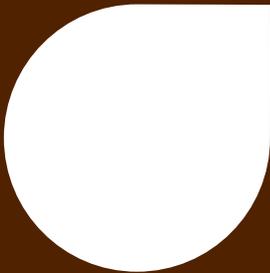


# Land instability in the Gorge







## Introduction

Major emergencies can occur suddenly, unexpectedly and anywhere. These incidents may be confined to a local area, or they may cover a wide area causing disruption. There have been several flooding incidents across the country as well as the Severn catchment area which have highlighted the dangers posed by natural events. Such incidents remain thankfully rare, but are not unknown to the Ironbridge Gorge area.

Landslips in the Gorge area over the last couple of centuries have seen the loss of a number of homes and roads. A number of agencies are working together to identify locations where land instability may cause future ground movement and an emergency plan to respond to such an incident has been agreed. This plan is written in partnership with the emergency services, Ironbridge Gorge Museum Trust, the Environment Agency, voluntary sector and utility companies.

By 2016 Telford & Wrekin Council will have spent more than £33 million on land instability issues in the Gorge. This has included the assessment and stabilising of sites in the Gorge most severely affected. This funding includes contributions from the Council itself, other agencies and the European Regional Development Fund.

Our next priority is stabilisation work in Jackfield which is due to start in 2014 and finish by 2016.

Monitoring is ongoing and the Council continues to lobby Government for further funding to progress the work to manage land instability in the Gorge.

This pack updates information that was sent by Telford & Wrekin Council to every home in the Gorge in 2005, 2007 and 2010. It forms part of our ongoing commitment to keep residents informed and this update comes at a time when specialist mapping across the Gorge has been completed.

While we may not have the answers to all of your questions, we are doing and will continue to do everything we can to keep you updated.

This information should be read together with the “What to do before, during and after a flood” leaflet which can be downloaded from [www.environment-agency.gov.uk](http://www.environment-agency.gov.uk)

**If you move home, please leave this pack for the new occupants.**

If you would like additional copies of this pack or the leaflet you can download these from [www.telford.gov.uk/gorge](http://www.telford.gov.uk/gorge) or email [civil.resilience@telford.gov.uk](mailto:civil.resilience@telford.gov.uk) for an electronic copy.



Cllr Kuldip Sahota  
Leader  
Telford & Wrekin Council



Richard Partington  
Managing Director  
Telford & Wrekin Council



# History, causes and what to look out for

The Ironbridge Gorge is an area of great beauty and is renowned across the world. It is an important site in the development of the Industrial Revolution that originated in Britain in the eighteenth century. The extensive mineral deposits within the Gorge, chiefly limestone, iron, tile clay and coal, have been mined or quarried since medieval times. The River Severn provided the main transport link for products from the Gorge to reach the wider world.

The unique contribution made by the Ironbridge Gorge to the Industrial Revolution, combined with the present day landscape which preserves many significant features including furnaces, works, dwellings and transport systems, was recognised in 1986 when the area was inscribed by the United Nations Educational, Scientific and Cultural Organisation (UNESCO) as a World Heritage Site.

Industrial activity has been dormant for many years but has altered the landscape over several centuries. The underground geological structure of the Ironbridge Gorge and the effects of ongoing erosion and of past mining in the area have caused gradual land slipping for many years.

The most common form of movement in the Gorge is witnessed over a period of time, where cracks gradually appear in buildings, or land starts to move. It can create minor damage to properties and land, and can create problems with services such as telecoms, gas, water, electricity and sewers. Locally the main services into the area are laid above ground to prevent damage from ground movement.

In the most extreme cases, and in very rare cases, this movement may occur suddenly, in the form of a landslide. This could affect homes and businesses in the Ironbridge Gorge in a number of ways.

A localised landslip may cause significant damage to properties. A major landslide could affect many homes with the added complication of flooding from the River Severn if debris falls into the river causing a partial or major blockage.

