makes it akin to scrambling is the configuration of the steps and the path, as will be described later in Section 3.1.1, which are very steeply inclined and include several sections that are severely exposed to height. Along these sections, a simple trip or stumble, which elsewhere would be of little consequence, is very likely to result in a tumble or a free fall with serious injuries or death as a consequence. It is inevitable that some people will find these sections challenging.

OPW personnel are very aware that they are involved in a mountaineering activity whenever they are engaged in conservation works in exposed areas of the Site such as the South Peak Hermitage. They receive specific training, they work from fixed ropes and are supported by a team of specialists with expertise in rock climbing techniques, in order to ensure their safety.

On the other hand, many of the recreational users who visit Skellig Michael with the intention of making the ascent to the Monastery probably do not consider that they too are involved in a mountaineering activity, even if at a much less serious level than OPW personnel. Nevertheless, this lack of awareness does not change the reality and is, of itself, a significant hazard.

### 2.4 The Risk Scenarios

This was the first time a formalised risk assessment had been carried out at Skellig and there had been no prior screening out of activities where the risks are trivial. As a consequence, two hundred and twenty scenarios were identified initially. These were then examined by Byrne Ó Cléirigh and those trivial events with inconsequential effects were eliminated. The number was reduced further by condensing several sets of hazardous events with identical, or very similar, causes and effects into single scenarios. The final scenario count is one hundred and sixteen and this total may be split as follows:
• One hundred (100) representing risks to people, of which,
  ▪ seventy-three (73) are risks to OPW personnel, and
  ▪ twenty-seven (27) are risks to recreational users.
• Sixteen represent risks to the cultural or natural heritage.

The distribution of the risks associated with the above scenarios is illustrated in Table 1.

**TABLE 1: DISTRIBUTION ALL RISK SCENARIOS**

<table>
<thead>
<tr>
<th></th>
<th>Very High Risk</th>
<th>High Risk</th>
<th>Medium Risk</th>
<th>Low Risk</th>
<th>Very Low Risk</th>
<th>Total Scenarios</th>
</tr>
</thead>
<tbody>
<tr>
<td>OPW Personnel On Site</td>
<td>0</td>
<td>1</td>
<td>5</td>
<td>31</td>
<td>18</td>
<td>54</td>
</tr>
<tr>
<td>Access to Site by OPW</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>12</td>
<td>5</td>
<td>19</td>
</tr>
<tr>
<td>Recreational Users On Site</td>
<td>0</td>
<td>4</td>
<td>3</td>
<td>15</td>
<td>6</td>
<td>27</td>
</tr>
<tr>
<td>Cultural &amp; Natural Heritage</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>5</td>
<td>9</td>
<td>16</td>
</tr>
<tr>
<td>Totals</td>
<td>0</td>
<td>6</td>
<td>11</td>
<td>60</td>
<td>39</td>
<td>116</td>
</tr>
</tbody>
</table>

Of the total number of scenarios, eight represent a risk of financial loss due to damage to materials or equipment; however, these are all trivial amounts. The fact that the number of risks to OPW personnel is greater than the number affecting recreational users is explained by the fact that the former are engaged in a wider range of activities while on Skellig Michael and also because the assessment included the transportation of OPW personnel to and from the Site.

A complete list of the one hundred and sixteen scenarios is given in the HAZIDRA Report (Byrne Ó Cléirigh, Mar. 2010).
2.5 **RISKS TO PEOPLE**

The distribution of risks to people, across all risk levels, is shown in the histogram in Figure 1.

**FIGURE 1 FREQUENCY DISTRIBUTION OF RISKS TO PEOPLE**

![Histogram showing frequency distribution of risks to people.](image)

2.6 **RISK TO RECREATIONAL USERS**

Of the one hundred scenarios identified by the HAZIDRA team as representing risks to people, twenty-seven would pose risks to recreational users. The breakdown was:

- three scenarios involving High Risk,
- four more involving Medium Risk,
- fifteen scenarios presenting a Low Risk, and
- five scenarios that were assessed as Very Low Risks.

No Very High Risks to recreational users were identified.

The Low and Very Low Risks may be regarded as being well within the acceptable range and the reader who wishes to review the reasoning for this should consult the HAZIDRA Report.
2.7 **RISK TO OPW PERSONNEL**

Seventy-three scenarios present risks for OPW personnel, of which:

- two scenarios involve High Risk,
- six are assessed as Medium Risk,
- forty three scenarios are Low Risk, and
- the remaining twenty-three may be considered Very Low Risks.

No Very High Risks to OPW personnel were identified.

As with the risks to recreational users, the Low and Very Low Risks may be regarded as being well within the acceptable range.

2.8 **RISK TO HERITAGE**

Fourteen of the scenarios that present a risk to the cultural or natural heritage were assessed as Low or Very Low; two were assessed as Medium. Both Medium Risks to heritage are associated with out-of-season access by recreational users. Measures for controlling these risks are considered in the context of access to Skellig which is discussed in Section 6.10.

Only those risks associated with the activities of people on Skellig Michael, whether OPW personnel or recreational users, were considered. We judged that the assessment of risks from natural catastrophes such as tsunami or earthquake, or disease introduced by migrating species, was not within the scope of this Review.
3 ANALYSIS OF HIGH RISKS TO RECREATIONAL USERS

The four scenarios that pose a High Risk for recreational users are:

1. A fall or tumble from an exposed height with fatal consequences,
2. A similar incident to the above but resulting in serious injuries,
3. A serious injury caused by crushing or impact, when transferring between a boat at the landing pier,
4. Inadequate awareness and preparedness on the part of some recreational users.

In the first two scenarios above, the hazards are the same, as are the initiating causes; the only difference is in the severity of the consequences. Any additional measures that may be proposed to control the risk or mitigate the consequences will be the same for both scenarios. For these reasons, we will consider them together in this analysis. In the strictest sense, item four above is not a scenario as such, because there is no initiating event and no end event. Nonetheless, it is considered to be a very significant influence on the level of risk to which people visiting the Site for recreational purposes may be exposed. It is essential that this influence is thoroughly assessed.

3.1 RISK OF SERIOUS INJURY OR DEATH ARISING FROM A FALL OR TUMBLE

The standard ascent route to the Monastery involves negotiating long flights of uneven steps that are very exposed. For persons wandering off this route, the risks are even greater unless they are competent mountaineers.

3.1.1 Standard Route to the Monastery

There are three man-made routes leading to the Monastery enclosure on Skellig Michael: the North Steps, the South Steps and the East Steps. In former times, these steps provided access from three separate landing points. All three date from over a thousand years ago. Some re-routing of the South Steps was made in the early 19th century when the lighthouse road was being constructed and the lowest section of the East Steps was demolished when the existing landing pier was built at the original East landing site. Today, only the South Steps are open to the recreational user and we focus on them in this discussion where they are referred to as the standard route. Figure 2 shows a section of the South Steps.
The steps were either hewn out of bedrock or constructed from rough flagstone treads laid on layers of dry stone acting as risers. (It is within these stone layers that the puffins build their nests.) Nest building, occasional heavy rain and the constant traffic throughout the open season can all result in loosening of the stones that support the flagstone treads. The OPW works team has to constantly wedge them tight again throughout the season. Despite this effort, some treads may rock from side to side, or front to rear, as they take a person’s weight. Even those flags that remain tight may not be laid flat: many slope laterally, or from rear to front and the dimensions of the *rise and going*\(^8\) are not consistent. In wet conditions, they can become very slippery. Consequently, it is not possible to develop a comfortable rhythm while negotiating the steps and it is essential to concentrate very closely on where to place one’s feet, especially when descending.

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\(^8\) The height and width of the steps
The configuration of the steps and the fact that some sections of the steps themselves – and of the stone terraces and ledges that link the several flights of steps – are acutely exposed to height means that ascending and descending the route to the Monastery in safety requires a level of agility and a ‘head for heights’ that would not normally be required when visiting other National Monuments such as Clonmacnoise or Newgrange, or while taking a walk in a forest park. Indeed, in our opinion, the competence required to safely ascend and descend is greater than that required in many hill-walking situations where – although the hill-walker may reach heights that are greatly in excess of the Monastery at Skellig – the slope of the ground would not be so acute, the terrain may be far less rugged and the surface more forgiving. In such terrain, if a person slips or stumbles, the consequences would probably be minor cuts or bruising, a sprained ankle or, at worst, a single fracture.

**FIGURE 3: EXPOSURE TO HEIGHT ON FINAL FLIGHT TO MONASTERY**

On Skellig, even for those who remain on the standard route, such a slip or stumble is likely to become a free fall, or tumble, with serious injury or death as a consequence. This is the case not only at those locations where incidents involving serious injury or fatalities are reported to have happened in the past, but at very many locations along the route. Examples of these exposed locations, which are intrinsic features of the monument, are illustrated in Figure 3 and Figure 4.
FIGURE 4: STEPS APPROACHING MONASTERY
Even within the Monastery enclosure itself, there are a number of built-up stone platforms or terraces to which a person can gain easy access by following a pathway or steps in relative safety to find that there is an unguarded drop of several metres. Two examples of these exposed terraces are shown in Figure 5.

Apart from the steps themselves, the wind, which is a very regular – if not constant – weather feature, increases the hazard. The weather variable that influences more incidents in mountain areas than any other is wind (Sharp, 2007).

As an illustration of how some people react to the exposure to height on the Site, consider the photograph in Figure 6. This is a relatively easy stage on the standard route as it approaches the entrance to the Monastery. The laid flagstone path is quite flat and approximately 1 m wide at this point. To the outside, the ground drops away sharply and anyone tripping or stumbling near the edge would very likely tumble a considerable distance; but is this likely? Traversing a metre-wide path on relatively flat ground cannot be regarded as especially difficult but some people are so averse to height exposure that they have created a new, walked path, to the inside of the laid flagstones. The compressed vegetation in the shadowed strip indicates the route of this new path. However, no such opportunity presents itself further along at the next short flight of steps which are also very exposed on the outside.
3.1.2 Previous Incidents

Apart from the incidents referred to in Section 2.3, three fatal accidents, all to recreational users, have been reported: one in 1995 and two in 2009. These are the only deaths recorded and, because fatal incidents are investigated by An Gárdai Síochána and subjected to public scrutiny before a coroner, a high degree of confidence may be put in the reliability of this statistic. The first incident occurred off route and the two casualties in 2009 are reported to have fallen from the same general area on the standard route.

Records of incidents involving non-fatal injuries are less specific. Not all such incidents will be reported, especially if they occur out of season, and people who suffer a relatively minor injury – especially those with experience of the outdoors – are likely to behave in the same way as they would in any other remote situation; for example, a person who suffers a simple cut or a slight sprain may not seek any attention from the guides or other OPW personnel but tend to the injury themselves and, if necessary, seek medical attention when they reach the mainland. The following are the only incidents of non-fatal injuries involving recreational users that were reported to us.
Byrne Ó Cléirigh, April 2010

- In 2007, a man fell to the road near the bottom of the South Steps. He suffered multiple fractures and heavy blood loss. It is not clear whether he fell from the steps or if he was off-route at the time.

- In 2003, a woman fell into the water as she was transferring from a boat to the landing pier. She was pulled out by those present and continued with her visit.

- In April 2003, an incident occurred out of season and a man had to be lifted by helicopter from the area to the North of the Monastery enclosure. He had suffered a fractured leg.

- Circa 2002, a woman fell approximately 2.5 metres within the Monastery site. She sustained cuts to her head which required stitching on her return to the mainland.

- Circa 1990, an OPW Guide suffered moderate injuries when he tripped on the South Steps.

The total number of reported incidents involving death or injury is, therefore, eight: three of which were fatalities. While the number of deaths may be treated as a reliable statistic, it is likely that the number of non-fatal injuries is understated. Even so, due to the remoteness of the location, any person suffering even a moderately serious injury would have to be evacuated from the Site and so it is reasonable to assume that any unreported incidents involved only relatively minor injuries. Nevertheless, we propose to be conservative and to increase the number of serious, non-fatal accidents that have occurred over this time period to eight, in order to allow for unreported incidents. This assumption increases the total number of accidents to eleven.

