

Land Inspection Guide - Mine Entries



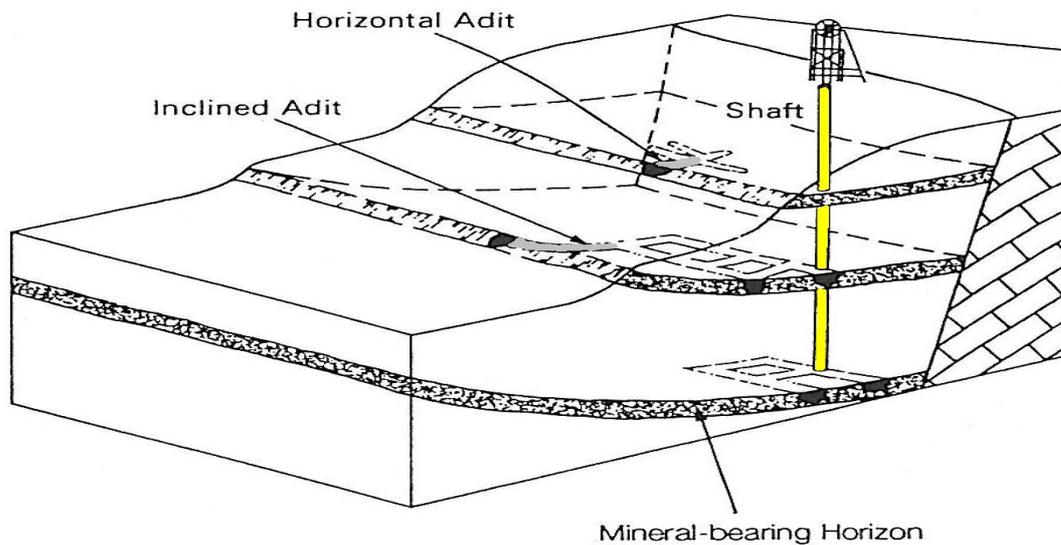
**The Coal Authority
Disclosure Programme**

Land Inspection Guide - Mine Entries

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Shafts and Adits - Definition



Shaft = Vertical or almost vertical opening used for access to the mine for removal of mineral, ventilation or pumping water etc; coloured yellow in the diagram.

Adit = Non vertical mine access roadway. Also known as Drift, Sough, Level, Day Level (Often known as a level when driven for mine drainage); coloured grey in the diagram.

Tunnels emanating from shafts and adits are known as **roadways**.

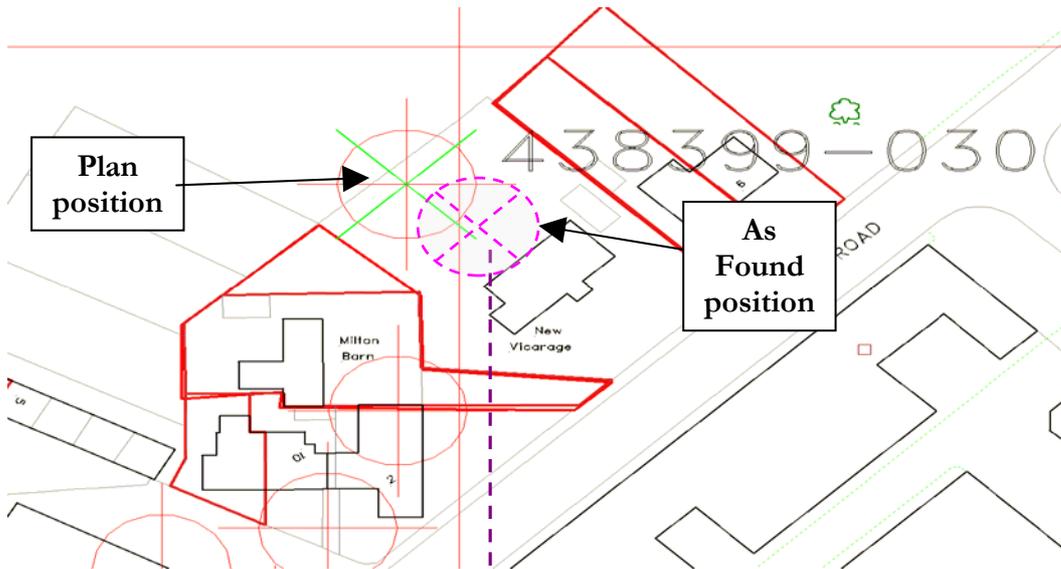


1. Shaft



2. Adit

Plan 'v' Actual Location



3 - LOW RISK - Very shallow depression - no signs of recent movement.

