Water Management Plan - Trefil Quarry Deepening

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Prepared for

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1 BACKGROUND

Gryphonn Quarries Limited was granted planning permission for the deepen Trefil Quarry in February 2009. Planning Condition 20 of this permission states that:

> *A Water Management Plan will be submitted for the approval of the Planning Authority prior to commencement of the deepening operations at the site.*

The Environmental Impact Assessment (EIA) that supported the application for the revised planning permission at the quarry included a series of recommendations for monitoring and mitigation that, it was proposed, would form the basis of the WMP for the site (ESI, 2008).

This letter sets out the WMP for the site and specifies requirements for three key activities. These activities are:

1. Monitoring
2. Mitigation measures
3. Annual review

It is intended that the WMP should be subject to regular review and modification as necessary in the light of ongoing data collection.

2 FUTURE MONITORING

2.1 Potential Receptors

The main receptors identified for the impact assessment are

- Shon Sheffrey Spring;
- The Nant Trefil; and
- Groundwater in the Carboniferous Limestone.

The impact assessment concluded proposed dewatering activities will not have any significant effect on flows in the Nant Trefil or Shon Sheffrey spring due to the re-circulation of water discharged to the Nant Trefil.

The proposed development involves two main hazards with respect to groundwater and surface water quality:

- Spills from plant operating on site.
- Discharge of sediment-laden water to drains etc.

2.2 Proposed Monitoring

In order to quantify the level of impact at key sites and to make sure that the system is continuing to behave as predicted on the basis of the current conceptual model, a monitoring system will be implemented.

The following monitoring regime will be put in place:

- Groundwater levels in the three boreholes on site (BH1/07, 2/07 and 3/07) will be measured at weekly intervals (see Figure 1).
- Subject to access agreements, groundwater levels in Trefil Boreholes 1 and 2 will be monitored at monthly intervals (see Figure 1).
- The rate of quarry pumping from the sump will be monitored at weekly intervals by means of an in-line flow meter or suitable alternative.
- The suspended solids/turbidity of the quarry discharge will be measured by the quarry operator at weekly intervals together with a note of the weather conditions at the time.
- Daily rainfall data will be monitored my means of a site rain gauge.
- The site drainage system will be inspected on a daily basis to ensure that the oil booms are in place and that there is no visible oil downstream of the booms.

An updated water balance for the site will be undertaken after one year of data collection. Further updated water balances in subsequent years may be necessary depending on the outcome of this updated water balance.

All monitoring should be continued until water levels in the quarries have recovered to their equilibrium position. It is anticipated that this will be one or two years after quarry dewatering ceases.

3 MITIGATION

The quality of water discharged from the site will be regulated by the discharge consent issued by the Environment Agency for the site (reference: AN0258201).

In order to comply with the requirements of the discharge consent and to cope with the predicted increase in dewatering rates, some additional settlement will be implemented on site (see below).

It is concluded that these measures will effectively control any risks of impacts on surface water and groundwater quality.

Specific Measures Proposed To Mitigate Risks Presented by the Development

1. The settlement capacity of the main discharge route will be increased by provision of an additional settlement pond upstream of the current clay lined lagoon.
2. The concrete pad at the re-fuelling point will be surrounded with a bund. Strict procedures are in place to avoid spills but in the event of a spill in this area the spill will be contained and removed with absorbent materials and disposed of appropriately. The concrete pad will be covered to the elements to keep the area dry and prevent any run-off of surface water which may be contaminated.
3. The emergency procedure in the case of an oil spill will include switching off the sump pump immediately to reduce the risk that any oil is pumped off-site. Materials to soak up spilt oil and fuel will be stockpiled on site.
4. A stock of flocculants should be kept on site to enhance settlement in the case that a suspended solids measurement indicates that the discharge consent limit has been exceeded. The selection of flocculant should be consistent with the location of the quarry within a source protection zone. The flocculants will be used according to the guidelines provided by the manufacturer.
5. A weekly inspection of the working areas will be made (and documented) to look for the presence of any voids which might indicate the presence of fast pathways from the quarry to local receptors. Quarry personnel will be made aware of the following preventative and remedial measures that may be employed following the discovery of preferential flow paths within the quarry face:

    - Isolation of surface water drainage from areas or features of concern.
    - Bunding critical areas or features with suitable material to prevent the ingress of water.
    - Lining critical areas or features with suitable geotextile material.
    - Limiting the quarrying of critical areas or features to dry weather.
    - Leaving unworked stone around the critical area or feature to minimise any risk of groundwater pollution.
    - Where significant ponding of surface water occurs in the vicinity of a critical area or feature, the water will be dispersed to other areas of the quarry where ground conditions are less sensitive.
    - Water seepages from quarry faces to be directed towards the nearest drainage channel or led to a lower level in an area where the ground is competent.
    - Haul roads and drainage channels to be kept open and free from obstruction to ensure site drainage directions are away from any identified features.