It is vital that the Council has a plan in place which it can activate in such an event to ensure that the risk to residents or visitors to the area is minimised.

The designation of the Ironbridge Gorge as a World Heritage Site brings with it a responsibility to preserve the area for the enjoyment of generations to come. This responsibility does not lie solely with the Council, but includes Government, businesses, residents and visitors to the Gorge



## Warning signs and triggers

### **Monitoring areas at risk**

As part of this ongoing monitoring of the area, the Council and its engineering consultants regularly inspect areas where movement is clearly visible. This information provides a good indication of where problems may arise, or may provide telltale signs of the potential for more land movement. Residents are encouraged to report evidence of land instability to the Council so that it can send out inspection teams. Please see the section “What can you do?” on page 14.

### **Ongoing monitoring**

The results of these intensive investigations have made it clear that the instability has affected the Gorge over thousands of years. In geological terms, the Gorge is still relatively immature and will continue to form by natural processes (for example land slippage). Ongoing monitoring will quantify the likely effects of the ground movement and will be used to help to prioritise future engineering schemes.

### **Telltale signs on land and buildings**

Evidence can be seen by the cracks in paths or pavements, leaning or cracked walls, distorted road surfaces and severely leaning trees, irregular terraced slopes and newly exposed faces in embankments and slopes.

## Triggers

There are key triggers which contribute to the instability in the Gorge, and may trigger further land movement. These include:

- Extreme weather conditions, for example prolonged high rainfall and flooding, continued freeze thaw conditions
- River erosion
- Development, for example loading of slopes by man-made structures
- Tipping, notably of colliery spoil and tile waste
- Undermining; removal of support as a result of mineral extraction
- High groundwater for example from rainfall or leaking pipes
- Earth tremors

## Risk and probability

Ground movement in the area is not new and has occurred since the Gorge was formed. While it is very difficult to determine the timing of significant ground movement occurring, it is possible to draw some conclusions based on the frequency and scale of previous events. Typically major events occur at intervals of 30 to 50 years in the Ironbridge Gorge. We know ground movement is taking place in parts of the Gorge on an ongoing basis.

The recent landslide events in Jackfield have been progressive failures where the slip occurs on an ongoing basis and merely speeds up for a short time until temporary stability is achieved. During the last two major events in the 1950s and 1980s, houses were lost and Salthouse Road slipped into the river. This resulted in the construction of the flexible wooden road designed to provide temporary access to the Maws area whilst being flexible enough to move as the ground movement occurs.

It is believed that this progressive style of movement is the most likely to occur rather than a more rapid spontaneous failure. However, no guarantee can be given that a more spontaneous failure will not happen.

The monitoring of areas where ground movement is known to occur is intended to provide a warning of potential major events thereby giving time to plan and for residents to get out safely. The monitoring also provides data which can be used in the design stage of remedial schemes aimed at managing the instability. The monitoring process includes visual inspection, surface survey, the recording from deep boreholes and the findings of site visits in response to information from the public.

In the event of a landslide, there is the possibility that it may lead to the partial or total blockage of the river. This happened before in 1773 when a landslide at the Birches resulted in a blockage of the river and its subsequent realignment as it cut a new channel.

In the event of such an occurrence in the Gorge, the effect on river levels would be just as significant as the landslide itself, resulting in flooding upstream of the blockage until a channel could be re-established. The extent of this flood would depend on the level of the river at the time of the landslide and the amount of rainfall within the area of the River Severn.

As a worst case, levels similar to those predicted by the Environment Agency as a 1 in 1000 year flood event may occur. This may result in homes in areas upstream such as Atcham, Buildwas, Cound and Cressage, and downstream in Bridgnorth, being affected by flooding. Shropshire Council is aware of this potential and will be in touch with residents in those areas to advise them of the possible risks to homes.

In the event of such flooding or landslide, an emergency plan prepared by Telford & Wrekin Council in conjunction with a number of other agencies will be implemented to minimise the risk to the public. Please see “Emergency Planning” on page 10.



