

## Match the definitions

Cut out along the dotted lines, mix and match up the definitions, working in pairs or independently. You can either choose to arrange them on the worksheet provided - [click here](#), glue down or keep in an envelope to play again.

## Cut along the dotted lines

<b>Dam</b>	large wall or barrier that obstructs or stops the flow of water, forming a reservoir or a lake
<b>Rockfill dam</b>	a kind of dam that combines porous yet firmly packed gravel, sand, or silt in one section with an area of concrete, metal, clay, or some other substance that completely blocks water
<b>Earthfill dam</b>	built up by compacting successive layers of earth, using the most impervious materials to form a core and placing more permeable substances on the upstream and downstream sides
<b>Concrete arch</b>	is a concrete dam that is curved upstream
<b>Concrete gravity</b>	a dam constructed from concrete or stone masonry and designed to hold back water by using only the weight of the material and its resistance against the foundation to oppose the horizontal pressure of water pushing against it
<b>Crest</b>	top of the dam wall
<b>Core</b>	impermeable fill barrier that makes up the balance of an embankment dam
<b>Filter</b>	semi-permeable zone designed to prevent loss of soil and protect the core
<b>Shoulder fill</b>	used to provide structural stability to the dam; should have high permeability
<b>Abutment</b>	side of the valley wall which the dam is constructed against. Can be stabilised and modified to provide more stability to the dam. Right and left abutments are as observed when looking downstream
<b>Toe</b>	junction point of the downstream face of the dam and the natural ground
<b>Grout curtain or blanket</b>	technique used to create a barrier into the foundation to avoid seepage or possible failure points with the foundation
<b>Spillway</b>	used to control the release of water from the dam downstream
<b>Riprap</b>	protection on the up and downstream face of the dam. Riprap offers wave protection particularly on the up-stream face
<b>Free board</b>	the height remaining between the top of the reservoir and the crest
<b>Phreatic line</b>	the top flow line of a saturated surface of the seepage from the reservoir through the dam

## 4 main categories of failure modes

<b>Overtopping</b>	when inflows fill the reservoir faster than spillway, generation or other measures can lower the water level, this can exceed the maximum design level and overtop the dam structure. Overtopping can lead to erosion and instability of the dam structure, causing a failure
<b>Foundation defects</b>	structural instability can occur through setting in the foundations, instability in the valley slopes, excessive uplift pressures and seepage through the foundation
<b>Piping and seepage failures</b>	water can find a defect or weak point and form a pathway through the dam or foundation, which can cause movement of material and internal erosion. Trees, animal burrows, conduits and cracks can contribute to these failures
<b>Conduit and valve failures</b>	issues in the operation or effectiveness of valves and conduits can lead to failure. Defects in conduits can create an erosion point and inlet for piping to occur

### Rockfill



### Earthfill



### Concrete arch



### Concrete gravity

