

TABLE 17.1 Operation and maintenance requirements for swales

Maintenance schedule	Required action	Typical frequency
Regular maintenance	Remove litter and debris	Monthly, or as required
	Cut grass - to retain grass height within specified design range	Monthly (during growing season), or as required
	Manage other vegetation and remove nuisance plants	Monthly at start, then as required
	Inspect inlets, outlets and overflows for blockages, and clear if required	Monthly
	Inspect infiltration surfaces for ponding, compaction, silt accumulation, record areas where water is ponding for > 48 hours	Monthly, or when required
Occasional maintenance	Inspect vegetation coverage	Monthly for 6 months, quarterly for 2 years, then half yearly
	Inspect inlets and facility surface for silt accumulation, excavation appropriate at removal frequencies	Half yearly
Remedial actions	Re-seed areas of poor vegetation growth, alter plant types to better suit conditions, if required	As required or if bare soil is exposed over 10% or more of the swale treatment area
	Repair erosion or other damage by re-turfing or re-seeding	As required
Remedial actions	Relieve uneven surfaces and reinstate design levels	As required
	Scarify and spike topsoil layer to improve infiltration performance. Break up silt deposits and prevent compaction of the soil surface	As required
Remedial actions	Remove build-up of sediment on upstream gravel trench, flow spreader or at top of filter strip	As required
	Remove and dispose of debris or petrol residues using safe standard practices	As required

TABLE 22.1 Operation and maintenance requirements for detention basins

Maintenance schedule	Required action	Typical frequency
Regular maintenance	Remove litter and debris	Monthly
	Cut grass - for spillways and access routes	Monthly (during growing season), or as required
	Cut grass - meadow grass in and around basin	Half yearly (spring - before seeding season, and autumn)
	Manage other vegetation and remove nuisance plants	Monthly at start, then as required
	Before work commences, the contractor shall liaise with all Statutory Authorities to determine the exact location of all apparatus and take all precautions deemed necessary to locate, identify and protect any apparatus, structures, services, etc.	Monthly
Occasional maintenance	Inspect inlets, outlets and overflows for blockages, and clear if required	Monthly
	Inspect infiltration surfaces for ponding, compaction, silt accumulation, record areas where water is ponding for > 48 hours	Monthly (for first year), then annually or as required
Remedial actions	Check any penstocks and other mechanical devices	Annually
	Tidy all dead growth before start of growing season	Annually (or as required)
Remedial actions	Remove sediment from inlets, outlet and forebay	Annually (or as required)
	Manage weedland plants in outlet pool - where appropriate	Annually (or as required)
Remedial actions	Re-seed areas of poor vegetation growth	As required
	Prune and trim any trees and remove cuttings	Every 2 years, or as required
Remedial actions	Remove sediment from inlets, outlets, forebay and main basin when required	Every 5 years, or as required (may be minimal requirements where effective siltation source control is provided)
	Repair erosion or other damage by re-seeding or re-turfing	As required
Remedial actions	Rehabilitation of inlets, outlets and overflows	As required
	Relieve uneven surfaces and reinstate design levels	As required

Notes

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Drawings must not be scaled. Work to figured dimensions only

