

Design Risk Assessment

Document control	Cefn Farm, Mount Road, Aberdare				
Contributing designers	Revision	Purpose of issue	Checked	Reviewed	Date
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Health and Safety Considerations

Stage 1 Identify				Stage 2 Eliminate / Reduce	Stage 3 Inform	Stage 4 Control		
Ref. no.	Project element, material or activity	Key health and safety <u>hazards</u> and their possible effects	<u>People/ environment</u> at risk from the hazard	<u>Design</u> measures taken to eliminate the hazard or reduce the risk	Significant <u>residual</u> hazards and risks	<u>Communication</u> method	Risk owner(s)	Proposed <u>control</u> measures
Guidance	Consider all aspects involved in each stage of interface with the site, environment and structure(s).	Record the key hazards and their potential consequences.	Identify the categories of people at risk.	Include obtaining adequate data for design certainty and any further studies carried out during the risk evaluation process. Proposed measures to be taken by constructors and operators are to be included in Stage 4.	Provide details of residual hazards and risks that will need to be communicated and managed.	Record how information is provided, whether on drawings, pre-construction information, buildability statement, specification, reports or H&S File	Record the name of designers, contractors, the client or other stakeholders who are to ensure the significant residual risk is minimised and controlled.	Recommend measures to be taken by the risk owner(s) to minimise and control the significant residual risk.
Design								
Des1	Design of drainage	Services: Potential for underground services crossing the site There are a series of ordinary watercourses / drainage ditches that should be surveyed to inform the location of drainage features. Risk of striking services.	Site personnel. Existing infrastructure	No information currently available – detailed site survey recommended prior to detailed design taking place.	Potential unidentified services	DRA	Designer at detailed stage (identifying known risks) Contractor (construction of the scheme)	Detailed survey of services prior to construction. Liaison with utility providers. Risk assessments and method statements and adequate briefing of site personnel.
Des2	Design of drainage	Ground and groundwater conditions: unknown at present. Potential for: Contamination Instability Groundwater in excavations	Site personnel Site plant	Preliminary drainage design has used largely shallow features.	Unknown ground and groundwater conditions	DRA	Designer (identifying known risks) Contractor (construction of the scheme)	Ground investigation to be undertaken at next stages of the design. Follow recommendations arising from ground investigation report.
Des3	Design of drainage	Unexploded ordnance	Site personnel Site plant Public	An unexploded ordnance map has been consulted at zeticauxo.com This has highlighted that there is a low risk of finding UXO across the proposed development site	Low risk from UXO	DRA	Designer (identifying known risks) Contractor (construction of the scheme)	Risk assessments and method statements and adequate briefing of site personnel in an event of UXO on site.

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Des4	Design of above ground SUDS features	Risk of trips and falls, drowning, vehicles entering the swale	End user SuDS features	Preliminary design undertaken in accordance with CIRIA C753. Proposals to provide planting to demarcate SuDS features whilst not obscuring visibility and signage informing of intermittent water. Shallow features and side slopes (max 1in3) to allow for safe exit from swale and basin features.	Risk of trips and falls, drowning Disrepair/lack of maintenance causing instability or obscured visibility	DRA	Owner/operator/ scheme designer	Detailed design should consider the use of appropriate kerbing when swale located near roads to reduce the risk of vehicles entering SuDS assets. Planting to demarcate SuDS features whilst not obscuring visibility and signage informing of intermittent water. Shallow features and side slopes (max 1in3) to allow for safe exit from swale and basin features. Maintenance schedule to be prepared.
Construction								
Con1	Excavations	Potential for instability of excavations Potential for groundwater flooding of excavations and contamination spread/mobilisation of contaminants Potential for striking of services/UXO	Site personnel Existing infrastructure Site plant	Hazard cannot be eliminated Limit depth of excavations where practicable	Ground conditions and potential services Low risk of UXO on site	DRA	Contractor	Early involvement of temporary works designer recommended Risk assessments and method statements and adequate briefing of site personnel. Follow recommendations arising from ground investigation report. Detailed survey of services prior to construction. Liaison with utility providers.