To assess the level of risk represented by these statistics, it is necessary to put them into a relevant context and this is best done by comparing them with the frequency of similar incidents in similar locations. This poses quite a difficulty because these data are usually collected on an absolute rather than a relative basis. That is to say: when, for example, the data for incidents in similar terrain in Scotland, England & Wales, or Ireland are being collected, it is the number of calls on the rescue services that are recorded, along with the nature of any injuries suffered. Nobody collects data on the number of participants who arrive home without the need for rescue services, even though some of these may have suffered an injury in the course of the activity. Consequently, to compare three deaths on Skellig Michael since 1995 with the number killed on mountains in Kerry, throughout Ireland, or elsewhere in the same period, would be worthless. For a meaningful analysis, it would firstly be necessary to relate the frequency of incidents on Skellig to the number of people visiting. The next step would be to compare this with similarly compiled statistics from other regions. Fortunately, due to two pieces of research work carried out: one on behalf of the Visitor Safety in the Countryside Group (VSCG) in Great Britain, and the second for the Scottish Sports Council, it is possible to make such a comparison; but it is necessary to make a series of assumptions, which is always the case when dealing with incomplete data.

The first step is to determine the number of recreational users visiting the Site.
3.1.3 Frequency of Visits to Skellig Michael

From our discussion with OPW personnel, with the boat operators and with others familiar with Skellig Michael, the evidence is that a ferry service for recreational users has been in operation for about forty years. This service has evolved: growing in capacity and numbers until the implementation of the permit system in 1995. Initially, the number of boats was five or less, but by the time the permits were applied the number had increased significantly. Boats tended to carry more than the twelve passengers currently permitted and some boats made more than one trip per day, weather permitting. No exact records of the numbers who make the trip are maintained, but OPW’s current estimate is 10,000 annually. This estimate is based on the number of boats permitted to carry passengers (fifteen), the number of days on which sailing is feasible in the season, and applying a utilisation factor on the service. The general consensus is that it is reasonable to assume an average of 10,000 since the service began. Before the permitting regime commenced, the numbers would have been lower and would then have increased to over 10,000 before levelling out at the OPW estimate since the introduction of the permits. Thus, the total number of recreational users who have visited the Site over the past forty years is assumed to be of the order of 400,000.

Before we relate the number of incidents on Skellig to the frequency of visits, a note of caution: the number of incidents is very low; it is not, therefore, possible to predict accident rates with a high degree of confidence on the basis of these data. Over the past forty years, while 400,000 or so recreational users visited the Site, there have been three deaths. The fact that there was only one fatality in at least thirty-nine years (and this was off the standard route) and then two fatal incidents occur, reportedly at the same location, within a six month period would point to an unfortunate coincidence, especially given that the configuration of this part of the route has remained the same for very many years. Due to their random nature, accidents do not necessarily occur at a uniform rate and some clustering is inevitable. Moreover, for reasons we have already explained in relation to the investigation of such incidents, it is reasonable to assume that these are the only deaths in a much longer period, since formal records began. However, as we do not have a basis for estimating the numbers who visited Skellig Michael before the early 1970’s, we have assumed that the incident rate for all injuries is, 1 in 36,000 and of these 27% resulted in a fatality while 73% resulted in non-fatal injuries ranging from moderate to serious. Put another way, based on the very small number of incidents to date, the likelihood is that a recreational user will be killed while using the standard route on Skellig Michael is 1 in 200,000 or once in 20 years. If the incident that occurred when the victim was off-route is included, then the fatality rate is 1 in 133,000 or once every 13 years.

Similarly, the likelihood of suffering an injury or significant discomfort is 1 in 40,000 or once every 4 years. We emphasise that this is a conservative approach which, in effect, penalises the safety record of the Site. It is interesting to compare the indicated likelihood of a fatality on Skellig Michael (1 in 133,000) with the fatality rates from some other activities (UK HSE, 2001).
### TABLE 2 FATALITY RATES FOR OTHER ACTIVITIES

<table>
<thead>
<tr>
<th>Activity Associated with Death Risk</th>
<th>Likelihood</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maternal death in pregnancy</td>
<td>1 in 8,200 maternities</td>
</tr>
<tr>
<td>Surgical anaesthesia</td>
<td>1 in 185,000 operations</td>
</tr>
<tr>
<td>Scuba Diving</td>
<td>1 in 200,000 dives</td>
</tr>
<tr>
<td>Fairground rides</td>
<td>1 in 834,000,000 rides</td>
</tr>
<tr>
<td>Rock climbing</td>
<td>1 in 320,000 climbs</td>
</tr>
<tr>
<td>Canoeing</td>
<td>1 in 750,000 outings</td>
</tr>
<tr>
<td>Hang-gliding</td>
<td>1 in 116,000 flights</td>
</tr>
</tbody>
</table>

3.1.4 Accident Rates for Mountaineering Activities

To put the accident rate for recreational users at Skellig Michael into a relevant context, we examined statistics for mountaineering incidents involving both non-fatal and fatal accidents.

3.1.4.1 Non-Fatal Accidents

The publication *Managing Visitor Safety in the Countryside* (VSCG, 2005) presents a series of data on non-fatal accident rates for a variety of outdoor activities including swimming, sailing, mountaineering, cycling, horse riding, and rugby. These data are expressed in terms of the number of injuries per 100 million hours of participation in the activity and so they are set within a relative context which can be used to assess the data for Skellig. They are particularly useful because the level of risk is, in part at least, a function of the length of time for which an individual is exposed to the hazard. The data are illustrated in Figure 7.

The non-fatal injury rate for all categories of mountaineering is given as 4,000 for every 100 million hours of participation in the activity. Assuming that each person on Skellig spends around 2.5 hours on the Rock (this is the length of a visit recommended by OPW) and there are 10,000 visitors a year, then the total length of time during which recreational users are exposed to the hazards annually is 25,000 hours. On this basis, a non-fatal accident is to be expected on Skellig every year, whereas, the actual rate reported is four times lower. This implies that, for non-fatal injuries, spending time on Skellig is far safer than mountaineering generally. This apparently low rate of non-fatal injuries on Skellig might be explained by considering that the VSCG data apply to all four categories of mountaineering and it would be expected that accident rates for snow & ice climbing, for example, would be higher than for scrambling. There is, however, another possible explanation.

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9 The figures were prepared from data in the UK’s Leisure Accident Surveillance System (LASS) by Prof. David Ball of Middlesex University and Mr. Mike Barrett of BRM Consultancy Services Ltd.
The VSCG figures are based on the UK’s LASS (Leisure Accident Surveillance System) which include data collected from hospital accident departments. This means that anybody arriving at a hospital reporting an injury incurred while mountaineering will be reported in the statistics, no matter how trivial that injury is. The figures for Skellig, on the other hand, include only those incidents where assistance was sought while in the remote location. As the reader will recall, we have already expressed the view that minor injuries picked up while on Skellig might not be reported, even though the person might seek medical attention after returning to the mainland. It may, therefore, be more appropriate to compare non-fatal accident statistics for Skellig with those reported by mountain rescue agencies who are called to the scene of an incident.

**Figure 7: Non Fatal Accident Rates for Outdoor Activities**

A study for the Scottish Sports Council, *Scottish Mountaineering Incidents (1996-2005) Research Report No. 109* (Sharp, 2007) examined ten years of data collected by the police and mountaineering rescue teams in Scotland, between 1996 and 2005. The data was made available by the Mountaineering Rescue Committee of Scotland. The study examined 2,446 incidents involving 3,315 casualties and was the most comprehensive survey of Scottish mountain incidents undertaken and the most exhaustive ever carried out in Great Britain.

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10 Some ‘incidents’ may not involve any casualties because mountain rescue may be called to search for people who are lost, or benighted, or to assist people who are cragbound. Other incidents may involve several casualties.
Over the ten year period, there was an annual average of 187 non-fatal injuries over all the four categories of mountaineering. It is necessary to put this statistic into some relative perspective. According to Sharp, data from his survey suggests there are just over 6.5 million participation days in mountaineering activities in Scotland each year, but he adds the caveat that the data will include those who walk regularly in lower hills. No reference is made to the length of time during which those participating are engaged in the activity. If it is assumed that each daily outing lasts for 5 hours, then the number of non-fatal accidents per 100 million hours of participation is 57511.

On this basis, a non-fatal injury of the type that would require a call out of emergency services can be expected on Skellig at a rate of 1 in every 7 years. This is considered a more reliable comparison and is very much in line with the record to date, even allowing for our conservative assumptions.

3.1.4.2 Fatal Accidents

The figures from the Scottish survey show that over the ten year period from 1996 to 2005, there was an average of 26 fatalities per annum from mountaineering incidents. Taking Sharp’s estimate of 6.5 million outings to the Scottish mountains per year and assuming again that each daily outing is an average of five hours duration, the number of fatalities per 100 million hours of participation is 80. When assessed against this statistic, the rate of fatalities while using the standard route on Skellig would be 1 in every 50 years. This means that the fatality rate for the standard route on Skellig, which is 1 in every 20 years and is based on a very small number of incidents, is 2.5 times greater than would be expected across all mountaineering activities in Scotland, including the large number who partake only in walking on the lower hills. Drilling deeper into the Scottish statistics shows that participation in hill walking outnumbers the other three more technical categories by 7:1 but hill walkers are only half as likely to suffer an accident. Furthermore, scrambling accidents result in a higher percentage of fatalities (18%) and a higher percentage of multiple injuries (30%) than in any of the other activities. Unfortunately, the data are insufficient to facilitate any further quantitative analyses of the particular risk associated with scrambling. Intuitively, however, it makes sense that the consequences of an accident while scrambling should be proportionately worse than in the other mountaineering categories: persons engaging in this activity place themselves in locations that are acutely exposed to height, but without any protection. Consequently, if a slight trip or stumble occurs, they are very likely to fall or tumble a considerable distance because they are not protected by a rope and belay device, as would be the case if they were rock climbing. It is not that the likelihood of falling while scrambling is higher than for rock climbing, but if it happens, the results tend to be very serious.

It is also noteworthy that the reported injury for 11% of all casualties in the Scottish survey was ‘medical’ and, of all fatalities, 25% were medically related (heart attack, for example). The autopsy report on one of the fatalities in 2009 stated, ‘Natural disease is noted with ischaemic heart disease and early cirrhosis of the liver’.

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11 Outings to higher mountains would take longer but it is reasonable to assume that the average duration spent in a hazardous area is five hours.
There is one other set of data available for mountaineering fatalities: a report published by the UK’s Health and Safety Executive (UK HSE, 2001). Fatality statistics are provided for a variety of activities and the rate for rock climbing is given as 1 in 320,000 climbs\textsuperscript{12}. Of course, the standard route to the Monastery cannot be considered to be the same as rock climbing, of which there is a whole spectrum of grades. A rock climber would be expected to have to perform more difficult moves but the cohort of people engaged in climbing would tend to be younger, fitter and more agile than the general population. On the other hand, like rock climbing, the exposure to height on the standard route is acute in many places and there is a very considerable variation in the age, agility and fitness amongst people making the ascent and the descent on this route.

The VSCG publication does not present any data on incidents involving fatalities. However, we did have access to unpublished data derived from the same LASS source that yielded the non-fatal statistics (Barrett, February 2010). These data indicate that fatality rates for all mountaineering activities is between 30 and 60 deaths per 100 million hours of participation. When compared to this statistic, the expected fatality rate at Skellig Michael, based on 10,000 visitors a year, each spending 2.5 hours on the Site, is between 1 death every 67 years and 1 death every 133 years.

\subsection*{3.1.5 Protecting the Route}

As a consequence of the two fatalities in 2009, there have been calls for some form of protection to prevent people from falling as they ascend and descend the South Steps. Some have suggested fixing a rope along the steps, other have suggested installing a guard rail along the entire steps.

\subsubsection*{3.1.5.1 A Fixed Rope}

It is our opinion that a rope along the entire length of the steps is neither feasible nor advisable for the following reasons:

1. There are not sufficient points at which to anchor a rope: anchors would have to be placed in the bedrock. If they were anchored to the flagstone steps, this would be unsafe, because the flags can move and such an anchor could not be relied upon to provide support to a person who needed it.

2. Even if sufficient anchors could be provided, ropes become frayed and deteriorate in ultraviolet light; they would also be exposed to saline attack by airborne sea spray.

\textsuperscript{12}The source is an estimate by the British Mountaineering Council (BMC).
3. Relying on a rope for support while ascending or descending a route such as the South Steps, even if it could be adequately fixed, would probably require the use of a harness and a belay device if it was to be of benefit, especially on the descent. It would not be feasible to supply these to recreational users or to provide the training necessary to use this equipment safely.

4. On very steeply inclined stages, inexperienced people would tend to pull on the rope with their hands ignoring the importance of correct foot placement. This would lead to exhaustion very quickly, thereby increasing the risk of a serious fall or tumble. There is also the matter of flexibility: a person leaning or pulling laterally on a rope would be more at risk and a rope of sufficient thickness and fixed at a height suitable for adults would be too thick for children’s hands, and too high.

