FLOOD RISK ASSESSMENT FOR
EXTENSION TO
HARLESTONE QUARRY
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Introduction

Harlestone Quarry is located south of Harlestone village adjacent to the A428 Harlestone Road and Harlestone Firs. An area to the north west of the existing quarry has been identified as suitable for a possible extension to the mineral extraction already taking place. It is proposed that the void created by the extraction would be followed by the importation of some inert waste to raise ground levels approximately back to contours, thus minimising the landscape impact of the extraction and maximising the site’s commercial value.

This report has been compiled as part of the Environmental Impact Assessment requirement for the planning application for the proposed extraction and landfill works. It considers the implications of the works on flooding and the surface water run-off from the site.

Site Description

The site occupies an area measuring approximately eighteen hectares with gradients generally about 1 in 40 falling south east towards the existing quarry. Surface water run-off from the site drains into a ditch which is culverted under the Harlestone Road and across the woodland known as Harlestone Firs (refer to plan in Appendix 1). The site forms part of the Nene Valley catchment and ultimately drains to the River Nene via Harlestone Brook.

The site is currently used as arable farming land.

Geology

The quarry is the last one in the country that produces Northamptonshire Sandstone which is a source of building stone for conservation projects.

Impact of Proposals on the Existing Flood Plain

The Environment Agency’s indicative flood plain maps have been checked and the site does not occupy any flood plains. Therefore varying the ground levels as a result of the proposed quarry operation will not affect flood storage or flow of flood water.

Phasing

The proposal will involve the extraction of sandstone which will be carried out in phases, the scale of which will depend on demand and geology. After the completion of each extraction phase, the quarry will be back-filled with inert waste material generated from local developments and then finally restored. These three processes are outlined below.

Mineral Extraction

It is predicted that the workings will be above the water table and therefore de-watering would be confined to any surface water which collects in the excavation. The de-watering, if required, will be restricted to a green-field run-off rate to be agreed with the Environment Agency which will discharge into the ditch mentioned above. In order to prevent undue sediment mobilisation in the ditch, the water would be pumped into a settlement pond close to the boundary of the proposed excavation. The water in the pond would then be either pumped or allowed to discharge by gravity at the agreed rate into the ditch.

Surface water collected from the haul road and compound area will be collected and attenuated as necessary to ensure green-field run-off rates are preserved.
Landfill

Following the conclusion of each mineral extraction phase, it is proposed to fill the void with inert waste. This would be compacted to maximise the commercial value of the site and will ultimately be expected to restore the site to levels up to and just above existing ground levels.

De-watering would be dealt with in the same manor as during the extraction process, although the material used to fill the void may be less permeable than the existing material which may result in much higher rates of pumping in order to keep the works ‘dry’. In order to prevent undue sediment mobilisation in the ditch, the water would be pumped into a settlement pond close to the boundary of the landfill area. The water in the pond would then be either pumped or allowed to discharge by gravity at the agreed green-field run-off rate into the ditch.

Surface water collected from the haul road and compound area will be collected and attenuated as necessary to ensure green-field run-off rates are preserved.

Restoration

Following the reinstatement of the existing topsoil, each phase will be planted with trees which will eventually mature into a new forest. The rate of surface water discharge from the forested area will be less than the existing arable land because of the absorption of water by the trees. The physical obstruction of the trees, leaves, shrubs and other items generally found on the woodland floor will also contribute to the slowing of surface water run-off. Therefore there should be no further requirement for the long term management of surface water run-off.

Conclusions

The proposed mineral extraction and landfill site is located well away from the flood plain and therefore will not displace any flood water or interfere with the flow of flood water. Measures to maintain green-field surface water run-off rates during the three phases of the operation will ensure that flows in the ditch will not be unduly affected. I would therefore conclude that the proposals would have no detrimental effect to flooding in the area.

Ian Brazier  BEng (Hons) CEng MICE
On behalf of Abington Consulting Engineers

12th March 2005
Site Location Plan – Extension to Harlestone quarry.

Approx scale 1:5,000

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