



BAIÃO
DESTINO
SUSTENTÁVEL


EARTHCHECK
SILVER CERTIFIED

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BAIÃO SUSTAINABLE TOURIST DESTINATION

Risk Assessment 2025

FRAMEWORK

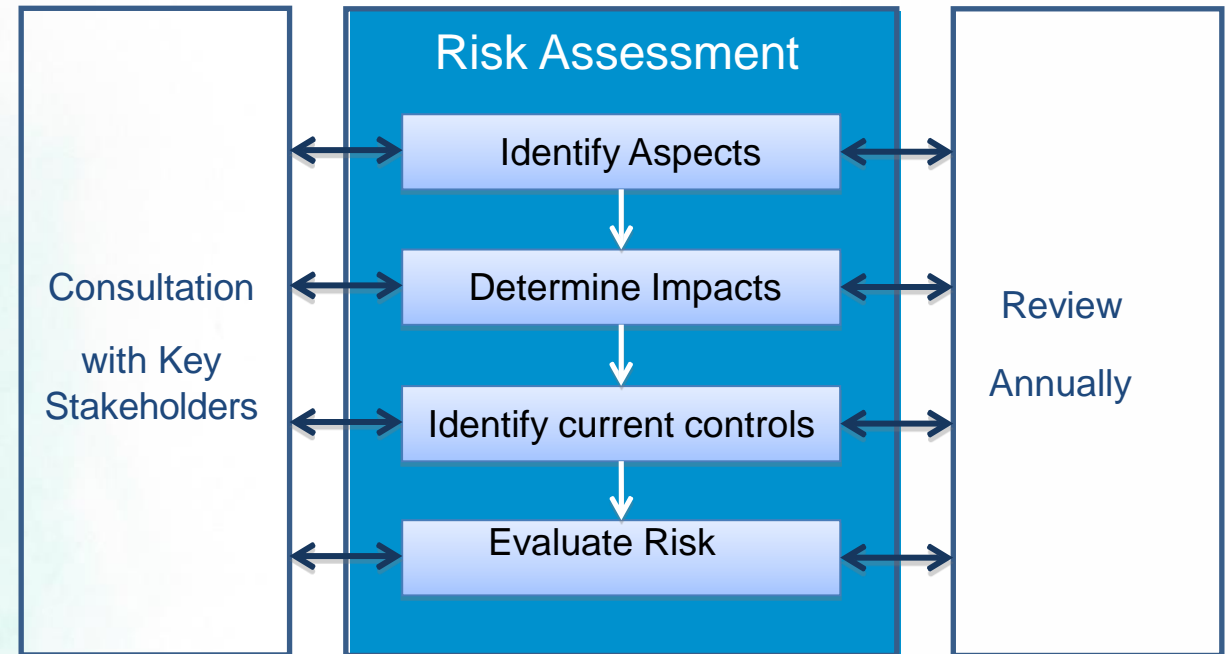
The EarthCheck Destination Standard states: *"The Destination shall identify the level of actual and/or potential risks of planned, accidental and emergency situations – natural and man-made, in relation to the Destination's scope"*

This Risk Assessment incorporates the 12 Key Performance Areas:

1. Energy efficiency, conservation and management
2. Greenhouse gas emissions
3. Air quality protection and noise control
4. Management of freshwater resources
5. Waste water management, drainage and streams
6. Ecosystem conservation and management
7. Land use planning and development
8. Transport
9. Solid Waste Management
10. Management of environmentally harmful substances
11. Cultural and Social Management
12. Economic Management

METHODOLOGY

1. Identify actual and/or potential impacts with regards to aspects;
2. Define categories representing the severity of actual and/or potential impacts (Table 1);
3. Define categories representing the likelihood of waste impacts (Table 2);
4. Define categories representing the risk evaluation (Table 3);
5. Determine the severity of potential/and or actual impacts and assign each to a severity category;
6. Determine the likelihood of potential/and or actual impacts and assign each to a likelihood category;
7. Evaluate the risk by multiplying the severity and likelihood to get the risk level.