Whilst the information provided by the Coal Authority will indicate the possible presence of a shaft or adit on a site, what it cannot usually provide is an exact location.

Coal Authority figures estimate that on average a mine entry should be within about 7 metres of its plotted position however, it is not unusual for them to be found up to and beyond 20 metres from where they are shown on the plan.

Inspecting Land - What to Look For:

Surface Depressions



4. HIGH RISK - Signs of recent movement



5. LOW RISK - No sign of recent movement



6. LOW RISK - No sign of recent movement



7. LOW RISK - No sign of recent movement

This is the most common visual indication of the presence of a mine shaft. Usually saucer or dish shaped and may have tension cracks around the edge. They are sometimes found to be filled with water even during dry periods. Mostly indicative of slumped or slumping of shaft fill material.

If observed, evidence should be sought which could indicate if the settlement has occurred recently or is longstanding.

Evidence of recent movement could be tension cracks around the edges which have not been infilled with debris or vegetation, patches or bare soil where the ground has been stretched.

Evidence of a longstanding depression could be infilling of the depression with debris, infilled tension cracks, established trees or plants.

Shaft Marker Pillars



8. LOW RISK – No sign of movement



9. LOW RISK – No sign of movement



10. LOW RISK – No sign of movement



11. LOW RISK – No sign of movement

Marker pillars come in many shapes and sizes. The most common form is a truncated concrete pyramid as in the **top two** pictures.

Marker pillars are generally sited directly above the shaft position and are usually indicative that the shaft has been treated to some degree, often concrete capping. However, beware as marker pillars are sometimes moved out of position.

Some markers may contain details about the shaft and the treatment.

Mounds



12. HIGH RISK – Open shaft covered with rocks



13. LOW RISK - No sign of movement



14. LOW RISK - No sign of movement



15. LOW RISK - No sign of movement

A mound at a shaft or adit location may be indicative of one of two things. It could be either the spoil removed when the shaft was sunk or it could be the mound of material that was left over the top of a shaft when it was filled. A mound is sometimes left when back filling a mine entry so that the excess material will naturally settle into the shaft as the fill compacts; this can result in a mound with depression at its centre.

Other mounds such as the *top right* on the right are left mainly as markers.

Plates, Boards & Sleepers



16. HIGH RISK – Open shaft covered with plates



17. HIGH RISK – Open shaft covered with plates



18. HIGH RISK – Open shaft covered with plates



19. HIGH RISK – Open shaft covered with plates

These sorts of treatments are often temporary measures that were never replaced with more permanent structures. They can take the form of wooden or concrete railway sleepers, steel plates, wood sheeting or concrete sections. These features can be very dangerous as they are often unsecured and cover open shafts.

Surface Structures



20. LOW RISK – Sealed adit, condition OK



21. LOW RISK – Sealed adit, condition OK



22. LOW RISK – Sealed shaft, condition OK



23. LOW RISK – No sign of movement

Surface buildings and structures can be either the physical remnants of the former colliery and mine entry portal or be pre designed buildings constructed for the purpose of covering the shaft or adit.

Vegetation Changes



24. LOW RISK - No sign of movement



25. LOW RISK - No sign of movement



26. LOW RISK - No sign of movement



27. LOW RISK - No sign of movement

The infill material of a mine shaft can have a different geotechnical make up and a different chemistry to the surrounding strata and soils, additionally the drainage properties may differ from the surround. As such growth patterns may differ and there may be localised vegetation differences above a shaft or adit mouth.

Other Visible Signs



28. LOW RISK – Sealed shaft, condition OK



29. LOW RISK - No sign of movement



30. LOW RISK - No sign of movement, cap OK



31. HIGH RISK – Distressed area of concrete, recent cracking forming a circle.

Visible signs can range from an obvious exposed shaft lining (**top**) to an unexpected concrete pad (**bottom left**) through to a seemingly innocuous cracked concrete yard (**bottom right**). The fact that the concrete has become distressed in a circular shape at a known shaft location would certainly be a cause for further investigation.

Other Visible Signs



32. LOW RISK – Shaft not visible



33. LOW RISK – Shaft sealed



34. LOW RISK – No sign of movement



35. LOW RISK – Shaft not visible

Whilst a mine entry may not be visible at the surface there may be other signs which indicate its presence. The signs may not be able to give a definitive position for a mine entry but will often put you in the right ball park.

The **top left** photo shows the remains of an unexpected brick structure in a wooded area in the general locality of a suspected shaft. This debris could be the remains of former colliery buildings.