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Con2	Plant/ material deliveries	Access via an informal narrow field lane off Mount Road. Unauthorised access by members of public Site traffic causing hazards to general public/ collisions	Site personnel Public	Hazard cannot be eliminated	Site access	DRA	Contractor	Traffic management plans, consultations with stakeholders, traffic management design and relevant NRSWA applications. Assess acceptability of the field lane for construction traffic. Limit volumes of imported material or muck away where possible.
Con 3	Construction of outfalls to the surface water body	Water, risk of inundation, illness	Site personnel	Hazard cannot be eliminated by design.	Water	DRA	Contractor	Edge barriers/ safety harnesses to be used. The work to be undertaken during dry weather periods.
Operation & Maintenance								
O&M1	Drainage systems in operation	Potential for failure of the drainage system and flooding of the site	End users Maintenance personnel	Drainage designed to 100yrCC standard of protection	Risk of flooding remains during exceedance events and if maintenance requirements are not followed.	Operation and maintenance manual (to be prepared)	Asset owner/operator	Regular maintenance in accordance with O&M manual, normal site safety controls, designated overland flow routes away from development area and towards existing ditches

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O&M2	Maintenance of drainage systems	Water Working at height Confined spaces	Maintenance personnel	Reduce or remove the need to enter confined spaces through the design of inspection chambers and access reducers where practicable. Above ground shallow SuDS features recommended where possible.	Water Working at height	Operation and maintenance manual (to be prepared)	Asset owner/operator	Non-man entry inspection chambers to be used , where possible, to eliminate confined space entry. Record non-entry methods of maintenance in O&M manual. Edge barriers to be used. Regular maintenance in accordance with O&M manual, normal site safety controls.
Demolition								
Dem1	Removal of drainage features	Hazards and risks: largely as per the construction stage, except that the removal of the drainage system will increase a risk of flooding to the site.	Site personnel End user	Replacement SuDS based drainage system to be provided or site returned to greenfield conditions	Instability of excavations, disturbance of services Increase of flood risk	DRA	Demolition contractor	Full as-built records, specifications and maintenance procedures included in O&M manual to aid in planning of demolition

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Construction								
Con1	Construction of drainage system	Sediment, oil and chemicals Pollution of ground and surface water features	Water bodies	Hazard cannot be eliminated by design.	Pollution	Construction Management Plan (to be prepared)	Contractor	Risk assessment and method statement undertaken to avoid pollution during the works. Water from excavations not to be discharged to the drainage system. Use of silt curtains, bunded storage tanks, spill kits envisaged. Permanent SuDS features to be grassed and established prior to connection of the drainage system. No construction runoff to be drained via permanent SuDS features.
Operation & Maintenance								
O&M1	Inspection and clearance of manholes and SuDS features	Oil/fuel, sediment Pollution	Environment Maintenance personnel	Hazard cannot be eliminated by design.	Pollution	Operation and maintenance manual (to be prepared)	Asset owner/operator	Regular maintenance in accordance with O&M manual, normal site safety controls. Materials/sediments removed to be treated as contaminated and disposed of to a licenced waste management facility
O&M2	Drainage system/ detention basin cleansing after fire event	Contaminated water Pollution, illness	Operator Water bodies	Detention basin to be lined and penstock or similar at outlet installed to enable retention of contaminated water and prevent pollution to surface and groundwater	Contaminated water Illness	Operation and maintenance manual (to be prepared)	Asset owner/operator	Contaminated water to be tested and treated in situ prior to discharge to the water environment or tankered off for offsite disposal

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Demolition								
Dem1	Removal of the drainage system/ general demolition activities	Hazards and risks: largely as per the construction stage.	Water bodies, groundwater	Replacement SuDS based drainage system to be provided, or site returned to greenfield conditions.	Pollution	Operation and Maintenance manual	Demolition contractor	Full as-built records, specifications and maintenance procedures included in O&M manual to aid in planning of demolition Risk assessment and method statement undertaken to avoid pollution during the works. Water from excavations not to be connected to the drainage system. Use of silt curtains, bunded storage tanks, spill kits envisaged.