METHODOLOGY

Table 1: Definition of the Severity degrees

Category	Definition
1	Catastrophic: Widespread, irreparable environmental, cultural, social and/or economic damage; loss of human life or long-term human health effects; national attention; serious litigation
2	Major: Widespread, medium to long term impact; serious human health impacts; state-wide or national attention; major breach of legal requirements; major disruption to operations; Destination's reputation badly tarnished.
3	Medium: Localized medium to long term impact; moderate contribution to global warming; moderate human health impacts requiring medical treatment; regional media attention; moderate breach of legal requirements with fine.
4	Minor: Localized short to medium term impact; minor contribution to global warming; minor and reversible human health impacts treatable with first aid; negative publicity from local media; minor breach of legal requirements.
5	Limited impact to a local area but no long-term effects; concern or complaints from neighbors; no injury to people; minor technical nonconformity but no legal nonconformity.

METHODOLOGY

Table 2: Definition of the likelihood/probability degrees

Category	Definition
1	Certain/Daily: Impact is expected to occur in most circumstances or will occur on a daily basis.
2	Likely/Weekly: Impact will probably occur in most instances.
3	Possible/Monthly: Impact could occur or will occur on a monthly basis.
4	Unlikely/Annually: Impact could occur but is not expected or will occur annually.
5	Rare: Impact would occur only in exceptional circumstances.

METHODOLOGY

Table 3: Risk Evaluation Matrix

		Severity				
		1	2	3	4	5
Likelihood	1	1	2	3	4	5
	2	2	4	6	8	10
	3	3	6	9	16	15
	4	4	8	12	32	20
	5	5	10	15	40	25

Evaluation
Severe
Extreme
High
Medium
Low

The Risk Assessment Matrix on the following pages provides an overview of Baião Municipality’s risk assessment, including strategies to mitigate and impact potential and/or actual impacts with regards to the 12 Key Performance Areas of the EarthCheck Destination Standard.

RISK ASSESSMENT MATRIX

Aspect	Potential Impact(s)	Likelihood	Severity & Reversibility of Impact	Risk Evaluation	Risk Minimization/ Mitigation Strategy
Energy efficiency, conservation, and management					
Energy efficiency, conservation, and management	Depletion of natural energy resources through electricity consumption.	4	5	20 Low	<ul style="list-style-type: none"> ✓ Energy conservation program in place for residents and visitors, through the implementation of LED technology in public lighting ✓ National policies to support and encourage the use of natural lighting, solar panels and thermal insulation system ✓ Use of wind power for electricity production ✓ Use of biomass for an energy production plant ✓ Encourage sustainable mobility, such as electric vehicles, bicycles, and public transport ✓ Actions to promote energy efficiency for tourist activities and community ✓ Involvement of school students in adopting practices related to energy efficiency
Greenhouse Gas Emissions					
Greenhouse Gas Emissions	Potential ozone depleting substances	3	3	8 High	<ul style="list-style-type: none"> ✓ Distribution of trees to local populations and planting actions with school students and volunteers to achieve carbon sequestration ✓ Implement an environmental education program on the European and national commitment to achieve carbon neutrality - EMEA ✓ Construction of several pedestrian paths and requalification of roads, contributing to the improvement of accessibility, the promotion of healthy living habits and the reduction of CO2 emissions ✓ Implementation of the recommendations and measures defined in the Intermunicipal Plan for Adaptation to Climate Change (PIAAC) ✓ Implementation of the Municipal Climate Action Plan
	Global warming and climate change	3	3	8 High	