The **bottom left** photo shows pipes which are likely to be gas monitoring / venting tubes which go through a probable shaft cap.

The **top right** photo shows a locked manhole cover in an unusual location. Manhole covers are often left at the surface above capped mine shafts for monitoring purposes and are usually locked due to the potential for mine gas.

The **bottom right** photo shows iron ochre stained water discharge emanating from a cliff side. Whilst there is no visible sign of an adit the discharge is a very obvious clue to its presence. Water flowing through old mine workings often picks up orange staining due to dissolution of iron from coal measure rocks. Gravity fed mine drainage levels were often driven to drain from the lowest point of a mines workings into local watercourses.

Open Adits (Drift Entries)



36. HIGH RISK – Open adit



38. HIGH RISK – Open adit

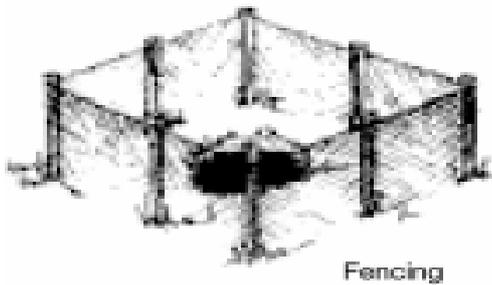


37. HIGH RISK – Open adit

Most ancient adits have been backfilled and or stopped off to some degree. It is often only when that treatment has failed (top left) that the adit will manifest itself. However there are many others that are very evident once you start looking.

Open adits often appear innocuous as they do not carry the obvious inherent dangers of mine shafts. Adits or drifts are usually not inclined at much more than about 30 degrees and therefore can make exciting places to explore for those uninitiated with their dangers. Mine workings often contain noxious gases, particularly carbon dioxide which, in sufficient quantities, can cause rapid unconsciousness and death.

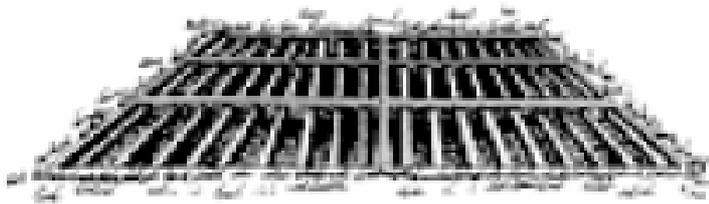
Other Common Treatments



Fencing

Fencing

Fencing can be the only treatment for a mine entry or be additional to other forms of security. On its own fencing is only a temporary measure. Look for dilapidated or the remnants of fencing near the location of a mine entry.

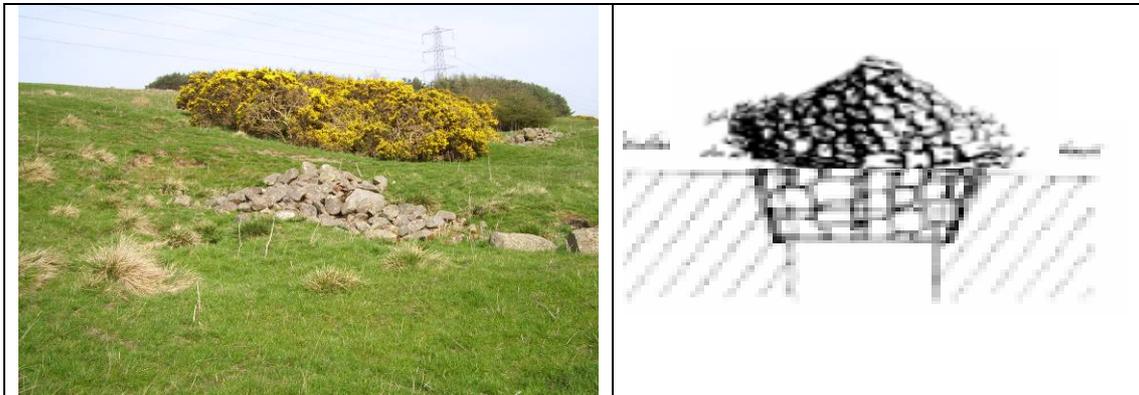


Grille

Grills

Steel Grills are often used to cover open mine entries (more commonly adits). Grills can be an effective form of security but should be examined for signs of defects and corrosion.

Clwyd Shaft Cap



This treatment is mostly localised to North Wales (although variations may appear elsewhere) and consists of a shaft plug and mound constructed from local stone.

