A83 Rest and Be Thankful

LTS EIAR VOLUME 4, APPENDIX 18.3 - RISK RECORD

Transport Scotland

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A18-3. Risk Record for Screened in Major Events

A18-3.1.1. Table A18-3.1 is a record of all potential major events considered as part of this assessment. The phases are indicated in the table as “C” for construction and “O” for operation (including maintenance (“M”)).

Table A18-3.1 Risk Record for Screening Major Event 1

Risk Record Entry Number	Major Event Category	Risk Event Type	Section of Proposed Scheme	Hazard Description	Applicable Phases (Construction, Operation, Maintenance)	Risk Description	Hazard Sources and/or Pathways	Documentation in which the Event is/will be Addressed	Reasonable Worst Consequence if Event did Occur and Receptor(s)	Air Quality	Climate	People and Communities	Biodiversity	Cultural Heritage	Geology and Soils	Landscape and Visual	Noise and Vibration	Transport	Material Resources	Road Drainage and the Water Environment
1	Natural Hazards: Geophysical	Ground collapse	Route wide	Landslides	C	Construction works cause ground movement leading to a landslide into the construction working area.	Unstable ground conditions.	CDM risk register. Geotechnical report.	Death and / or injury to construction workers.	n/a	n/a	X	n/a	n/a	X	n/a	n/a	n/a	n/a	n/a

Mitigation - Ground investigations to be undertaken to determine the ground conditions and understand the areas of site that are at greatest risk from instability. The construction contractor will plan the works and apply appropriate controls to mitigate potential instability (e.g. top-down excavations, installation of slope stabilisation systems). Use of slope monitoring systems to help identify ground movements in advance of significant events. Existing debris flow and rockfall fences and catchpits upslope of the A83, which will help retain landslide events. Additional ones are to be installed as part of the scheme.

Could this constitute a Major Event? – No. Justification - The reasonable worst consequence of this event does not meet the criteria of a major event. The only potential receptors of harm are construction workers.

Is this ALARP with Existing Mitigation – N/A. Justification - Not identified as a potential major event.

Table A18-3.2 Risk Record for Screening Major Event 2

Risk Record Entry Number	Major Event Category	Risk Event Type	Section of Proposed Scheme	Hazard Description	Applicable Phases (Construction, Operation, Maintenance)	Risk Description	Hazard Sources and/or Pathways	Documentation in which the Event is/will be Addressed	Reasonable Worst Consequence if Event did Occur and Receptor(s)	Air Quality	Climate	People and Communities	Biodiversity	Cultural Heritage	Geology and Soils	Landscape and Visual	Noise and Vibration	Transport	Material Resources	Road Drainage and the Water Environment
2	Natural Hazards: Geophysical	Harm to people	Route wide	Landslides	C	Construction works cause ground movement leading to a landslide onto the OMR.	Unstable ground conditions.	CDM risk register. Geotechnical report.	Death and / or injury to construction workers. Death and / or injury to members of the public.	n/a	n/a	X	n/a	n/a	X	n/a	n/a	n/a	n/a	n/a

Mitigation - Ground investigations to be undertaken to determine the ground conditions and understand the areas of site that are at greatest risk from instability. The construction contractor will apply appropriate controls to mitigate potential instability. The alignment of the LTS scheme has been designed to minimise the works on the downslope side of the A83 and thereby will minimise the risk of ground movement and consequent landslides affecting the OMR. Re-profiling of watercourses between the A83 and OMR, which are at risk of instability, to minimise the risk of ground movements.

Existing geotechnical measures (e.g. soil nails, rock blankets, retaining walls) installed to stabilise areas immediately downslope of the A83. Should a landslide occur, there is an existing debris flow barrier to mitigate the risk of land-slipped material affecting the OMR. Additional debris flow barriers are to be constructed as part of the MTS scheme.

Could this constitute a Major Event? – Yes. Justification - Could cause loss of life or permanent injury to multiple members of the public.

Is this ALARP with Existing Mitigation – Yes. Justification - Considered to be ALARP if all mitigation measures outlined are correctly implemented.