# Council – serving you

The Ironbridge Gorge World Heritage Site Management Plan was first published in 2001 and it identified the main issues facing the World Heritage Site, including the problem of land instability. The plan listed a number of actions for the council and partner organisations including investigation and monitoring of land instability in the area and engineering work to manage it. Since then, extensive work has been undertaken by specialist engineering consultants who have given us a much better understanding of the causes and pattern of land instability within the Ironbridge Gorge and the action required to manage the problem.

## **Investigative work**

The council has a programme of action which includes ongoing investigative work and the monitoring of ground movement. It has also undertaken a study of land instability throughout the World Heritage Site. This included reviews of existing information using published data and local historical sources, supplemented by intensive mapping and ground investigations. Comprehensive ground investigation has taken place locally in parts of Jackfield, Lloyds Coppice and Lloyds Head and detailed mapping has been undertaken across the whole of the World Heritage Site.

The studies and investigations have identified areas of land movement which is current or historic over most of the World Heritage Site.

## **Stabilisation works**

The long-term aim must be to manage the risk of instability and help to stabilise the area. Whilst it is not possible to stop ground movement completely within the Ironbridge Gorge, the forces of nature are far too powerful; it is possible through various engineering works to minimise movement. These works include:

- improving ground stability by use of piling, retaining structures, re-profiling slopes, improving drainage and reducing erosion
- improving the river walls which were likely to have been originally

constructed as a mooring, rather than a retaining wall for slopes

- utilities services maintenance programme with limited excavation of trenches which can contribute to further instability
- repairing drainage pipes to ensure they are not leaking into the slopes, adding to instability
- regulating new construction, based on engineering/technical feasibility, environmental constraints and economic viability
- regular monitoring to form part of an early warning system.

## **Funding and Public information**

The council has already engaged with Ministers, Government departments, MPs, English Heritage, Homes & Communities Agency and Environment Agency with a view to securing additional funding. The council has also committed its own resources to the investigation, monitoring and stabilisation of the most severely affected sites.

The on-going discussion with funders has also resulted in direct negotiation with the European Commission.

## **Emergency Planning**

The council is not acting alone on these issues. The information we have received has been shared with other organisations which will help to inform the decisions taken. The advice contained within this pack has been produced in consultation with the Environment Agency, Police and other emergency services, other councils, utility companies, the Ironbridge Gorge Museum Trust and voluntary organisations. A multi agency Emergency Plan is in place to assist with the response to land instability in the Ironbridge Gorge.

We anticipate that the emergency services are likely to receive the first calls from residents who are affected by or witness land movement. It is likely at this stage you will need to evacuate.

In the event of an evacuation, please do not panic but self evacuate to the nearest Community Muster Point on page 11. Please consider any

neighbours that may require assistance to get out of their property. Police officers, Ambulance staff and Shropshire Fire and Rescue will be on hand to help residents who need assistance.

Residents will each require a small evacuation bag – a list of suggested items to include can be found on page 20.

**If you are asked to leave your premises, please do so immediately – it is for your own safety.**

This request may be via media messages, door knocking or loud halers from cars or a helicopter etc. You will find a list of useful numbers at the end of this pack.



## Community Muster Points

**Youth Hostel – Paradise, Coalbrookdale**

**St Lukes Church – Coalbrookdale**

**The Golden Ball Inn Car Park – Newbridge Road**

**D’Arcys – Ladywood**

**Fusion, Jackfield Tile Museum – Jackfield**

All pets will need to be evacuated with owners, as long as there is no threat of danger to your own or anyone else’s life.

While many residents will try and leave in their own vehicle, arrangements will be made to take you out of the immediate area of danger. Once out of this area you will have the opportunity to make arrangements to stay with families and friends. The Local Authority will provide temporary shelter and accommodation at Rest Centres where longer term arrangements will be made.

