
From: Curley, Jane
Sent: 01 August 2023 12:52
To: Planning Comments (SMDC)
Subject: Safety and stability in quarry 3 ref SMD/2019/0646 and SMD/2022/0014

Categories:

Jane Curley (Mrs)
Senior Planning Officer (Majors & Commercial)

From: SheilaWalters <>
Sent: Monday, July 31, 2023 11:01 PM
To: Haywood, Ben <
Cc: Curley, Jane <>; James Aberley <>; Stokes, Andrew <>; Roberts, Paul (CLLR) <>
Subject: Safety and stability in quarry 3 ref SMD/2019/0646 and SMD/2022/0014



Dear Mr Haywood,

Thank you for your email of the 7th July in respect of the thorny issues of safety at Moneystone Quarry and its suitability as a site for visitors.

Having discussed your reply at our recent meeting, the committee and the CVCS membership have been dismayed that you appear to have concluded that you, acting as Senior Planning Officer of SMDC LPA, have now reached a firm conclusion that it has satisfied the duty imposed on SMDC LPA and recited in the NPPF, that in all respects the Authority has predetermined that MQ is suitable for the proposed development adjacent to and actually within the edge of the deep water.

We feel that there are legal and planning provisions that indeed do regulate risks associated with leisure facilities near water. Just three examples are sufficient to make the point, The Reservoir Act 1975, The Mines and Quarries Act and the NPPF.

Nor do we feel that It is appropriate for you to dismiss the LPA obligations with these words.
' Ultimately the health and safety of visitors to any facilities rests with the landowner.'

That is far too simplistic and shocking to abrogate the planning authority's responsibility to consider all the aspects of what is a complex application in such terms.

We would remind you of the background statement contained in the introduction to the Wardell Armstrong LLP (WA) report commissioned by Jane Curley of Staffordshire Moorland District Council (SMDC) under PO Number 100028581 (04/05/2022) to carry out a Stability Peer Review of three reports for Quarry 3 of Moneystone Quarry, submitted in support of a planning application for the redevelopment of the Quarry into a leisure facility, namely:-

1.2.2 As part of the National Planning Policy Framework, SMDC are required to ensure that '...a site is suitable for its proposed use taking account of ground conditions and any risks arising from land stability and contamination'.

The presence of the waterbody at Moneystone is a key issue when it comes to ground conditions and stability, and therefore a crucial, safety factor that has to be considered in the suitability of the site's development plans by SMDC as LPA.

Government guidance last updated in 2019 warns that

"The effects of land instability may result in landslides, subsidence or ground heave. Failing to deal with this issue could cause harm to human health, local property and associated infrastructure, and the wider environment. They occur in different circumstances for different reasons and vary in their predictability and in their effect on development.

The planning system has an important role in considering land stability by:

*minimising the risk and effects of land stability on property, infrastructure and the public;
helping ensure that development does not occur in unstable locations or without appropriate precautions;
and
to bring unstable land, wherever possible, back into productive use."*

Also on the question of ***Is dealing with land stability issues solely a planning issue?***

It says

"When dealing with land that may be unstable, the planning system works alongside a number of other regimes, including:

a general duty on the site operator to ensure the safety of quarry excavations and tips; and that once abandoned the quarry is left in a safe condition, as required under the Quarries Regulations 1999."

It has an obligation therefore to consult other bodies such as HSE to ensure that the ground is suitably stable and the tips, ie the water body, safe.

There has been no regular inspection by HSE of this site and no closure report filed with the appropriate authorities as to its state upon the cessation of quarrying.

Now once again after several years of uncertainty, the Environment Agency has stated that the quarry 3 waterbody or lagoon is to be classed as a reservoir and that too has further ramifications that SMDC should have to consider.

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To take up a further point you made in your reply, indeed there are plenty of planning approvals deemed suitable for a variety of sites where water bodies are concerned and yes they do include quarries, but you have take into consideration the individual circumstances of each application on its merit.

This is a specific site with its own set of unique problems that have to be considered by the LPA.

Most quarries that have been accepted for development which include large water bodies as part of their attraction, have been successful in their design because they have incorporated measures in the planning stage to obviate the risks posed by any potential hazards, or they are of a nature or setting where the obvious dangers present in Moneystone quarry 3 are not as restrictive or imposing.

