Conceptual Groundwater Model (Regional Context)

SW — NE

Catchment Boundary

Catchment Boundary

Rain

Rain

Rain

Rainfall recharge is the dominant source of water in the Wollombi Brook catchment.

Narrabeen Group (Rn)

Lateral Flow

Evaporation + Transpiration

Runoff

Alluvium
Unconfined Aquifer
Moderate Permeability

Evaporation + Transpiration

Wollombi Brook

Broke

BM02

BM01

HB02

Runoff

Runoff

Recharge to lower coal seams is collected at outcropping sections of the strata in neighbouring catchment

Evaporation + Transpiration

Secondary infiltration occurs as water enters from an above formation, this flow is relatively small compared to recharge from direct rainfall

Infiltration

Infiltration

Infiltration

Infiltration

Infiltration of rainfall water adds to groundwater aquifers where the formation outcrops. In alluvium, infiltrated rainfall has a direct path to the water table

Minor secondary infiltration

Wollombi Coal Measures/Newcastle Coal Measures
Coal seams, claystone (tuffaceous), siltstone, sandstone, conglomerate. Medium to coarse-grained sandstone (Watts Sandstone)

Lateral flow through coal seam

Lateral flow through coal seam

Lateral flow through coal seam

Water level heads are characterised by the confining pressures of the aquifers. The deeper the strata the higher the confining pressures and the higher the resting water level.

Minor Coal Seam

Whybrow Coal Seam

Semi-confined Aquifer - Low Permeability

There are numerous low permeability layers throughout both coal measure formations - low permeability layers restrict vertical flow between aquifers

Interval to be tested: Blakefield Seam (323 - 330 mBGL)

Redbank Creek Coal Seam

Confined Aquifer - Low Permeability

Blakefield Coal Seam

Confined Aquifer - Low Permeability

BM01 contains 3 wells in the same location that are screened at 3 different depths to monitor the water levels of 3 separate aquifers

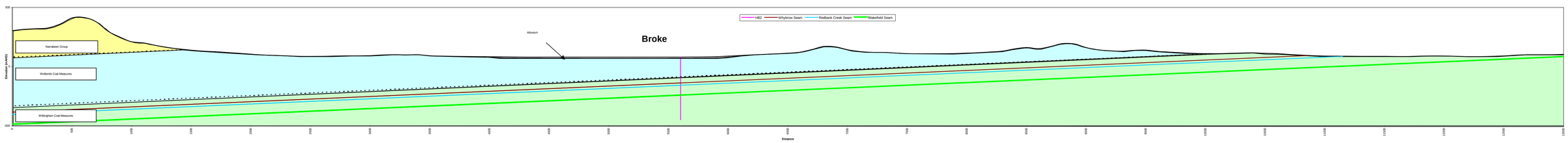
Wittingham Coal Measures/Tomago Coal Measures
Coal seams, claystone, siltstone, sandstone, conglomerate

Total Depth HB02: 531 mBGL
HB02 well fully isolated from all surrounding strata with steel casing and cement along its length.

Not to scale:
Vertically Exaggerated

LEGEND

- Low Permeability layer/impermeable layer
- Evaporation + Transpiration
- Flow
- Primary infiltration
- Secondary infiltration
- Catchment boundary
- Water table (Alluvium)
- Coal Seam



No Vertical Exaggeration