5. A fixed rope would provide a false sense of security. People who would otherwise turn back when they see how steep the steps are might be tempted to venture beyond their level of competence, or endurance\textsuperscript{13}.

6. Providing adequate anchorage for a rope, even if it was a feasible protection, would cause serious or extreme harm to the cultural and natural heritage.

3.1.5.2 Erecting Guard Rail

The technical feasibility of fixing a guard rail along the entire length of the South Steps has been investigated by Mr. Jack O’Leary, Chartered Engineer, of Malachy Walsh & Partners. His findings are that if the purpose of erecting such a rail is to protect the public, then it must be designed, fabricated and erected in accordance with current codes of practice with regard to horizontally imposed loads for barriers and parapets, as set out in BS 6399 Table 4 and the support posts would have to be fixed into the bedrock or into concrete foundations.

Drilling into the bedrock at a multitude of locations along the South Steps or pouring concrete foundations would probably require the removal of the steps entirely and relaying them again. It would never be possible to achieve the same configuration. Referring to Appendix 1 will explain how extreme the consequences for the cultural and natural heritage would be if this was to be implemented.

At the most recent inquest on the second person to die in a fall on the Site in 2009, the Coroner made the following request.

\textsuperscript{13} The Head Guide observed that some do.
‘Due to two accidents happening at the same location within the one year, I believe it is now essential for the OPW to erect some type of barrier at this location to prevent further deaths. I am aware of the OPW’s need to protect the “integrity of the site”, but surely a stone wall or a black iron railing at this point would not damage the site to the extent that if something is not placed there, more lives will or could be lost. The slightest thing would help people to arrest their fall and prevent them going over the edge and falling to their death.’

(Casey, Coroner for South & East Kerry, February 2010)

During a visit to the Site, we examined the location from where the two fatal casualties are reported to have fallen. This area is illustrated in Figure 8. It comprises a horizontal ledge, about 4 m long and an overall width of approximately 900 mm. There is a low bedrock wall, about 1.5 m high, on the inner side. The outer side is openly exposed with a fall of around 9 m to a flat, rocky area at the foot of the steps on the Lower Lighthouse Road, where the ascent begins. This exposure is illustrated in Figure 9.

As Figure 8 illustrates, the inner 500 mm (approximately) of the ledge is well defined, flat and with a rough surface that is unlikely to become slippery, even in wet weather. The outer 400 mm or so is smoother and slopes gently to the outside, before falling away sharply. The ledge had been narrower until OPW widened it by removing bedrock from the inside wall, in the early 1990s. Traversing this ledge requires no particular skill; even the sense of balance required is not especially demanding because the inner 500 mm provides good footing and it is possible to lean a hand against inner wall to maintain balance, if a person is affected by the exposure. However, a trip or a stumble caused, for example, by loose or inappropriate footwear, or careless foot placement, could have fatal consequences because of the exposure. This ledge is fairly typical of a scrambling situation, albeit at the easier end of the range for that activity.

Apart from this ledge, there are several other locations along the route where, in our opinion, the likelihood of a fall with serious or fatal consequences is the same or greater. There are locations along almost the entire steps which present a hazard of falling or tumbling a considerable distance. During the HAZIDRA exercise the overall risk, in societal terms, was assessed as High, in that the likelihood is that a person will be killed as a result of a fall on Skellig Michael between once in 5 and once in 50 years. This is confirmed by the data from elsewhere. On an individual basis, however, the risk varies according to the agility, fitness and preparedness of that individual; consequently, for some, ascending to the Monastery represents a Very High risk.

If, as the Coroner has suggested, a guard rail was erected on the outside of the ledge to protect people from falling, it would not be open to OPW to place a wire cable, for example, because someone could slip under it or a child might be attracted to swing from it. Any such protection would have to take the load from people leaning against it, or climbing on it. It would be necessary to design it as Mr O’Leary has specified.
It is technically feasible to erect a guard rail at this point and it would provide protection from height exposure to anyone traversing the ledge. Of all the locations on the standard route to the Monastery, this is probably the only location where it would be possible to erect a guard rail without disrupting the steps. Nonetheless, there would be some very negative consequences in erecting such a guard rail and we will now examine these.

- Protecting the ledge would make it a very attractive platform from which to admire the views or to take photographs and people would tend to pause here, confident in their sense of safety. During the peak of the season, when over one hundred people can be on the route within a short time of each other, this would likely cause congestion on either side of the ledge, in areas that cannot be so easily protected. People on the way down, when more accidents tend to occur, could be left standing on the exposed steps immediately above the ledge, thereby increasing the likelihood of a fall.

- It would introduce a false sense of security in some people. Seeing a protective guard rail at the first point on the route where they experienced significant exposure to height would lead them to believe that any similarly exposed locations further along the route would also be protected. Those who might otherwise decide for themselves not to progress beyond the ledge would feel encouraged to continue.

- There are several sections where it would be impossible to provide this type of protection without serious or extreme damage to the cultural and natural environment. One such exposed location can be seen at the far end of the ledge in Figure 8. Others have been illustrated earlier in this section. Consistency in implementing risk mitigation measures is very important; it contributes to a safer environment by enabling people to know what to expect and to make informed judgements about what level of risk they wish to accept.

- Protecting this section of the route could cause difficulties for OPW in any future litigation case arising out of an accident occurring elsewhere along the route where no such protection is provided. It could set a similar unwelcome precedent for OPW at other locations and for other bodies involved in the management of wild and remote places such as Coillte, or the National Parks and Wildlife Service. Consider the following extract (VSCG, 2005):
'The use of modern safety precautions may conflict with conservation, recreation or landscape objectives. For example, it would be possible to reduce risk when crossing historical aqueducts by erecting railings. Handrails and steps could reduce risk on steep mountain descents. Fencing might lessen risk if erected at the edge of a cliff or water. However, the application of such control measures could fundamentally detract from the historical integrity of the structure and inherent attraction of the landscape. A balance must be achieved between risk and the impact of safety measures.'

Apart from the above reservations, there are reasons for believing that in the case of at least one, and possibly both, accidents, the initiating incident that caused the fall occurred not at the ledge itself, but at the steps immediately beyond the ledge on the ascent route. This matter will be teased out later, in Section 6.
FIGURE 8: REPORTED ORIGIN OF FATAL FALLS IN 2009
FIGURE 9: EXPOSED LEDGE VIEWED FROM BELOW
3.2 **RISK OF INJURY AT LANDING HARBOUR**

Apart from the boat operators themselves, some of whom seemed surprised that our assessment of risk would include the transferring of people to and from the landing pier at Skellig Michael, those with whom we consulted felt, intuitively, that this is the highest risk activity which recreational users engage in when they visit the Site. The landing pier is shown in Figure 10.

![Figure 10: Landing Pier Skellig Michael](image)

While the HAZIDRA Team recognised the skill and experience of the boat operators, those who are very familiar with boat traffic to and from the Site have observed that recreational users are sometimes put ashore in conditions that are considerably less than comfortable and this presents a high risk of a serious injury occurring to a passenger as they attempt to disembark or embark at the landing pier in a high swell. Such an incident would involve crushing between the vessel and the pier or impact due to a fall on to the pier or into the vessel. It could become more serious if the person was dragged below the water or washed into the sea cave adjacent to the pier and it is not the practice to have passengers wear lifejackets as they make this transfer.
During our site visit, the water was swelling from the bottom left hand side of the photograph below and washing over the outcrop of rock in mid-picture and then over the pier behind. This was on a relatively calm day in February, but the tide was particularly high\(^\text{14}\).

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{figure11.png}
\caption{Sea washing over landing pier}
\end{figure}

It must be acknowledge that, to date, there is no record of any person suffering such injuries but the anecdotal evidence is that there have been several near misses. One elderly man is reported to have fallen directly from the pier into a boat and a woman with an infant in her arms was partially submerged by the swelling sea as she stood on the steps.

From our discussions, we understand that sea conditions change rapidly and it may not always be possible for the boat operators to be aware of what conditions are like at the landing pier before they arrive there. Boat operators occasionally contact the OPW guides for information on conditions at the pier. It appears that some operators do persist in putting their passengers ashore in conditions that may not leave a comfortably safe margin and this puts pressure on others who do not want to disappoint their clients who will already have paid for the trip\(^\text{15}\).

\(^{14}\) Note the section of railing missing in the foreground. This is an indication of the damage that occurs regularly due to the force of the sea.  
\(^{15}\) Currently €45 for a round trip
We have already discussed the difficulty in putting confidence in accident frequency rates when the number of incidents that have occurred is very low. Conversely, just because there have been no serious incidents to date, does not mean that a high confidence can be put in the accident rate remaining at zero. The fact that there have been no serious injuries caused to date may just be another coincidence, this time a fortunate one. The genuine concerns expressed by those who are very familiar with this operation must be recognised. The HAZIDRA team considers that this type of incident could occur between once every five and once every fifty years, with serious injuries or worse. Measures to reduce this risk will be considered in Section 6.

3.3 RISKS ASSOCIATED WITH LACK OF AWARENESS

The fourth High Risk scenario for recreational users is associated with a lack of awareness and preparedness. The immediate causes and outcome of this scenario are not any different from those other High Risks affecting recreational users that have already been analysed, but in this case the underlying hazard is seen as the lack of sufficiently accurate and relevant information held by some recreational users.

This could lead to a range of consequences, from slight to serious. At the lower end, not bringing sufficient food or drink may result only in a slight discomfort, while wearing unsuitable clothes or footwear could be more serious. At the extreme end, people who due to their medical condition are not physically or mentally prepared for the voyage run the risk of exacerbating any inherent weakness. They may be sea sick from the passage out. They must then undertake an arduous ascent to the Monastery, and descending safely requires a very high level of mental concentration. The result may be the sudden onset of a medical condition that would not otherwise arise and, depending where this occurred on the Site, could trigger a more serious event involving death or serious injury.

There are, of course, volumes of relevant information available, if a person is interested in searching for it. The problem is that it is not sufficiently well targeted at many of the people who are now visiting the Site. It seems there may be a change in the type of person who opts to make a visit today compared with twenty or so years ago, and in their motives for so doing. Although OPW has not carried out any visitor surveys, the opinion of the guides, who are very familiar with the recreational users, is that more of those making the visit in recent years only hear of the Site and the opportunities to visit when they happen to be in the South Kerry area, whereas, heretofore, visitors tended to have more advance knowledge of the Site, the conditions there, and of its significance. For some, it is included in the itinerary of the tour company that arranged their holiday.
The difficulty for OPW is how to ensure such people obtain the necessary information. A very real
dilemma, one which affects many aspects of the management of visitors to the Site, apart from the
risk dimension, is the fact that OPW has absolutely no way of vetting, or monitoring or instructing
those who wish to make a visit until they actually arrive at the landing pier, and by then they are on
the Site. OPW has no control on the numbers, other than the permit system whereby a specific
number (currently fifteen) of operators who hold License from the Department of Marine to carry
passengers for hire are allowed to make one trip with twelve passengers each per day to the Site.
The fact that these boats operate from four different locations on the mainland and that the
journey out involves a 12 km trip, in very changeable seas, means that passengers cannot be
scheduled to arrive at preset intervals and in conveniently sized groups. In addition, the
constraints of the Site are such that there is just no way in which a reception area could be
provided for the induction of visitors and an opportunity to make them aware of the hazards. It is
similarly difficult to provide warnings to divers, sailors and cruise ship passengers. During the
closed season, when there are no OPW personnel on site, landing can be made without OPW’s
knowledge.

Possible measures for targeting recreational users with relevant information, and the nature of the
message that should be transmitted, is discussed in Section 6.

3.4 CONCLUSIONS ON HIGH RISKS TO RECREATIONAL USERS

3.4.1.1 Non-Fatal Accidents

- The historical data over the past forty years indicate a non-fatal injury rate resulting from a
trip or fall at Skellig is 1 in 80,000, based on the number of reported incidents (five). We
took a conservative approach, assuming that not all the accidents were reported and we
have assumed that the total number of non-fatal accidents is eight. The resulting injury rate
is 1 in 50,000. The estimated non-fatal rate based on the Scottish data is 1 in 70,000 but this
includes all categories of mountaineering, including the very high number who engage in hill
walking only, where the expected accident rate would be lower. Our conclusion is that the
injury rate on Skellig is less serious than has been reported for similar terrain elsewhere.
- This means that a non-fatal injury to a recreational user, requiring prompt or emergency
evacuation, is expected to occur about once in every five to seven years.
- For emergency planning purposes, OPW should assume a rate of one evacuation involving a
recreational user approximately every five to seven years.
- Although there have been no serious injuries at the landing pier, in the opinion of the OPW
personnel most familiar with the Site, this is probably fortuitous. We agree with this
assessment.
In our opinion, the risks of injury to recreational users is within the expected range, nonetheless, measures should be taken to reduce the risk and these will be discussed in Section 6.

