

CONSTRUCTION AND ENVIRONMENT MANAGEMENT PLAN

SURFACE WATER RUN OFF FROM THE CONSTRUCTION PHASE SHOULD BE COLLECTED VIA A SERIES OF GRAVEL FILLED TRENCHES WHICH FEED INTO A STORAGE BASIN WHERE THE STORED WATER WILL BE PUMPED TO THE PROPOSED SURFACE WATER OUTFALL LOCATION AT THE AGREED PROPOSED DISCHARGE RATE.

PROPOSED DISCHARGE RATE: 8.2 l/s

THE REQUIRED ATTENUATION VOLUME TO ACHIEVE THE PROPOSED DISCHARGE RATE OF 8.2 l/s IS 88.0m³ FOR A 1 IN 1 YEAR STORM EVENT THROUGHOUT THE CONSTRUCTION PERIOD.

ATTENUATION CALCULATION:

$(90.0m^2 + 229m^2) / 2 = 165.5m^2 \times 0.6m \text{ (DEPTH OF BASIN)} = 95.7m^3$

SILT PROTECTION

ALL INLETS TO THE PROPOSED TEMPORARY BASIN ARE TO HAVE A STRAW BALE FILTER STRIP TO FILTER SILTS. STRAW BALES ARE TO BE REPLACED SEASONALLY OR AS REQUIRED.

WHERE DIRECT RUNOFF TO THE BASIN IS TO OCCUR, A SILT FENCE IS TO BE INSTALLED TO LIMIT THE PASSAGE OF SILTS.

AREA	TOTAL AREA m² (ha)
PROPOSED IMPERMEABLE	7671m² (0.767ha)

*TOTALS FOR HECTARES (ha) AND METERS SQUARED (m²) DIFFER SLIGHTLY DUE TO ROUNDING AND ACCUMULATION OF INDIVIDUAL AREAS.

RUNOFF RATES	
DISCHARGE	FLOW RATE (l/s)
PROPOSED RATE	8.20l/s

CONSTRUCTION NOTES:

- POLLUTION AND SEDIMENT CONTROL SHOULD BE IN PLACE ON SITE UNTIL RAINFALL FROM THE CONSTRUCTION PHASE HAS STOPPED. THE MAIN DRAINAGE SYSTEM SHOULD BE IN PLACE AND ALL POLLUTED WATERS SHOULD BE COLLECTED AND DISCHARGED TO THE WATERCOURSE.
- IF SUSTAINABLE DRAINAGE COMPONENTS MUST BE CONSTRUCTED AS PART OF THE EARTHWORKS, IT IS SUGGESTED THAT THE TEMPORARY SURFACE WATER MANAGEMENT (EARTHWORKS) IS NOT REASONABLY PRACTICAL AT THAT POINT. SEDIMENT AND TREATMENT FOR THE CONSTRUCTION SURFACE WATER RUN OFF SHOULD BE PROVIDED BEFORE ANY WATER ENTERS THE SUSTAINABLE DRAINAGE COMPONENT.
- THE CONTRACTOR AND ALL RELEVANT WORKERS SHOULD HAVE A GENERAL UNDERSTANDING OF HOW THE PROPOSED SUSTAINABLE DRAINAGE COMPONENTS WORK AND THEIR PURPOSE. TO ENSURE ALL APPROPRIATE CONSTRUCTION PRACTICE AND THE SUSTAINABLE DRAINAGE COMPONENT IS USED CORRECTLY. "TOO GOOD" TANKS SHOULD BE UNDERSTOOD TO ALLOW A SITE UNDERSTANDING.
- SEDIMENT BASIN AND TRAPS SHOULD BE INSTALLED BEFORE ANY MAJOR SITE EARTHWORKS. FURTHER SEDIMENT TRAPS SHOULD BE INSTALLED ON SITE AS EARTHWORKS PROGRESS. TO CONTROL THE AMOUNT OF SEDIMENT LEAVING THE SITE.
- RUN OFF CONTROL MEASURES SHOULD BE IN PLACE WITH THE SEDIMENT TRAPS. PROPOSED AND OVERLY WATER AWAY FROM THE PROPOSED EARTHWORKS. PERIMETER DRAINING SHOULD BE INSTALLED WITH STABLE OUTFALLS. IT IS RECOMMENDED THAT THE SURFACE WATER HAS POTENTIAL TO LEAVE THE SITE. ANY ADDITIONAL FACILITIES NEEDED FOR RUNOFF CONTROL SHOULD BE INSTALLED AS THE EARTHWORKS/GRADINGWORKS TAKE PLACE.
- AN AREA WILL BE DESIGNATED ON THE DEVELOPMENT SITE FOR STORAGE OF MATERIALS (PIPPES, PIPE BEDDING, MATERIALS ETC.) UPON DELIVERY MATERIALS WILL BE OFF LOADED IN ACCORDANCE WITH THE RESPECTIVE PRODUCT. (USE GUIDES). ALL BEDDING MATERIALS TO BE STORED AWAY FROM ANY TEMPORARY DRAINAGE PROPOSALS TO PREVENT ANY POLLUTION OF THE WATERCOURSE. SILTS WILL BE LEFT AT THE SITE TO DEAL WITH ANY LEAKAGES OR SPILLS.
- A COPY OF THE EXISTING SERVICES ON SITE SHOULD BE OBTAINED AND ANY SERVICES ON THE SITE SHOULD BE MARKED OUT PRIOR TO ANY EXCAVATIONS.
- OVER PUMPING MAY BE REQUIRED TO CREATE A DRY WORKING AREA TO FACILITATE THE WORKS AND REMOVE THE RISK OF POLLUTION TO THE WATERCOURSE. STRAWBALES CAN ALSO BE USED AS SEDIMENT CONTROL MEASURES BEING PLACED AND PLACED IN TWO OVERLAPPING ROWS AT THE END OF THE DRY WORKING AREA. ALTHOUGH THE SURFACE WATER RUN OFF IS CONTAMINATED IT IS SUGGESTED THAT THE SURFACE WATER RUN OFF IS FILTERED THROUGH 100 MICRON DIRT BAGS OR SIMILAR TO PRE FILTER SUSPENDED SOLIDS FROM THE WATER PRIOR TO ANY FURTHER SETTLEMENT.
- WATER QUALITIES WILL BE MONITORED THROUGHOUT THE WHOLE CONSTRUCTION PROCESS.
- CONSTRUCTION METHOD STATEMENTS SHOULD BE PROVIDED BY THE APPOINTED CONTRACTOR AND APPROVED AS REQUIRED.
- BEFORE MOBILISATION, THE SITE LAYOUT SHOULD BE CONSIDERED, AND A CONSTRUCTION SITE LAYOUT PROCEDURE WHICH FULLY CONSIDERS THE LOCATIONS OF STOCKPILES, FILL STORES, STORAGE AREAS, WASTE DISPOSAL, REFUELLING POINTS AND WASH DOWN AREAS. THESE SHOULD ALL BE LOCATED IN AREAS WHERE THEY ARE LEAST LIKELY TO AFFECT THE RECEIVING WATER BODY. THE PLAN SHOULD ALSO INCLUDE THE REQUIREMENTS FOR DISCHARGE AND ABSTENTION LICENCES, LOCATION OF SPILLAGE KITS, AND CONSTRUCTION PLANS IN THE EVENT OF AN ENVIRONMENTAL ACCIDENT (INCLUDING RELEVANT TELEPHONE NUMBERS).
- IT IS BELIEVED THAT THERE COULD BE EXISTING DRAINAGE ON THE SITE DUE TO THE PREVIOUS DEVELOPMENT. IF ANY EXISTING DRAINAGE IS UNIDENTIFIED, SURVEY IS TO BE UNDERTAKEN TO DETERMINE IF THERE ARE ANY OFF SITE CONNECTIONS. IF THE DRAINAGE HAS BEEN PROVEN TO ONLY ACCOMMODATE THE SITE THEN IT SHOULD BE REMOVED OR GRATED. IF OFF SITE CONNECTIONS ARE FOUND, ENGINEERS TO BE CONSULTED TO DETERMINE DIAPHRAGM ROUTE FOR THE EXISTING DRAINAGE.

