

Surface Water Management Plan (SWMP) Guidance

1. General

- 1.1. The CEC Flood Planning team always encourage early discussions in advance of submission of Flood Risk Assessments and SWMPs to discuss pertinent issues to the applicant's site in order to reduce the number of iterations required to reach an appropriate solution.
- 1.2. Overview maps and plans of the proposed development should be provided to give context to the FRA and SWMP. All relevant locations should be listed with a grid reference and referenced consistently on drawings and maps. This should include pertinent locations such as manholes, detention ponds/basins, discharge points etc.
- 1.3. Information should be supplied in an organised manner via a technical report detailing proposed mitigation measures with supporting and appropriate drawings and calculations (including modelling details if hydraulic modelling has been undertaken in support of the application).
- 1.4. Disparate print outs solely from hydraulic modelling software such as InfoWorks / MicroDrainage / ISIS etc and overview drawings are not considered as providing sufficient detail as to supersede the need for a report.
- 1.5. Submission of all of the information required will enable consideration of the planning application. Failure to demonstrate good flood risk management could lead to a recommendation to the planner of refusal.
- 1.6. There are two types of planning approvals that require sign off from Flood Prevention – planning in principle and full planning.

2. SWMP Details

The SWMP should deal with flood risk from surface water (pluvial), ensuring that flood risk elsewhere is not made worse by runoff from the development and that surface water quality improvements are included prior to discharge from site. The main elements of the SWMP should be analysed up to the 1 in 200yr (0.5%AEP) event with a 40% allowance for climate change.

2.1 Drainage System

- 2.1.1 For all sites, except those discharging directly to coastal waters, surface water should discharge at a rate as if it were a greenfield site. Surface water management shall take account of rain falling on the site and run-off from adjacent areas which enter the site. This remains a requirement if the site is brownfield or discharges to the combined sewer network. A discharge rate from the proposed drainage system during the 200-year plus climate change event should not exceed 4.5l/s/ha or the 2-year greenfield rate, whichever is the lower. Allowable discharge rates should be calculated based upon the impermeable area, not the whole site area captured by the drainage system, to the betterment of the system as a whole.
- 2.1.2 A drawing showing the proposed drainage plan must be provided including the locations and flow directions of all pipes, manholes, swales, filter drains and discharge points. The drawing should also include the development footprint. A drawing showing catchment areas draining onto the proposed development area should also be provided including a measurement of the catchment areas. Measurement of permeable and impermeable areas must be provided.
- 2.1.3 All drainage systems must be served by SuDS in accordance with the SPP, CIRIA C753 and SuDS for roads where applicable. This requirement applies even if the surface water system discharges to the combined network. When discharging to a waterbody the treatment methods must be approved by SEPA.

- 2.1.4 Pumped surface water drainage is only recommended if Scottish Water adopt it. If this is not possible then the onus is on the developer to confirm that the property owners ensure a robust maintenance programme which is adhered to. The Council cannot take responsibility for the rectification of any failure. Further information is available within Sewers for Scotland for design guidance on surface water pumping requirements.
- 2.1.5 The drainage system must be designed to accommodate the 1 in 200 year rainfall event including a 40% uplift to account for climate change. Where the network cannot accommodate storage below ground level or within formal SuDS structures the developer must demonstrate that all flood waters can be retained within the site boundary. Flood areas within the site boundary must not prevent dry pedestrian egress from the property.
- 2.1.6 To confirm the drainage system can attenuate the 1 in 200 year plus climate change allowance rainfall event, hydraulic modelling outputs must be provided. This must include simulated water levels at all elements of the drainage system, referenced to a plan drawing. This will enable confirmation that the system is operating as perceived. Any output (nodes) should be cross-referenced to the drainage drawing to aid interpretation.
- 2.1.7 We require that any form of attenuation for greenfield sites must be located above ground level i.e. no underground storage will be permitted, unless there are robust reasons as to why above ground storage is unacceptable (such as BAA requirements).
- 2.1.8 It is recognised that small, restricted sites may require some relaxation in respect of discharge from site so that the flow controls are not smaller than 75mm, as stipulated in Sewers for Scotland.
- 2.1.9 The developer must confirm the organisation taking on the responsibility of the proposed SuDS (including underground attenuation tanks), the size of SuDS detention ponds/basins along with GIS co-ordinates. CEC do not adopt attenuation ponds which form any part of the SuDS under any circumstance, except for those to be adopted under the RCC. Appropriate discussion should be undertaken by the Developer to determine suitability for adoption in advance of planning submission.
- 2.1.10 Current guidelines are that CAR licences are required for discharges to waterbodies greater than 1000 residential houses, car park spaces, all industrial estates and major roads / motorways. Consultation with SEPA will be required. It is up to the applicant to check that these have not been revised since the production of these guidelines.
- 2.1.11 If the development is being approached in a phased manner then a drainage masterplan covering the drainage for the entire site will be required at outline planning stage.

2.2 SuDS Ponds

- 2.2.1 The developer must ensure no steep sided basins are created within the development which require grass cutting. The gradient of any attenuation area should allow safe operation of standard grass cutting machinery. The location and design of SuDS ponds or surface water storage areas should be agreed with the project landscape architect (if appropriate).