4 ANNUAL REVIEW

The data will be reviewed annually and an annual report on trends observed with interpretation submitted to the Planning Authority and Environment Agency. Details of the water balance calculations after one year of data collection will be included in the annual report. The annual report will be submitted to the Planning Authority.

5 REFERENCES

ESI Ltd. (2008). Trefil Quarry: Hydrogeological Impact Assessment

FIGURES

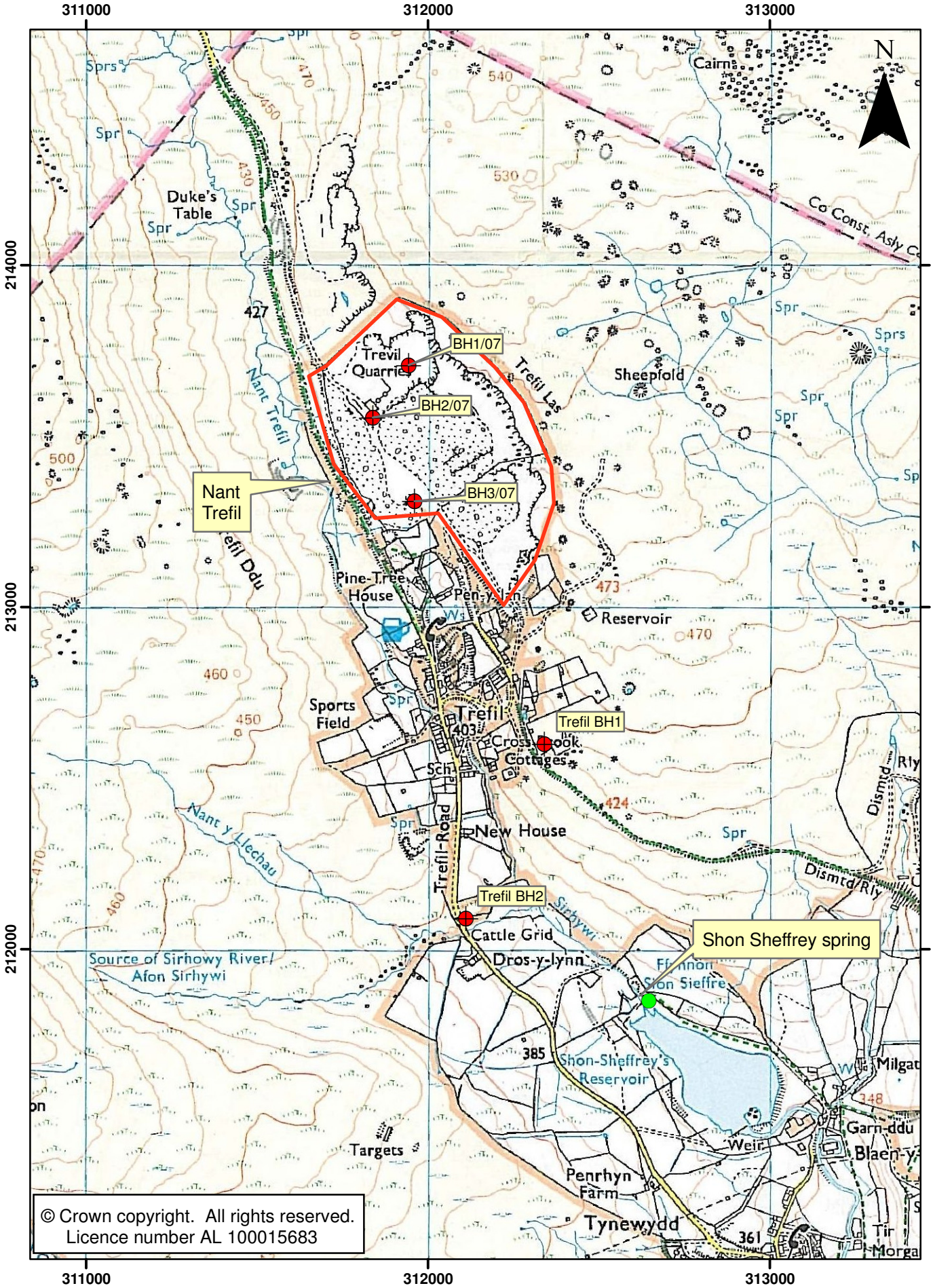

Figure 1
Monitoring borehole locations

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