Factors to Consider When Inspecting Land for the Presence of Mine Entries

Requirements:

Handheld GPS Device (optional but very useful where landmarks are not readily apparent); Plans showing the location of the feature being searched for (co-ordinates could either be displayed on the plan or pre-programmed into the GPS device); Mobile telephone; Camera.

As mine entries have an inherent danger, the Coal Authority strongly recommends that organisations establish a lone working procedure.

Pre-Inspection Checks:

1. Check Location. If inspecting in remote locations, areas where walking conditions could be hazardous or where mobile phone reception likely to be poor, the need for taking 2 persons should be considered
2. Check History. - Check with appropriate land steward (groundsman, caretaker) for presence of known mine entries, abnormal features, recent changes or unsafe areas.
3. Check Route. - Assess safety of access route using plans/aerial photos, check for mine entries en-route.
4. If using GPS, check co-ords are known or that GPS is uploaded accordingly if not check that plans are of appropriate scale and detail to orientate yourself on site.

Approaching a Mine Entry Safely

1. If using GPS set up and orientate device to local conditions.
2. Check phone signal available, log into lone working system.
3. Proceed only when it is safe to do so.
4. Try to avoid reading maps and GPS whilst walking. Stop to assess and take in surroundings checking for potential hazards at all times. Whilst stationary orientate yourself with likely position using plans and GPS.
5. Always ensure clear site of the ground at all times when walking. Unrecorded mine entries and other hazards are sometimes found in the proximity of recorded mine entries.
6. Do not proceed into water bodies unless it is safe to do so; ponding can be associated with a mine entry!
7. Ensure sufficient time allocated to avoid inspecting a site or walking your return route in the dark.
8. Once in the vicinity of a suspected mine entry (within approx 20m) undertake a visual inspection of the area to identify any hazards, particularly those likely to be associated such features (see examples in Inspection Guide Booklet).

In the event of finding evidence of a mine entry

- a. Identify any areas of ground instability; maintain a suitable stand off distance outside this area. A collapsing shaft can destabilise an area far greater than its diameter.
 - b. Do not proceed into or stand on surface depressions, shaft/adit covering structures, broken or damaged shaft caps, covering slabs or boards etc.
9. Identify topographic conditions which could lead to accumulation of mine gas (e.g. adits located in a cutting, depressions associated with slumping of shaft fill etc). Do not enter a confined space where a mine entry is suspected; asphyxiating mine gases could be present!
10. If a former mining hazard is identified that represents an immediate danger to the public, the Coal Authority should be contacted as a matter of urgency on the number given below.

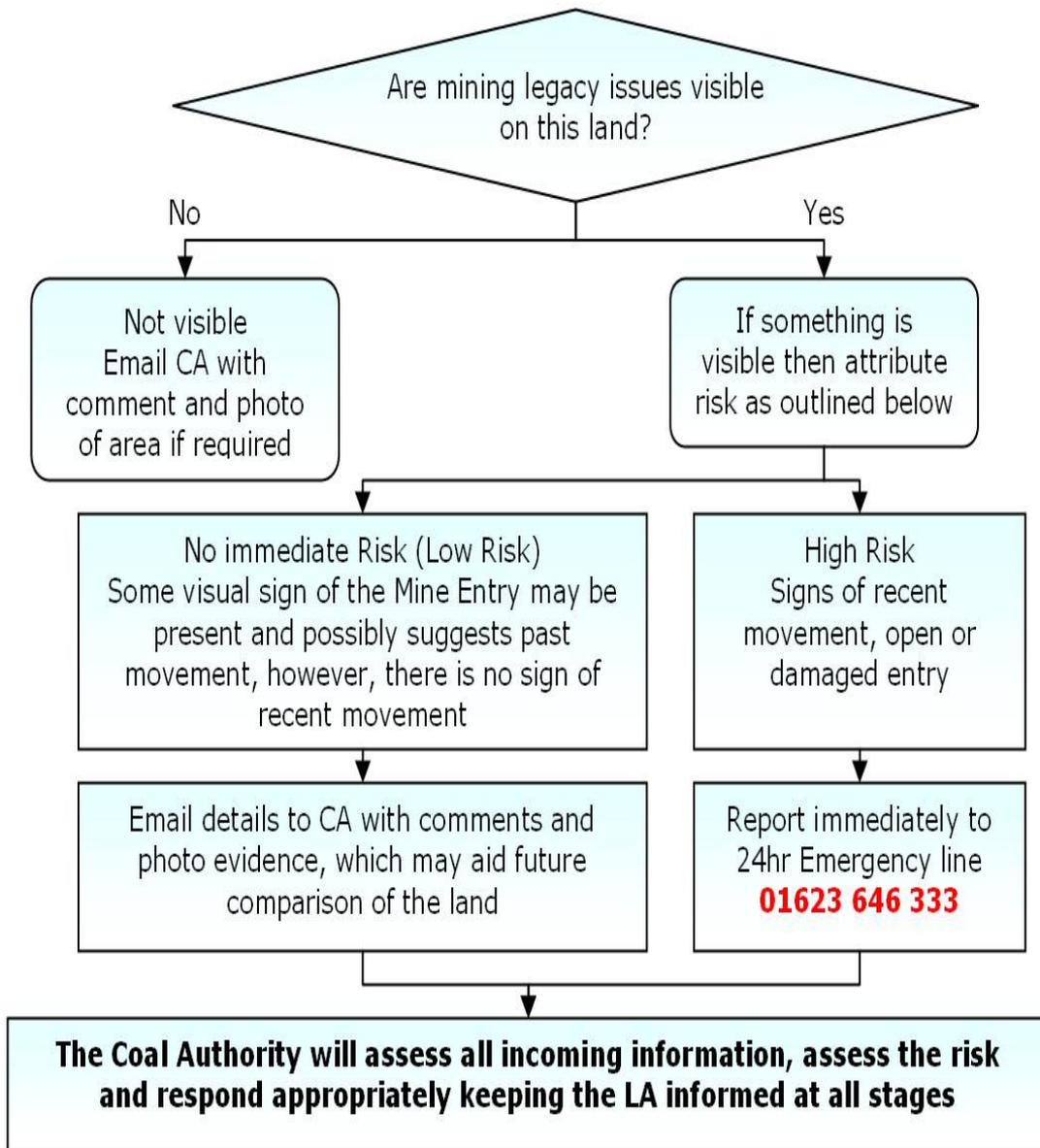
If you are in any doubt regarding your safety do not approach a mine entry!