RISK ASSESSMENT MATRIX

Aspect	Potential Impact(s)	Likelihood	Severity & Reversibility of Impact	Risk Evaluation	Risk Minimization/ Mitigation Strategy
Air Pollution protection, noise control, & Light Pollution					
Air Pollution protection, noise control, & Light Pollution	Emissions from local vehicles contributing to respiratory issues	5	4	40 Low	<ul style="list-style-type: none"> ✓ Destination Authority is committed to gradually replacing its car fleet with electric vehicles, more efficient and environmentally friendly ✓ Community members are encouraged to use sustainable mobility, such as electric vehicles, bicycles and public transport ✓ Installation of public stations to supply electric vehicles ✓ Construction of several pedestrian paths and requalification of roads, contributing to the improvement of accessibility, the promotion of healthy living habits and the reduction of CO2 emission
	Occurrence of forest fires	4	2	8 High	<ul style="list-style-type: none"> ✓ Implementation of the Sub-Regional Integrated Management Plan for Rural Fires, which promotes forest management and planning, as well as rural fire risk management, in the Tâmega and Sousa region. ✓ Elaboration and implementation of a Municipal Plan for the Defense of the Forest Against Fires, for an efficient management of rural fire risk. ✓ Implementation of the Municipal Commission for the Integrated Management of Rural Fires, with the participation of local and national authorities. ✓ Acquisition of land in key areas to promote correct forest management and reforestation with native species. ✓ Partnership in projects with Minho University, for prevention, detection and study of forest fires.

RISK ASSESSMENT MATRIX

Aspect	Potential Impact(s)	Likelihood	Severity & Reversibility of Impact	Risk Evaluation	Risk Minimization/ Mitigation Strategy
Freshwater resources					
Freshwater resources	Depletion of freshwater resources in the Destination (Ovil River, Teixeira River and Douro River)	3	4	16 Medium	<ul style="list-style-type: none"> ✓ Municipal water supply taken from natural water sources is approved by government authority ✓ The public company responsible for water management within the destination (Águas do Norte), has a defined strategy for the conservation and sustainable use of the freshwater resources ✓ Awareness campaign on water saving and its rational use is promoted by the Municipality and the public water management company (Águas do Norte) ✓ Rehabilitation and enhancement of the Ovil and Teixeira Rivers (Ecological Corridors)
	Degradation of water quality for consumption in Destination, including Degradation of water quality for human consumption captured in groundwater extractions, due to the aging of infrastructure	4	3	12 Medium	<ul style="list-style-type: none"> ✓ Partnership with the public managing company (Águas do Norte) or the cyclical monitoring of drinking water quality reports ✓ Expansion of the drinking water network to ensure quality water for all inhabitant ✓ The management of groundwater extractions is carried out by the Portuguese Environment Agency. (A list of licensed extractions was requested to assess their representativeness in human consumption of water in the municipality, as well as the date of construction and / or licensing. After obtaining this list, an awareness campaign will be carried out to maintain the infrastructures, assess the quality of the water collected and encourage connection to the public water supply network.

RISK ASSESSMENT MATRIX

Aspect	Potential Impact(s)	Likelihood	Severity & Reversibility of Impact	Risk Evaluation	Risk Minimization/ Mitigation Strategy
Wastewater Management, drainage, and streams					
Wastewater Management, drainage, and streams	Contamination of waterways by storm water polluted by oil, grease, litter, and sediment.	5	4	40 Low	<ul style="list-style-type: none"> ✓ Installation of fat-dissipating equipment in restaurants and other tourist facilities, as well as in other public or private institutions. ✓ Promote reforestation with native species, to manage the cycle and quality of rainwater before it enters water courses and groundwater. ✓ Creation of a tourist tax for cruise ships in the Douro, as a commitment to the sustainability of the territory, whose value will be applied in environmental preservation measures, as well as cultural heritage.
	Contamination of waterways by domestic and industrial wastewater after treatment in WWTPs (Wastewater Treatment Plants)	4	3	12 Medium	<ul style="list-style-type: none"> ✓ Expansion of the wastewater network to an increasing number of residents ✓ The public companies managing the WWTP's in the Municipality (SIMDOURO and Águas do Norte) carries out periodic checks on the quality and characteristics of the wastewater treated and released into waterways ✓ Awareness campaign for the use of less harmful substances that could contaminate wastewater promoted by the public wastewater management companies (SIMDOURO and Águas do Norte)

