# Asset Templates: Guidance on Element Weightings

## What Are They?

Asset templates give suggested values for the weightings to apply to elements of assets which have an FCRM purpose.

These suggested values are not compulsory, but where better information is not available, they should be used.

The tables give both a suggested default weighting for each element, plus an alternative value, with reasons why it might be appropriate to pick this.

## Who are they for?

The templates will be of use to Asset Inspectors and the wider Asset Performance Teams

## How to use this guide

Each asset type has a selection of example photos and a table of all the elements you can use to describe the asset.

The elements in red are the essential elements, which are the minimum requirements for AIMS, those in black are optional, and should also be used as appropriate for each asset.

There is also information on how weightings are used to calculate the overall condition grade at the end of this guidance.

## Other Guidance

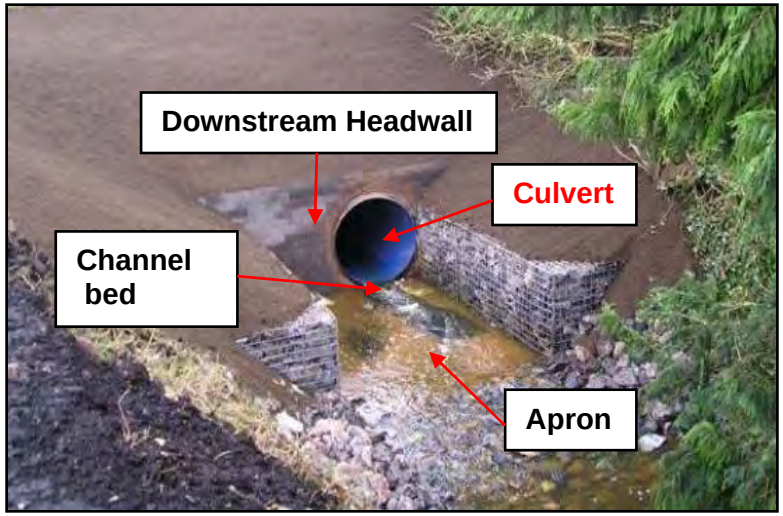
There is separate guidance available on how to classify and describe all Asset types and also how they are represented in AIMs.
Follow the hyperlinks below:

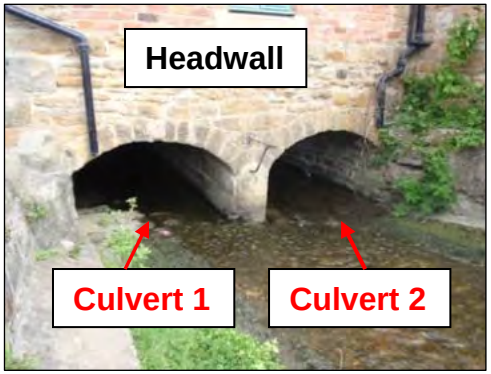
*AIMS Asset Terminology Guide*
*AIMS Technical User Guide*
*AIMS Guide for Asset Inspections*

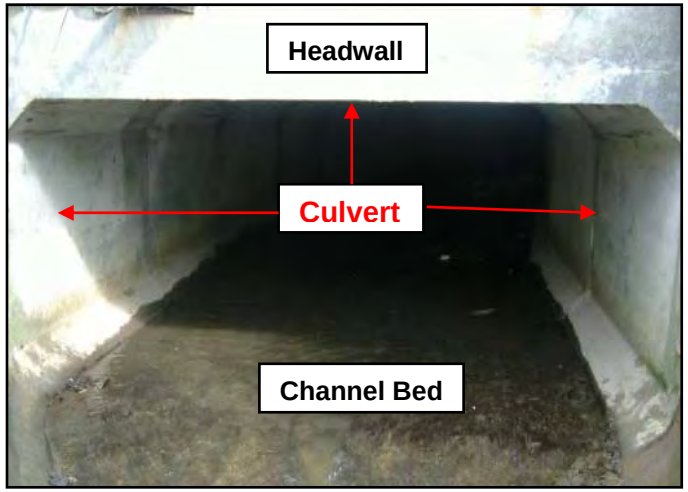
## Asset Type: Channel

## Asset Sub Type: Simple Culvert

**A covered channel or large pipe to convey water below ground level, whose cross section is made of the same material (for example: concrete pipe, concrete box section, brick arched).**




| Element (essential) | Definition | Element Weight | | Consider using Variant weighting… |
|---|---|---|---|---|
| | | *Default* | *Variant* | |
| **Culvert** | **The whole culvert structure, between U/S and D/S Headwalls where they exist** | 7 | *9* | If construction material is unknown, or heavy loading above culvert |
| Channel Bed | The channel bed along the length of the culvert | 7 | 9 | If used, weighting should be same as culvert. Consider if this should be a complex culvert |
| Upstream Headwall | The upstream retaining wall structure | 7 | | |
| Downstream Headwall | The downstream retaining wall structure | 6 | | |
| Apron | The scour protection structure laid downstream of the culvert | 5 | 3 | If not a prominent part of the structure |

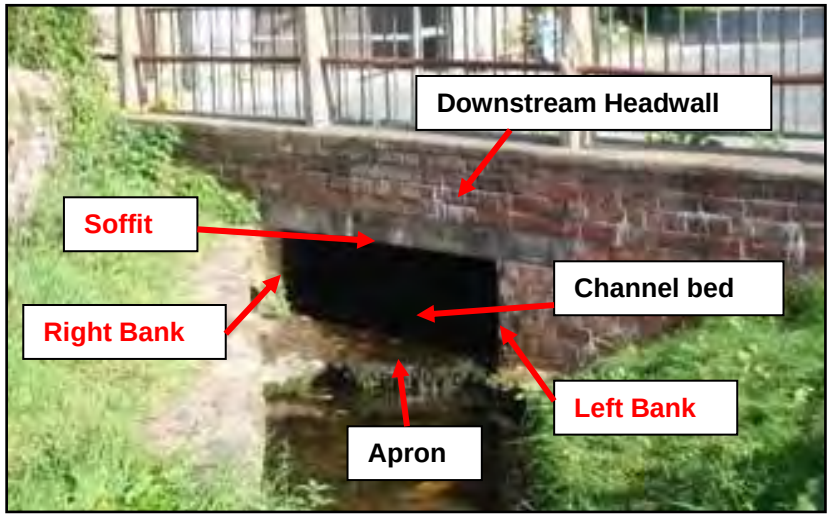
General Notes

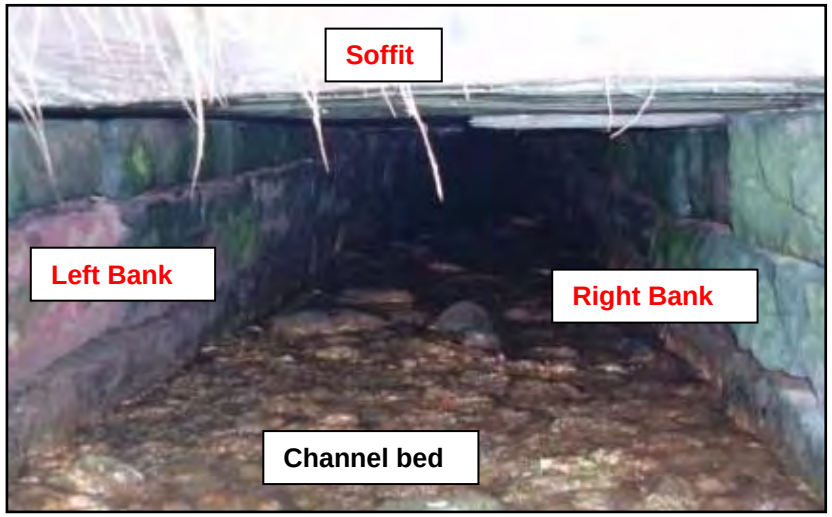
1. Where there is more than one culvert or pipe run the culvert and channel bed elements will be duplicated as appropriate in order from right bank to left
2. Where there is more than one culvert or pipe run the Headwall will be regarded as one element
3. Where a Screen / Grid is associated with either headwall this is identified as a separate asset. See Structure section
4. Culverts should be distinguished from outfalls as the latter tend to be of smaller diameter, are often flapped and whose function is to discharge surface water drainage or water from a smaller watercourse into the main watercourse. Culverts form an enclosed line along the main watercourse
5. Conveyance will be assessed using the **Blockage** attribute in AIMS, NOT in the Channel Bed element. (Blockage attribute to be added to Aims in PH2)

## Asset Type: Channel

## Asset Sub Type: Complex Culvert

**A covered channel to convey water below ground level, whose cross section is made of different materials (for example: masonry sides covered with a concrete soffit).**




| Element (essential) | Definition | Element Weight | | Consider using Variant weighting… |
|---|---|---|---|---|
| | | *Default* | *Variant* | |
| **Soffit** | **The top/roof of the culvert structure** | 7 | *9* | If construction material is unknown, or heavy loading above culvert |
| **Left bank** | **The left hand side (facing downstream) of the culvert from channel bed to soffit** | 7 | 9 | If construction material is unknown, or heavy loading above culvert |
| **Right bank** | **The right hand side (facing downstream) of the culvert from channel bed to soffit** | 7 | 9 | If construction material is unknown, or heavy loading above culvert |
| Channel bed | The channel bed along the length of the culvert | 7 | 8 | |
| Upstream Headwall | The upstream retaining wall structure | 7 | | |
| Downstream Headwall | The downstream retaining wall structure | 6 | | |
| Apron | The scour protection structure laid downstream of the culvert | 5 | 3 | If not a prominent part of the structure |

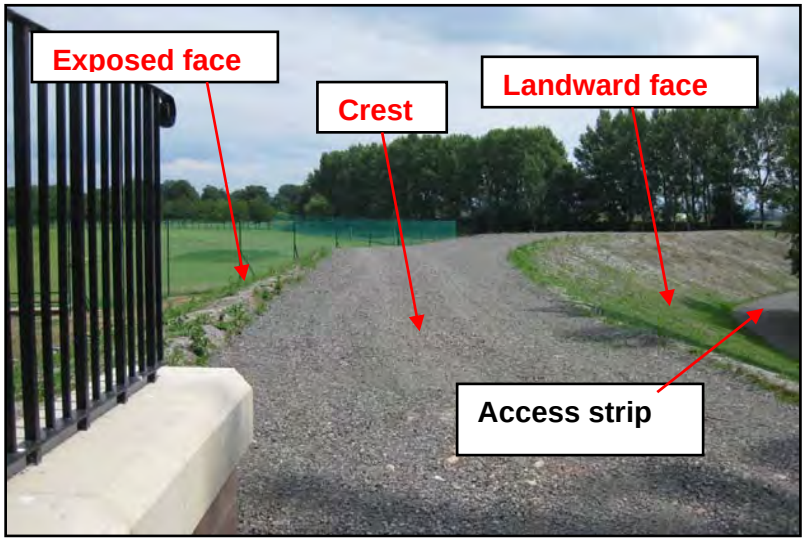
General Notes

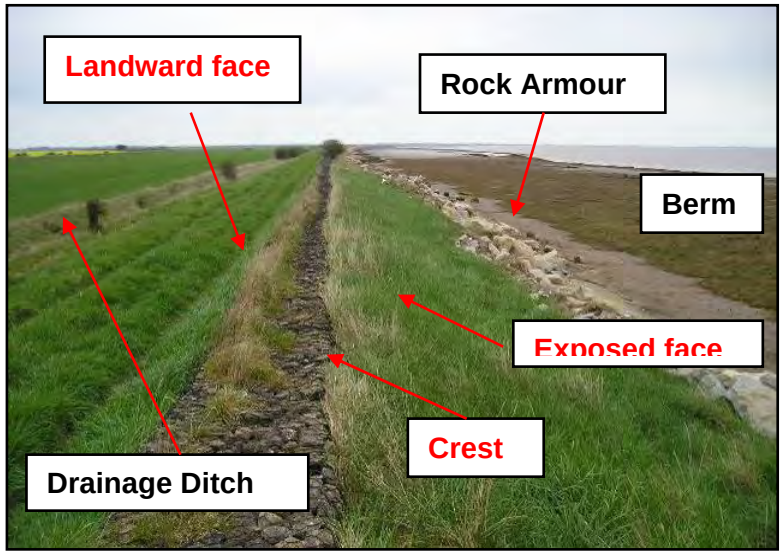
1. Where there is more than one culvert or pipe run the culvert and channel bed elements will be duplicated as appropriate in order from right bank to left
2. Where there is more than one culvert or pipe run the Headwall will be regarded as one element
3. If the left and right walls of an upstream or downstream Headwall structure are composed of different material e.g. bag work, rip rap, sheet piling, then these elements should be separately identified
4. Where a Screen / Grid is associated with either headwall this is identified as a separate asset. See Structure section
5. Culverts should be distinguished from outfalls as the latter tend to be of smaller diameter, are often flapped and whose function is to discharge surface water drainage or water from a smaller watercourse into the main watercourse. Culverts form an enclosed line along the main watercourse
6. Conveyance will be assessed using the **Blockage** attribute in AIMS, NOT in the Channel Bed element. (Blockage attribute to be added to Aims in PH2)