For example, particularly as sand quarries are concerned, most development in former ones are based in wide, flatter, and open riverine settings where the lagoons or lakes are not overlooked or towered over by high, steep sided cliffs of debatably unstable rock, or have the depth of cold water or irregularity of shelving or basal floors in them that is present at Moneystone.

We have been unable to locate any such developments akin to the peculiar conditions pertaining at Moneystone and would be interested in learning about any comparable parallels of which you may be aware from your knowledge and experience, that we could investigate to try to allay our concerns.

These are crucial matters in terms of the proposed lay out of the lodges in a quarry where they are going to be sited in the water itself, but where, to date, no underwater surveys have taken place to take account of the effect of over 10 years of inundation and saturation of the former excavation pit of these sedimentary rocks, and, very importantly, the made up or redeposited layers of quarry waste that was used by Sibelco to form the basis of the bund or dam that originally extended along the south west corner and southern flank of quarry 3.

These are areas where back as far as 2011 the owners' agents, Abbeydale, raised concerns over the issue of stability and the presence of the lagoon as a potential destabilising factor.

They produced two reports about the problems in quarry 3 including the infamous tsunami claim, the potential collapse of the north face of quarry 3 and Eaves Lane nearby, as well as worries about the weak cementation of the sandstones on the flanks of quarry 3 including the made ground by the bund and the effect of water rebound from the lagoon filling up.

Such was their concern that they brought a new restoration plan to SCC in 2012-13 which in turn caused two further stability reports to be prepared for SCC before the modified restoration plan was finally agreed.

A report by SINCLAIR KNIGHT MERZ for Staffordshire County Council 28 June 2013 also echoed the danger of the following issues

"The risk to life is dependent upon the actual usage of the site and the risk of failure endangering the life of people who would be on the mass of slope that failed. If direct access to the slope were prevented it could be concluded that the risk to life would be negligible."

The current plans however are for allowing access onto that slope where lodges will be sited above the water.

Since then of course nothing more has been done to stabilise or eradicate the problems Abbeydale had highlighted.

During that time too Abbeydale changed its tune and denied the problems when confronted, but on behalf of SMDC, Wardle Armstrong in their critical peer review, confirmed the shortcomings of their reports.

Abbeydale have now responded in a general way but not addressed specific problems: for example the narrowness of the access roads on the edge of the deep water, or that there is insufficient geotechnical data to design a bridge to cross between the southern and western lower benches.

But even so, there also remain two salient, serious omissions which SMDC must still pursue.

1. In its most recent response to Wardle Armstrong, Abbeydale have not produced any new evidence to address all the issues. Instead, in their defence, they have referred back to their earlier reports of 2011-2. Those were the ones you will recall that occasioned the potential for the collapse of quarry 3 cliff faces and tsunami threats.

eg

Abbeydale BEC Ltd report 418040DS 18/03/2011

Abbeydale stated in 2011-12 that

'Examination of the existing quarry face at the quarry's west end shows that some of the steep 45° to 52° quarry face is formed of highly weathered sandstone, in parts completely weathered to sand. Wetting of a weakly cemented sandstone will result in a reduction of its cohesive strength, particularly where unconfined. Consequently with the flooding of the quarry our observations would suggest the over steep quarry side faces will decay and cause localised instability into the lake. Analysis would suggest that instability would not initially affect the ground beyond the quarry crests, but if unchecked this might be a concern, although, provided it is not removed, slipped debris in the lake floor would have the effect of improving the stability of the side slopes. Although this scenario may be acceptable in a quarry setting where public access is limited, in an area developed for lake activities and lodges on the quarry sides, localised slipping could not only affect the areas of movement, but displaced water in the lake might be expected to surge in a wave across the lake and endanger lakeside activities.'

and in another report

4.5 Report Conclusions

The statements made within the report regarding slope stability are:

- *A more detailed examination of the quarry's past site investigation data, current groundwater monitoring and examination of the exposed quarry face revealed concerns about the long term stability of the quarry sides of Q3 at its western end*

The issue is not identified as an immediate problem, but if it left would become a concern. Therefore it is considered prudent and practical to seek a solution to avoid long term stability issues.

... Which indicates that the quarry slopes at the western end of Q3 could become unstable over the longer term when groundwater rises to its original standing levels.

