



D5.7 Landslides and Coal Tips

Landslides can lead to direct physical health impacts of injury and fatality; impacts on mental wellbeing; direct economic costs of repair and recovery and disruption of access to services.

Characterisation of impact on:

Intensity	Likelihood	Duration	Intensity	Likelihood	Duration
Positive impacts/opportunities			Negative impacts		
			 when/where they occur	 / 	 to 

 Confirmed
 Probable
 Possible
 Major
 Moderate
 Minimal
 Short term
 Medium term
 Long term



Impacts of landslides on health and wellbeing

Positive impacts / opportunities

- Sustainable land management

Negative impacts

- Injury
- Mortality
- Economic costs
- Disrupted access to services
- Mental wellbeing (increased anxiety)



Pathways of impact arise from

- Increased rainfall
- Extreme weather: rainfall/storms/wind
- Water scarcity
- Flooding
- Psychosocial factors

Increased rainfall, extreme weather and flooding

There is strong evidence that the increasing intensity and frequency of rainfall projected as a result of climate change in Wales is likely to increase the risk of landslides, embankment failures within the transport network, and landslips on coal tips (Netherwood, 2021; Network Rail, 2019). The Coal Authority has stated that *“water ingress poses the biggest risk to stability”* (Coal Authority, 2020).

Storms Ciara and Dennis in 2020 caused heavy rainfall and flooding in Wales and led to a number of landslips (BBC, 2020a), including a major landslip of 60,000 tonnes of spoil from a former coal tip at Tylorstown in Rhondda Cynon Taf (BBC, 2020b). This triggered significant concern about the safety of coal tips across the former mining areas in Wales and a programme of inspection of all coal tips was conducted along with a review of the current governance and programme for securing the safety of the tips has developed (Welsh Government, 2022a). A summary of the current scale of the risk identified by the inspections is included below. A White Paper on coal tip safety was issued for consultation by the Welsh Government in May 2022 (Welsh Government, 2022b). The most recent Climate Change Risk Assessment for the UK (Kovats and Brisley, 2021) identifies that *“climate change may have already increased the risk of future slope failures”* in Welsh coal tips.

Health and wellbeing impacts

Landslides can lead to direct physical health impacts of injury and fatality; direct economic costs of repair and recovery; as well as other important social and economic impacts such as loss of access to services, markets, tourism and travel disruption (Froude and Petley, 2018; Haque et al., 2019; Winter et al., 2016).

Landslides could also lead to loss of valued environments affecting mental wellbeing ('solastalgia') (see Section D4 on mental wellbeing). Feeling safe is an important protective factor for mental wellbeing (Cooke et al., 2011) and the safety and security of communities has been recognised as an important factor in the policy actions taken in relation to coal tip safety since the landslides of 2020 (Welsh Government, 2020). Therefore, impacts on mental wellbeing, such as increased anxiety, for those living in an area that may be vulnerable to landslides is recognised. In particular in Wales, the ongoing legacy of the Aberfan coal tip disaster and the resulting psychological impact on individuals affected and the wider community are significant (BBC, 2021).



Population groups affected

- **South Wales Valleys and other ex-mining areas**
- **Other areas at risk of landslides**
- **Rail users and workers**



Relevant statistics

- **Data on “Wales Rainfall and Landslides” from 2011 to July 2022 is available from the British Geological Survey (2022).**
- **Up to August 2021, 2,456 disused coal tips have been identified in Wales with approximately 85% located in the South Wales valleys** (Welsh Government, 2022c).
- **71 (just below 3%) coal tips were categorised on an interim basis as Category D meaning they have the “potential to cause risk to life or property and known history of movement/signs of instability” - although this does not translate into an imminent risk** (Welsh Government, 2022c).
- **256 (around 10%) coal tips were categorised on an interim basis as Category C meaning they have the “potential to cause risk to life or property, no known history of movement/instability signs”. Again, this does not translate into an imminent risk** (Welsh Government, 2022c).



Key Policy Documents

- **Coal Tip Safety (Wales) White Paper Welsh Government (2022): A new regulatory framework for disused coal tips in Wales** (Welsh Government, 2022c)
- **Network Rail Route Weather Resilience and Climate Change Adaptation Plan for Wales covering 2019-2024** (Network Rail, 2019)
- **Llwybr Newydd: the Wales Transport Strategy** (Welsh Government, 2021): **aims to future proof transport infrastructure to adapt to climate change**
- **Sustainable Farming Scheme Proposals Welsh Government (2022): identifies mitigation of heavy rainfall and flooding as an outcome of sustainable land management** (Welsh Government, 2022d)
- **Transport for Wales Climate Adaptation and Resilience Plan** (Transport for Wales, 2023)

Reference for this document

Edmonds, N., Green, L. (2023) Section D5.7 Landslides and coal tips: IN: Climate Change in Wales: Health Impact Assessment, Public Health Wales NHS Trust. - <https://phwwhocc.co.uk/resources/climate-change-in-wales-health-impact-assessment>

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