**Under no circumstances should residents attempt to go back to their property until they have been told it is safe to do so.**



# Emergency Accommodation

Due to health and safety issues, it may be unsafe for you to return to your property in the short term. Telford & Wrekin Council and Shropshire Council will be able to help in finding emergency accommodation.

Many people will seek lodging with family and friends, outside of the Ironbridge Gorge and rest centre accommodation will be a last resort. You are advised to discuss such arrangements with family and friends in advance of any situation as part of your own personal emergency response.

## **Short term arrangements:**

As an immediate response to an incident that requires evacuation, Telford & Wrekin Council and Shropshire Council will arrange for rest centres to be set up.

The rest centre will provide a warm, dry setting where immediate welfare needs can be met, ensuring you, your family and friends are accounted for and appropriate arrangements are made for moving you into more suitable accommodation.

## **Long Term Arrangements:**

If you live in accommodation and your home insurance does not cover emergency accommodation, then you will have to rely on your local authority in co-operation with local housing providers to re-house you (if you have been flooded you will have priority for re-housing). In such a case, you should contact the Council's Housing Options Advice Service as soon as possible, when flooding has occurred on [01952 381925](tel:01952381925).

Costs for emergency accommodation may be covered by your home insurance and you should check your policy carefully for details. Often your insurance company will pay for emergency accommodation up to a certain percentage of the value of your insurance.



# Development issues, what can you do?

## **Development issues**

It is important to make sure that any new development within the Ironbridge Gorge does not adversely affect the stability of the area and is not itself vulnerable to the presence of unstable land. Before granting Planning Permission or Building Regulations Approval for new buildings, extensions to existing buildings or other operations such as engineering works, the Council will need to be satisfied that:

- The proposed development is not at flood risk or likely to increase the risk of flooding to others
- The proposed development will not cause problems of instability
- The proposed development is not at risk from instability

Developers will also need to consider other geotechnical issues including past mining.

In some parts of The Gorge, extensive ground investigation works may be necessary in order to be able to satisfy the Council on the above three counts. These investigative works will need to be commissioned and paid for by the property owner or developer and the results may have to be submitted in support of an application before it is determined by the Council.

Land stability is only one of a number of factors that the Council will take into account when considering a development proposal.

Some small scale works will not require Planning Permission or Building Regulations Approval. Before starting on such works you are strongly advised to take appropriate professional advice and also to discuss your proposals with a Planning Officer or Building Control Officer from the Council.

Telephone numbers can be found in the Who to Contact section of this guide.

The Ironbridge Gorge is a living community and in order to continue, it is important that there are opportunities to change and adapt to modern day needs, including permitting appropriate new development. Therefore, the Council will not be looking to stifle development but will be seeking to ensure that any appropriate new development that is permitted will be stable and will not exacerbate land instability in the area.



## What can you do?

### **Become an Ironbridge Gorge Community Champion?**

Volunteers will be recruited from within the community of the Ironbridge Gorge. They will be involved in:

- Sharing information and warnings
- Identifying vulnerable residents who may need assistance in an emergency situation
- They will be community aware e.g. of empty properties, new residents etc
- Be able to guide emergency services to those residents who require evacuation
- They will help with taking information at the community muster points to help the Local Authority

Training will be available to volunteers for this role. To become an Ironbridge Gorge Community Champion, please contact [01952 381960](tel:01952381960) or email [civil.resilience@telford.gov.uk](mailto:civil.resilience@telford.gov.uk)

## What to look out for?

To help us with our monitoring, we need you to help us to identify areas of significant movement or changes. Engineers from the Council are able to monitor highways and public areas, but residents may spot ground movement on private land.

If you become aware of any of the following events:

- Cracks in paths, or pavements
- Distortion of surfaces
- Cracked, bowed or leaning walls
- Garden movement, trees or soil sliding
- Severely leaning trees, walls, lamp posts, telegraph poles
- Changes in the profiles of slopes
- Broken drainage systems, dirty tap water
- Appearance of new groundwater springs
- Disruption to services
- Doors and windows sticking

Please record them in a diary with dates, times and, where possible, before and after photos. Then contact our engineers on 01952 384867 who will log them and monitor them over a period of time.