3.4.1.2 Fatal Accidents

- The fatality rate while using the standard route on Skellig, as indicated by the data since 1970, is 1 in 200,000, or once every twenty years.
- Based on our derivations from Sharp’s work, the expected fatality rate would be 1 in 500,000 and, on this basis, a fatality could be expected on Skellig once every fifty years.
- If expected fatalities were to be projected on the basis of Ball and Barrett’s data, as derived from the LASS, the rate would be between once every sixty-seven years and once every one hundred and thirty-three years.
- Both the VSCG and Scottish Sports Council figures represent all mountaineering activities and as Sharp reports, hill walkers are only half as likely to suffer an accident. The relatively higher proportion of deaths while scrambling must also be considered. Therefore, the comparisons above are likely to be on the conservative side, that is to say, they penalise and they tend to paint a bleaker picture of the risks at Skellig.
- Using the HSE statistics, the expected fatality rate would be 1 in 320,000 (once every thirty-two years).

The third fatality to a recreational user, the incident in 1995, occurred when the person was descending off the standard route and fell from a location where the terrain is a mixture of sloping rock benches and steeply inclined grassy slopes, and from where it is not possible to judge the lie of the ground below. If this incident is included, then the total fatality rate for recreational users would be 1 in 133,000 or once every thirteen years. This illustrates the sensitivity of the data to very small changes and it is necessary to remain aware of this. The number of fatalities is low in absolute terms so that one incident, more or less, can have an appreciable impact on the rates.

In our opinion, the number of fatalities at Skellig is broadly within the range that might reasonably be expected based on data for similar mountaineering activities elsewhere, given the nature of the terrain and the profile of those taking part in the activity. This is not to suggest that OPW can afford to be complacent about fatalities and we make recommendations on how to mitigate this risk in Section 6.

3.4.1.3 Protecting the Route to the Monastery

When Skellig Michael was inscribed on the World Heritage List in 1996, UNESCO described the Site as a ‘unique example of early religious settlement which illustrates, as no other site can, the extremes of Christian Monasticism’. It is reasonable to assume that those who originally chose the Skellig as a location for their Monastery did so because of its remoteness and its inaccessibility. These are features of the monument which attract people to visit it. Some of this remoteness and
inaccessibility has been compromised – the building of the lighthouse road, for example – but our view is that there is no need to compromise it further because of the risks to recreational users.

Because of the choice of this location by the original builders, visiting the legacy they have left involves certain risks which are entered into voluntarily by the recreational user. In our opinion, the number of fatal and non-fatal incidents is consistent with what can be expected when people voluntarily engage in such activities in other, similarly rugged terrain and the fact that two fatalities occurred in close proximity to each other within a short period of time is an unfortunate coincidence. It should be noted that there was no change to the configuration of the route at the point where these accidents are reported to have occurred for at least fifteen years. What is critically important is that recreational users should be made fully aware of the hazards to which they will be exposed when visiting Skellig Michael and the attendant risks, so that they can make an informed decision to accept these risks, or to decide not to take the risk and to stay away. There is always the option to take a boat trip around the island and to view the Monastery from the sea. It must be acknowledged that this would be subject to weather conditions but then so too is a visit to the Site itself. The provision of advance information will be discussed in Section 6.1.

3.4.1.4 Protecting Off-Route Areas

Currently, there is a chain-link fence across the gap between the North and South peaks known as Christ’s Saddle. Another, similar fence closes off a lay-down area used by the OPW works team when conservation work is being carried out on the Monastery. There is also the remains of a netting fence originally intended to screen off access from the Saddle to the South Peak Hermitage.

The purpose of erecting these was to cordon off Works areas from the general public, as required under the Construction Regulations. Once these Works are completed, we see no reason to maintain these fences in place even though they hinder access to some of the areas that are off the standard route and where the terrain is very hazardous. It would be physically impossible to prevent people from gaining access to all such areas and, besides, it would not be justifiable to do so. People should be allowed to decide for themselves what risks they wish to undertake. These considerations are especially relevant in the context of opening up the South Peak Hermitage in future.

In our opinion, the only valid reason for erecting a fence would be to protect some specific aspect of the cultural or natural heritage or to protect the public from Works being carried out by OPW. As we have illustrated in section 5, none of the activities undertaken by OPW on the Site to date place the recreational user under any significant risk. This is due to careful management of the Works by OPW, in particular, the scheduling of hazardous activities while the Site is closed to recreational users.

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4 MEDIUM RISKS TO RECREATIONAL USERS

The four scenarios posing Medium Risk to recreational users are:

1. Drowning while transferring from a boat to the landing pier and vice versa,
2. Falling overboard while transferring between a boat and the landing pier, with resulting exposure to cold/wet and, potentially, hypothermia,
3. Being struck by falling rock or stones with serious or fatal consequences,
4. Incurring moderate injuries while wandering off the standard route.

We analyse the above risks in the following sub-sections and additional measures that might be taken by OPW to eliminate hazards, reduce likelihoods or mitigate consequences will be discussed under Recommendations for Controlling & Mitigating Risk, in Section 6.

4.1 LANDING PIER

The hazards associated with transferring people to and from a boat at the landing pier have already been analysed in Section 3.2 where the potential for serious injuries to people was considered a High Risk, because of the frequency with which these were considered likely to occur: between once in fifty and once in five years.

Two Medium Risk scenarios are also associated with this operation. In the first, the assessment was that a drowning is likely to occur during this operation between once in fifty and once in one hundred years. The second scenario involves passengers suffering moderate injuries (exposure to cold/wet) between once in fifty and once in five years16.

Notwithstanding the assessment of the HAZIDRA team, in the light of additional information on fatality rates, our opinion is that this overstates the risk of drowning. Statistics compiled from the LASS data (Barrett, February 2010) and supplied to Byrne Ó Cléirigh indicate that the fatality rate while boating or sailing is 20 per 100 million hours. Assuming that the average journey out and back, from all four mainland harbours and across the faster and the slower boats, is 2 hours and 10,000 people make the trip each year, then the fatality rate would be 1 in every 250 years. It must be remembered that this rate would apply to the entire journey, not just to the time spent transferring to and from a boat as Skellig. It is also the case that the LASS statistics refer to boating and sailing as a leisure activity, whereas the boat trip to Skellig is undertaken in a licensed vessel with a professional crew. Accordingly, the incident rate would be expected to be even lower for the Skellig voyage. On the other hand, embarking and disembarking are likely to be more

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16 This is not to say that a fatality is rated less seriously than an injury, however serious; rather it is the lower likelihood of a drowning that brings it into the same risk category as moderate injuries suffered more frequently.
hazardous than the voyage itself. Nonetheless, it does not seem justifiable to assess the frequency of a drowning at the landing pier as high as one in fifty to once in a hundred years. In our opinion, this likelihood should be considered as remote and accordingly, this scenario should be downgraded to a Low Risk scenario.

4.2 LOOSE OVERHEAD ROCK

Loose overhead rock is a natural hazard in many mountain areas like Skellig Michael. Because the Lower Lighthouse Road skirts along the bottom of the incline, it is particularly susceptible to impact damage some sections more so than others. One such section is immediately before the helipad, on the road from the landing pier to the foot of the South Steps. This is where OPW maintains the protective canopy shown in Figure 1217.

OPW also arranges to have the general area above the road surveyed annually by the specialist safety contractor to the OPW works team on Skellig.

Despite these precautions, loose rock remains a hazard: even the most thorough survey could not foretell whether rocks and stones are likely to move as a consequence of rain, when the supporting soil may become eroded, or if bird nests and rabbit burrow undermine them. Major rock falls have occurred; one about a decade ago when boulders, some weighing more than a tonne, fell onto the Lower Lighthouse Road and damaged the parapet wall. The repairs to the damaged wall are very evident today. The Upper Lighthouse Road has been seriously damaged and is effectively blocked by fallen rock and debris18.

\[\text{Figure 12 Section of Road Protected from Rockfall}\]

17 This was originally erected by Irish Lights to protect its personnel when they were resident on the island.
18 Recreational users have no access to this section of the road.

Byrne Ó Cléirigh, April 2010
The risks associated with loose rock becoming dislodged due to natural causes (soil erosion or the activities of birds and rabbits) were assessed as being Low or Very Low. However, this Medium Risk scenario is more directly concerned with careless behaviour by recreational users and the consequences could be serious injury or death to another person.

People leaving the standard route, especially those who are not familiar with this specific hazard while mountaineering, may dislodge rocks or stones on to the Lighthouse Road. Similarly, the deliberate throwing of stones from the Monastery enclosure threatens people below, on the Lighthouse Road. And people who carelessly climb on to the fragile, dry stone walls at the Monastery – to avail of a more advantageous spot for photographing, for example – risk serious injury or death to themselves and those below, if the wall was to collapse. The guides confirm that such incidents do occur and report that, occasionally, the parents of children who are asked by the guides not to throw stones resent what they see as an unwarranted restriction on their children’s freedom.

4.3 **Wandering Off Route**

The High Risk scenarios involving a fatality to a recreational user, due to a fall or a tumble has been analysed in detail in Section 3. Such a fatality could occur on the standard route or off this route.

Wandering off the standard route also carried with it the less serious consequences of lower leg injuries due to the large number of rabbit burrows and other ground cavities. If a person managed to avoid falling or tumbling to their death, or suffering serious injury, there remains the likelihood of suffering this type of injury. This is what might reasonably be expected in any similarly rugged terrain. This is considered a medium risk because, although the injuries sustained might be moderate, it is likely to occur at least once every fifty years and perhaps as frequently as once every five years.

This scenario is linked to the lack of WC facilities for recreational users which is analysed in subsection 5.2.6. People may wander off route in search of a secluded spot in which to defecate or urinate and this exposes them to the hazards already discussed above. However, most appear to do so at a location on the Lower Lighthouse Road, adjacent to the accommodation huts and this poses more of a risk to the OPW personnel than to recreational users.

*Byrne Ó Cléirigh, April 2010*
5 RISKS TO OPW PERSONNEL

The overall risk profile to OPW personnel is illustrated in Table 3.

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<th>Activity</th>
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<th>High Risk</th>
<th>Medium Risk</th>
<th>Low Risk</th>
<th>Very Low Risk</th>
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<tr>
<td>Maintaining North, South, &amp; East Steps</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Surveying (Topo. Arch. Wildlife etc.)</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Temporary Habitation of Site</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>8</td>
<td>9</td>
</tr>
<tr>
<td>Totals</td>
<td>0</td>
<td>2</td>
<td>7</td>
<td>41</td>
<td>23</td>
</tr>
</tbody>
</table>

No Very High risks were identified. Indeed, of the seventy-three risk scenarios that were identified, sixty-four belong in the Low or Very Low categories and may be regarded as well within the acceptable range. The reasoning for this is provided in the HAZIDRA Report which is attached to this Report as Annex 1.

There are only two areas of activity involving High Risks: the journey to and from the Site, and the habitation of the Site by OPW personnel. The remoteness of the Site, with sometimes difficult access due to weather, makes it difficult to provide medical support and what might otherwise be a very manageable scenario on the mainland, becomes an emergency in a location like Skellig.
Some surprise might be expressed at the relatively low risk profile for working at exposed heights and on fixed ropes. This activity includes erecting scaffolding and platforms in exposed locations, as well as working from these platforms. There might be similar surprise that maintenance of the North, South and East Steps have no High Risk scenarios. These are very well managed activities within OPW. Considerable resources are spent: time, training equipment and specialised contractors to ensure the safety of all those involved in this activity. Moreover, all conservation and infrastructural works are scheduled so that recreational users are not exposed to any hazards arising from carrying out such works. What is critically important for OPW is to ensure that this remains the case and that complacency does not set in.

The individual High and Medium Risk Scenarios are analysed in the remainder of this Section.

5.1 **HIGH RISKS TO OPW PERSONNEL**

There are two High Risk Scenarios:

1. Falling from the pier ladder when boarding a boat at Portmagee.
2. Developing a serious medical condition while on the Site, where there is no medical support.