2.3 Discharge Point

- 2.3.1 Discharge point(s) for the drainage system must be identified, and the approval in principle from the owner, or Scottish Water in the case of a sewer, must be demonstrated with a signed letter of confirmation.

2.4 Flow Paths

- 2.4.1 The developer must make full account of surface water flows by ensuring that flows are not directed into properties and by directing any exceedence flows into a surface water storage area or a SuDS pond/basin if included in the design (and with Scottish Water's approval), or along the flow path of the pre development topography. Exceedence is considered as either due to a larger storm and therefore under capacity within the pipeline, or from a blockage occurring.
- 2.4.2 To demonstrate this detailed drawings showing pre and post development flow paths must be provided, including ground levels of the proposed development to support the flow path diagram. These should be of sufficient detail to determine whether water will be directed into houses.
- 2.4.3 Surface water should be dealt with by analysing the existing and proposed flow paths and depths for surface water runoff. This should include all areas within the site boundary and also runoff from areas outwith the site which enters the site.
- 2.4.4 New buildings in the development must not be at risk of flooding as a result of the post development flow paths and depths. Ground levels should be designed so that any surface water runoff does not cause flooding of buildings. This means ensuring that there are no low spots which would create ponded water and therefore buildings are at flood risk. Likewise, if the system suffers blockage or a SuDS pond overflows, there must be a "fail safe" overflow route which avoids buildings. A necessary risk assessment is required if an area has been designated as a flood storage area.
- 2.4.5 If the development alters existing flow paths in a way which increases flood risk to existing property, additional attenuation or other measures will be required.

2.5 Additional Requirements

- 2.5.1 Several areas throughout Edinburgh are protected from fluvial flooding using flood prevention schemes. Proposed developments in these areas are not permitted to discharge to a watercourse through a flood protection infrastructure without design approval from CEC Flood Prevention.
- 2.5.2 No access roads to proposed developments will be tolerated adjacent to watercourses as this encourages fly tipping, blocking the watercourse and exacerbating flood risk.
- 2.5.3 The developer should aim to minimise the amount of impermeable areas in the proposed design as much as possible and increase permeable areas using grass, plants, grasscrete and permeable paving where appropriate.
- 2.5.4 Confirmation of measures to be employed to manage surface water runoff during the construction phase may be required (this is particularly notable during dewatering situations).

Flood Risk Assessment Guidance

1. A FRA must consider all potential sources of flooding which may impact a proposed development i.e. fluvial, culvert, pluvial, tidal, coastal, groundwater. Assessment of pluvial flood risk (flooding from rainfall flowing overland) should feed into the SWMP.
2. The FRA should show that the development is not at fluvial flood risk (i.e. flooding from a watercourse) during a 1 in 200 year (0.5% AEP) including an allowance for climate change based on current guidance. For developments considered as civil infrastructure (such as care homes, hospitals, critical infrastructure) then as per SPP a 1,000 year plus climate change assessment will be required.
3. Cross reference to the SEPA pluvial flood maps should be made. If the proposed development is situated within an area predicted to experience pluvial flooding for the 200 year event then the developer must account for this surface flow in the drainage design. Account must be taken of the whole catchment that drains to the flooded area when accounting for any areas of flooding. The final design must prove that they are not increasing the extent of the pluvial flooding, and that there is no risk of any water entering the proposed properties.
4. The FRA should show that the development is not at risk of coastal and/or tidal flood levels for the 1 in 200yr (0.5% AEP) including an appropriate allowance for climate change. Appropriate consideration of wave action, funnelling and local bathymetry should also be included.
5. When flooding mechanisms are acting in unison a joint probability analysis may be required in accordance with the relevant guidance.
6. The detail required for an FRA is described in CIRIA C624 under Level 1, Level 2 or Level 3. This hierarchy should be followed when considering flood risk at the proposed development.
7. The developer should be aware that if a Level 3 FRA is deemed to be required, CEC hold water level data from hydraulic modelling studies of several watercourses within the city. The developer should contact CEC to discuss if pertinent data is available to inform the FRA before embarking on the construction of a new model. Generally water levels and river flows can be supplied, but the use of actual hydraulic models are limited due to ownership issues.
8. No development should be considered within the functional flood plain of a watercourse.
9. Land raising to protect a proposed development will not generally be acceptable if the development lies within the 1 in 200 year plus climate change flood extent.
10. The developer should consult with SEPA and refer to all SEPA's relevant guidance when considering flood risk at the proposed development site.
11. A flood response plan is required including:
 - a. Plans showing safe access points during flood conditions
 - b. Instructions for residents to sign up for flood warning alerts
 - c. Flood warning thresholds after which no access to any underground car park (if part of the development) will be allowed.
12. Daylighting of culverts is actively encouraged by CEC Flood Planning and SEPA to reduce flood risk and to help return the watercourse to its natural state. City of Edinburgh Council supports SEPA's stance against culverting for land gain
13. Sewers for Scotland guidance on building over or near a sewer should be applied to culverted watercourses. Where depth of sewer is unknown a minimum of 5 metres clearance from the centreline should be applied.

14. Properties located behind a Flood Prevention Scheme must have a finished floor level a minimum of 600mm above the 200 year plus climate change return period flood level.