RISK ASSESSMENT MATRIX

Aspect	Potential Impact(s)	Likelihood	Severity & Reversibility of Impact	Risk Evaluation	Risk Minimization/ Mitigation Strategy
Ecosystem Conservation and Management					
Ecosystem Conservation and Management	Impact on local ecosystems from economic activities associated with the exploitation of forest resources, pastoralism, and forest fires and from visitor infrastructure including hotel and transport services.	4	3	12 Medium	<ul style="list-style-type: none"> ✓ Promotion of the Regional Protected Area of Serra da Aboboreira ✓ Constitution of a Geopark ✓ Development of partnerships with Universities for the resilience of the territory against fires ✓ Valuation of the Carvalho de Reixela (native forest of the Iberian Peninsula) ✓ Reforestation of Serras da Aboboreira, Matos and Marão with native species ✓ Restocking of inland rivers with native species ✓ Adoption of an acquisition policy that privileges recycled paper products ✓ Rehabilitation and enhancement of the Ovil and Teixeira Rivers (Ecological Corridors)
Land Use Planning and Development					
Land Use Planning and Development	Incorrect use of land not considering its suitability according to national and municipal regulations	4	4	32 Low	<ul style="list-style-type: none"> ✓ Municipal Master Plan (PDM) aims to guide the occupation of urban land, based on objectives such as the preservation of nature and memory, as well as the main options regarding the location of equipment and infrastructure, defining the municipality's development strategy ✓ Compliance with other territorial management instruments (municipal and national)
	Natural Disasters (e.g. earthquakes, floods, droughts, and severe storms)	4	3	12 Medium	<ul style="list-style-type: none"> ✓ Construction of buildings resistant to natural disasters, according to the applicable legislation ✓ Implementation of the Municipal Emergency Plan by the Municipal Civil Protection Services ✓ Implementation of an alert system for the eventuality of sudden/unscheduled floods in the Douro (SMZ)

RISK ASSESSMENT MATRIX

Aspect	Potential Impact(s)	Likelihood	Severity & Reversibility of Impact	Risk Evaluation	Risk Minimization/ Mitigation Strategy
Transport					
Transport	Predominance of the use of own vehicles, powered by fossil fuels, as an alternative to the public transport	1	4	4 High	<ul style="list-style-type: none"> ✓ Public Transport Tariff Reduction Support Program (PART) ✓ Electrification of the Douro railway line
Solid Waste Management					
Solid Waste Management	Green House Gas emissions from solid waste going to land fill.	2	3	6 High	<ul style="list-style-type: none"> ✓ PAYT/RAYT system ✓ Awareness campaign for waste recycling, reducing, and reusing by the municipality and by the waste management company, Resinorte. ✓ Municipality green waste put into compost ✓ Disposal of other waste to a well-managed intermunicipal land fill (Codessoso, Celorico de Basto) ✓ Implementation of the biowaste management system (selective collection and treatment at source) ✓ Implementation of PAPERSU 2030
Management of environmentally harmful substances					
Management of environmentally harmful substances	Potential risk of polluting the environment through the disposal of used batteries and accumulators	3	4	16 Medium	<ul style="list-style-type: none"> ✓ Collection by a government managed waste facility which has specific disposal processes for harmful substances ✓ Purchasing policy in place that all suppliers adhere to international standards when disposing harmful substances
	Potential risk of polluting the environment through the incorrect use and storage of plant protection products, pesticides, and herbicides	3	3	9 High	<ul style="list-style-type: none"> ✓ Mandatory training course for application, use and storage of plant protection products, pesticides, and herbicides.