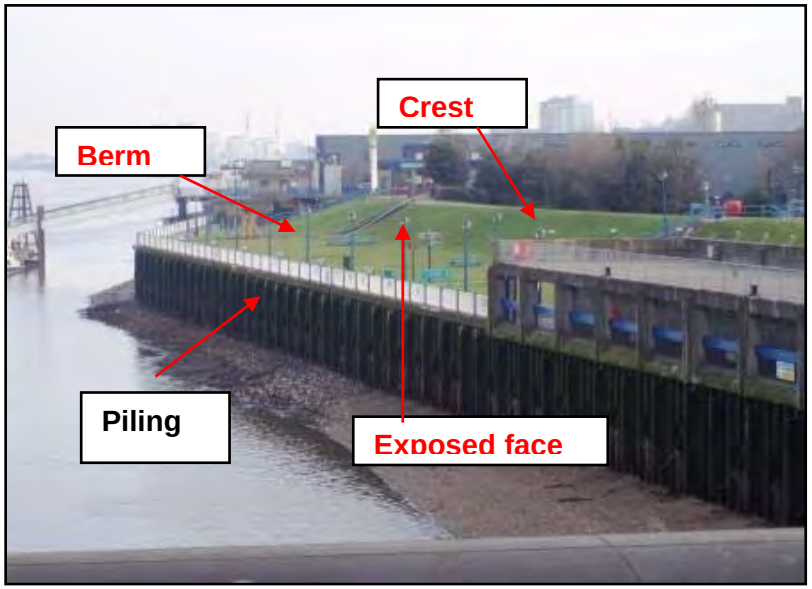
## Asset Type: Defence

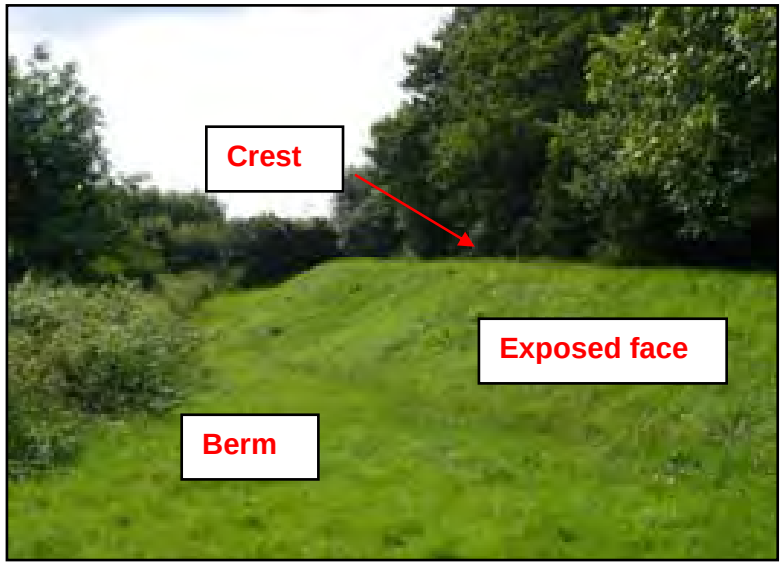
## Asset Sub Type: Embankment

***All types of earthen structures found in the fluvial, tidal and coastal environment, that are used for flood defence and/or erosion protection. Also to be used for dam structures that are embankments***



| Element (essential) | Definition | Element Weight | | Consider using Variant weighting… |
|---|---|---|---|---|
| | | *Default* | *Variant* | |
| **Exposed face** | **The face of the embankment that faces the river / coast (or reservoir).** | 7 | 9 | If slope is steeper than 2:1 or is exposed to extreme loading |
| **Landward face** | **The face of the embankment that faces the land (or away from the reservoir).** | 7 | 9 | If slope is steeper than 2:1 or subject to regular overtopping |
| **Crest** | **The highest point of the embankment.** | 7 | 9 | If flood crest is less than 3m wide or subject to regular overtopping |
| Berm | The extent of largely flat ground between the embankment and the watercourse / coast | 5 | 6 | If berm is less than 3 metres wide |
| Channel side | **Only to be used for fluvial and tidal.** This describes the channel side from the channel bed to the top of bank, adjacent to the defence. | 4 | **5** | If less than 3m from toe of embankment |
| Landward toe | The area at the base of the Landward face on the embankment. | 6 | | |
| Capping wall | Where the embankment has exposed piles that have been capped to form a wall on top of or along the embankment. | 4 | | |
| Access strip | A strip of land on either side of the embankment that is used for operational/ maintenance access | 1 | | |
| Drainage ditch | A drain along the bottom of the embankment. | 3 | | |
| Seaward toe | The base of the Exposed face on Coastal embankments. | 6 | 8 | If not rigid |
| Rock armour | Where rock armour has been installed as part of the overall defence, to prevent scour. | 6 | 8 | Higher weighting for exposed coastal defences. |
| Piling | Where piling has been used as part of the defence to prevent scour on Exposed face | 8 | | |
| Gabions | Where gabions have been used as part of the defence, to prevent scour or reduce tidal energy. | 6 | 8 | Higher weighting for exposed coastal defences. |

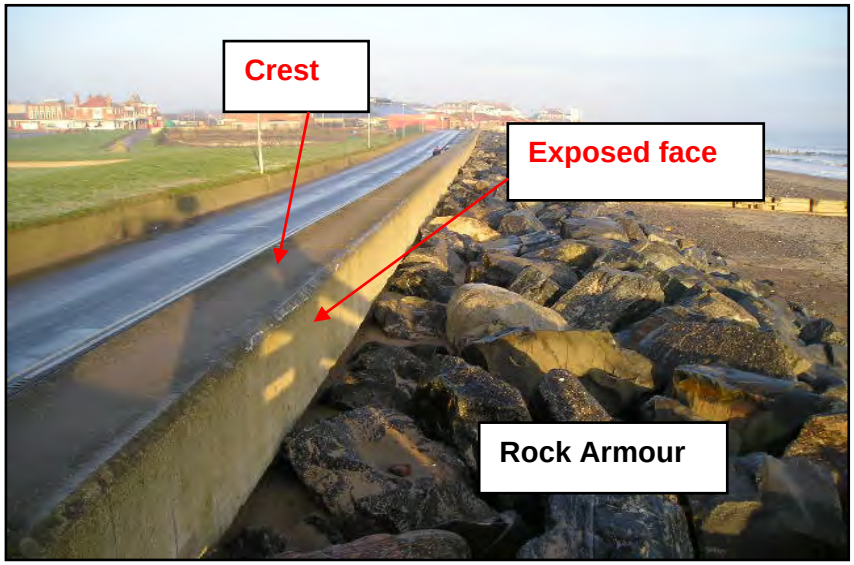
General notes:

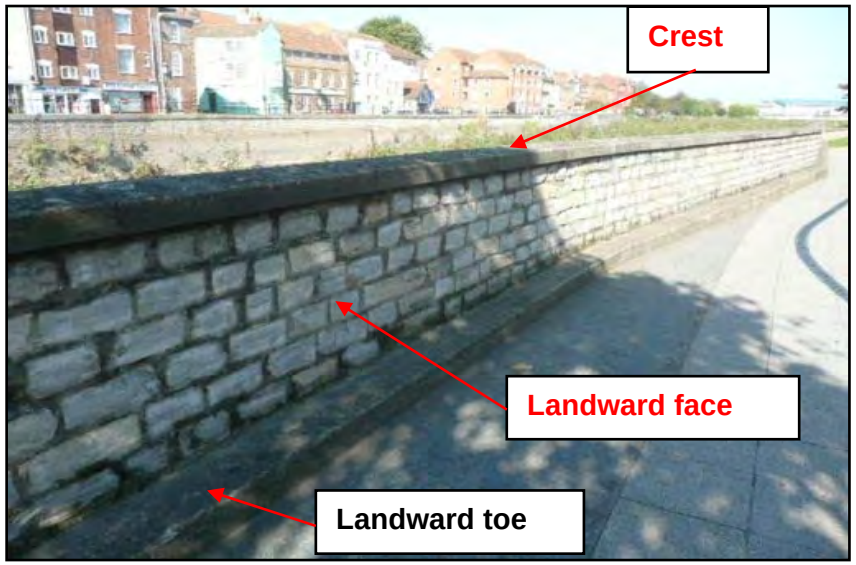
1. Where 2 or more elements are represented in a single embankment then sequentially number from Exposed face
2. Embankment lengths should be separated where the elements in elevated profile change significantly in type, form, material and/or geometry.
3. Berm elements should be ignored where flood embankments are distant from watercourse e.g. ring banks

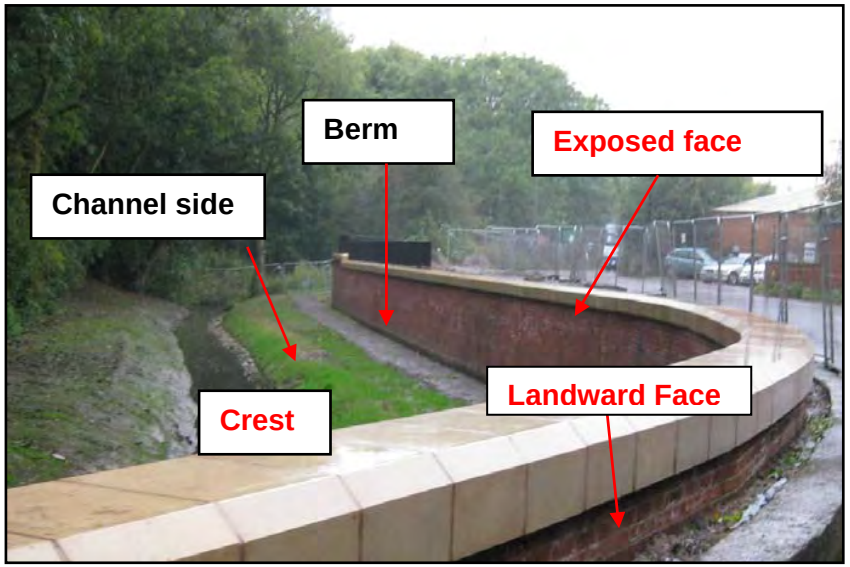
## Asset Type: Defence

## Asset Sub Type: Wall

***All types of wall found in fluvial, tidal and coastal environments, that are used for flood defence and/or erosion protection. Also to be used for dam structures that are walls.***



| Element (essential) | Definition | Element Weight | | Consider using Variant weighting… |
|---|---|---|---|---|
| | | *Default* | *Variant* | |
| **Exposed face** | **The face of the wall that faces the river / coast (or reservoir)** | 7 | 9 | If the primary defence has no revetment or is exposed to extreme loading |
| **Landward face** | **The face of the wall that faces the land (or away from the reservoir).** | 7 | 9 | If the primary defence has no revetment or is subject to regular overtopping |
| **Crest** | **The highest point of the wall** | 7 | 9 | If failure of capping stone would compromise structure |
| Berm | The extent of largely flat ground between the embankment and the watercourse / coast | 5 | 6 | If berm is less than 3 metres wide. Add 1 to default and variant values in coastal environments |
| Foreshore | The area of ground between the seaward toe and the sea | 5 | 8 | If extreme wave conditions or element is fundamental to the integrity of the seawall |
| Channel side | **Only to be used for fluvial and tidal.** This describes the channel side from the channel bed to the top of bank, adjacent to the defence. | 6 | 7 | If less than 3m horizontal from flood wall |
| Landward toe | The base of the Landward face. | 7 | | |
| Access strip | A strip of land on either side of the wall that is used for access for operation or maintenance purposes. | 1 | | |
| Splash Deck | The area between the main wall and the splash wall. | 2 | | |
| Splash wall | A secondary wall on the landward side of the main structure that is used to contain splash waters from the sea. | 4 | | |
| Seaward toe | The base of the Exposed face on coastal walls | 5 | 8 | If exposed face is a vertical wall |
| Rock armour | Where rock armour has been used as part of the defence, to prevent scour or reduce tidal energy. | 6 | 8 | Higher weighting for exposed coastal defences. |
| Piling | Where piling has been used as part of the defence, to prevent scour. | 8 | | |
| Gabions | where gabions have been used as part of the defence, to prevent scour. | 6 | 8 | Higher weighting for exposed coastal defences. |