Inspection Recording

1. Once the land overlying a suspected mine entry has been visited the findings should be recorded for future reference, even if there is no sign of a mine entry.

Every inspection should record the following details:

- a. Date
 - b. Inspector & organisation
 - c. Mine entry reference number
 - d. Inspection findings i.e. no evidence of mine entry.
 - e. GPS co-ordinates or precise plan position
 - f. Nearest addressable feature
2. If there is evidence of a mine entry the following should be recorded:
- a. Photographs (with a recognisable object to indicate scale)
 - b. Type of evidence i.e. depression, marker pillar etc
 - c. Size of feature i.e. depth & diameter of depression, size of structure, dimensions of any opening
 - d. Is the feature secured and if so what is its condition i.e. palisade fence, stock proof fence, metal grill, concrete cap.
 - e. Details of any defects i.e. fencing broken, cap cracked.
 - f. Land use i.e. open public parkland, dense woodland
 - g. Access constraints
 - h. Any recommendations.
 - i. Contact details for site i.e. site manager / key holder.
3. Copies of inspection reports should be passed to the Coal Authority for updating of its records.



Coal Related Hazards and Emergency Call Out Procedures

The Coal Authority operates a 24-hour call out service for public safety related surface hazards, including:

- Collapses of shallow mine workings and mine entries
- Fissures arising from deeper mine workings
- Gas and water emissions from mine workings
- Spontaneous combustion of coal
- Unsealed abandoned mine entries permitting access into old mines

24-hour emergency call out service
tel: 01623 646 333

Our emergency call out service deals with these incidents on a 24-hour basis, every day of the year, across all the coalfield areas. Upon receiving a report of

a suspected coal mining hazard, we will arrange for the situation to be made safe. The Authority will respond to surface hazard reports by making them secure, on a without prejudice basis, investigating the cause of incidents and carrying out a permanent treatment where the Authority has a responsibility to do so.

It should be noted that in carrying out inspections of lands which contain former coal mining features, local authorities and other land owners are not accepting any additional liabilities. The Coal Authority will always retain responsibility for securing the surface entrance to a coal mine.

As well as fulfilling a land owners health and safety obligations, regular land inspections will ensure the Coal Authority is able to take swift and effective action where coal related hazards are identified thus reducing the risk to public safety.

Disclaimer

1. This information is provided as general guidance only. Inspecting bodies should undertake their own specific risk assessments and apply their own safe methods of work and control measures as appropriate.
2. The authors and compilers of this guide are not responsible for the results of any actions taken on the basis of the information contained in this guidance, nor for any errors or omissions from this guidance.
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