5.1.1 **Using the Pier Ladder at Portmagee**

OPW personnel use a contracted boat service to ferry them to and from the Site. The normal practice is for guides to travel out and back once a fortnight, while the maintenance personnel make a weekly journey, remaining on the island for five days. Other OPW personnel make less frequent journeys. All supplies: food, water, gasoline for generators, LPG for cooking and lighting, and the lighter conservation materials are also transferred to the Site by boat\(^{19}\). These materials and equipment have to be carried by hand on to the boat. When the tide is low at Portmagee, it is necessary to board using a steel ladder fixed to the jetty. Occasionally, equipment and materials are carried up and down this ladder. The resulting assessment was that between once in five and once in one fifty years, a person could fall from the ladder suffering serious injury. The conclusion reached was that no one should board the boat by ladder while carrying anything more than a small rucksack. All other items should be lowered to the deck of the boat by rope. These measures will be considered further under Section 6.

\(^{19}\) All heavy materials and equipment are transferred by helicopter.
5.1.2 *OPW Personnel becoming ill while on site*

In this scenario, a member of OPW personnel would suddenly develop a serious medical condition while on site and emergency evacuation would be required. This may not always be easily effected because of weather conditions. The likelihood is considered to be between once in five and once in fifty years and although the OPW maintenance personnel on Skellig are trained to Wilderness First Responder level, the guides only have occupational first aid. This means that the personnel with WFR training are not on site at weekends.

5.2 *Medium Risks to OPW Personnel*

OPW personnel are exposed to one Medium Risk at the departure pier at Portmagee and six such scenarios while they are on Skellig Michael:

1. Slipping or stumbling while transferring to or from a vessel at Portmagee,
2. A fire or explosion with fatal consequences, arising from the use of LPG as a fuel in the accommodation huts,
3. Sudden onset of a moderately serious medical condition with no convenient access to medical support,
4. Incurring a moderately serious injury while carrying out maintenance work at the Monastery enclosure,
5. Falling while maintaining the three sets of steps,
6. Being struck by loose, overhead rock while maintaining steps
7. Being exposed to infection due to the absence of WC facilities for recreational users

5.2.1 *Boarding a Vessel at Portmagee*

The background to this scenario has already been explained under 5.1.1 - Using the Pier Ladder at Portmagee. Using the pier steps would be the normal procedure, unless the tide is low. These steps become very slippery and there is an unlikely chance (between one in five and once in fifty years) that OPW personnel would suffer moderate injuries while engaged in the activity. The existing control measures in place are considered inadequate and additional measures were recommended.
5.2.2 Use of LPG as a Fuel and for Lighting

Liquid Petroleum Gas is used by OPW personnel for cooking and lighting in their accommodation huts. Normal, domestic-sized cylinders (approximately 11 kg net) are stored in the open, outside the huts, and these are not seen as presenting any significant hazard. It is the use of smaller LPG canisters for lighting inside the huts that was a matter of concern for the HAZIDRA team. Although the recommended practice in OPW is that a canister in a gas lamp should only be replaced after taking the lamp outside, this may not always be observed. In addition, the type of lamp used requires a clamp-on canister rather than the screw-in type, and the former are more likely to leak. The assessment concluded that a fire or explosion, with potentially fatal consequences is considered likely to occur between once in fifty and once in a hundred years.

This was originally assessed as a Medium Risk scenario by the HAZIDRA team; however, since the assessment was conducted, we in Byrne Ó Cléirigh have examined this scenario again and we have concluded that this risk is overstated. Even if it is conservatively assumed that a canister would be changed by each member of the OPW team twice every week for the whole season, and assuming there are 10 OPW personnel on site for 18 weeks, this would result in 360 operations involving the changing of a gas canister per year. If a fire or explosion involving a fatality was to occur between once in fifty and once in a hundred years, then the frequency of such incidents would be between 1:18,000 and 1:36,000. Given the many millions of such canisters in use around the world, it is not credible that the fatality rate would be so high. Moreover, we are doubtful if there is even a sufficient mass of gas in one of these canisters to form an explosive mixture with air inside an accommodation hut, even if the door was closed. Our opinion is that the likelihood of this scenario occurring should be downgraded to remote (less than once in a hundred years) with consequences limited to a fire. It should therefore be considered a Low Risk and may be considered acceptable.

5.2.3 Living in a Remote Location

Due to the remoteness of Skellig and the difficulties in arranging for prompt or emergency evacuation, there is a likelihood that between once in five and once in fifty years, one of the OPW personnel may develop a moderately serious illness which would require prompt evacuation. If the weather conditions were unsuitable, emergency evacuation might be required. Apparently, there is no current procedure for regular medical checks on OPW personnel who may stay for prolonged periods and the HAZIDRA team has proposed measures to remedy this.
5.2.4 Maintenance Work at the Monastery

OPW personnel working within the monastery enclosure may be subject to a Medium Risk involving moderate injuries arising from a trip or stumble, especially when the proposed repairs to the external wall of St. Michaels Church commence. In general, the management of risks to OPW personnel while involved in Conservation or Infrastructural Works is very effective and it is necessary that this continues to be the case.

5.2.5 Maintaining the Steps

A fall while maintaining the steps is considered unlikely, between once in fifty and once in a hundred years. The likelihood was assessed as relatively low because OPW already has extensive training and safety procedures. Over time, however, there is a concern that personnel may not always follow these procedures.

In the Report for the Scottish Sports Council, (Sharp, 2007), it is reported that when incident reports are being completed by the Mountain Rescue Service, an assessment is made at the time of an incident about whether or not the casualty is experienced. Almost two thirds (62%) of casualties were considered to be ‘experienced’. To quote Sharp: ‘... It is well known that whilst wisdom and skill grow with experience, so does confidence, familiarity and occasionally complacency. In an environment where there are many potential hazards, those who show complacency place themselves at greater risk.’

The maintenance of the North Steps involves a particular hazard due to the presence of so much loose overhead rock above this area and personnel maintaining these steps are subject to a medium risk involving a fatality.

5.2.6 The Lack of WC Facilities for Recreational Users

The absence of any WC facilities for recreational users on the Site causes discomfort for those affected and, indeed, could also be a reason for their wandering off route with consequences that have already been discussed under different scenarios. In the opinion of the HAZIDRA Team, the absence of such facilities represents a more serious risk to OPW personnel. This is because recreational users use a secluded location on the Lighthouse Road, close to accommodation huts, to urinate and defecate. Some actually do so in very close proximity to the accommodation. This has to be cleaned up by OPW personnel and, apart from being a very unpleasant task, it exposes OPW personnel to unhygienic conditions.

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20 Although Sharp acknowledges that this criterion was assessed on a very subjective basis.
6 RECOMMENDATIONS FOR CONTROLLING & MITIGATING RISK

In the Terms of Reference for this Review, the objective of ensuring ‘... a safe environment [emphasis added] on Skellig Michael, insofar as this is reasonably practicable’ is mentioned. Before proceeding further to consider any proposals for improving safety, it is first necessary to consider what is meant by a safe environment.

A safe environment is one where risks are at an acceptable level. It is not one where the risk is zero, because this is impossible; all of us live with the risk of being struck by lightning, for example.

In considering the acceptable level of risk on Skellig Michael, it is useful to consider what level of safety support and hazard management might be expected of OPW, given the nature of the terrain, and what level of user skill and self reliance might be expected of a recreational user.

![Figure 13 Terrain, Self Reliance & Support](image)

The matrix shown in Figure 13 was extracted from the publication on managing visitor safety in the countryside (VSCG, 2005). The principles of hazard management indicated above have also been adopted by Coillte.²¹

²¹ The State‐owned company that is responsible for developing and managing Ireland’s forestry.
Consider the circumstances on Skellig Michael once a person leaves the Lighthouse Road, in the context of the above matrix: the terrain is between wild and rugged (depending on the routes taken), the level of support that recreational users can be afforded is minor, but the level of skill and self reliance of those arriving to participate in the Interpretive Experience may be as low as minimal. We do not believe it would be valid to argue that easy access to Skellig for all should be provided, irrespective of fitness, agility etc., notwithstanding the monument’s archaeological, cultural, spiritual or environmental importance. None of these attributes can cancel out the fact that it is a wild, mountainous area surrounded by sometimes temperamental seas where any incident involving relatively moderate injuries is likely to require that an emergency evaluation be implemented.

This is a dilemma for OPW: because there is no way of screening visitors before they arrive.

In this Section, we examine several proposals for improving safety on the Site. Some of these have been suggested by the various stakeholders with whom we have consulted; others arose during the HAZIDRA process\(^{22}\) and some originate from within the Study Team. Our recommendations have been formulated on the premise that all considerations concerning the acceptable level of risk must reflect the remoteness of the Site and the nature of the terrain. Any consideration of a safe environment must take into account the level of self reliance that the terrain demands.

Of course, we do acknowledge the greater duty of care which OPW has towards its employees and contractors, be they involved in conservation works or in interpretive guiding, compared to the duty of care owed to recreational users who voluntarily undertake visits to the Site. They must be made aware of the nature of the risks and they must decide if the level of risk is acceptable.

### 6.1 Improving Awareness and Preparedness

Throughout our Review, the one feature relating to safety that continued to emerge from all the interested parties was the lack of awareness and preparedness on the part of recreational users. Improved transmittal and distribution of relevant information might well act as a self-regulating filter and discourage people who are not capable of making the ascent in safety from attempting it.

There are two separate considerations here: the nature of the information required by the recreational user to make an informed decision and the method of transferring that information.

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\(^{22}\) Attention is drawn to the full list of Additional Control Measures that were identified by the HAZIDRA Team. This list is presented as an Appendix to the HAZIDRA Report and the latter is attached as an Annex to this Report. Only those recommendations that impact on the more significant risks are discussed in this section.
We consider that the tourist information and advertising for Skellig currently provided does not provide a sufficiently accurate description of the nature of the Site and the hazards involved. The OPW’s recently published Visitor’s Guide simply states, in relation to the standard route, ‘...there are about 600 steps on the ascent to the Monastery’. It acknowledges that the steps ‘...can be slippery, particularly in bad weather...’ and that Skellig Michael is a precipitous rock. Unless this description is backed up with close-up and detailed photographs and graphic hazard warnings, any tourist who has climbed the 234 steps to the Sacre Couer Basilica in Montmartre, for example, might well expect the ascent to be a similar experience, except for the greater number of steps involved. However, there is no such similarity; the Skellig rock is a mountain area and so, whenever a person leaves the Lower Lighthouse Road, they are engaged in a mountaineering activity. This applies to the standard route to and from the Monastery, as well as to accessing areas off this route. Anybody contemplating a visit to the Site must be made aware of this and prepare accordingly.

However, because there is no one point of departure, it is impossible to provide any ‘induction’ for this type of visitor before they depart and it is impractical to attempt this as they arrive. It is essential, therefore, to target potential visitors at the point where they are contemplating their decision to visit the Site. There is one virtual ‘gate’ through which almost all recreational users must pass on their way to the Site and that is the contact with the boat operators. This group could play a crucial role in this self-filtering mechanism but it must be acknowledged that it may not always be in their commercial interest to do so. That said, however, we did gain the impression from our meeting with the operators that they are very conscious of the damage which negative publicity about the safety of visitors to Skellig Michael could cause to their business and they expressed willingness to cooperate in providing the safety information to their passengers.

Tourist information offices, hotels and guest houses, and any other location where a potential visitor might pick up promotional literature advertising Skellig, must also be supplied with a simple, accurate description of the hazards to which they will be exposed, and the level of the risks. Notices should have as few words as possible and rely instead on graphical images—similar to that shown in Figure 15—that transcend language barriers and require little by way of literacy skills.

The internet is probably the first method of choice for most people seeking travel information, nowadays, and DOEHLG, in collaboration with OPW, is preparing to launch a dedicated website for the Site. This opens up a whole new set of opportunities. We understand that the website may eventually include a virtual tour of Skellig. It should also be possible to produce a video clip, with voice-over in a selection of languages, that would illustrate how to ascend and descend the steps in relative safety, the importance of correct foot placement, identify the more hazardous sections and inform people about the potential hazards and risks. If a hyperlink was provided to this video from all other official websites relating to Skellig, this would greatly increase its coverage.

Existing hard signs, such as the one that is fixed low down on the quay wall at Portmagee are of very little benefit. They are prone to vandalism and weather damage, or to becoming obscured by parked cars or stacked fish boxes and they do not attract the attention of those for whom they are intended.

Byrne Ó Cléirigh, April 2010
6.1.1 **Recommendations**

1. The material in the current Visitor’s Guide should be updated to provide a more stark description of the risks involved in a visit to Skellig Michael. It may be prudent to do this as soon as possible and not to wait until the current print run has been exhausted. This description should also be published on the dedicated website.