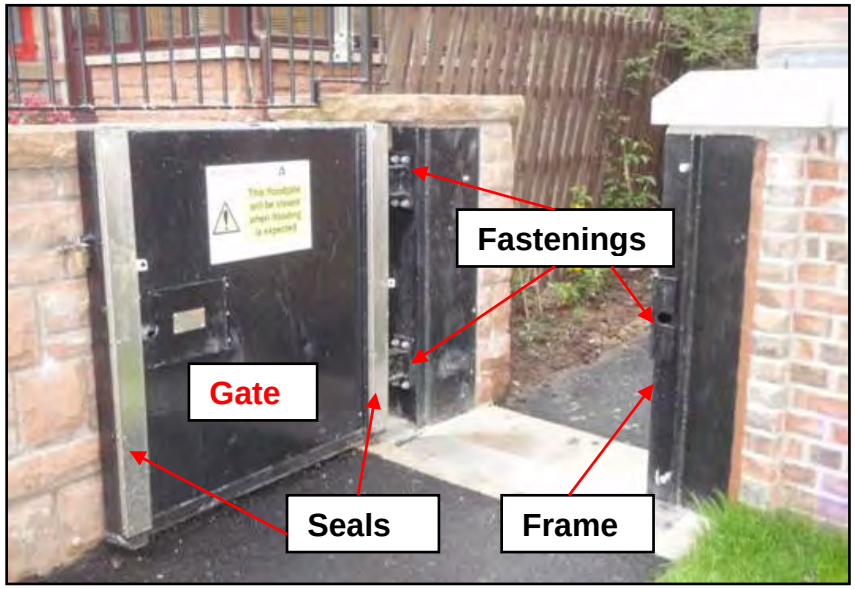
General Notes

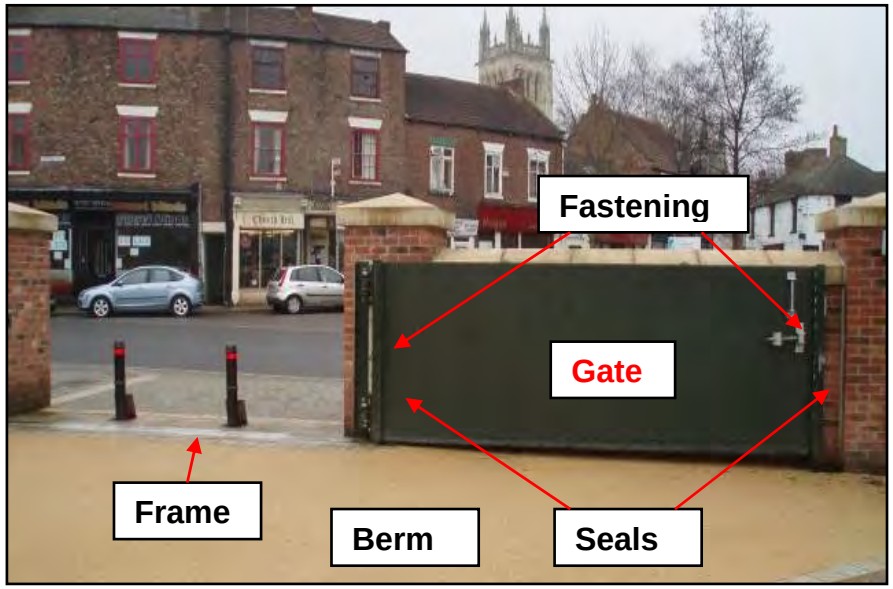
1. Small wall structures found along channels that offer no flood defence / questionable erosion protection should be defined as Defence - High Ground.

## Asset Type: Defence

## Asset Sub Type: Flood Gate

***Gates that form part of a flood defence, usually to provide access through the defences***




| Element (essential) | Definition | Element Weight | | Consider using Variant weighting… |
|---|---|---|---|---|
| | | *Default* | *Variant* | |
| **Gate** | **The gate or gates in a defence designed to control the flow of tidal or flood water by acting as a barrier to flow** | 9 | | |
| Frame | The structure that connects the gate (s) to the neighbouring defences. | 7 | | |
| Seals | The components that are either attached to the gate or frame that help to make the structure watertight when closed. | 7 | | |
| Fastenings | The hinges and locking mechanisms that allow the flood gate to be shut to the frame. | 7 | | |
| Channel Side | Only to be used for fluvial and tidal. This describes the channel side from the channel bed to the top of bank, adjacent to the defence. | 4 | 7 | If less than 3m horizontal from flood wall |
| Berm | The extent of horizontal ground between the flood gate and the watercourse / coast. | 4 | 6 | If less than 3 metres wide. Add 1 for default and variant values in coastal environments |

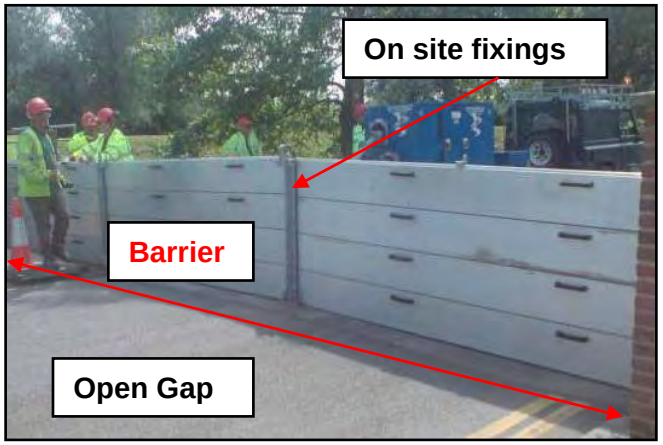
General Notes

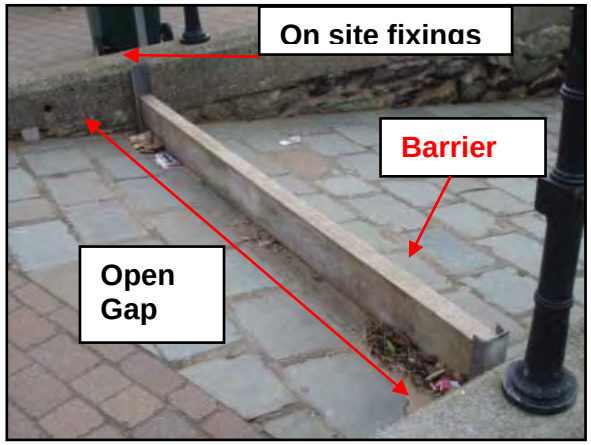
1 Flood gate is not be used for assets that control the flow of water, those assets can be found in the Structure section
2 Fastenings will generally be attached to the defence wall(s) either side of the gate(s)

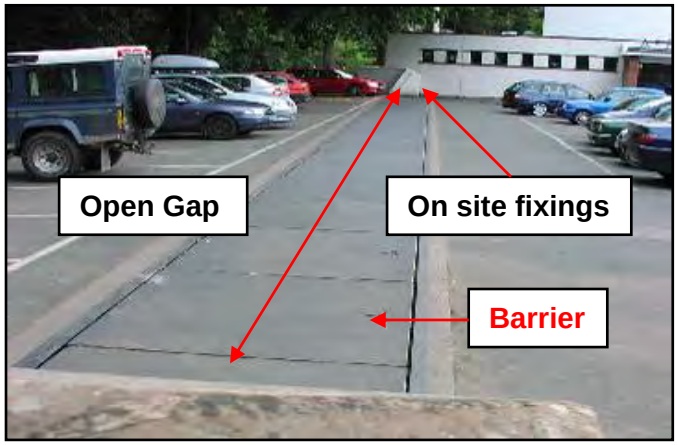
## Asset Type: Defence

## Asset Sub Type: Demountable Barriers

**(i) Temporary demountables that are brought to site to be erected and in-situ, and**
**(ii) Demountables that are stored on site ready to be erected to form a flood defence.**




| Element (essential) | Definition | Element Weight | | Consider using Variant weighting… |
|---|---|---|---|---|
| | | *Default* | *Variant* | |
| **Barrier** | **The structures that fill the open gap** | 9 | | |
| On-site fixings | Any components that are left permanently exposed on site that the barriers connect to in order to form a watertight barrier. | 7 | | |
| Open gap | The linear open space where the barrier is erected. | 1 | | |
| Channel Side | **Only to be used for fluvial and tidal**. This describes the channel side from the channel bed to the top of bank, adjacent to the defence. | 4 | 7 | If less than 3m horizontal from flood wall |
| Berm | The extent of horizontal ground between the demountable and the watercourse / coast | 4 | 6 | If less than 3 metres wide. Add 1 for default and variant values in coastal environments |

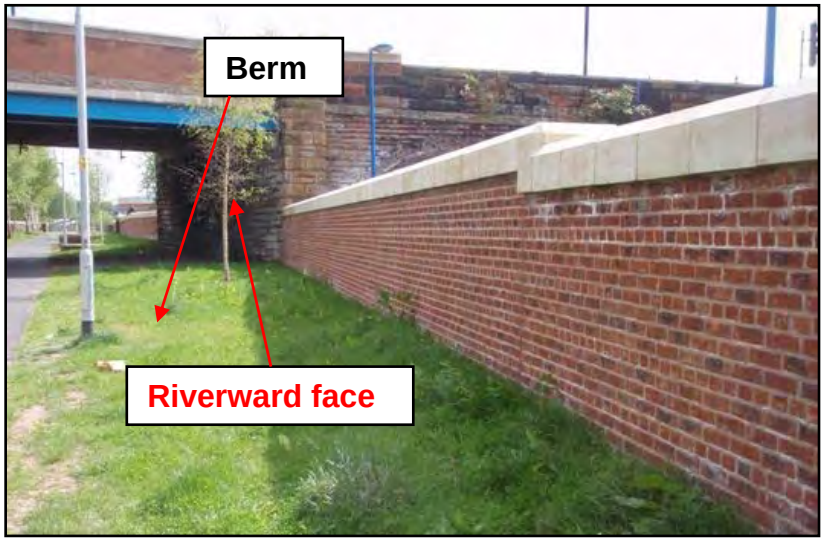
General Notes

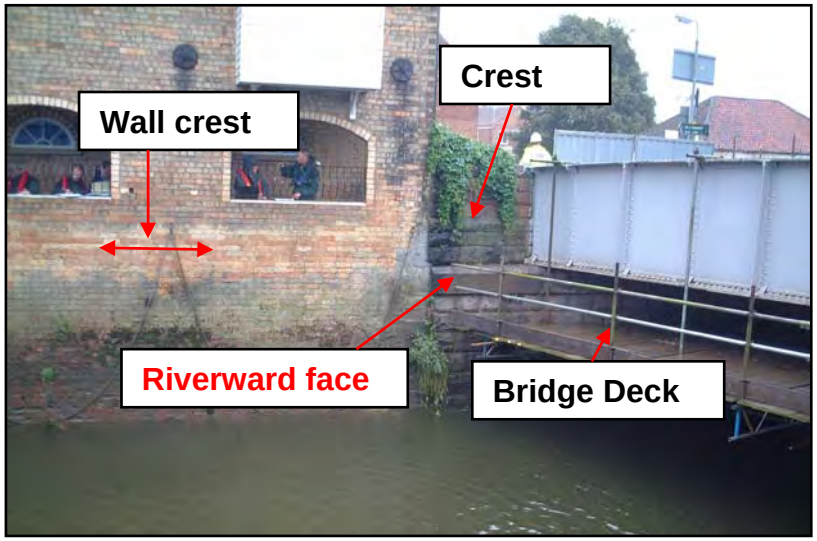
1 Channel Side for defences is different to the right / left bank elements found in the Open Channel assets, which have no relationship to the individual defences.
2 Channel Side and Berm failure is unlikely during flood event. If flood water destabilised these elements during flooding then the impact on the security of the demountable defences would be serious

## Asset Type: Defence

## Asset Sub Type: Bridge Abutment

***Only Bridge abutments that tie into flood defences and therefore act as a defence***




| Element (essential) | Definition | Element Weight | | Consider using Variant weighting… |
|---|---|---|---|---|
| | | *Default* | *Variant* | |
| **Riverward Face** | **The face of the abutment facing the watercourse.** | **9** | | |
| Landward Face | The face of the abutment facing towards the land. It may be the road/footpath surface as it slopes down to ground level. | 8 | *2* | If landward face is high ground |
| Crest | The top of the abutment. It could be the top of the abutment itself, the deck of the bridge or the parapet wall. | 8 | 5 | If crest of abutment is above the crest level of the adjacent defence |
| Channel Side | **Only to be used for fluvial and tidal**. This describes the channel side from the channel bed to the top of bank, adjacent to the defence.. | 6 | 7 | If less than 3m horizontal from flood wall |
| Berm | The extent of horizontal ground between the bridge abutment and the watercourse | 5 | 6 | If less than 3 metres wide |

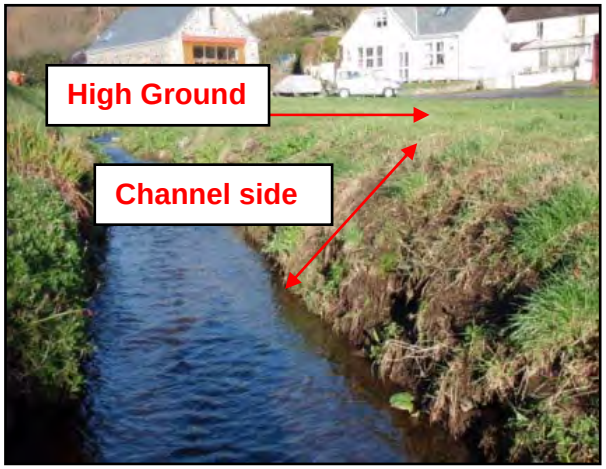
General Notes

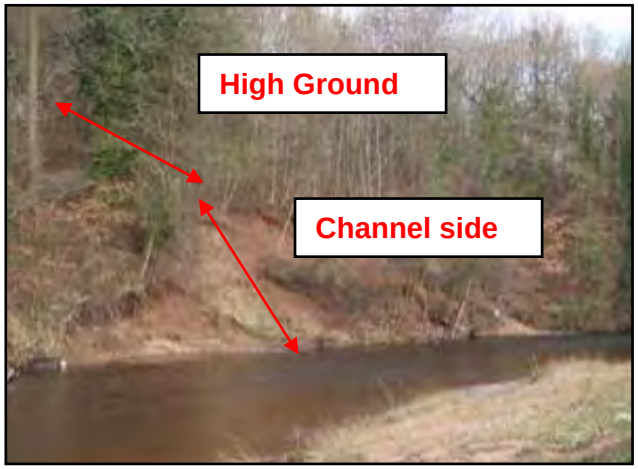
1 A bridge associated with the abutment which spans a watercourse is part of a channel crossing
2 Second picture shows the bridge deck is lower than crest level of wall the bridge. Abutment is an integral part of the defence system