- Due to a change in legislation on 1st October 2011, there could be formally private sewers which have transferred over to the responsibility of the Sewerage Undertaker. If such sewers are located on site during construction works, please advise the Engineer immediately.
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- The drawing is the copyright of the Engineers and may not be reproduced or used except by written permission.
- Before work commences, the contractor shall liaise with all Statutory Authorities to determine the exact location of all apparatus and take all precautions deemed necessary to locate, identify and protect any apparatus, structures, services, etc.
- The drawing is the copyright of the Engineers and may not be reproduced or used except by written permission.
- Should any surplus excavated material require disposal of site, it should be taken to a licensed disposal site.
- The contractor shall check all dimensions and levels on site.
- Setting out to be confirmed by the Architect.
- Prior to commencing work on the drainage, all existing drains, sewers, manholes and outlets to remain shall be identified and a CCTV condition survey carried out. Where necessary, protection to the existing drainage infrastructure shall be provided.
- All existing drainage levels, diameters & locations need to be checked on site prior to any drainage works, and any discrepancies need to be reported back to the Engineer.
- Cover levels for manholes are approximate only and should be adjusted to match surrounding levels.
- All manholes and drainage covers shall comply with BS EN 124. Manhole covers with 1500 rated areas and buildings shall be provided. Cover strengths to be provided as follows:
 - Class D400 in heavily trafficked areas (roads, service roads).
 - Class C250 in lightly trafficked areas (footpaths, etc.).
 - Class B125 in landscape and non trafficked areas (min. 100mm deep frame).
- Pipes to be: - Vitrified clay to BS EN 308 or Concrete to BS EN 1245 or UPVC to BS EN 1422 or Thermoplastic Structures with joint complying with BS EN 1245 or BS EN 1422.
- BS 5911 Standard, Class B125 for non trafficked areas (min. 100mm deep frame).
- All pipes to be laid with a fall of 1 in 100 unless otherwise stated.
- Where cover to pipes is less than 1000mm underfootway - concrete bed and surround of concrete protection shall be provided.
- All pipes beneath buildings to be BS EN 308 or Concrete to BS EN 1245 or UPVC to BS EN 1422 or Thermoplastic Structures with joint complying with BS EN 1245 or BS EN 1422.
- An opening is to be formed through walls to give pipes at least 50mm clearance all round. Brickwork over shall be supported by a limit. Opening to be installed each side with rigid steel material.
- Pipes embedded in walls shall have joints formed within 100mm of either wall face. Adjacent cover pipes of max 600mm length with flexible joints shall continue the alignment.
- Pipe runs near buildings:
 - A trench is to be formed within 1m of a building it shall be filled with concrete up to the lowest level of the adjacent foundation. If a trench is greater than 1m from a building the trench shall be filled with concrete up to a level below the building level to the adjacent foundation.
 - For walls of DWP and BIPV see additional notes.
- Drainage channels shall be provided at the head of the foul drainage runs.
- For walls of DWP and BIPV see additional notes.
- Threshold drainage is required where levels fall towards a building entrance. Another to confirm and required.
- Yard Duty positions are indicated, should be adjusted on site to suit levels.
- All gully positions to suit low points and to be required.
- Root gully shall be fitted 450 diameter x 900mm deep with Class D 400 frame and gully to BS EN 124.
- Drainage channel detailed design to be undertaken by manufacturers. Alternative channels may be used, subject to Engineer approval.
- All concrete to drainage, manholes, basins, tunnels etc. to be in accordance with the BRE special report 1 - Concrete in aggressive ground. Refer to site investigation report for details of ground conditions.
- All manholes, pipe trenches etc. to be bedded with imported granular fill to Class 9/5 (4% clay material) to BS EN 1245 & 1246 & 1247 & 1248 & 1249 & 1250 & 1251 & 1252 & 1253 & 1254 & 1255 & 1256 & 1257 & 1258 & 1259 & 1260 & 1261 & 1262 & 1263 & 1264 & 1265 & 1266 & 1267 & 1268 & 1269 & 1270 & 1271 & 1272 & 1273 & 1274 & 1275 & 1276 & 1277 & 1278 & 1279 & 1280 & 1281 & 1282 & 1283 & 1284 & 1285 & 1286 & 1287 & 1288 & 1289 & 1290 & 1291 & 1292 & 1293 & 1294 & 1295 & 1296 & 1297 & 1298 & 1299 & 1300 & 1301 & 1302 & 1303 & 1304 & 1305 & 1306 & 1307 & 1308 & 1309 & 1310 & 1311 & 1312 & 1313 & 1314 & 1315 & 1316 & 1317 & 1318 & 1319 & 1320 & 1321 & 1322 & 1323 & 1324 & 1325 & 1326 & 1327 & 1328 & 1329 & 1330 & 1331 & 1332 & 1333 & 1334 & 1335 & 1336 & 1337 & 1338 & 1339 & 1340 & 1341 & 1342 & 1343 & 1344 & 1345 & 1346 & 1347 & 1348 & 1349 & 1350 & 1351 & 1352 & 1353 & 1354 & 1355 & 1356 & 1357 & 1358 & 1359 & 1360 & 1361 & 1362 & 1363 & 1364 & 1365 & 1366 & 1367 & 1368 & 1369 & 1370 & 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