If you become aware of any of the following events:

- Evidence of subsidence
- Collapse of mine shafts

please contact The Coal Authority on [01623 646333](tel:01623646333) as well as our engineers at Telford & Wrekin Council on [01952 384867](tel:01952384867)



# Flood warnings

The Ironbridge Gorge has a history of flood events and is in a flood risk area. During a flood event the Environment Agency issues flood warnings to all properties signed up to the free Floodline Warnings Direct System.

We would encourage all residents within the Ironbridge Gorge area to sign up to the full service by calling [0845 9881188](tel:08459881188) or register online at [www.environment-agency.gov.uk](http://www.environment-agency.gov.uk)

The Environment Agency updates its flood warnings every 15 minutes on its website. You can also follow the Environment Agency Midlands region on Twitter at [@EnvAgencyMids](https://twitter.com/EnvAgencyMids) or via the Flood Alert App for iPhone or iPad available from the app store.

Flooding updates will also be published regularly on the Council's website [www.telford.gov.uk](http://www.telford.gov.uk) and Twitter [@telfordwrekin](https://twitter.com/telfordwrekin) and Facebook pages.



# Who to contact

In the event of an emergency please call the emergency services on [999](#). For general enquiries about the emergency please contact Telford & Wrekin Council's Emergency Helpline on [0845 155 7401](#). This section provides a detailed list of organisations that you may need to contact.

Contact	Number	Contact	Number
<b>Telford &amp; Wrekin Council</b>		<b>The Coal Authority</b>	
Switchboard:	01952 380000	Switchboard:	01623 637000
Planning:	01952 380380	Subsidence:	0845 762 6848
Building control:	01952 384555	Emergency:	01623 646333
Engineers:	01952 384867		
Civil Resilience Team:	01952 381960	<b>Severn Trent plc</b>	0800 783 4444
Housing Options Service:	01952 381925		
<b>Shropshire Council</b>		<b>Met Office (Severe Weather)</b>	
Switchboard:	0345 678 9000	0870 900 0100	
Emergency Planning Unit:		<b>Citizens Advice Bureau</b>	
01743 252844		0845 146 1554	
<b>West Mercia Police</b>		<b>Madeley Town Council</b>	
(non emergency):	101	01952 567280	
<b>Environment Agency</b>		<b>The Gorge Parish Council</b>	
0845 988 1188		01952 883192	

# Frequently asked Questions

We know that there are questions which everybody will want answering about their homes and the likelihood of an incident occurring. The truth is that we do not have all the answers. In essence, nothing has changed in the Gorge and the ground movement that is being reported has been happening since the Gorge was formed approximately 13,000 years ago.

## **What are the chances of a landslide occurring?**

Ground movement is occurring all the time particularly as river erosion takes place. The timing of ground movement is difficult to predict. There have been a few major events in the last 100 years and a blockage of the river occurred in 1773.

Ground movement and minor landslips did occur in response to the unusual weather events of 2007 and there are likely to be more of these because of climate change.

## **Could my house be affected?**

Because we are dealing with the forces of nature we have no way of knowing when or if there will be a landslide. Engineers are trying to pinpoint which areas are most at risk and those vulnerable areas will be mapped on the basis of geology and landform.

## **I want to sell my house. Should I tell the new owners about these problems?**

The land instability is an historic problem and specific questions, if asked, should reveal instability in the area. The Local Authority has been answering questions about land instability in the Gorge for years so this information should not come as a surprise. If you have information specific to your property you have an obligation to inform the people purchasing your house of this.