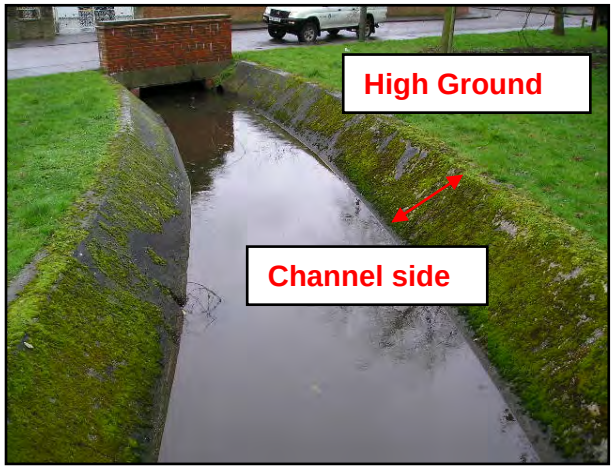
## Asset Type: Defence

## Asset Sub Type: High ground

**High Ground covers all other extents along watercourses that have not been defined by Asset Type 3. It is where there are no defences other than the ground itself. Examples include: the top of a river bank, a cliff adjacent to a watercourse.**




| Element (essential) | Definition | Element Weight | | Consider using Variant weighting… |
|---|---|---|---|---|
| | | *Default* | *Variant* | |
| **Channel Side** | **Only to be used for fluvial and tidal. This describes the channel side from the channel bed to the top of bank, adjacent to the defence.** | 4 | 5 | If rapid response watercourse in urban area |
| **High Ground** | **The top of the ground adjacent to the watercourse** | 2 | 1 | Where High ground rises steeply away from Channel side |

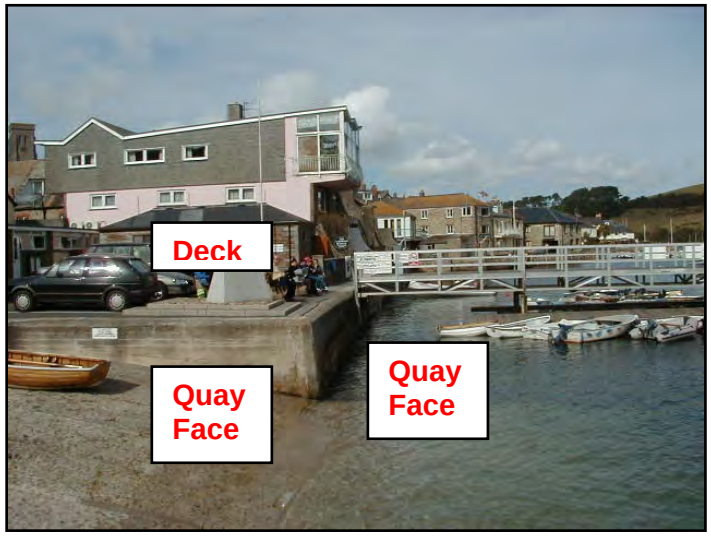
General Notes

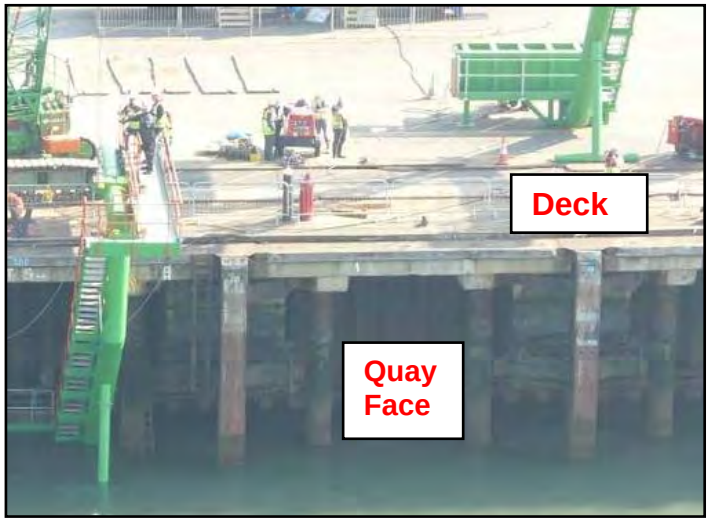
1 Channel Side for defences is different from the right / left bank elements found in the Open Channel in the channel Section, which have no relationship to the individual assets
2 Channel Side erosion may produce slumping of material into the watercourse and thus reducing channel conveyance capacity
3 High Ground cannot fail and therefore rarely has an influence on reducing flood risk

## Asset Type: Defence

## Asset Sub Type: Quay

**Quays alongside and perpendicular to both coastal frontages and watercourses**




| Element (essential) | Definition | Element Weight | | Consider using Variant weighting… |
|---|---|---|---|---|
| | | *Default* | *Variant* | |
| **Quay face** | **The main face of the quay. Some quays will only have one face if they run along the edge of the land. Quays that extend out into water will have two faces.** | **7** | **9** | If extreme exposure |
| **Deck** | **The top of the quay** | **5** | | |
| Capping | Where piles have been capped with concrete | 3 | | |
| Piling | Where piles, wooden or concrete, have been used as part of the structure. | 8 | | |
| Planking | Where planks have been used to form part of the quay face. | 4 | | |
| Stem | For perpendicular quays, the length of quay between the land and the roundhead. | 8 | 9 | If narrow perpendicular, <3 metres wide |
| Roundhead | The roundhead structure at the end of the quay facing out to sea. | 5 | | |
| Sheet Piling | To be used where sheet piling has been used to form part of the structure | 8 | | |
| Seaward face | The face pointing out towards the sea | 7 | 9 | If Extreme exposure |
| Face protection | Where any extra protection has been applied to any of the faces of the quay. | 5 | | |

General Notes

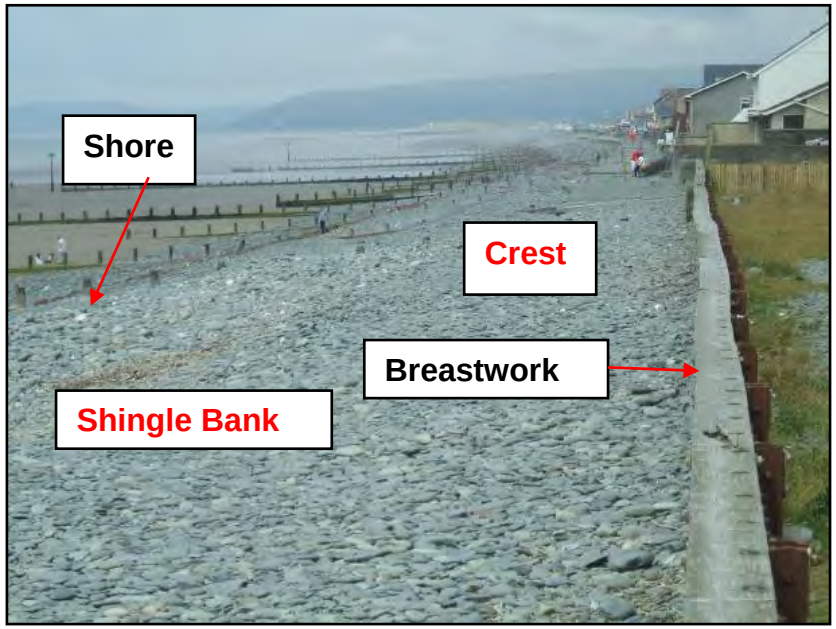
1 Do not use Quay if the assets primary function is a Breakwater. Use Breakwater from the Beach Structure section 6.3.

2 Seaward Face to be used on coast only, where quay has two faces. In this case the **Quay Face** is the face pointing towards land

## Asset Type: Defence

## Asset Sub Type: Beach

**Coastal beaches with either a flood defence or coastal erosion function**




| Element (essential) | Definition | Element Weight | | Consider using Variant weighting… |
|---|---|---|---|---|
| | | *Default* | *Variant* | |
| **Shingle bank** | **The section of beach that rises up (similar to the Seaward face on barrier beach).** | 7 | 9 | If gradient is steeper than 2:1 |
| **Crest** | **The highest point of the beach** | 7 | 9 | If Crest is less than 5m wide |
| Breastwork | Barrier above shingle bank to prevent formation of shingle fans | 5 | | |
| Berm | The extent of horizontal or gradual sloping ground between the shore and the Shingle bank. | 6 | | |
| Shore | The fringe of land at the edge of the sea | 3 | | |

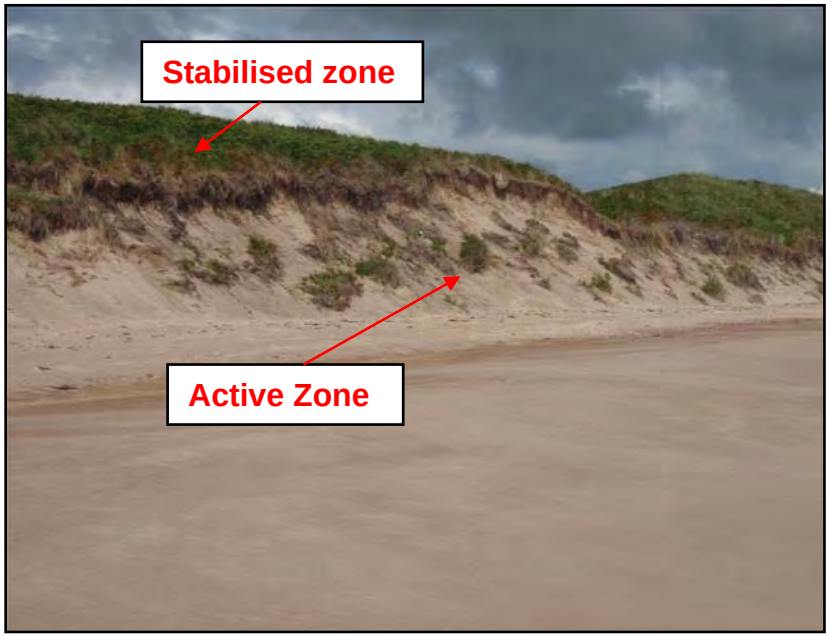
General Notes

1 No distinction is made between shingle and sand
2 Shingle banks respond to each storm. It is their volume and width that are key to reforming after the storm.

## Asset Type: Defence

## Asset Sub Type: Dunes

**Coastal dunes with either a flood defence or coastal erosion function**



| Element (essential) | Definition | Element Weight | | Consider using Variant weighting… |
|---|---|---|---|---|
| | | *Default* | *Variant* | |
| Active Zone | The section of the dune that can be easily eroded and therefore active. | 3 | | |
| Stabilised Zone | The section of the dune that is not easily eroded and therefore stabilised due to for example: management or natural vegetation. | 9 | | |

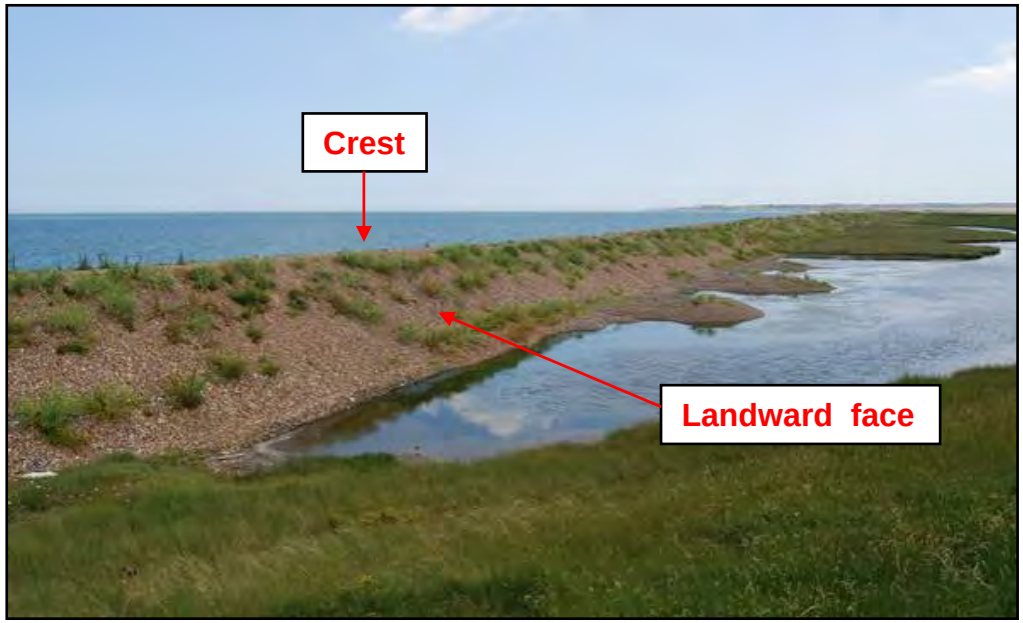
General Notes

1. The active dune or fore dune is indicative of the health (sediment supply and erosion) of a dune but is not functional as a flood defence
2. It is the combined integrity of the dune ridge(s) and slacks that indicates the effectiveness of the dune system for flood defence. A wide dune system might be compromised by flow routes through the slack.
3. The stabilised zone is a combination of slacks, dune ridges, and dune pastures, which not only protect the hinterland from flooding but are multi functional for ecology and recreational purposes