2. A design for a standardised notice, using graphical images and a minimum of words, should be commissioned. At least an A3 size is recommended and copies should be laminated. Copies should be displayed at all tourist information offices and on board all boats that are permitted to land passengers on Skellig. This should include cruise liners. Copies should be sent to all walking groups, diving schools and other interest groups who are known to frequent the Site. Hotels and guest houses in the South Kerry area should be encouraged to display them.

3. A safety video should be commissioned featuring the hazardous nature of the terrain, advice on how to prepare for the visit and the precautions necessary. Apart from putting a hyperlink to this video from all the official OPW or government websites that refer to Skellig Michael, it should be a condition of any permit issued to a boat operator to land people on Skellig that, if they advertise this service on the web, they must include a hyperlink to the safety video.

4. A notice drawing attention to the date on which the Site officially closes should be placed in the national and local newspapers each year. This notice should also be published on the dedicated Skellig Michael website.

5. The fact that fatalities have occurred on the Site should be acknowledged in all promotional literature and on the standardised notice. This notice should also convey the message that if people come to Monument during the closed season, then their status changes from that of a recreational user to a trespasser, under the Occupier’s Liability Act.

6.2 **Restricting Access on Site**

At present, there are some lines of fencing on Site, especially around Christ’s Saddle. There is another fenced-off area adjacent to the Monastery enclosure, where a small OPW storage hut and a lay-down area for material are located. The fences are shown in Figure 14.
Some of those calling for physical protection on the standard route have relied on the presence of these fences as a justification for fixing ropes or guard rails along the steps. It has been used as a counter argument about the need to protect the integrity of the Site. This line of reasoning misses the point that the purpose of erecting these fences was to cordon off work areas where construction activities were ongoing from the general public, as required under the Construction Regulations 2006.

We have been asked by OPW to consider whether some form of permanent fencing should remain at Chris’s Saddle, especially that section which cordons off the extremely steep slope to the north (in the direction of the sea in the above photograph). This is where the North Steps are located and the area is very exposed to loose, overhead rock.

Our view is no, it should not. Other than those areas where fencing or some other form of enclosure is required to protect a particularly sensitive part of the monument, or the natural heritage, or where construction works are taking place, the entire Site should be left as a wild, mountain area. This is in keeping with the argument for consistency that we have already made in this Report.

As we understand OPW’s intention, the plan is to open up the South Peak Hermitage by 2011. Access to the Hermitage is very hazardous and is only suitable for those with appropriate experience. But this is also true of many other areas of Skellig Michael, and it is neither possible nor desirable to cordon off all such areas – any more than it would be to erect a fence across the Beenkeeragh Ridge in the McGillicuddy Reeks.

Byrne Ó Cléirigh, April 2010
Relevant signage to warn against the hazards would be appropriate but it would only be necessary at the foot of the standard route, at the Lower Lighthouse Road, and perhaps also at Christ’s Saddle. The following Case Law report (Struthers-Wright v Nevis Range Development Co PLC [2006] CSOH 68 4 May 2006) illustrates the extent to which signage is required.

An experienced skier, familiar with the area, was skiing from the summit plateau at Aonach Mór, near Fort William. He fell over or through a snow cornice on a ridge, sustaining fractures to both arms. He claimed that the company managing the ski area and providing the lifts and tows were in breach of the Occupier’s Liability (Scotland) Act 1960 by failing to display such care as was reasonable to see that he did not suffer injury. He suggested that signs should have warned of the danger.

The judge, Lord Turnbull, found that the claimant had failed to establish the underlying factual basis for his case. Notwithstanding his rejection of the claim on these grounds, Lord Turnbull went on to consider whether the ski company might have been liable under Occupier’s Liability. It was clear from case law that the duty imposed upon an occupier does not extend to providing protection against obvious and natural features of the landscape. Therefore, there was no duty to provide fencing, warning signs, or notices. The judge also referred to the Tomlinson v Congleton BC [2004] 1 AC 46, Brereton Heath Country Park Case.

Interestingly, Lord Turnbull went on to consider whether the ski company would have been seen to have acted reasonably in the event that they did owe a duty of care to the skier under the circumstances. Although it would have been feasible to erect signs along the ridge, a balance had to be struck. It was correct to acknowledge that the area was only used by experienced skiers and that the ski company provided literature and advice that warned of the dangers.

Lord Turnbull also accepted that there were a number of issues as to the effectiveness of warning signs placed in the snow. In particular, if skiers came to expect them, then an added danger would be introduced should such a sign be hidden by snow or blown away.

The judge also emphasized that to place warning signs at regular intervals along the summit ridge would have a significant impact upon the natural beauty and character of the landscape. To have taken this step would have constituted a disproportionate response to the risk said to exist.

(VSCG, December 2006)
6.2.1 **Recommendations**

1. No permanent fencing should be erected other than that necessary to protect sensitive areas of the monument or the natural heritage, or as is required under the Construction Regulations 2006, when works are being carried out.

2. Appropriate warning notices, similar to the one shown below, might be erected but it would not be necessary to have a proliferation of these. In our opinion, it would be sufficient to warn of the nature of the terrain on the proposed Skellig Michael website, in the information brochure (as is done already), at the foot of the South Steps and at Christ’s Saddle.

![Sample Signage](image_url)

6.3 **Protecting the Exposed Ledge**

We have already reasoned why, in our opinion, there is no particular difficulty in crossing the exposed ledge where the two fatal accidents in 2009 are reported to have occurred. We have also listed the many negative consequences if a guard rail was to be erected at this ledge (Section 3.1.5).

In both of these incidents, it has been reported that the casualties were found at the same location but we could find no definitive evidence that either fell from the ledge itself. Having inspected the location and considered the configuration of the steps at this point, and from our reading of the available evidence, our conclusion is that the initiating slip or stumble – in at least one of the

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23 (VSCG, 2005)
incidents – is more likely to have occurred on the steps immediately up-route of the ledge, as illustrated in Figure 16.

In our opinion, this is the point at which some inexperienced people may panic when they see the exposed drop to their left. They might then lose the concentration that is essential to maintain their balance at this point. We have discussed this with Mr Con Moriarty of Spórt Corrán Tuathail – the well known Irish mountaineer – who has led many groups to Skellig and is very familiar with the this specific point on the standard route. Mr Moriarty agrees with this opinion. In Figure 16, the left hand photograph gives an indication of the exposure felt by the person descending and the right hand image illustrates how difficult correct foot placement is at this point.

![FIGURE 16: STEPS IMMEDIATELY ABOVE THE LEDGE](image)

6.3.1 Recommendations

Assuming our conclusion is correct, protecting the ledge is not the answer. Instead, the steps leading immediately to the ledge on the descent route should be realigned, making them easier to negotiate. This would mean reconfiguring three or four steps at the maximum. It may mean taking away the bedrock to the left of the steps, as shown in the right hand photograph. As we understand it, this section of the route does not date from the early Christian period but was built in the 1820s when the lighthouse was under construction.

In our opinion, such a realignment would significantly reduce the hazard presented at this location.
As we have said, our opinion is that traversing the ledge does not require any specific expertise. If, despite this opinion, OPW wishes to respond to the calls for some more tangible form of protection at the exposed ledge, then an alternative to a guard rail would be to fix a steel chain to the inner wall along the ledge, using eyebolts grouted into the bedrock. An example of this technique, as employed on the Cirque du Solitude in Corsica, is shown below, in Figure 17.

**FIGURE 17: A FIXED CHAIN PROTECTING THE ROUTE ON CIRQUE DU SOLITUDE, CORSICA**

There are further examples of this type of protection to be found in other mountain areas, including Chamonix, but it should be stressed that it is usually only employed to assist mountaineers carrying heavy loads, especially on a descent. It still requires a deftness in foot placement and strength in the arms. However, on the ledge at Skellig, it would provide reassurance to anyone who might panic at the exposure to height. A chain, rather than a steel cable or a rail is preferred: steel cables can become frayed producing sharp ends that cut into the hands; rails are difficult to fix on uneven surfaces, they become slippery when wet and do not provide any flexibility as a person shifts their weight to maintain balance. A steel chain is flexible and durable, and the individual links provide excellent handgrips.

This solution is not without its drawbacks. We have already made the point that there are other, equally hazardous sections higher up and we seriously doubt if such a protective feature could be employed at these locations. It must also be acknowledged that to implement this suggestion would introduce the type of inconsistency that we have earlier advised against.
6.4 WC FACILITIES FOR RECREATIONAL USERS

In Section 5.2.6, it was noted that the absence of any WC facilities for recreational users had been assessed as being more of a risk to OPW staff than to recreational users, for whom the absence is a discomfort rather than a significant hazard. It has been put to us by some of the boat operators, and others, that the absence of a toilet may drive people off the route to find a suitable location or that it causes people to rush on the descent route so as to find a secluded place on the road. It is claimed that both of these activities add to the risks for the individuals themselves and for those whom they may try to bypass on the steps. There is a certain illogicality in the second of these assertions. If WC facilities could be provided, they could only be built at some location on the road, so people requiring the use of a WC would still have to return to the road to use it. If people are inclined to rush down the steps to the road now, building a WC on the road will not change that behaviour. And if some go off-route while they are climbing or descending the steps because they are in urgent need to defecate or urinate, they will continue to do so even if there is a WC provided on the road.

None of this is to say that WC facilities are not very desirable and would greatly improve the experience for the recreational users. We have not been convinced, however, that it is a serious matter of safety for recreational users.

We note that Mr J. O’Leary of MWL has prepared a draft report highlighting the difficulties in finding a suitable solution for Skellig Michael where there is little or no water and no location to build reed beds or locate a septic tank. The WC would have to be some form of composting facility, and the record of the existing composting WC for the 10 or so OPW staff is not encouraging. It would have to be cleaned regularly and, at weekends, there is no maintenance staff on the island. The composted sewage would have to be transported back to the mainland, at very significant cost. Even from a sustainability perspective, this is not an attractive solution.

Mr O’Leary is of the opinion that Kerry Co. Co. would be unwilling to allow any form of direct discharge into the sea. OPW personnel express the view that due to the status of the island and the seas around it as a Special Area of Conservation (SAC) and a Special Protection Area (SPA), there would be widespread objection to such a proposal.24

In our opinion, these objections should be challenged. While we acknowledge that this is not Byrne Ó Cléirigh’s core area of expertise, we remain to be convinced that the amount of raw, or partially treated sewage arising from 100 people a day, who spend two and a half hours on the island, would significantly impact on the assimilative capacity of the seas surrounding the Skellig. The irony is that when OPW personnel clean up the faeces from around their accommodation huts they have to do so with a shovel and the offending matter ends up in the sea. And if the recreational users were to use the heads provided in most, if not all, of the boats that ferry them to the island, the sewage would also end up in the sea, untreated. It is understood that the lighthouse already has such a direct discharge facility, but of course this would predate the Planning Acts or the Water Pollution Act.

24 It should be technically possible to pump seawater up to the location for a WC.

Byrne Ó Cléirigh, April 2010
6.4.1 Recommendations

Given the enormous constraints imposed by the location and the costs and logistical difficulties involved in maintaining, cleaning and emptying a composting toilet – without any assurances that it will operate effectively – the basis for objections to a direct discharge facility should be challenged.

6.5 THE LANDING PIER

Although a drowning at the landing pier has been relegated to a Low Risk category, the risk of serious injury or exposure to cold and possibly hypothermia remains.

While it is acknowledged that the competence of the ferry boat crews is a matter for another department of state, not OPW, and the risks associated with recreational users’ voyage to and from the Site is not within the scope of this Review, the risks associated with the transfer of passengers to and from the landing pier cannot be ignored. This is an interface that requires the cooperation of both OPW and the boat operators in relation to the sea and weather conditions in which it is appropriate to make this transfer. Both parties need to agree on a set of criteria to define the conditions in which it is safe to land passengers at the landing pier. We acknowledge the difficulty in reaching any firm agreement on an issue like this where there is room for subjective judgement and the experience and skill of an individual skipper would play a very large part. Nonetheless, in the interests of reducing the risks at the landing pier, it is imperative that some limits are set. These limits might be referenced to quantitative parameters such as the amplitude and frequency of the sea swell, and the force and direction of the wind.

The wearing of lifejackets by OPW personnel is a standard practice but this is not written up as a Standard Operating Procedure. The drafting of such SOPs in a Safety Manual as part of a Safety Management System is a general recommendation of this Report.

