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RECEIVED
20 APR 2012
LEWIS HOUSE

17 April 2012

Dear Sir

Stowey Quarry – Landfilling of hazardous waste – Application 10/05199/EFUL
Bristol Water Response

Summary of objection

On the basis of the evidence put forward by the applicant, we object to the proposals to develop the quarry void as a landfill site. We consider that the applicant has not fully comprehended the link between shallow ground water in the strata in which the quarry sits and the surface waters that supply the reservoir. We do not have confidence that the conceptual model represents the true situation as no survey or quantitative data has been presented in support of the model. We believe that the application is based on an inaccurate depiction of the hydrogeology. A landfill constructed as proposed by the applicant would result in an engineered liner being the only barrier between the leachate in the cells of the landfill and shallow groundwater contributing to reservoir inflows. We consider this is both a situation that may not comply with required design standards and is an unacceptable long term risk to a major public water supply. In the light of the possibility of further evidence being presented, we reserve the right to modify or strengthen our view.

Background

Bristol Water is a water supply company, licenced under the Water Industry Act 1991. As such we are required to comply with a range of regulatory duties. Of particular relevance in this case is the obligation to ensure any water we supply complies with the statutory Water Quality Regulations. With that in mind, it is our view that it is not appropriate to plan a large scale waste disposal facility where there is evidence of direct flow pathways from that facility to the main water resource for the area.

The company owns and operates Chew Valley Reservoir, situated less than 2Km from the application site. A number of springs and streams originating from shallow groundwater in the vicinity of Stowey Quarry discharge to the reservoir, as does all other local surface water on the catchment.

Chew Reservoir is the primary source of drinking water for most of Bristol and surrounding areas to the south including Midsomer Norton, Radstock, and Shepton Mallet. The reservoir is designated both as a Site of Special Scientific Interest (SSSI) and Special Protection Area for migratory wading birds. The reservoir is also a significant local and national leisure resource, hosting a sailing club, nature, bird watching and angling facilities.

As the owners of Chew Reservoir, we have binding obligations to meet the highest water quality and environmental stewardship standards as part of our operation of this valuable resource. Over the years, we have worked with local wildlife groups, the Environment Agency and the farming community to ensure these standards are maintained and enhanced. We also believe a significant population outside of the local community have benefited and continue to benefit from our careful management of the reservoir.

The value of this resource to the local community can only increase in future. The population of the region is forecast to increase by 30% over the next 30 years and this will create additional demand for water in an area where water resources are limited. Chew Reservoir will remain an essential part of the company water resources strategy. If this body of water were to be compromised in any way, there would be significant social and economic consequences.

In the past 50 years, two of our water sources have been put beyond economic use by pollution from landfill leachate. For one of them, the then regulating authorities gave assurances at the time that only tipping of inert material would be permitted. From the analysis of that source today, it is clear that there was no meaningful control over what was tipped. Our water quality analysis for that source detects every class of pollutant from radioactive substances, hydrocarbons, ammonia and a cocktail of organic chemicals. We would not wish to see this situation repeated at Chew.

Chew Reservoir is designated by the Environment Agency as a 'drinking water protected area' under the Water Framework Directive. We understand that the designation was intended to afford some measure of protection against present and future pollution risks. We would point out that a source of water can be made unfit for use by extremely low concentrations of proscribed substances (often at the limits of detection). Planners need to bear this in mind when considering the potential pollution risk of developments adjacent to drinking water resources.

Representations to application 10/05199/EFUL

Subsequent to our previous objection, we have reviewed the revised application 10/05199/EFUL. We note it does not appear that significant new information has been provided in terms of quantitative assessment of risks or new details covering construction of the liner, handling of leachate or future monitoring. We would ask the Local Authority to consider whether the Environmental Statement provided is in accordance with the new Town and Country Planning Regulations 2011.

In our original objection, we indicated that the background information, detailed design considerations and conceptual model did not fully convey the nature of the risks to our reservoir. It is our view that this particular planning application caries high environmental risk potential to Chew Reservoir. The level of detail provided by the applicant in respect of risks to the water environment was not, in our opinion, sufficient to allow a fully informed planning decision.

Following our planning response, the applicant provided some further information on the possible interaction between groundwater and surface waters, however no quantitative information or baseline hydrogeological data was provided.

We believe that a planning decision has to be based on a full understanding of all of the risks associated with the proposal. We would also expect the applicant would want to fully understand these risks. To not do so could mean that permission is granted for a project with embedded potential for environmental harm. Alternatively, the project may fail at the permitting stage because issues were later uncovered for which there was no economic mitigation.

It is our belief that the application may be technically flawed, in that it proposes the construction of a landfill directly upon a minor aquifer without any intervening geological barrier. Moreover, this 'minor' aquifer communicates hydraulically with the reservoir via numerous springs and streams

Our comments set out below relate mainly to material presented in the Conceptual Site Model Report, prepared for the applicant by Watermill Environment Ltd.