RISK ASSESSMENT MATRIX

Aspect	Potential Impact(s)	Likelihood	Severity & Reversibility of Impact	Risk Evaluation	Risk Minimization/ Mitigation Strategy
Cultural and Social Management					
Cultural and Social Management	The non-involvement of the local population in the valorization and conservation of their cultural heritage and traditions, as well as the behavior of tourists that can affect the customs, values and material and immaterial heritage of the community	3	3	9 High	<ul style="list-style-type: none"> ✓ Involve the community in the certification, valuation and monitoring of the tourist destination ✓ Involve the community in promoting and valuing material and immaterial heritage ✓ Elaboration of Baião's Tourism Strategy, based on an anchor project ✓ Rehabilitation of the Ancede Monastery with a cultural reference project ✓ Promotion of the Eça de Queiroz Foundation ✓ Holding a Youth and Sustainability Festival
	Appearance of epidemics / pandemics	4	3	12 Medium	<ul style="list-style-type: none"> ✓ Implementation of the Municipal Emergency Plan and preparation / implementation of specific contingency plans by the Municipal Civil Protection Services ✓ Implementation of preventive and public health measures, as well as social support for families and companies by local and national authorities.
Economic Management					
Economic Management	Economic downturn due to low visitor numbers	4	4	32 Low	<ul style="list-style-type: none"> ✓ Gastronomic and Territory Promotion Fairs ✓ Involve tourism and agriculture companies and stakeholders in sustainable practices and projects, making them agents of sustainability. ✓ Creation of a Center for Logistics and Promotion of the Douro Verde Agrifood Sector ✓ Monitoring and conducting satisfaction studies of interested parties, residents, visitors, and tourists
	Business Reception Areas	4	4		<ul style="list-style-type: none"> ✓ Implementation of a risk management plan in the new Baião Business Reception Zone, for Energy, Waste, Water and Sanitation.

RESPONSE TO EMERGENCY SITUATIONS

The structure of the Municipal Civil Protection of Baião consists of:

1. Political governing body - Mayor of Baião, who has the authority to declare an alert situation;
2. Coordination body - Municipal Civil Protection Commission, which is responsible for implementing the municipal emergency plan, triggering the necessary means for actions, disseminating warnings to populations and institutions;
3. Execution body – Municipal Civil Protection Services, to implement the plan, manage resources, provide logistical support for victims and rescue workers, manage accommodation centers and submit proposals for carrying out exercises and simulations.

The operational command is ensured by the Municipal Civil Protection Coordinator, in coordination with the coordination and execution bodies.



RESPONSE TO EMERGENCY SITUATIONS

The civil protection agents, in accordance with their specific attributions, are the following:

1. The fire departments - Baião Volunteer Fire Department and Santa Marinha do Zêzere Volunteer Fire Department
2. The security forces - National Republican Guard of Baião
3. The Armed Forces;
4. The bodies of the National Maritime Authority;
5. The National Civil Aviation Authority;
6. Public health care providers - Municipal Health Authority, Baião Health Center, Poison Information Center and INEM.



ATTACHMENT

Risk analysis taken from the Municipal Civil Protection Emergency Plan of the Municipality of Baião

(Approved by Resolution No. 3/2017, of May 18, 2017, of the Ministry of Internal Affairs)



Quadro 1 | Riscos naturais, mistos e tecnológicos considerados no PMEPCB

Tipologia	Riscos
Naturais	<ul style="list-style-type: none">• Nevões;• Ondas de calor;• Vagas de Frio;• Secas;• Ventos Fortes;• Cheias e Inundações;• Sismos;• Radioatividade natural;• Movimentos de massa.
Mistos	<ul style="list-style-type: none">• Incêndios florestais;• Erosão hídrica dos solos;• Degradação e contaminação dos solos;• Degradação e contaminação de aquíferos;• Degradação e contaminação de águas superficiais.
Tecnológicos	<ul style="list-style-type: none">• Acidentes rodoviários, ferroviários, fluviais, aéreos e no transporte de mercadorias perigosas;• Colapso de túneis, pontes e outras infraestruturas;• Acidentes em infraestruturas fixas de transporte de produtos perigosos;• Cheias e inundações por rutura de barragens;• Acidentes em instalações de combustíveis, óleos e lubrificantes;• Acidentes em estabelecimentos de fabrico e de armazenagem de produtos explosivos;• Acidentes em áreas e parques industriais, em estabelecimentos de atividades sujeitas a licença ambiental e/ou que envolvam substâncias perigosas;• Incêndios e colapsos em Centros Históricos e em edifícios com elevada densidade populacional.