## Asset Type: Defence

## Asset Sub Type: Barrier Beach

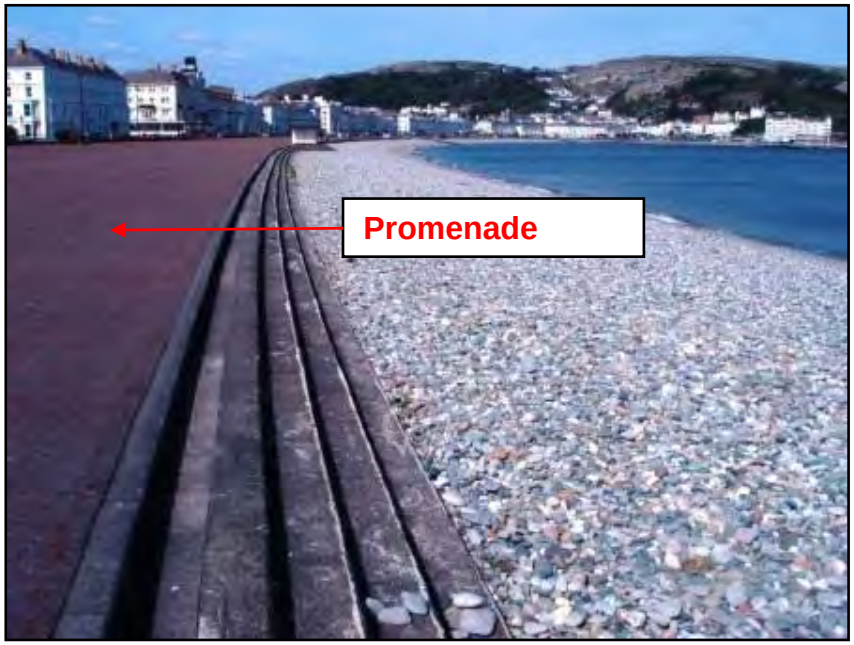
**Barrier beaches extending out from the coast that perform a flood defence and/or erosion protection function.**




| Element (essential) | Definition | Element Weight | | Consider using Variant weighting… |
|---|---|---|---|---|
| | | *Default* | *Variant* | |
| **Seaward Face** | **The raised face of the barrier beach that faces the sea.** | 7 | 9 | If gradient is steeper than 2:1, or extreme wave action |
| **Landward face** | **The raised face of the barrier beach that faces the land.** | 7 | 8 | If gradient is steeper than 2:1 |
| **Crest** | **The top of the barrier beach** | 7 | 9 | If Crest is less than 5m wide |
| Berm | The extent of horizontal ground between the seaward face and shore | 5 | 6 | If < 5 metres wide |
| Shore | The fringe of land at the edge of the sea. | 3 | | |

## Asset Type: Defence ` Asset Sub Type: Promenade

**Promenades found along the coast that perform a flood defence and/or erosion protection function.**



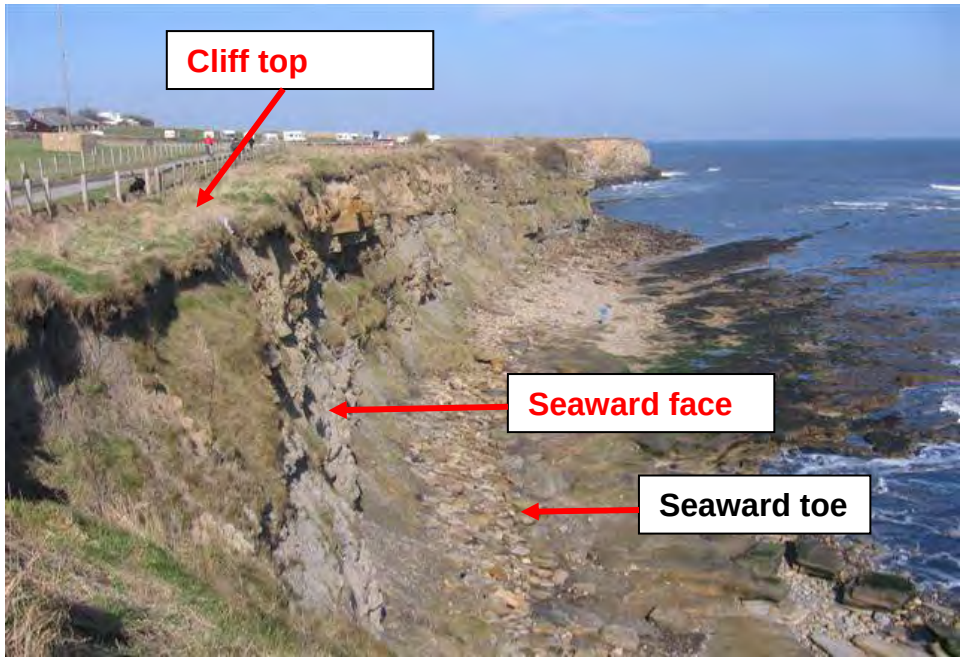

| Element (essential) | Definition | Element Weight | | Consider using Variant weighting… |
|---|---|---|---|---|
| | | *Default* | *Variant* | |
| **Promenade** | **The whole promenade structure, usually high ground above the coastal defence asset** | 4 | 6 | If promenade is < 5 metres wide and landward hinterland falls away to a level below spring tide levels |

General Notes

1 Seaward elements are included in Section: Embankment – Wall

## Asset Type: Defence ` ` Asset Sub Type: Cliff

**Cliffs found at the coast that perform a flood defence and/or erosion protection function.**

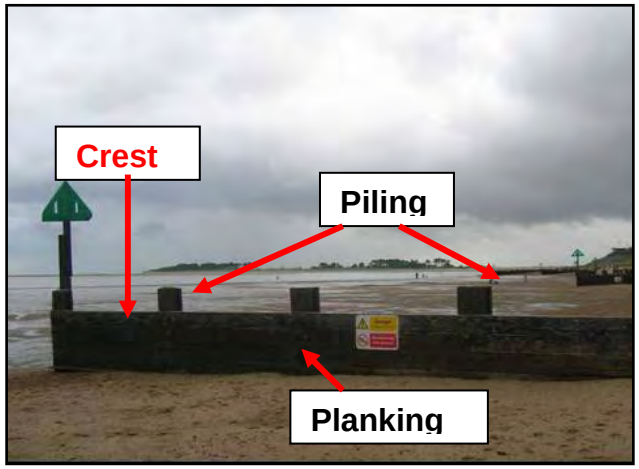


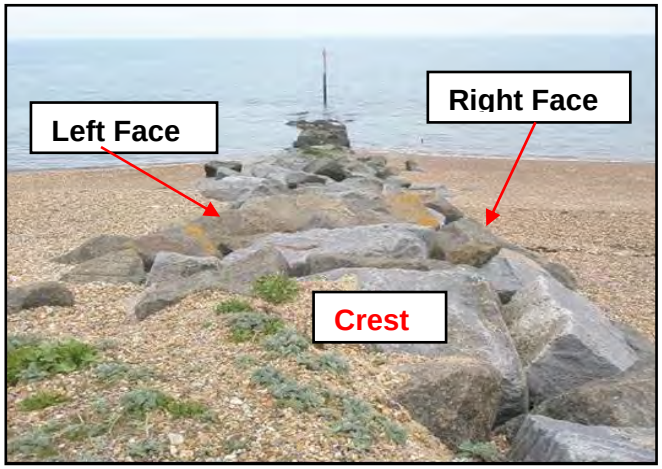
| Element (essential) | Definition | Element Weight | | Consider using Variant weighting… |
|---|---|---|---|---|
| | | *Default* | *Variant* | |
| **Seaward face** | **The face of the cliff that points towards the sea.** | 5 | | |
| **Cliff top** | **The top of the cliff** | 1 | | |
| Seaward toe | Base of the seaward face | 5 | | |
| Face protection | Where the Seaward face has had erosion protection installed to stabilise the cliff. | 6 | | |
| Drainage | Where drainage has been installed to stabilise the cliff. | 4 | | |

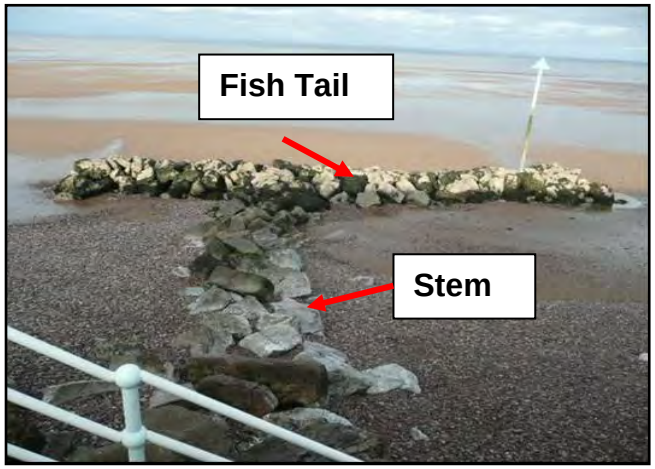
## Asset Type: Beach Structure

## Asset Sub Type: Groyne

**All types of groynes that provide coastal erosion protection on beaches.**




| Element (essential) | Definition | Element Weight | | Consider using Variant weighting… |
|---|---|---|---|---|
| | | *Default* | *Variant* | |
| **Crest** | **Top of the groyne** | **7** | **9** | Depending on prevailing conditions/exposure |
| Piling | Piling for wooden groynes | 7 | 9 | Depending on prevailing conditions/exposure |
| Planking | Primarily for wooden groynes for the plank sections between the piles | 6 | 9 | Failure near landward end of groyne |
| Waling | To be used primarily for wooden groynes for the horizontal member that ties the piles together | 6 | | |
| Roundhead | The roundhead is the round structure at the end of the a rock groyne that faces the sea | 6 | 7 | Depending on prevailing conditions/exposure |
| Fishtail | The fishtail is an extension at the end of a rock groyne that helps provide the secondary function of a breakwater | 6 | 7 | Depending on prevailing conditions/exposure |
| Stem | The stem is the section on rock groynes between the land and the end of the groyne | 7 | 9 | Use where rock groyne does not have a significant Left or Right Face. Depending on prevailing conditions/exposure |
| Sheet piling | Where the structure contains sheet piles | 5 | 7 | Depending on prevailing conditions/exposure |
| Capping beam | Where sheet pile is capped with concrete beam | 4 | | |
| Left face | The left hand face of the groyne when looking from the land | 7 | 9 | Substantial rock groyne, exposed conditions |
| Right face | The right hand face of the groyne when looking from the land | 7 | 9 | Substantial rock groyne, exposed conditions |

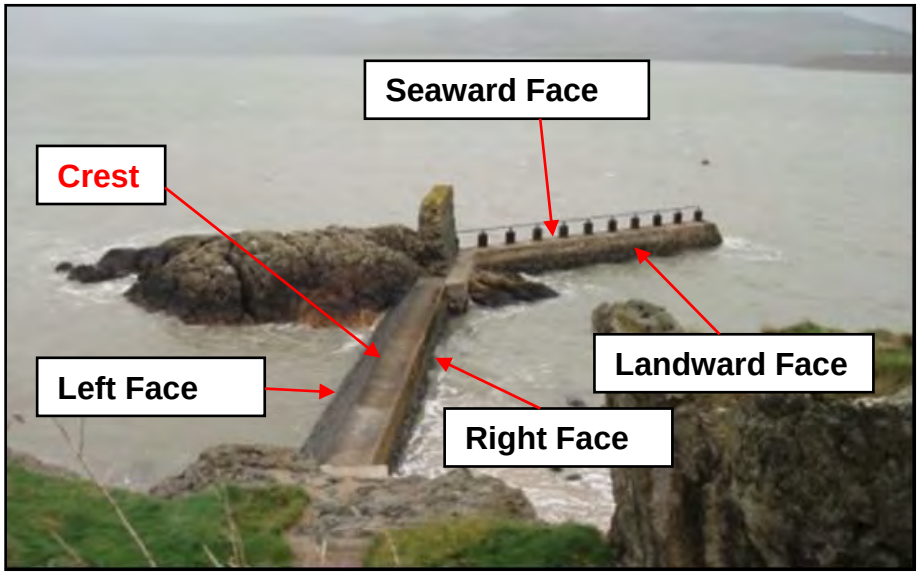
General Notes

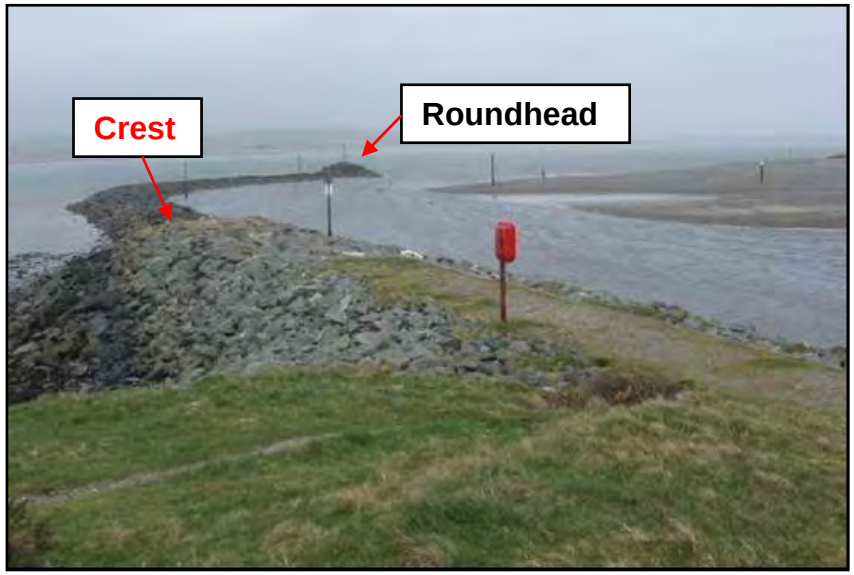
1 Groynes control the beach and prevent sudden loss of sediment. The groyne may be acting too effectively, causing down drift erosion over time or be too low, providing too little protection to the defended coastline. Weighting may vary with respect to the individual groyne system.