1. There has been no study to trace flow pathways from the quarry site to surrounding springs and streams. We observe many more springs and risings occur immediately to the north and west of the site than implied by the statements in 2.3.4. Contrary to the statement in 2.3.5 suggesting that there is no spring line to the north of the site, we note evidence from maps indicates evidence for a spring line and several spring issues. It is likely the source of water for these springs is infiltration through the limestone around and beneath the quarry. This shallow water collects and flows as surface water to Chew Reservoir.

2. The possibility of there being rapid flow pathways via faulting and fracturing of the limestone at the base of the quarry or the mudstones beneath has not been considered in detail. The fact that there are a number of small springs to the north and north-west suggest the flow regime is more complex than stated in the conceptual model and groundwater does flow to the north and north-west as well as the north-east.

3. The report stresses that the shallow groundwater through the aquifer in which the quarry is sited is likely to flow to the north-east. This may be the case, but it is also the case that this groundwater becomes a spring source for Hollow Brook, which enters the reservoir, providing a clear pathway for pollutants beneath the site to enter the reservoir.

4. The Lias limestone of the quarry is classified as a minor aquifer with a high leaching potential. This means that groundwater can move rapidly through the strata and may not be constrained entirely by hydraulic gradients and will take preferential flow pathways. Our analysis leads us to believe that groundwater in the aquifer beneath the quarry supplies and is in direct hydraulic communication with local streams and therefore the reservoir.

5. In the context of the points above, the statement in 3.4.3 that the Mercia Mudstone is sufficient to mitigate groundwater migration to the reservoir is seen as no longer relevant and possibly misleading. This is because shallow groundwater from the aquifer appears to issue from less permeable bands in the Lower Lias or more probably at the boundary with the Mercia Mudstone, before discharging to the reservoir.

6. The implication of the points made above is that the proposed landfill will actually be sited directly on the base of a permeable aquifer having the potential to conduct any leachate via the springs and streams to the reservoir.

7. The application primarily rests on the assumption that the Mercia Mudstone would be the effective geological barrier preventing transmission of groundwater beneath the quarry to the reservoir. This view was held by the Environment Agency and BANES planners at a meeting we attended in February 2012. At that time we were not able to challenge that assumption. From a more detailed study, it is clear the assumption in the conceptual model is unlikely to represent the actual situation. Groundwater from the aquifer by-passes the mudstone, discharging as springs before entering the reservoir.

8. It is our understanding that the base of any landfill must have a geological barrier (as well as an engineered liner). The applicant's conceptual model states the base of the landfill would rest in a permeable limestone aquifer (with a mudstone beneath). We have shown there is evidence that this limestone aquifer is hydraulically connected to the reservoir. If that is the case, then approving the development would create an entity that would be unlikely to comply with current landfill legislation as there would only be a constructed liner to separate the leachate in the landfill from the aquifer.

9. When assessing the risks of landfill sites, consideration must be given to the full life of the landfill. We would need to be assured that the design will not become a pollution risk many years in the future. As the integrity of a constructed liner cannot be guaranteed in the long term, the lack of any geological barrier between the landfill and the aquifer discharging water to our reservoir renders the application flawed in our opinion.

10. The infilling of the existing voids will change the flow pathway of some groundwater and impose differing loadings on the surrounding land and slopes. We understand that there has been some evidence of past instability on the west side of the quarry. If that is the case, then detailed investigation of slope stability should be carried out prior to any determination. While stability may be adequate during operation of the landfill, movement over time following completion may lead to premature failure of a constructed liner.

11. Overall, we are concerned that there has been limited evidence presented to support some of the statements made in the application covering the hydrogeology of the site. In some cases, these statements do not appear to be consistent with some of the observable facts.

12. The proposed waste stream is described as stable non reactive hazardous waste including fibrous or bonded asbestos and materials containing those substances. In reality it is very rarely the case that these wastes arrive as 'factory fresh' items. We would expect the material to be largely from demolition sites including industrial sites, contaminated land and other non verifiable sources. The material containing asbestos in any quantity is usually bagged and not always checkable. There is a high probability there will be a component of co-deposition of less inert material, or material contaminated with other mobile substances. Due to percolation of water into disposal cells, there will eventually be some form leachate generated. This practicality should be responsibly considered, remembering that for some contaminants, concentrations of the order of a few parts per billion may be sufficient to compromise a source of drinking water.

13. The planning application rests upon unverified assumptions and significant uncertainties relating to the ultimate destination of water passing beneath the quarry and the nature of the aquifer in which the quarry rests. We believe that these issues are not fully understood and require further evidence or discussions prior to any determination.

14. We are surprised the applicant has not presented any programme for pre investigation, or baseline monitoring of hydrological or water quality parameters to inform a quantitative risk assessment. We also note there is no recommendations made for operational monitoring of hydrological or water quality parameters during or after the operational life of the landfill. In our view, these omissions should be resolved prior to a determination.

Yours sincerely,

M J Berry
Water Resources Planning Manager