Quadro 4 | Definição do grau de probabilidade de ocorrência

Probabilidade	Descrição
Média-alta	<ul style="list-style-type: none">- Irá provavelmente ocorrer em quase todas as circunstâncias;- E/ou registos regulares de incidentes e razões fortes para ocorrer;- Pode ocorrer uma vez em cada cinco anos.
Elevada	<ul style="list-style-type: none">- É expectável que ocorra em quase todas as circunstâncias;- E/ou nível elevado de incidentes registados;- E/ou fortes evidências;- E/ou forte probabilidade de ocorrência do evento;- E/ou fortes razões para ocorrer;- Pode ocorrer uma vez por ano ou mais.
Confirmada	<ul style="list-style-type: none">- Ocorrência real verificada.

Quadro 5 | Definição do grau de gravidade da ocorrência

Gravidade	Descrição
Moderada	<ul style="list-style-type: none">- Tratamento médico necessário, mas sem vítimas mortais;- Algumas hospitalizações;- Retirada de pessoas por um período de 24 horas;- Algum pessoal técnico necessário;- Alguns danos. Alguma interrupção na comunidade (menos de 24 horas);- Pequeno impacto no ambiente sem efeitos duradouros;- Alguma perda financeira.
Acentuada	<ul style="list-style-type: none">- Número elevado de feridos e de hospitalizações;- Número elevado de retirada de pessoas por um período superior a 24 horas;- Vítimas mortais;- Recursos externos exigidos para suporte ao pessoal de apoio;- Danos significativos que exigem recursos externos;- Funcionamento parcial da comunidade com alguns serviços indisponíveis;- Alguns impactos na comunidade com efeitos a longo prazo;- Perda financeira significativa e assistência financeira necessária.
Crítica	<ul style="list-style-type: none">- Situação crítica;- Grande número de feridos e de hospitalização;- Retirada em grande escala de pessoas por uma duração longa;- Significativo número de vítimas mortais;- Pessoal de apoio e reforço necessário;- A comunidade deixa de conseguir funcionar sem suporte significativo;- Impacte ambiental significativo e ou danos permanentes.

Quadro 6 | Matriz de Risco

Gravidade	Probabilidade		
	Média-Alta	Elevada	Confirmada
Moderada			
Acentuada			
Crítica			

Fonte: Adaptado de Diretiva Operacional Nacional n.º 1/ANPC/2007, de 16 de maio.

Quadro 7 | Interpretação dos níveis do estado de alerta

Estado de Alerta	Descrição
Moderada	Situação de acidente grave ou catástrofe de âmbito e dimensão relativamente limitada que, contudo, podem potenciar o desenvolvimento de consequências mais gravosas. Os serviços e entidades deverão garantir as condições de operacionalidade adequadas à situação.
Acentuada	Situação de acidente grave ou catástrofe em que se admite não ser possível controlar a situação num curto espaço de tempo e que podem potenciar o desenvolvimento de consequências que excedam a capacidade de controlo do nível municipal. É necessária a intervenção conjunta de várias entidades. As entidades intervenientes no plano devem garantir o reforço do estado de prontidão.
Crítica	Situação de acidente grave ou catástrofe em que presumivelmente não será possível o seu controlo num curto espaço de tempo e que excedem a capacidade de controlo do nível municipal. Total empenho das estruturas operacionais de proteção civil. Necessidade de uma resposta de nível distrital.