The stability analysis presented in Appendix C shows that the north side of Q3 could collapse in the long term if weathering extends into the quarry face.

We therefore conclude that provided the north face of Q3 below the lake water level is protected from progressive failure of the quarry face, as set out in this revised restoration strategy, the risk of the above scenarios occurring will be significantly reduced."

NB The latter statement does not guarantee the safety of the quarry users or lakeside activities. It reduces the risk, but a degree of risk remains.

2. Also since that statement was made, over ten more years of saturation has taken place and yet they have done nothing to update the information regarding the stability of the quarry sides and its floor.

Wardle Armstrong have only reviewed the data produced so far, as their remit was not extended beyond to the detailed investigation of SMD/2022/0014 although they did raise concerns in passing comment. (ref WA1.2.3.)

And here we revert to the problem of the deep water which you seem to consider is not SMDC's responsibility.

No one knows what has happened to the sandstone below the water line.

There have been no detailed bathymetric surveys carried out since the quarry flooded in 2010.

So the unknown state of the flooded quarry sides remains.

An onsite hazard of 10 -20 metres of deep water with uncharted water impacts, over which it seems SMDC is prepared to consider a plan for the installation of lodges, does not seem prudent to ignore.

It is now over 10 years since Abbeydale produced its reports and those were mainly based upon historical data provided by the quarry owners.

Not only was much of the data **pre** the flooding of the quarry 3 excavation pit and therefore actually untested under full saturation conditions, but also

there have been notable discrepancies between the Sibelco figures used and those of Abbeydale.

For example, we have drawn Mrs Curley's attention to one such important one where there is a 10 metre difference between the heights given for water to overtop the bund. She has yet to offer a reply though she said she would make inquiries.

Reliance on such historical data is not acceptable given the known risk that the deep water in the reservoir /lagoon presents where proposals for watersport activities and lakeside accommodation are being considered.

There is far more sophisticated survey technology now available that can provide state of the art information on the underwater conditions of the steep sides / benches of the former pit regarding saturation stresses, weaknesses and erosion problems that might be critical to the stability of the piling

and construction and safety factors of locating the lodges in and on the edge of the waterbody, that should be deployed.

The use of GIS modelling and GPS survey to investigate preservation levels in wetland landscapes and its management is now commonplace in situations where decisions about drainage and water tables are important, eg in the effect upon the SSIs for example, and data from piezometers combined with GIS can be used to model the surface shape of the top of the water and show the heights or depths of its levels at different areas of

the site.

This model could be compared with, or added to a model of the landscape surface derived from GPS survey data to provide a much more comprehensive picture of the structure of the lagoon in 3D forms that would enable planners to see and understand the problems.

Underwater robotic camera and laser scans could assist in pinpointing any structural problems or weaknesses, and vertical levels of preservation

with the position of the fluctuating water table, seasonally adjusted, can be properly assessed.

The current level in the reservoir / lagoon has been unusually lower than expected and is revealing evidence of tailing seepages and potential pollution from quarry 2 in its silts, so that modelling of the water table throughout the year would seem essential before decisions on permanent spillways and lake levels are made, given the potential effect upon the SSIs.

But where is such data? Abbeydale have not provided sufficient information in terms of pictorial modelling or indeed any recent close up visual evidence to prove or disprove subsurface stability issues.

More information is required.

The water table and lake levels need scrutiny and information to be derived from three, key, zonal variations, reflecting areas of

1) permanent saturation:

that is the floor and quarry sides that are always below the waterline and where potential, hidden weaknesses, or undermining could be lurking and currently unrecognised from lack of modern investigation.

2) a zone of fluctuation

where the sandstones, mudstones and redeposited waste material that constitute much of the southern flanks that were earlier identified by Abbeydale as potentially hazardous, or any areas encountered in the survey /model profile which would be wet for some periods of the year, but dry at other times, such as the liminal parts where the lodges may be sited both in and out of the water.

3) a proven dry zone

those areas which are above the lake levels but which may be subject to and vulnerable to penetrative surface seepage from weather events and increased risk with climate change.

It is important to identify and compare the three varying saturation zones because of the thixotropic nature of the sandstone (quicksand formation already present in quarry 2 and elsewhere according to the quarry notices and from the known geology) and to test the hypothesis relating to the relationship of the saturation levels and stability of the ground, and the expected variations of the water table and its longer term effect upon the SSIs.