## Asset Type: Beach Structure

## Asset Sub Type: Breakwater

**Covers all types of breakwaters that provide coastal erosion protection. Some breakwaters also provide the secondary function of a Quay.**



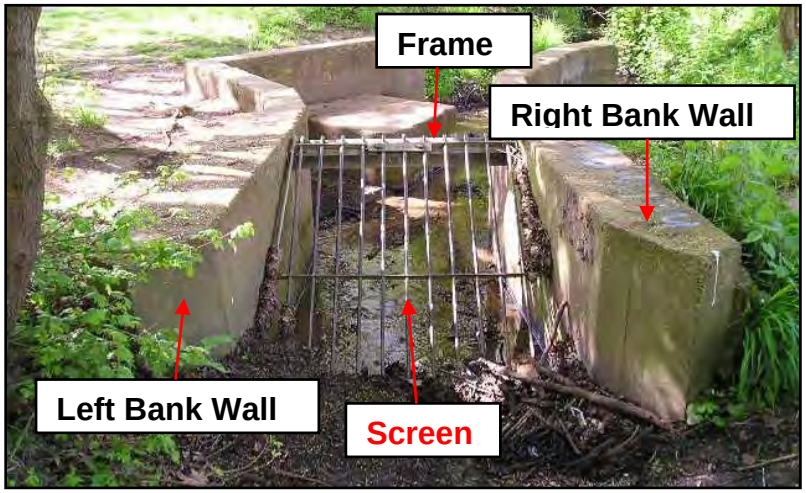



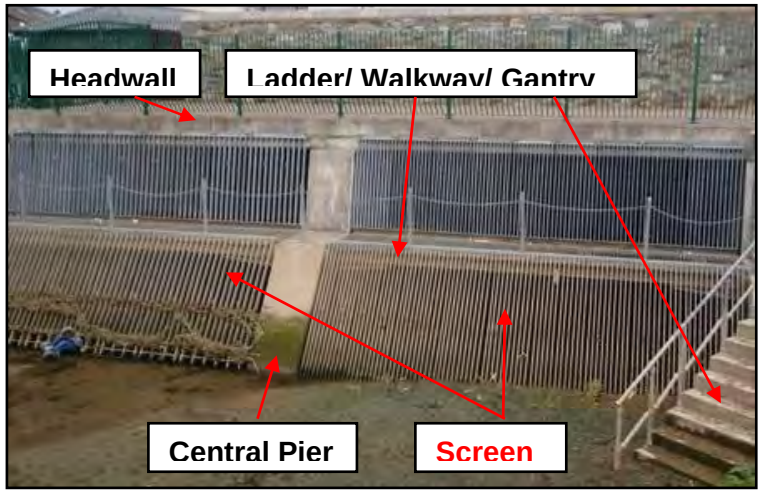

| Element (essential) | Definition | Element Weight | | Consider using Variant weighting… |
|---|---|---|---|---|
| | | *Default* | *Variant* | |
| **Crest** | **Top of the breakwater** | **7** | **9** | Depending on prevailing conditions/exposure |
| Landward face | The face of the breakwater nearest land | 6 | | |
| Seaward face | The face of the breakwater adjacent to open sea | 7 | 9 | Depending on prevailing conditions/exposure |
| Roundhead | The roundhead is the round structure at the end of the breakwater | 6 | 7 | Depending on prevailing conditions/exposure |
| Fishtail | The fishtail is an extension at the end of the breakwater | 6 | 7 | Depending on prevailing conditions/exposure |
| Sheet piling | Where the structure contains sheet piles | 5 | 7 | Depending on prevailing conditions/exposure |
| Waling | Where a horizontal member has been used to tie piles together | 6 | | |
| Capping beam | Where sheet pile is capped with concrete beam | 4 | | |
| Left face | The left hand face of the groyne when looking from the land | 7 | 9 | Depending on prevailing conditions/exposure |
| Right face | The right hand face of the groyne when looking from the land | 7 | 9 | Depending on prevailing conditions/exposure |
| Bedding layer | The smaller sized rock used to form the base of the breakwater which the larger rocks sit on | 4 | | |
| Face protection | Where face protection has been applied to one of the faces | 5 | | |

## Asset Type: Structure

## Asset Sub Type: Screen

**All screens (grids) that are used to collect debris and / or prevent access to culverts, outfalls, channels etc.**




| Element (essential) | Definition | Element Weight | | Consider using Variant weighting… |
|---|---|---|---|---|
| | | *Default* | *Variant* | |
| **Screen** | **The screen or grid usually metal** | **8** | **1** | If screen or grid is downstream of channel and is purely for Health and Safety purposes |
| Right wall bank | The structure that forms the right bank and ties into the screen/grid. | 5 | 4 | If structure is of minor significance and failure will not compromise flows |
| Left wall bank | The structure that forms the left bank and ties into the screen/grid. | 5 | 4 | If structure is of minor significance and failure will not compromise flows |
| Central pier | A pier which separates two screens/grids | 6 | 4 | If structure is of minor significance and failure will not compromise flows |
| Frame | Where the screen and frame are separate components. | 7 | | |
| Headwall | Where the screen/ frame is supported by a separate Headwall | 7 | 1 | If element is dominant and failure will compromise integrity of screen/grid |
| Ladder/ Gantry/ Walkway | Where there is a ladder/walkway/gantry at the screen/grid | 1 | 5 | If failure will eventually compromise the operation of the screen/grid |
| Mechanical grab/ rake | Where the screen is automatically cleaned by a mechanical grab/rake. | 3 | 5 | If failure will eventually compromise the operation of the screen/grid |

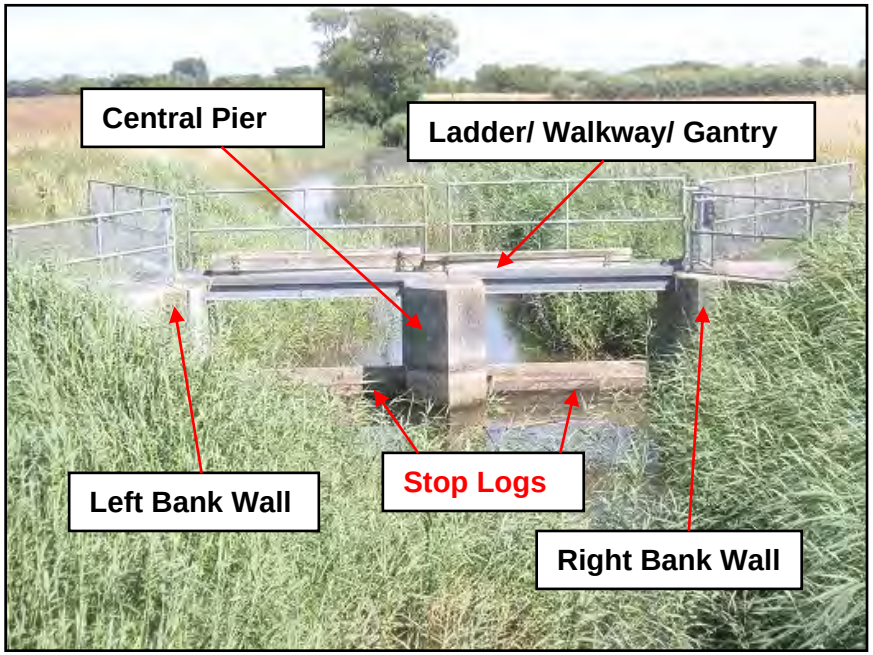
General Notes

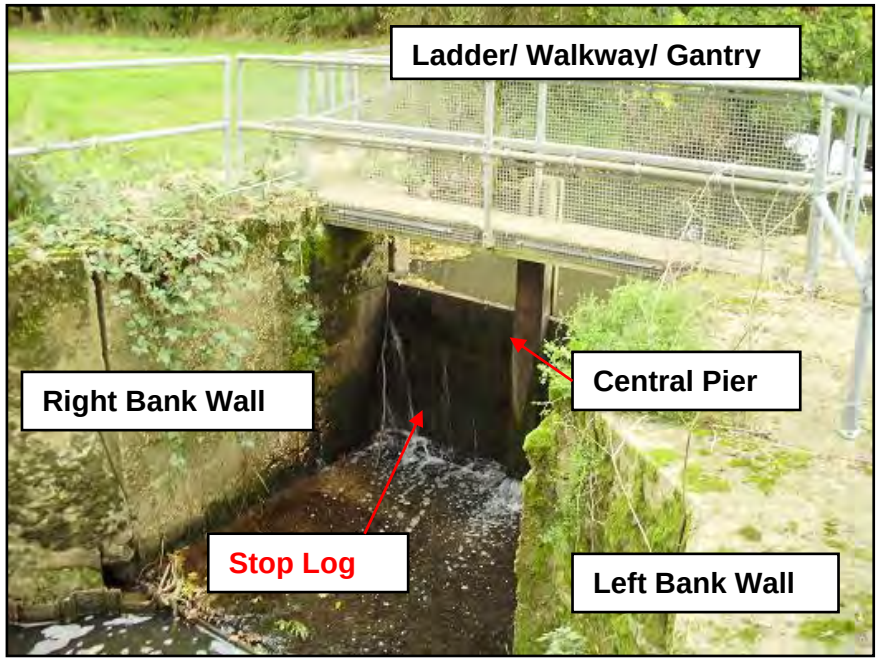
1. Right bank is right of the direction of flow
2. Where there is more than 1 screen/grid or central pier, each element will be duplicated as appropriate in order from right bank to left
3. Although the screen/grid upstream of the channel is a vital element to prevent channel/culvert blockage, failure over time of supporting elements can cause blockage and also compromise conveyance. Weighting should be varied in relation to the perceived effect of failure. Variants are for guidance purposes

## Asset Type: Structure

## Asset Sub Type: In Channel stop logs

**In-channel stoplogs are used to control the flow of water in a channel**




| Element (essential) | Definition | Element Weight | | Consider using Variant weighting… |
|---|---|---|---|---|
| | | *Default* | *Variant* | |
| **Stop logs** | **The set of stop logs** | 9 | | |
| Right Bank Wall | The structure that forms the right bank and ties into the stop logs. | 5 | 4 | If structure is of minor significance and failure will not compromise flows |
| Left bank Wall | The structure that forms the right bank and ties into the stop logs. | 5 | 4 | If structure is of minor significance and failure will not compromise flows |
| Central pier | A pier that separates 2 stop logs | 6 | 4 | If structure is of minor significance and failure will not compromise flows |
| Ladder/ gantry/ walkway | Where there is a ladder/walkway/gantry at the stop logs. | 1 | 5 | If failure will eventually compromise the operation of the stop log (s) |

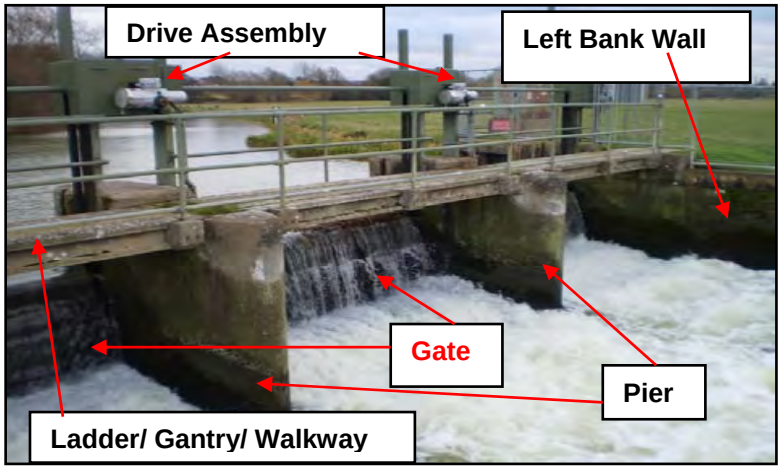
General Notes

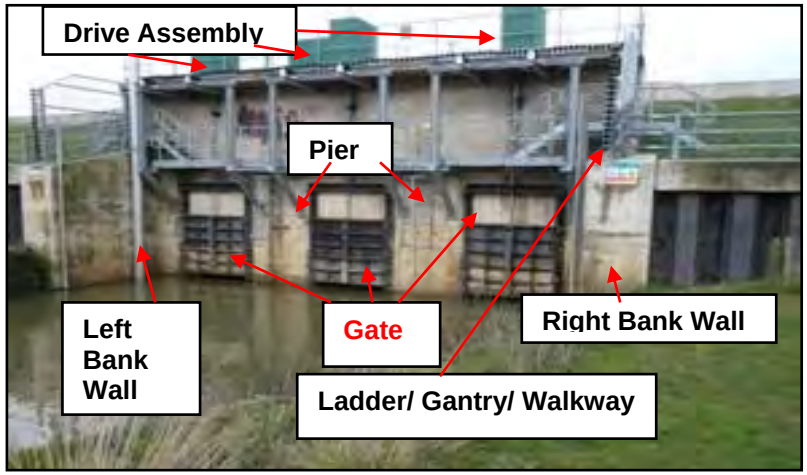
1 Right bank is right of the direction of flow
2 Do not use for out of channel stop logs that are used as flood defences. They are found under Demountables in the Defence section.
3 Where there is more than 1 stop log or central pier each element will be duplicated as appropriate in order from right bank to left
4 Weighting should be varied in relation to the perceived effect of failure on the asset.