## **Why are we being told about this now?**

This is an ongoing information programme which will continue to provide residents with regular updates on the issue of land stability. Investigative work is being carried out continually and new technology enables us to pinpoint far more accurately any land movement. The Local Authority has enough information in accessible form to inform and raise awareness about the situation with residents.

## **Who's paying for it?**

The Council has already committed significant monies into managing the problem, however, it cannot pay for further work as it does not have the money available. The Council is lobbying Central Government and Europe in the hope they will help financially. You can also help by lobbying your MPs and asking people to be aware of the needs of the area.

## **Will I get insurance?**

We recommend that all property owners in the Gorge area contact their insurance companies to ensure that they have adequate and comprehensive cover.

## **What's the Council doing about ground movement in my area?**

The Council's engineers are working closely with consultants to monitor the area on an on-going basis, identifying areas of greatest concern. This will serve as an early warning system and the Council can take action, either to prevent greater movement happening, or to prepare for evacuation.

## **How much warning will we get of an 'incident'?**

We don't know. Most of the time, movement is gradual and the Council's engineers will be able to see the changes to the landscape and may be able to predict an incident. However, history has shown that sudden movement could take place quickly and without warning.

## **What will happen if there is a landslide?**

We anticipate that the emergency services are likely to receive the first calls from residents who witness major land movement. The emergency services would then review the situation and launch an evacuation if necessary.

Residents must listen to the advice given to them. They may be asked to prepare for an evacuation, in which case we would recommend packing a small bag with some necessary items, clean changes of clothes etc. Alternatively, you may be asked to leave the premises immediately – please do so, it is for your own safety.

### **Why would I be evacuated?**

In some emergencies the safest course of action will be to evacuate residents from their homes until the danger has passed. In most cases this will only be temporary, however if there is significant damage to your home or the surrounding areas as a result of the incident you may not be allowed to return home until it is made safe.

### **Who makes the decision to evacuate?**

The police in consultation with partner organisations will make the decision to evacuate. However if the landslip happens close by – you may have to make that decision yourself – this is called self evacuation.

### **Where would we go in an evacuation?**

In an evacuation, there are a number of prearranged Community Muster Points. At these you will have your details logged and then transport will be provided to take you to a place of safety. Please see page 11 for the Community Muster Points.

### **What should I take with me in my emergency pack?**

If you need to evacuate your home you should consider taking the following items with you where possible in a small holdall:

- Change of clothes
- Toiletries
- Medicines and any special foods
- Blanket and pillow
- Money, credit/debit card
- Mobile phone and charging unit
- Important documents e.g. Insurance, passport, driving licence, mortgage

- Items for babies and small children e.g. formula milk, food, nappies, blanket, small toys
- Items for pets e.g. basket, cage, lead, dog waste bags/newspaper and food etc.

### **I have special requirements; will the rest centre be able to accommodate these?**

Be sure to tell staff at the rest centre about any special requirements you or your family have on arrival and the staff will do their best to make appropriate arrangements for you.

### **I've got family in Telford. Can I go and stay there?**

We want people to feel safe wherever they are staying and often staying with family or friends is the best option.

Please ensure you register your name and new address at a rest centre or muster point, so we know that you are safe and, in extreme circumstances, so that rescue teams are not sent to your house.

### **What other agencies have been involved in this planning?**

There are many agencies involved in the planning including the Environment Agency, the Emergency Services and other Local Authorities. Each has provided professional advice and guidance to the Council, which include helping to formulate information to provide for the public.

### **How do I become an Ironbridge Gorge Community Champion?**

Please contact the Civil Resilience Team on [01952 381960](tel:01952381960) or email [civil.resilience@telford.gov.uk](mailto:civil.resilience@telford.gov.uk)







### **Civil Resilience Team**

Telford & Wrekin Council Unit B4b,  
Stafford Park 11,  
Telford TF3 3AY  
01952 381960  
[civil.resilience@telford.gov.uk](mailto:civil.resilience@telford.gov.uk)

In the event of an emergency please call the emergency services on [999](tel:999)