Lifejackets are not issued to recreational users when they make this transfer. It is difficult to think of any other leisure activity involving sailing or boating where participants – many of them totally inexperienced – making what can be a very difficult manoeuvre which involves placing one foot on the gunwale and another on the steps of the pier, in a swelling sea, would not be required to wear a life jacket.

6.5.1 Recommendations

1. OPW should request the permitted boat operators to propose a set of criteria for governing the safe transfer of passengers at the landing pier, to be reviewed by an independent mariner with suitable experience.
2. The matter of recreational users being required to wear lifejackets should be discussed with the boat operators and, unless there are convincing reasons for not doing so, this should be made a condition of a permit to land passengers on Skellig.

6.6 Portmagee Pier

Using the quay steps at this location carries the risk of slipping on concrete that becomes slimy due to marine growth. Kerry Co. Co is responsible for cleaning the steps and maintaining them in a safe condition. At low tide, using the ladder to carry materials on to the boat poses a risk of falling on to the boat.

6.6.1 Recommendation

1. The steps should be inspected visually before any materials or equipment is carried aboard by hand. There should be a weight limit on each individual item carried on to the boat by hand: to be determined in consultation with the boat operator.

2. A SOP prohibiting the carrying of anything except a small personal rucksack while climbing up or down the quay-wall ladder should be implemented. The practice of dropping certain objects on to the vessel should be reviewed and an appropriate limit should be set. All other materials should be loaded on to a boat by rope.

6.7 OPW Habitation on Skellig

Several additional control measures that are relevant to the Low and Very Low Risk scenarios associated with this activity are listed in the HAZIDRA Report and these need not be repeated here. Instead, we will concentrate on the recommendations that are relevant to the higher risks. These relate principally to the potential for OPW personnel to develop a serious medical condition while on the Site, with the attendant difficulty of emergency evacuation.

6.7.1 Recommendations

1. The embryonic emergency plan that is currently in place should be fully developed, tested, validated and adopted. Even if a full scale emergency exercise cannot be scheduled for some time, table-top test exercises should be carried out. It should be brought up-to-date regularly.
2. The Chief State Medical Officer should be consulted on the need for medical and psychiatric assessment before appointing new guides or members of the OPW maintenance staff who are expected to stay on the island for prolonged periods, or renewing existing contracts.

3. A person specification, identifying the personal attributes, training and experience required of OPW personnel who are expected to spend many days, or weeks on Site, in what is a very unique role, should be prepared.

4. A sufficient number of guides should be trained to WFR (Wilderness First Responder) level in first aid to ensure that there is always an OPW person with this level of training present on site. If followed, this recommendation would also improve the level of response in the case of an accident to a recreational user.

6.8 Loose Overhead Rock

Loose overhead rock presents two hazardous scenarios. One arises where recreational users accidentally dislodge rocks or stones when going off route, or deliberately throw stones from the Monastery enclosure. The critical importance of getting the message across to recreational users that their careless behaviour while on the Site can put other’s lives at risk has been emphasised in the recommendation on improving awareness and preparedness.

In the second, it is the natural dislodgement of loose rock and stones. This is especially the case at the North Steps, although as we have reported, there have been major falls of rock on to the Lower Lighthouse Road. A survey is always carried out by OPW’s specialist safety contactor before any works are commenced in areas that are threatened by loose overhead rock.

6.8.1 Recommendations

1. A survey should be carried out regularly to identify any obviously loose rock and propose a method for safely dislodging, or otherwise stabilising them. It has to be acknowledged that even conducting such a survey is, in itself, a hazardous activity which would have to be thoroughly assessed beforehand and there is no definitive way of determining if larger rocks are about to dislodge; some dislodgements are in fact flakes of bedrock. It may well be determined that the level of mitigation that could be achieved by such a survey could not be justified by the increased level of risk for those undertaking the survey.

2. The matter of some recreational users refusing to heed the guides’ warnings about stone throwing should be discussed with An Garda Síochána. It would be a simple matter for the
guides to inform the Gardaí by radio, providing them with a description of the culprit and the name of the boat they were returning on. A notification to the effect that this procedure is in place should be included in all safety notices.

6.9 FUTURE CONSERVATION WORKS

As of now, almost all of the conservation works in the current phase of the Management Plan have been carried out. There remains the works required to conserve the Old Lighthouse and its access road but there is no definitive date set for these works. These works must comply with the Construction Regulations 2006 and a Safety & Health Plan would be required. If the duration of the works is expected to be greater than 30 days, or the work content is greater than 500 person days, a Notification must be given to the Health and Safety Authority (HSA).

It is acknowledged that the requirement to comply fully with these regulations may pose particular challenges given the remoteness of Skellig and the other constraints involved in carrying out construction works there.

6.9.1 Recommendations

OPW should consult with the HSA to determine how it can meet the requirements of these Regulations. We would anticipate that the Authority would take an understanding approach in relation to the constraints under which this conservation work will have to take place.

6.10 ACCESS TO SKELLIG

In the course of our meeting with the boat operators, a serious concern, strongly expressed by most if not all, was the restrictions on the length of the ‘open season’ which extends from around mid-May to the end of September, weather permitting. Another concern was restrictions on the hours during which they are permitted to land passengers on Skellig and take them off again. Currently, this is 1000 to 1630 hours.

The principal reason put forward for extending the season was that if the permit season was to match the season for which the boats are licensed to carry passengers (April to October inclusive) it would avoid congestion in the mid summer months, thereby improving safety on the Site. To us, there is a very tenuous link between providing a service in April or October in order to reduce congestion in June or July. People plan their holidays and short breaks on the basis of far more complex and personal reasons and those who plan to visit south Kerry in June, July or August are...
unlikely to reschedule to April or October just because the service to Skellig might be somewhat congested when they plan to visit. Besides, as the boat operators accurately point out, it is the vagaries of the weather that most disrupts the tourists’ plans and lengthening the season will not change this.

We have no doubt that a longer season would provide better commercial opportunities for the boat operators and that this may well be a valid reason for seeking such an extension; but we also understand the very considerable logistical constraints there would be placed on OPW if the Site was to be opened to ferry services any earlier than is done already. When the OPW personnel leave Skellig Michael at the end of September each year, it is necessary to decommission the rather basic facilities that make their accommodation habitable. It is also essential to storm proof the accommodation itself, insofar as this is possible. Other ‘mothballing’ activities such as the taking down of signs and protective features at the landing pier are also carried out. Consequently, all of this work must be carried out in reverse before the Site can again be made habitable for OPW personnel again and ready to receive the first recreational users the following year. This may involve the repair of storm damage caused over the winter months. This ‘re-commissioning’ takes time and can only commence when the weather and sea conditions are suitable. The very personnel who carry out this work must, themselves, be sustained on the Site and OPW had a duty of care towards its employees under The Health, Safety and Welfare at Work Act. It is inevitable that preparing the Site each year, in compliance with this obligation, will eat into the time available for bringing recreational users to Skellig Michael.

Because we remain to be convinced that lengthening the season would have any significant impact on reducing risk for recreational users on Skellig Michael, we consider that this is primarily a commercial issue and as such is a matter for discussion directly between the boat operators and OPW. We will not comment on this proposal further.

In respect of the other suggestion: lengthening the day; we agree that this would indeed help to avoid congestion and that this would have a beneficial impact on safety by reducing the numbers on the South Steps at any one time and providing more opportunity for the guides – suitably reinforced as recommended below in sub-section 6.11 – to advise and monitor those ascending and descending the route to the Monastery. It would also reduce the need for people to rush their visits. Several of those who are intimately familiar with the Site have reported to us that this is a regular occurrence and this certainly increases the risk of a fall, especially while descending.

Of course, if the length of the day was to be extended, the boat operators would have to avail of the additional time for this measure to have any safety benefit. At present, the earliest permitted time of arrival is 1000 hours, yet any advertising we have seen for boat services states that 1000 is the earliest sailing time. Since it takes about one hour for the journey, the first passengers do not arrive until 1100. And as the boat operators have informed us, many of their passengers are brought to the departure harbours by tour bus companies who want their passengers delivered back to the mainland by a specific time in order to meet their own schedules. It may also be unrealistic to commence sailing much before 1000, given that many visitors might have to travel some distance from their place of accommodation beforehand.
Nonetheless, it is our opinion that this is a worthwhile proposal, but it would impact on the routine and working day of the guides and the implications of this must be given consideration.

Another proposal put to us by individual boat operators, following our meeting with the group was that each boat operator be permitted to make a specific number of landings each season. If this were the case, the boat operators could compensate for journeys cancelled due to poor weather by making a second trip per day when the weather improves. Here again, we remain to be convinced as to how this would improve safety, indeed the reverse might well be the case, increasing congestion on fine days.

Allied to the proposal to lengthen the season is the ferrying of passengers to the Site during the ‘closed season’ when no OPW personnel are present. To a lesser extent, sail boat crews, kayakers and divers also land during the closed season. It is not practicable for OPW to physically close off the Site: any gate close to the pier would be swept away by the sea and with no presence on the Site, it could easily be forced. One of the fatalities in 2010, the death of Mr Gaughan, occurred during the closed season and while it is not possible to say that this incident would not have occurred if OPW personnel had been on Site, there is no doubt that whenever such an accident occurs and there is no OPW presence, the implementation of the emergency plan will not be as efficient as would otherwise be the case. In addition, proposals are made later on, in Section 6.11 on reinforcing the guide service with personnel who have mountain leadership skills in order to better monitor the progress of people who may find the ascent and descent challenging and this additional service could only be provided when the Site is officially open.

There is also one other feature of access to Skellig that seriously restricts OPW’s capacity to effectively monitor those intending to visit the Monument and to ensure they are appropriately aware and prepared. This is the multiplicity of ports from where the ferry services operate: Portmagee, Knightstown, Ballinskelligs and Caherdaniel. If all departures could be arranged from one port, it would be possible to provide an induction centre where all intending passengers could be given an appropriate safety briefing. Portmagee would be a very convenient location because the nearby Skellig Experience facility on Valencia Island could become such a centre. With the complexity of the stakeholder interests in providing ferry services, it does not, however, appear likely that a resolution to this difficulty will be found in the short term. This is regrettable because, in our opinion, providing this type of facility would reduce the risks significantly.

6.10.1 Recommendations

1. OPW should examine the option of extending the number of hours during which the permitted boats may land passengers and take them off again, while allowing a minimum of two-and-half-hours for each visit. The implications of such an extension on the guide service must also be considered.

2. The Permit System whereby a specific number of boats are allowed to land passengers on the Site is the only control OPW has on the numbers visiting the Monument and to ensure
that the appropriate services are available should an emergency arise. Although it has been in place since 1995 and it has been effective in controlling numbers, in recent years a number of issues of contention have arisen between OPW and the boat operators which have impacted on its effectiveness. It is imperative that this system is fully reinstated.

3. OPW should commit itself to seeking a resolution of the problem concerning the multiplicity of departure points to the Site, with all the stakeholders involved, so that a single centre for the safe induction of visitors can be established on the mainland.

6.11 The Guide Service

This service is provided throughout a season that extends from about mid-May through June, July, August, and September. The primary role of the guide service is to protect the monument; the secondary role is to interpret the Site for recreational users. There are normally three guides on site at any one time and this is the number required to carry out these two primary functions. Guides also monitor the recreational users on site, and they note the arrival and departure of boats from the harbour, insofar as they can.

It is unfortunate that the term guide, which is the standard description given to people who fulfil this role on the other National Monument Sites managed by OPW, can convey a completely different meaning, especially to people from the European continent or North America. When used in the context of wild and rugged terrain – a precipitous rock as it is referred to in the OPW Visitor’s Guide - it could well lead some people to believe that the role involves guiding them up and down the steps to the Monastery, like a Mountain Guide does.

It is not feasible, given the random pattern of arrival of boats and their passengers, to have a guide accompanying small groups up and down the steps. Even if the arrivals could be scheduled with any regularity, and more guides were recruited, it would not be possible to accommodate them.

In 2009, for a short time before the Site was closed for winter, and following the second fatal incident, a guide was always present at the bottom of the South Steps to draw attention to the safety notices and to point out the hazards ahead. Provided the recommendations for improving awareness of the hazards and risks that are made elsewhere in this Report are implemented, it would not be necessary to continue this practice. However, it would be a significant improvement if there was at least one person on the Site, throughout the season, who was a qualified Mountain Leader or European Mountain Leader grade (the latter is trained in handling groups on steep ground and on non-glaciated, snow-covered ground whereas the former has a lower level of training on steep ground). While only one such person could not directly handle all the groups, he/she could generate an attitude of safe and controlled progress up and down steps, keep an eye on groups, particularly those which might need help or who might cause difficulty and break up groups if numbers using steps simultaneously became too great. Controlling pace and behaviour would be very conducive to safety. All Mountain Leaders are suitably trained in wilderness first aid. A well-chosen person could have a significant impact on the safety of recreational users. In
turn, the OPW guides could be trained, not necessarily to a very high degree, by the mountain leader. The training would consist of pacing, foot placing, watching for health and physical problems.