## Asset Type: Structure

## Asset Sub Type: Control Gates

**Penstocks, sluice gates, mitre gates, sector gates, and radial gates; structures which can be moved to alter the flow of water.**




| Element (essential) | Definition | Element Weight | | Consider using Variant weighting… |
|---|---|---|---|---|
| | | *Default* | *Variant* | |
| **Gate** | **The Gate** | **9** | | |
| Right bank wall | The structure that forms the right bank and ties into the control gate | 5 | 4 | If structure is of minor significance and failure will not compromise flows |
| Left bank wall | The structure that forms the left bank and ties into the control gate | 5 | 4 | If structure is of minor significance and failure will not compromise flows |
| Central pier | A pier that separates two gates | 6 | 4 | If structure is of minor significance and failure will not compromise flows |
| Cill | The base of the channel that the control gate closes to | 4 | | |
| Frame | The frame that holds the control gate | 7 | | |
| Seals | The seals associated with the control gate | 7 | | |
| Ladder/ Gantry/ Walkway | To be used where there is a ladder/walkway/gantry at the control gate | 1 | 5 | If failure will eventually compromise the operation of the screen/grid |
| Drive assembly | The components that allow the control gate to be raised and lowered | 9 | | |
| Balance beam | The beam that is used to open the and close the mitre gate | 9 | | |
| Face Plate | The plate that covers the face of the radial or sector gate | 6 | | |
| Struts and Bracing | The struts and bracing that form part of the radial or sector gate | 7 | | |
| Balance weight | The weight used to balance the radial gate | 7 | | |

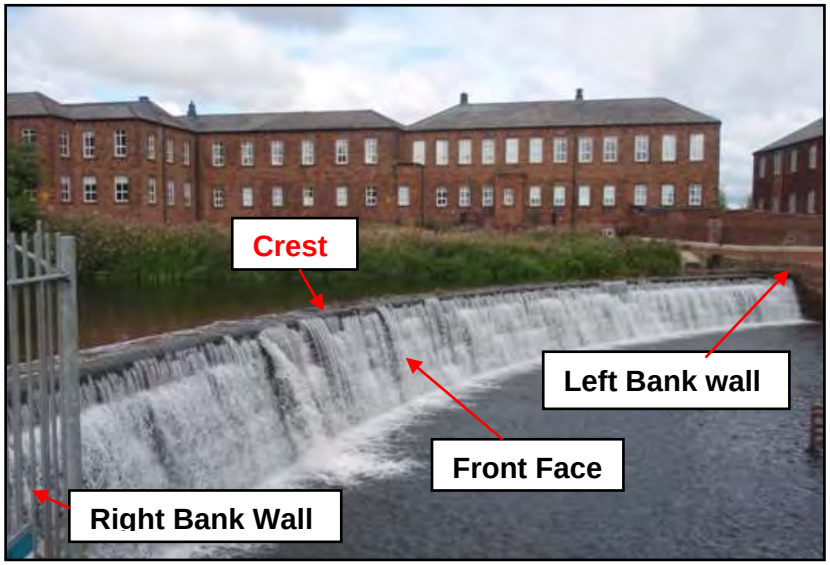
General Notes

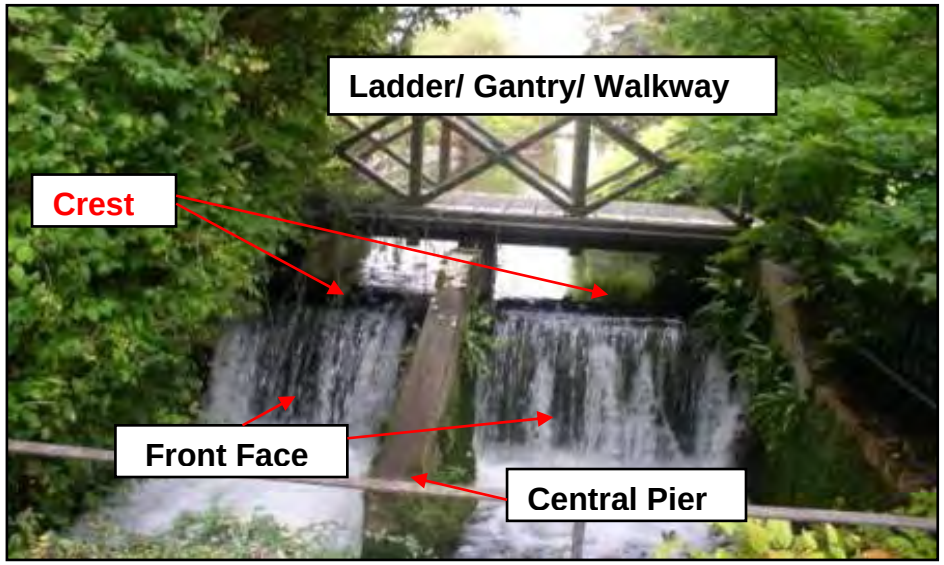
1 Right bank is right of the direction of flow
2 Where there is more than 1 control gate or central pier each element will be duplicated as appropriate in order from right bank to left
3 Weighting should be varied in relation to the perceived effect of failure on the asset. Variants are for guidance purposes

## Asset Type: Structure

## Asset Sub Type: Weir

**Fixed weirs, manual weirs and mechanical weirs that cross channels to increase the upstream water level.**




| Element (essential) | Definition | Element Weight | | Consider using Variant weighting… |
|---|---|---|---|---|
| | | *Default* | *Variant* | |
| **Crest** | **The top of the weir** | 8 | | |
| Right bank wall | The structure that forms the right bank and ties into the weir | 3 | 5 | On narrow channels where failure might compromise flows |
| Left bank wall | The structure that forms the left bank and ties into the weir | 3 | 5 | On narrow channels where failure might compromise flows |
| Central pier | Where a central pier exists in the middle of the weir | 3 | 5 | On narrow channels where failure might compromise flows |
| Front face | The downstream face of the weir | 7 | | |
| Ladder/ gantry/ walkway | Where there is a ladder/ gantry/ walkway at the weir. | 1 | 5 | On narrow channels where failure might compromise flows |
| Boom | For weirs that have a boom across the channel to prevent access to the weir | 1 | | |
| Drive assembly | To be used on manual and mechanical weirs that have an assembly to allow them to move | 3 | | |

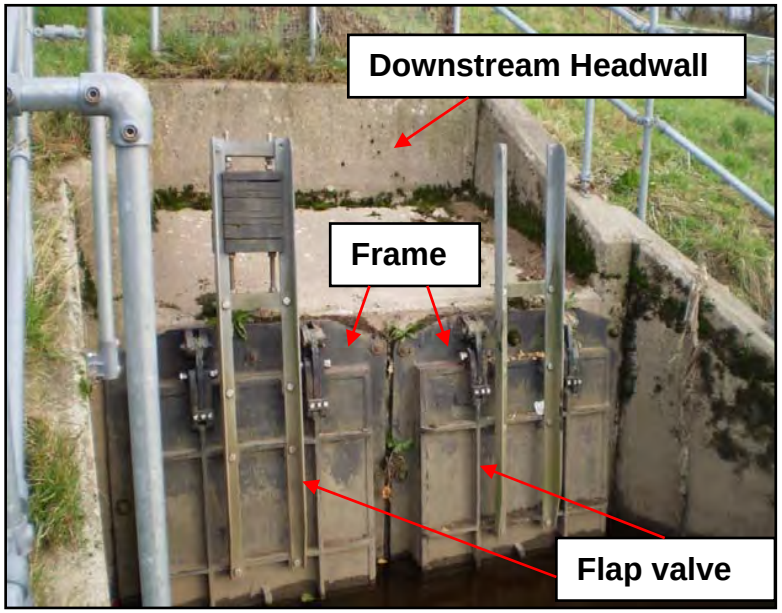
General Notes

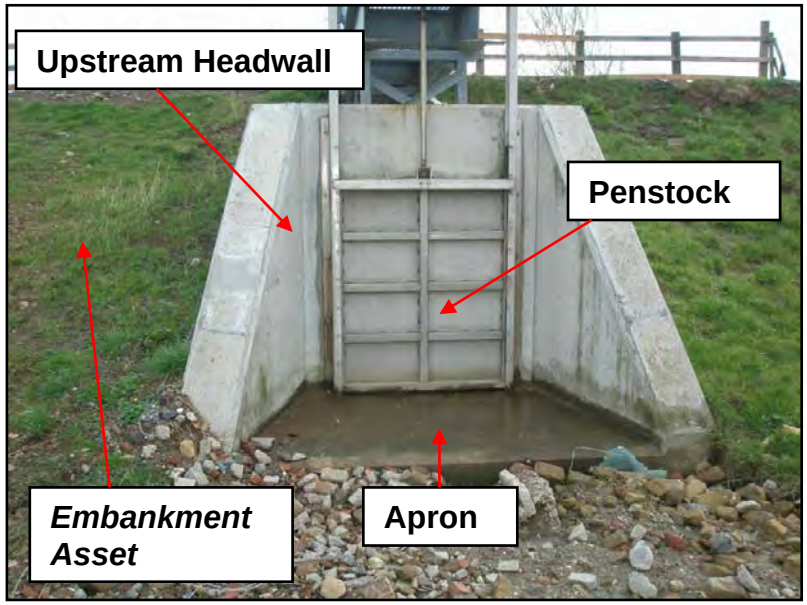
1. Right bank is right of the direction of flow
2. Where there is more than 1 weir section each element will be duplicated as appropriate in order from right bank to left
3. Where there are more than 2 weir sections central pier elements will be duplicated as appropriate in order from right bank to left
4. Weighting should be varied in relation to the perceived effect of failure on the asset. Variants are for guidance purposes

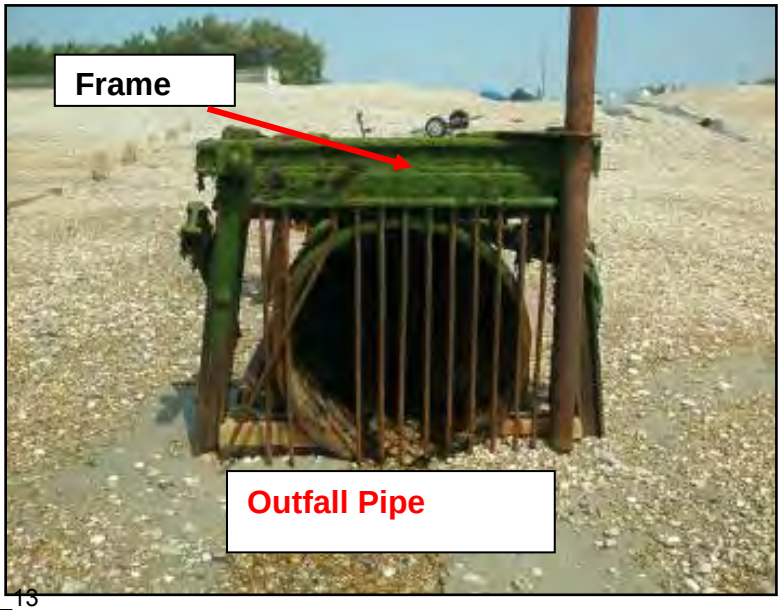
## Asset Type: Structure

## Asset Sub Type: Outfall

**(i) small surface water drains that outfall into watercourses or the sea. (ii) larger flapped outfalls where a smaller watercourse flows under a defence and outfalls into a larger watercourse or the sea.**



| Element (essential) | Definition | Element Weight | | Reason for using Variant weighting |
|---|---|---|---|---|
| | | *Default* | *Variant* | |
| **Outfall pipe** | **The pipe that carries the water at the outfall** | 9 | | |
| Upstream headwall | The upstream headwall, usually concrete, of the outfall structure. This is to be used where the drain / watercourse has an outfall through a defence | 6 | 5 | If structure is of minor significance and failure will not compromise flows in the short term |
| Downstream headwall | The downstream headwall of the outfall structure | 8 | 7 | If structure is of minor significance and failure will not compromise flows in the short term. For coastal assets weight is 8 to account for diurnal tidal inundation |
| Apron | The structure at the base of the outfall to prevent scour | 4 | 3 | If structure is of minor significance and failure will not induce asset failure |
| Frame | The frame that holds the flap, screen, or penstock | 7 | | |
| Screen | This is only to be used for informal screens | 1 | | |
| Penstock | This is only to be used for informal penstocks. | 7 | | |
| Flap valve | Where there is a flap valve on the outfall. | 9 | 7 | If a penstock is active as when closed will largely prevent ingress from watercourse or tidal waters in the short term |

General Notes

Surface water outfalls could not contribute to the likelihood of flooding from main river unless:

a) the outfall pipe runs under a raised defence and water from main river could back up the pipe during high flows if it failed and/or;

b) where its failure might cause a raised defence to be undermined.