Table A18-3.3 Risk Record for Screening Major Event 3

Risk Record Entry Number	Major Event Category	Risk Event Type	Section of Proposed Scheme	Hazard Description	Applicable Phases (Construction, Operation, Maintenance)	Risk Description	Hazard Sources and/or Pathways	Documentation in which the Event is/will be Addressed	Reasonable Worst Consequence if Event did Occur and Receptor(s)	Air Quality	Climate	People and Communities	Biodiversity	Cultural Heritage	Geology and Soils	Landscape and Visual	Noise and Vibration	Transport	Material Resources	Road Drainage and the Water Environment
3	Natural Hazards: Geophysical	Harm to people	Route wide	Landslides	O, M	Adverse weather causes ground movement leading to a landslide onto the A83.	Heavy rain triggering landslide onto the carriageway.	Geotechnical report. Ground investigation will inform the design of suitable earthworks.	Death and / or injury to members of the public.	n/a	n/a	X	n/a	n/a	X	n/a	n/a	n/a	n/a	n/a

Mitigation - Existing debris flow and rockfall fences and catchpits upslope of the A83. Design of the scheme includes a debris flow shelter, a debris flow protection wall and associated catchpits in the areas at high risk of landslides. Site specific landslide management plan to manage the risk to road users. Mitigation measures within this plan include: site-specific weather forecasts; real-time rainfall monitoring; slope inspections; and landslide patrols. Remote monitoring instrumentation to be trialled (and if successful adopted) to providing pre-cursor information on landslide events.

Could this constitute a Major Event? - Yes. Justification - Could cause loss of life or permanent injury to multiple members of the public.

Is this ALARP with Existing Mitigation – Yes. Justification - Considered to be ALARP if all mitigation measures outlined are correctly implemented.

Table A18-3.4 Risk Record for Screening Major Event 4

Risk Record Entry Number	Major Event Category	Risk Event Type	Section of Proposed Scheme	Hazard Description	Applicable Phases (Construction, Operation, Maintenance)	Risk Description	Hazard Sources and/or Pathways	Documentation in which the Event is/will be Addressed	Reasonable Worst Consequence if Event did Occur and Receptor(s)	Air Quality	Climate	People and Communities	Biodiversity	Cultural Heritage	Geology and Soils	Landscape and Visual	Noise and Vibration	Transport	Material Resources	Road Drainage and the Water Environment
4	Natural Hazards: Hydrology	Extreme weather (flood)	Southern section crossing/adjacent to Croe Water	Fluvial flooding associated with Croe Water.	C	Flooding of the construction site.	Flooding of Croe Water.	CDM risk register. Flood risk assessment (Appendix A19.6).	Nuisance only, construction works may have to be temporarily suspended.	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	X

Mitigation - Implementation of a Construction Environmental Management Plan (CEMP) by the construction contractor. The CEMP will include a Flood Response Plan which will set out the mitigation measures to be implemented, (e.g. checking for flood alerts, monitoring river levels, installation of temporary drainage systems, withdrawal from works close to or within the water features should flooding be predicted, where practicable plant and materials will be stored in areas outside the functional floodplain, in addition, where practicable haul routes will be located out of the functional floodplain).

Could this constitute a Major Event? – No. Justification - The reasonable worst consequence of this event does not meet the criteria of a major event. Nuisance only as construction works may have to be temporarily suspended.

Is this ALARP with Existing Mitigation – N/A. Justification - Not identified as a potential major event.

Table A18-3.5 Risk Record for Screening Major Event 5

Risk Record Entry Number	Major Event Category	Risk Event Type	Section of Proposed Scheme	Hazard Description	Applicable Phases (Construction, Operation, Maintenance)	Risk Description	Hazard Sources and/or Pathways	Documentation in which the Event is/will be Addressed	Reasonable Worst Consequence if Event did Occur and Receptor(s)	Air Quality	Climate	People and Communities	Biodiversity	Cultural Heritage	Geology and Soils	Landscape and Visual	Noise and Vibration	Transport	Material Resources	Road Drainage and the Water Environment
5	Natural Hazards: Hydrology	Extreme weather (flood)	Southern section crossing/adjacent to Croe Water	Fluvial flooding associated with Croe Water.	O, M	Flooding leading to damage to infrastructure and deterioration of materials (e.g. scouring and erosion of embankments).	Flood water from Croe Water encroaches onto the highway.	Flood risk assessment (Appendix A19.6). Highway maintenance safety inspection policy.	Flooding of the road leading to a road traffic accident.	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	X