We would therefore expect more evidence to be provided to SMDC by means of the visualising and analysing of multiple datasets that is not available to date, or indeed where it has been provided in limited fashion, up to date.

Only in that way can it be possible to accurately quantify the effects of alterations to the landscape over time (at least the past 10 years in the case of quarry 3) in terms of erosion and stability following its inundation, and the potential safety of development within it, and not least to appreciate the potential dewatering effect on the SSSIs.

These are technical matters that the planning demands for safety and risk assessment. They are reliant on the full knowledge of the impact of that deep water and its attributes.

But as you are aware, we hope, the presence of such deep water in this quarry that both requires those assessments to be made and is a significant contributory factor in their formulation, or should be, is itself a public safety hazard as regards the site's intended use.

Remembering the earlier guidance that 'the planning system works alongside a number of other regimes', you have to take notice of the safety factor of that deep water that is an obvious concern given the proposed use of the site and its suitability.

The principal regulator for quarry safety is the Health and Safety Executive HSE while local authorities can also inspect and both have the powers to take direct enforcement if required. However good planning should anticipate the potential for risks, especially for ground instability and water impact, but also for public safety in its decisions.

The HSE has not been involved in the planning consultation as far as we are aware. Given too that it has regulatory powers over quarry tips or lagoons and has never inspected the site as required by law, that seems a very serious safety omission all round.

Indeed in that regard, the Minerals Product Association or MPA, the national body who represent quarries and owners alike, has recently endorsed a new ROSPA campaign document entitled 'Managing Safety at Inland Water Sites.' as it is keen to ensure that current owners of former quarry sites understand the public safety issues and the support that is available to them.

Whilst the MPA's primary focus is for public safety in member operated or owned quarries, it also recognises this will most effectively be achieved within the wider context of drowning prevention and close collaboration with other organisations with an interest in water safety and drowning prevention.

Tragically, 60% of the UK's 1,029 accidental drownings over a five-year period commencing in 2012 were at inland water sites. 263 people accidentally drowned in open water such as rivers, canals, reservoirs, and quarry lakes in 2018.

The MPA believes that helping to raise awareness of the hazards associated with quarries, both active and disused, will help to save young people's lives. The MPA is collaborating with and supporting organisations such as the Fire and Rescue Services, RNLI, RLSS and RoSPA in their campaigns to raise public awareness of the dangers associated with open water safety.

When it comes to identifying the hazards of a water filled quarry, there are three main groups that cause concern. They are classified under the following headings:-

those that are built, the nature of the water, and people and activity.

All three hazards are currently either present in Moneystone quarry or according to the planned development will be present :-

Built includes the quarry itself and its topography, the reservoir, the proposed bridge, the jetties on the lodges themselves protruding over the water, the spillway and drainage features leading to unseen currents, unprotected drops such as outcrops, lake edges and boulders.

Nature of the water

Temperature, both at the surface and below, the depth, underwater objects and unclear features such as rock shelves, erosion, undercuts, quicksand
unstable edges and water quality factors (seepage from former industrial tailings, acidity, PCBs etc)

Activity and People

The proposed Water Sports Centre and the exposure to increased footfall in and around the site with activities such as walking, running and cycling.

We would argue therefore that these are factors inherent in the plans for the development that you have to consider.

They are also an accumulation of significant risk factors that make the site unsuitable for its intended use and design as proposed.

Prescriptive answers for specific issues need to be taken into consideration by SMDC as a principle of safety.

If it is about weighing the planning balance, we would also argue that the safety risks concerning the presence of the deep water as currently evidenced, outweigh the benefits.

We should be grateful therefore if you would reconsider your earlier response in the light of the above and would welcome your further views or comments on this matter of safety and the planning obligation towards it.

Perhaps you would also be able to confirm the part the HSE has played in the consultation process so far.

In the meantime we would be obliged if you or Mrs Curley would kindly place this letter on the files for SMD/2019/0646 and SMD/2022/0014 respectively as ongoing objections.

Many thanks.

We look forward to hearing from you.

Yours sincerely,

David Walters
Secretary
Churnet Valley Conservation Society
CVCS

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