1 Surface water outfalls should be visually inspected and classified in AIMS as having it's primary purpose 'Flood Risk Management' if they fall into category a) or b) above

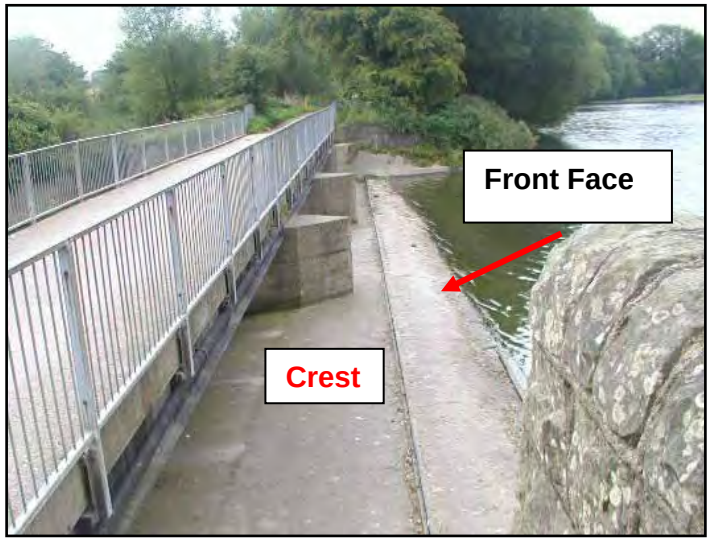
2 Where there is more than 1 outfall each element (outfall pipe and flap valve) will be duplicated as appropriate in order from downstream to upstream of the watercourse into which the outfall is discharging

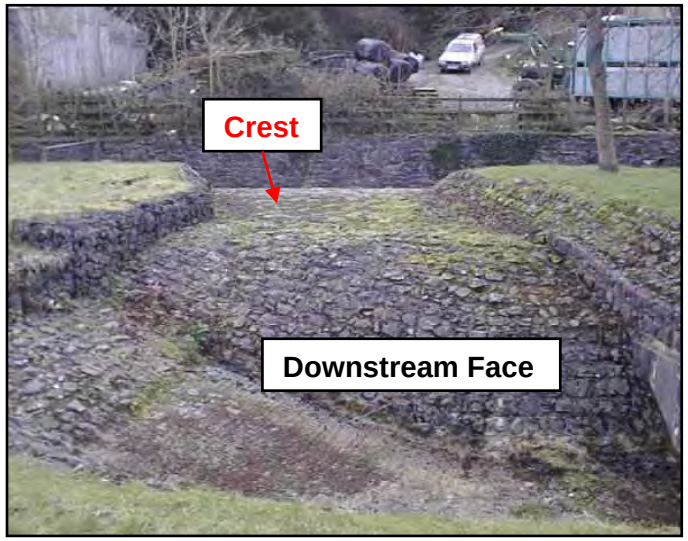
3 If the left and right walls of an upstream or downstream Headwall structure are composed of different material e.g. bag work, rip rap, sheet piling, then these elements should be separately identified

## Asset Type: Structure

## Asset Sub Type: Spillway

**Overflow spillways, side spillways, and shaft spillways found at reservoirs, flood storage areas, and along defences.**



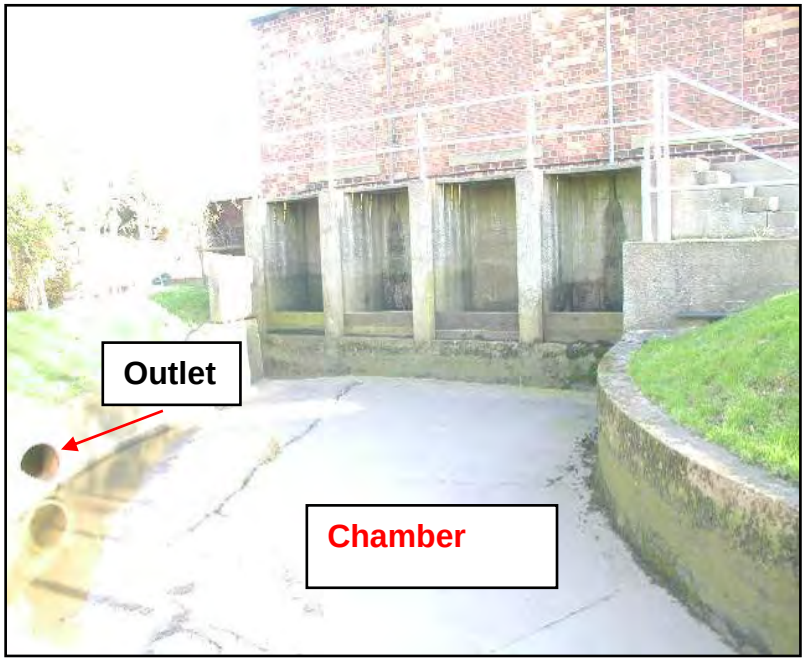



| Element (essential) | Definition | Element Weight | | Consider using Variant weighting… |
|---|---|---|---|---|
| | | *Default* | *Variant* | |
| **Crest** | **The top of the spillway** | 8 | | |
| Upstream face | The upstream face of the overflow or side spillway | 7 | | |
| Downstream face | The downstream face of the overflow or side spillway | 7 | | |
| Pipe | The structure that connects to the funnel in a shaft spillway and goes through the dam to the outfall | 5 | | |
| Funnel | The main funnel structure from a shaft spillway | 5 | | |
| Ladder/ gantry/ walkway | Where there is a ladder/ gantry/ walkway on the spillway | 1 | | |

## Asset Type: Structure

## Asset Sub Type: Stilling Basin

**The structure usually found at the outfall of a reservoir / flood storage area or spillway that reduces the water velocity before it is passed further downstream.**

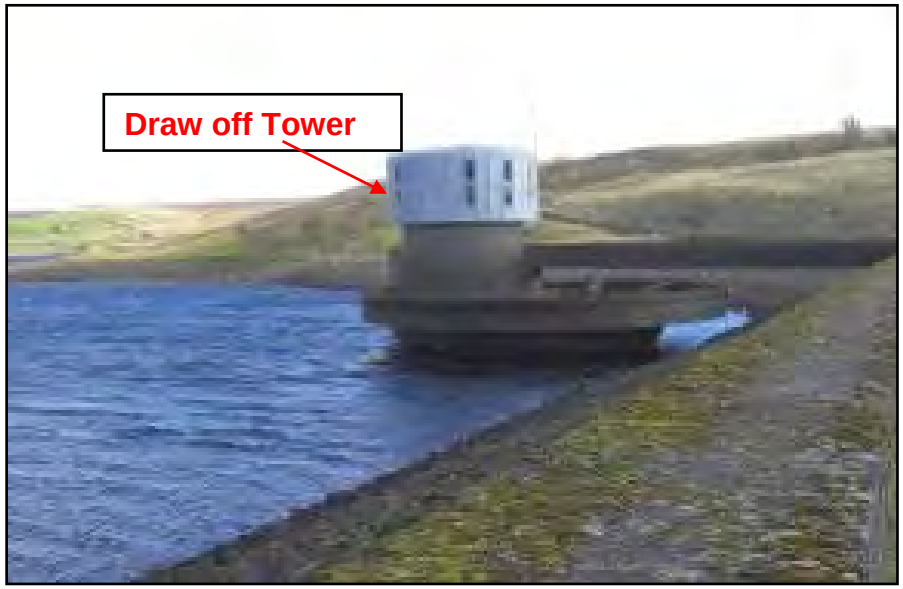


| Element (essential) | Definition | Element Weight | | Consider using Variant weighting… |
|---|---|---|---|---|
| | | *Default* | *Variant* | |
| **Chamber** | **The main chamber/basin structure** | **4** | | |
| Outlet | The outlet structure of the stilling basin | 7 | | |

## Asset Type: Structure  Asset Sub Types: (i) Draw off Tower / (ii) Hydrobrake

**(i) The structure that is found in reservoir that removes water from the reservoir and diverts it elsewhere.**

**(ii) Structure controlling water flow using a vortex**

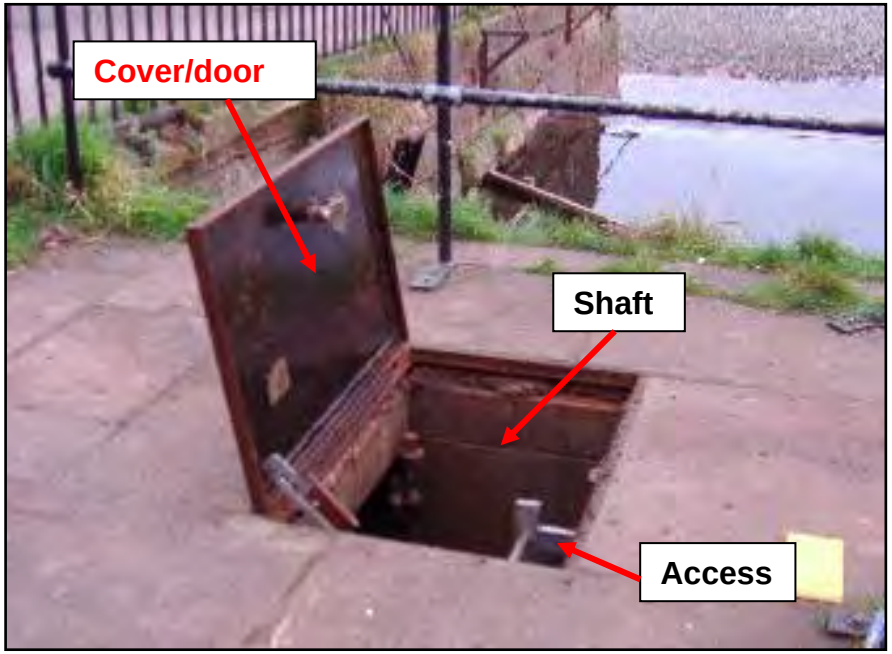


| Element (essential) | Definition | Element Weight | | Consider using Variant weighting… |
|---|---|---|---|---|
| | | *Default* | *Variant* | |
| Draw off Tower | As above | 5 | | |
| | | | | |
| Hydrobrake | As above | 5 | | |

## Asset Type: Structure

## Asset Sub Type: Inspection Chamber

**Used for Inspection Chambers or manholes**




| Element (essential) | Definition | Element Weight | | Consider using Variant weighting… |
|---|---|---|---|---|
| | | *Default* | *Variant* | |
| **Cover/door** | **The structure preventing access into the chamber** | 1 | | |
| Access | Access aids such as ladders | 1 | | |
| Shaft | To be used on deep chambers where there is a shaft down to the bottom of the chamber | 7 | | |

## Asset Type 10: Major Civils

## Asset Sub Types: Abutment / Central Piers

**Major abutments and central piers only**

| lement (essential) | Definition | Element Weight | | Consider using Variant weighting… |
|---|---|---|---|---|
| | | *Default* | *Variant* | |
| **Abutment Front face** | **Face of the abutment facing channel** | 9 | | Left and right bank abutments |
| Capping to abutment | | 4 | | |
| | | | | |
| **Central pier** | **The pier** | 9 | | Element sets as appropriate for each pier |
| Pier foundation | The foundation of the pier | 7 | | |
| Contraction joint | Where the pier has a contraction joint | 5 | | |
| External features | Where the pier has external features | 4 | | |
| Roof Access | Where there is access to the roof | 1 | | |

## How weightings are used to calculate overall Condition Grade

Weightings are used to indicate the importance of each element to the overall stability and performance of the asset. They range from 1 to 9, where 1 would apply to elements that do not have a flood risk reduction function, whereas an element with a weighting of 9 is one that were it to fail would lead to the asset as a whole failing immediately. The full description of each weighting can be found in Operational Instruction 166_03.

The weighting of each element is fundamental to how AIMS determines the overall condition grade of the asset. The table below gives an example of how the calculation is made.

| Element/Type | Weighting (W) | Condition Grade (CG) | W x CG |
|---|---|---|---|
| Channel Side | 3 | 3 | 9 |
| Berm | 5 | 2 | 10 |
| Exposed face | 8 **(9)** | 4 | 32 (36) |
| Crest | 8 | 1 | 8 |
| Landward face | 8 | 2 | 16 |
| Sum (W) | **32 (33)** | | |
| Sum (CG x W) | | | **75 (79)** |
| Overall Asset Grade | Sum of (weightings x Condition Grades) divided by sum of weightings | | 75 / 33 = 2<br>(2.34 but rounded down to whole number)<br>(79/33 = 2.39) (override to 4) |

## Special Instructions for elements with weighting of 9

It is important to understand how AIMS calculates the overall condition of an asset which has an element with a weighting of 9.
Elements with a 9 weighting will override the overall calculated condition of the asset if that element has a worse condition grade. This is because of the importance of those elements to the overall stability of the asset.

For example, using the asset in the table above, if the weighting of the exposed face was 9, the calculated overall condition grade would be 4.
This can be seen in the red numbers in the brackets