Mitigation - The upgrades to the road have been designed to modern safety standards and include additional drainage features such as a SuDS (sustainable urban drainage system design) pond to reduce the potential for standing water on the road. Routine inspections and preventative maintenance will be carried out throughout the lifetime of the scheme.

Could this constitute a Major Event? - Yes. Justification - Could cause loss of life or permanent injury to multiple members of the public.

Is this ALARP with Existing Mitigation – Yes. Justification - Considered to be ALARP if all mitigation measures outlined are correctly implemented.

Table A18-3.6 Risk Record for Screening Major Event 6

Risk Record Entry Number	Major Event Category	Risk Event Type	Section of Proposed Scheme	Hazard Description	Applicable Phases (Construction, Operation, Maintenance)	Risk Description	Hazard Sources and/or Pathways	Documentation in which the Event is/will be Addressed	Reasonable Worst Consequence if Event did Occur and Receptor(s)	Air Quality	Climate	People and Communities	Biodiversity	Cultural Heritage	Geology and Soils	Landscape and Visual	Noise and Vibration	Transport	Material Resources	Road Drainage and the Water Environment
6	Natural Hazards: Hydrology	Extreme weather (flood)	Route wide	Surface water flooding.	C	Flooding of the construction site.	Extreme rainfall.	CDM risk register. Flood risk assessment (Appendix A19.6).	Nuisance only, construction works may have to be temporarily suspended.	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	X

Mitigation - Implementation of a Construction Environmental Management Plan (CEMP) by the construction contractor. The CEMP will include a Flood Response Plan which will set out the mitigation measures to be implemented, (e.g. checking for flood alerts, monitoring river levels, installation of temporary drainage systems, withdrawal from works close to or within the water features should flooding be predicted, where practicable plant and materials will be stored in areas outside the functional floodplain, in addition, where practicable haul routes will be located out of the functional floodplain).

Could this constitute a Major Event? – No. Justification - The reasonable worst consequence of this event does not meet the criteria of a major event. Nuisance only as construction works may have to be temporarily suspended.

Is this ALARP with Existing Mitigation – N/A. Justification - Not identified as a potential major event.

Table A18-3.7 Risk Record for Screening Major Event 7

Risk Record Entry Number	Major Event Category	Risk Event Type	Section of Proposed Scheme	Hazard Description	Applicable Phases (Construction, Operation, Maintenance)	Risk Description	Hazard Sources and/or Pathways	Documentation in which the Event is/will be Addressed	Reasonable Worst Consequence if Event did Occur and Receptor(s)	Air Quality	Climate	People and Communities	Biodiversity	Cultural Heritage	Geology and Soils	Landscape and Visual	Noise and Vibration	Transport	Material Resources	Road Drainage and the Water Environment
7	Natural	Extreme weather (flood)	Route wide	Surface water flooding	O, M	Flooding leading to damage to infrastructure and deterioration of materials (e.g. scouring and erosion of embankments).	Flood water overwhelming the drainage system.	Flood risk assessment (Appendix A19.6). Highway maintenance safety inspection policy.	Flooding of the road leading to a road traffic accident.	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	X

Mitigation - The upgrades to the road have been designed to modern safety standards and include additional drainage features such as a SuDS pond. All flows that originate on the hillside above the A83, will spill into the catchpit that is located upslope of the debris flow shelter and debris flow wall. The water in the catchpit will flow into a culvert under the A83 and towards a newly designed channel. The drainage system has been designed to withstand a one in 200 year flood event plus climate change.

Could this constitute a Major Event? - Yes. Justification - Could cause loss of life or permanent injury to multiple members of the public.

Is this ALARP with Existing Mitigation – Yes. Justification - Considered to be ALARP if all mitigation measures outlined are correctly implemented.