

# LANDFORM AND WATER MANAGEMENT

## LANDFORM

The landform and topography that forms the baseline for the scheme comprises the approved quarry restoration proposals to be implemented by Aggregate Industries, which started this year. The restoration proposals addressed three technical issues: long term slope stability; groundwater levels and quality; surface water runoff and quality.

The proposed landform includes:

- Bailey's Pit – quarry floor raised using excavated rock and quarry spoil, levelled & capped with imported soil
- Bailey's Pit – steeply sloping sides to the quarry re-formed to provide slope stability
- Spear's Land – spoil heaps removed and the base capped with imported soil to

create a gentle sloping bowl falling to the west

- Spear's Land – Attenuation pond for surface water and short term ponds designed to treat acidic runoff

## WATER MANAGEMENT

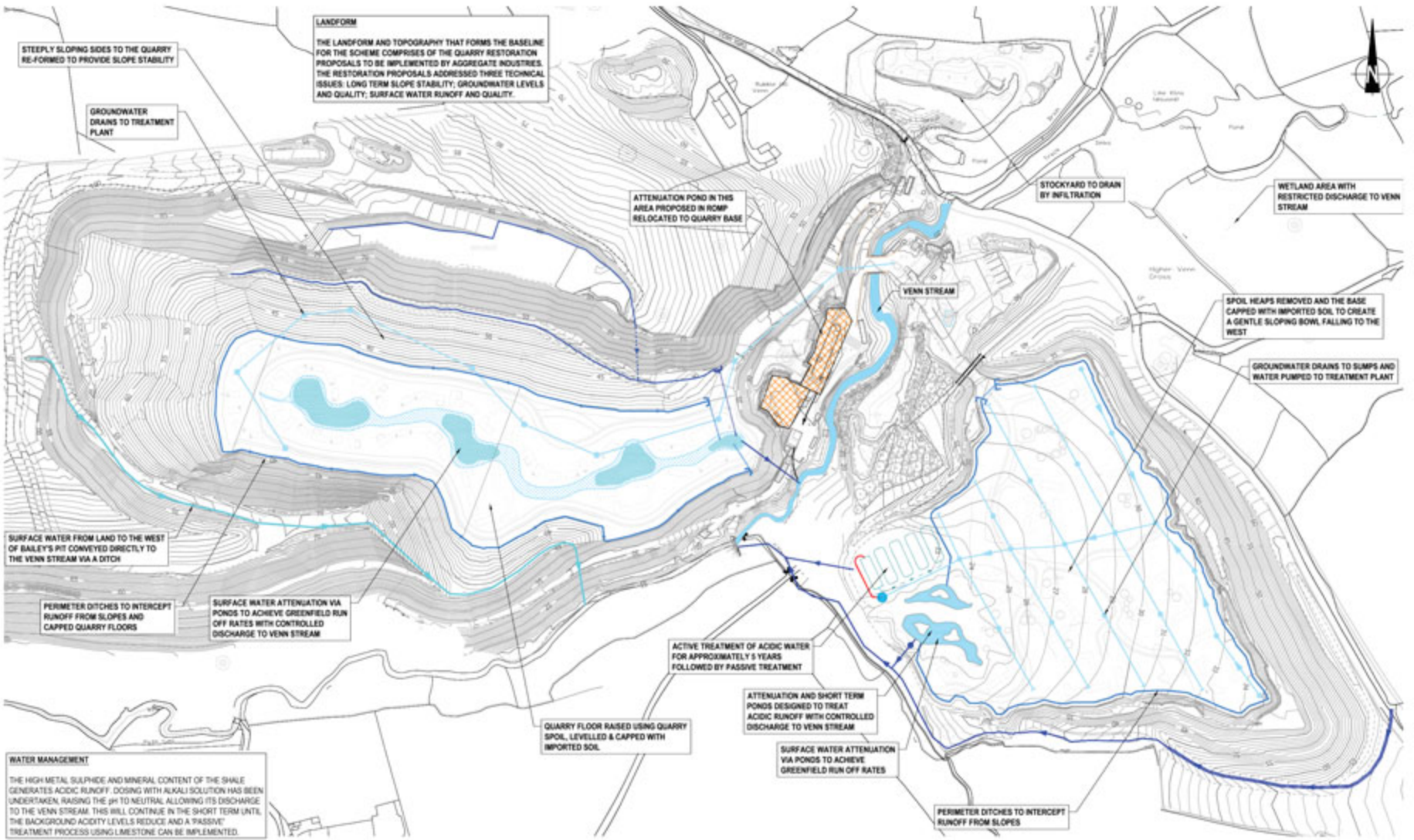
The high metal sulphide and mineral content of the shales generates acidic runoff. Dosing with alkali solution has been undertaken, raising the pH to neutral allowing its discharge to the Venn Stream. This will continue in the short term until the background acidity levels reduce and a 'passive' treatment process using limestone can be implemented. The water management measures include:

- Groundwater drains to sumps and water pumped to a treatment plant in

Spear's Land

- Perimeter ditches to intercept runoff from slopes and capped quarry floors
- Surface water from land to the west of Bailey's Pit conveyed directly to the Venn Stream via a ditch
- Active treatment of acidic water for 5 years followed by passive treatment
- Surface water attenuation via engineered ponds in Bailey's and Spear's to achieve greenfield run off rates

For the holiday accommodation scheme, the water management proposals are adapted to achieve more diverse forms of surface water attenuation, more effective long term water treatment, continuation of groundwater management, and greater biodiversity.



# BIRCHWOOD LAKES



HABITAT FIRST