6.11.1 Recommendations

1. A revised job description, specific to the role and functions required of a guide on Skellig Michael should be drawn up. Those who currently hold posts as guides should be consulted. Possible changes to the roles and responsibilities arising out of the recommendations in this Report should be identified. This should be done in tandem with recommendation 3 (subsection 6.7) on preparing a person specification. This may lead to a reallocation of resources.

2. It should be made clear in the promotional literature that the primary role of the existing guides to protect the Monument and to interpret the heritage. It is not their function to lead people up and down the route to the Monastery.

3. Efforts should be made to recruit two people with Mountain Leader qualifications (one per shift). This may be very difficult to put into practice: it may not be possible to attract two suitably qualified people because, of their nature, this type of person looks for a more challenging lifestyle. If they could travel out and back on the ferries on a daily basis, this might make the role more attractive and it would help solve the accommodation problem.

4. Irrespective of the success with the previous recommendation, the guides should be given some preliminary training in instructing inexperienced arrivals on how to negotiate the ascent and descent.

6.12 General Recommendations

In our opinion, OPW’s management of the Site from a safety perspective is admirable, despite the incidents last year. In the circumstances, the measures in place for safeguarding the health and safety of OPW personnel and controlling the risks from conservation or infrastructural Works to recreational users and to the natural heritage are impressive and it is difficult for anyone who is not intimately familiar with the Site or who has not studied the operations in detail to fully comprehend the very significant logistical constraints involved. There are very few degrees of freedom in reaching solutions to what are quite complex problems. Nonetheless, there are opportunities for improving the safety management by reducing risk further and by ensuring that existing Low and Very Low Risks remain at these levels. In particular, it is critically important to ensure that those measures that are already in place are maintained in place and, where new controls involving low
cost, or none, have been identified, these should be implemented without delay. In many cases, such controls involve simply writing up what is already standard operating practice into a formal procedure so that, whenever experienced personnel are replaced by those less experienced, this change can be effectively managed by referring to the accumulated corporate wisdom within OPW. Apart from this benefit, it is also very advisable to maintain written records of procedures in order to be able to demonstrate that best practice was being followed, in case of any future investigations.

6.12.1 Recommendations

1. The Hazard Identification and Risk Assessment that was conducted towards the end of January was a very useful exercise. Several recommendations for additional control measures were identified. While many of these apply to Low or Very Low risks, and have not therefore been discussed in the Report, it is very necessary to examine these in detail and to follow through where they are relevant. Risk Assessment is a dynamic process. OPW must now appoint an appropriate person to take ‘ownership’ of the HAZIDRA model and continue the process.

2. A safety Management System to BS 18000 or similar standard should be implemented. This would need to be tailored to include the management of risk for both OPW personnel and recreational users. A Safety Management Plan would be an essential element of such a system.

3. Many of our recommendations refer to notifying people of the hazards and risks involved and advising them of the precautions they should take. Rather than having an ugly and unsightly proliferation of individual signs, we recommend that a standardised notice be designed using graphical images and a minimum of words. A checklist of all the notices, cautions etc. which we have suggested is provided in Appendix 2. OPW may wish to add to this list.

          oooOOOooo
REFERENCES

Casey, Coroner for South & East Kerry. (July 2009). Inquest File on Mr. Joseph Gaughan (deceased).

Barrett. (February 2010). Private correspondence Byrne Ó Cléirigh with Mr. Mike Barrett, BRM Consultancy Services Ltd, not published.


Casey, Coroner for South & East Kerry. (February 2010). Inquest File on Ms Rita C. Spooner (Desceased).


VSCG. (December 2006). Aonach Mór Skiing Case.

APPENDIX 1: EXTRACT FROM HAZIDRA PROCEDURE

FREQUENCY RATINGS USED IN THE HAZIDRA EXERCISE

<table>
<thead>
<tr>
<th>Rating</th>
<th>Descriptor</th>
<th>Frequency Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Remote</td>
<td>Less than once in 100 years</td>
</tr>
<tr>
<td>2</td>
<td>Very unlikely</td>
<td>Between once in 100 years and once in 50 years</td>
</tr>
<tr>
<td>3</td>
<td>Unlikely</td>
<td>Between once in 50 years and once in 5 years</td>
</tr>
<tr>
<td>4</td>
<td>Likely</td>
<td>Between an once in 5 years and once every six months</td>
</tr>
<tr>
<td>5</td>
<td>Very Likely</td>
<td>At least once every six months</td>
</tr>
</tbody>
</table>

SEVERITY OF HARM OR LOSS TO PEOPLE

<table>
<thead>
<tr>
<th>Rating</th>
<th>Descriptor</th>
<th>Severity of Harm to People</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Slight</td>
<td>On Site First Aid is adequate; Minor discomfort in working conditions or accommodation (e.g. temperature, odour, noise).</td>
</tr>
<tr>
<td>2</td>
<td>Minor</td>
<td>Medical treatment of injury required off Site; Referral to off-site medical practice / GP. No need for prompt or emergency evacuation.</td>
</tr>
<tr>
<td>3</td>
<td>Moderate</td>
<td>Lost time injury or illness without permanent disability; Restricted work case; Serious deviations in working conditions (e.g. temperature, odour, noise). Prompt evacuation required.</td>
</tr>
<tr>
<td>4</td>
<td>Serious</td>
<td>Serious lost time injury or illness case; Major bone fracture; Amputation of body part; Significant 2nd or 3rd degree burns; Injury requiring hospitalisation of 3 days or more; Accident leading to permanent disability. Emergency evacuation required.</td>
</tr>
<tr>
<td>5</td>
<td>Extreme</td>
<td>Fatality of employee or non-employee in conditions that are related to company activity; Critical injuries to 3 or more persons.</td>
</tr>
</tbody>
</table>
Emergency evacuation required.

<table>
<thead>
<tr>
<th>Rating</th>
<th>Descriptor</th>
<th>Severity of Harm to Cultural Heritage</th>
</tr>
</thead>
</table>
| 1      | Slight     | **Cultural:** Damage which can be repaired through the normal site maintenance programme. No real impact on the monument or visitor access.  
**Natural:** An impact which causes changes in the character of the environment which are not significant and profound. The duration of the impact is 1 year or less. |
| 2      | Minor      | **Cultural:** Specific small-scale damage which can be repaired using existing infrastructure on the island. No real impact to the monument with minor impact to visitor access.  
**Natural:** An impact which causes changes in the character of the environment which are not significant and profound. The duration of the impact is 1 to 7 years. |
| 3      | Moderate    | **Cultural:** Damage to an element necessitating mainland-based support with possible specialist intervention or input. Moderate budgetary impact. Involves closure of part of the Site or limited access in short-term. Minor impact on authenticity/integrity of the Site. Moderate impact for visitors.  
**Natural:** An impact which, by its magnitude, duration or intensity, alters and important aspect of the environment. The duration of the impact is 1 to 7 years. |
| 4      | Serious     | **Cultural:** Serious structural damage requiring major planning and intervention with outside specialist support. Additional serious budgetary impact. Closure of all or part of monument in short-medium term. Partial impact on the authenticity/integrity of the Site. Serious impact to visitor access.  
**Natural:** An impact which, by its magnitude, duration or intensity, alters and important aspect of the environment. The duration of the impact is 7 to 20 years. |
| 5      | Extreme     | **Cultural:** Extreme infrastructural damage requiring a major input from a broad-ranging team of specialists. Major budgetary implication. Closure of all or part of the Site for medium-long term. Loss of some authenticity/integrity with possible impact on the Outstanding Universal Value of the Site. Closure of the island to visitors for long term.  
**Natural:** An impact which obliterates all previous characteristics. The impact is greater than 20 years. |
## Definition of Risk Levels

<table>
<thead>
<tr>
<th>Risk Ratings</th>
<th>Risk Level</th>
<th>Action and Timetables</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 to 4</td>
<td>Very Low Risk</td>
<td>These risks are acceptable. No further action is necessary other than to ensure that controls are maintained.</td>
</tr>
<tr>
<td>5 to 8</td>
<td>Low Risk</td>
<td>No additional controls are required unless they can be implemented at very low cost (in terms of time, money and effort). Actions to further reduce these risks are assigned low priority. Arrangements should be made to ensure that the controls are maintained. Where a low risk is attributed to a scenario in which the consequences are Serious (Severity Rating 4), further assessments is necessary to increase confidence in the actual likelihood of harm or loss.</td>
</tr>
<tr>
<td>9 to 10</td>
<td>Medium Risk</td>
<td>Consideration should be given as to whether the risks can be lowered, but the costs of additional risk reduction measures should be taken into account. The risk reduction measures should be implemented within a defined time period. Arrangements should be made to ensure that the controls are maintained, particularly if the risk levels are associated with a scenario in which the consequences Serious or Extreme (Severity Rating 4 or 5). In such cases, further assessments are necessary to increase confidence in the actual likelihood of harm or loss.</td>
</tr>
<tr>
<td>12 to 15</td>
<td>High Risk</td>
<td>If the activity is new, it should not be started until the risk has been reduced to as low as reasonably practicable. If the activity is an existing one, substantial efforts should be made to reduce the risk. Risk reduction measures should be implemented urgently within a defined time period and it might be necessary to consider suspending or restricting the activity, or to apply interim risk controls, until this has been completed. Considerable resources might have to be allocated to additional controls. Arrangements should be made to ensure that the controls are maintained particularly if the risk levels are associated with a scenario in which the consequences Serious or Extreme (Severity Rating 4 or 5). In such cases, further assessments are necessary to increase confidence in the actual likelihood of harm or loss.</td>
</tr>
<tr>
<td>16 to 25</td>
<td>Very High Risk</td>
<td>These risks are unacceptable. If the activity is new, it should not be started until the risk has been reduced. If the activity is a current one, substantial improvements in risk controls are necessary so that the risk is reduced to an acceptable level. The work activity should be halted until risk controls are implemented that reduce the risks so that it is no longer very high. If it is not possible to reduce risk the activity should remain prohibited.</td>
</tr>
</tbody>
</table>
APPENDIX 2: CHECKLIST FOR STANDARDISED NOTICE

The following is a checklist of those cautions and advices that should be notified to the public, in addition to the information already provided in the existing Visitor’s Guide. OPW may wish to add additional material.

The Hazardous Terrain

- The terrain includes sheer cliffs and steep, uneven ground.
- Appropriate footwear must be worn.
- The Lower Lighthouse Road and the standard route are exposed to loose, overhead rock.
- Careful foot placement is essential on the standard route.
- The carrying of anything in the hand is not advised, even on the standard route, except for a suitable walking stick, everything else should be carried in a rucksack leaving the hands free for maintaining balance.
- If there is congestion on the standard route, the correct protocol is to give way to the person who is ascending.
- Expect severe exposure to height and some exposure to falling rocks, even on the standard route.
- The standard route may be subject to high winds.
- Underfoot conditions on the standard route can be very uneven and may become slippery.
- Fatalities have occurred on the standard route.
- Access to the South Peak is only advised for those with rock climbing expertise.
- The ground between Christ’s Saddle and the North Steps falls away sharply and the North Steps themselves are severely exposed to loose, overhead rock.
- Straying from the standard route involves a high risk of a falling or tumbling and the result could be serious injury or death.
- On the standard route, give way to those who are descending.

The Guide Service

- The guides’ function is primarily to protect the monument and to interpret the heritage.
- They do not guide visitors up and down the standard route (to be amended if Recommendation 3 of Section 6.11.1 is successfully followed).
Visitor Behaviour

- Leaving the standard route may cause the dislodging of loose rock and stones, thereby endangering the lives of those below.
- Picking up and throwing loose stones damages the Monument and endangers the lives of those below.
- Climbing on dry stone walls is forbidden. If a wall were to collapse, peoples’ lives would be endangered, especially those below; it also damages the Monument.
- Offenders will be reported to the Gardaí.

The Landing Pier

- Transferring between a boat and the Landing Pier can be hazardous in certain sea conditions; there is a risk of serious injury.
- A reference to the wearing of a lifejacket should also be made, pending the outcome of recommendation 1 of Section 6.5.1