SEDIMENT CONTROL NOTES:

- EXCAVATED GROUNDWORKS AND EXPOSED GROUND THE EFFECT OF HAVING NO VEGETATION AND BEING RECENTLY DISTURBED ALLOWS FOR RELATIVELY LOW LOCATIONS FOR THE PROTECTION OF THE SURFACE. CONSIDERATION OF POLLUTION ENTERING THE WATERCOURSE, SILT FENCES, HAY BALES OR STILING PONDS WILL BE PLACED DOWNSTREAM OF THE TEMPORARY SURFACE WATER COLLECTION LOCATIONS.
- STOCKPILES STOCKPILES SHOULD BE LOCATED AWAY FROM THE SITE DRAINAGE SYSTEM AND WATERCOURSE. DUE TO THE POTENTIAL OF THE DISCHARGE ON A STOCKPILE, ALTHOUGH THIS WILL DEPEND ON THE TYPE OF MATERIAL, FINE SANDS AND TOPSOIL STOCKPILES WILL ERODE MUCH EASIER THAN HEAVY GRANULAR MATERIALS. PROTECTIVE COVERINGS WILL HELP PREVENT RUNOFF STRIPPING THE STOCKPILES.
- PLANT AND WHEEL WASHING WHEEL WASHES AND PLANT WASHES SHOULD BE LOCATED IN DESIGNATED LOCATIONS. THE AREA SHOULD BE TARMED AND NOT BE ALLOWED TO DISCHARGE INTO THE WATERCOURSE, OR INFLUENCE INTO THE GROUND DUE TO THE WASTE WATER OF THESE ACTIVITIES BEING HIGHLY CONTAMINATED WITH SILTS, SANDS AND HYDROCARBONS.
- DISTURBANCE OF RIVERBEDS OR BANKINGS EXCAVATIONS OF BEDS OR BANKINGS OF RIVERS CAN GENERATE SILTY WATER AS THE EXCAVATED AND POSSED MATERIAL IS WASHED DOWNSTREAM. THE WATERCOURSE SHOULD BE PROTECTED AS WELL AS POSSIBLE DUE TO THE RISK OF SILTS ENTERING THE BODY.
- DE-WATERING OPERATIONS GROUNDWATER DISCHARGE DUE TO EXCAVATIONS IS HIGHLY LIKELY TO BE HEAVILY POLLUTED WITH SUSPENDED SOLIDS AND NOT DISCHARGED DIRECTLY INTO THE WATERCOURSE. TECHNIQUES SHOULD BE IMPLEMENTED ON THE SITE TO ALLOW IMPROVEMENT OF THE WATER QUALITY BEFORE DISCHARGE OFF SITE. SOME OF THESE CAN INCLUDE PASSING WATER OVER GRASS AREA, PASSING THROUGH A TEMPORARY GRAVEL STRIP, BANK TO BANK AS STILING, BASIN AND STILING PONDS.

