

**Document Control**

Rev	Date	By	Comments
A	Jun'16	J. Hoare	Technical Review Update
B	Oct'17	J. Hoare	Technical Review Update
C	Dec 17	UoL	Sign off for release
D	Mar'20	J. Hoare	March 2020 Issue
E	April 2020	A. Singleton	General update to tracker and other minors.

Design Guidance

1. The above ground drainage and sanitation systems should comply with the current editions of the following guidelines and regulations
 - a. The Building Regulations Part H.
 - b. BS EN 12056 Gravity Drainage systems inside buildings BS EN 752 below ground drainage.
 - c. Water Regulations.
 - d. Institute of Plumbing and Heating Engineers – Plumbing and Engineering Services Design Guide.
 - e. Legionella Code of Practice and guidance documentation.
 - f. BS 8000– 1989, which includes, Part 13: Code of practice for above ground drainage sanitary appliances and Part 14: Code of practice for below ground drainage.
 - g. Water Supply (Water Fittings) Regulations 1999.
2. Fully ventilated systems shall be employed. Air admittance valves should not be used. All pipework shall be laid to correct falls.
3. All plant rooms containing water storage tanks, water boosters and/or wet services should include the provision of floor drains with deep traps. Where this is the case plantroom floors should be tanked and laid to falls.
 - a. Plantroom drainage from boilers and hot water generators shall be in a dedicated non-combustible material such as cast iron.
 - b. Condensate drainage from FCU's to be in copper or ABS and must be well supported to provide an even gradient. uPVC pipe must NOT be used.
 - c. Drainage to services items shall only discharge into the foul water drainage system via a trapped air break.
 - d. Drainage to FCUs shall be by means of a gravity system. Pumped systems are to be avoided.
4. The need for floor gullies within toilet areas shall be determined at early project commencement.
5. No above ground drainage or rainwater shall pass through lift shafts; lift motor rooms, electrical switch rooms or computer server rooms.
6. All laboratory waste systems must be designed to withstand attack from chemicals and acid and use suitable materials e.g. polypropylene.
 - a. Laboratory drainage is to be kept separate from other systems to the point of entry into the underground drainage.
 - b. Anti-syphon bottle traps to be fitted to all sinks.
 - c. In certain circumstances Acid Neutralisation / Dilution Tanks shall be utilised where corrosive liquids / spent acids or harmful chemicals which can cause damage to main sewer drainage or are likely to create noxious or toxic fumes or interfere with sewage treatment processes.
 - d. Radioactive waste is to be drained via borosilicate glass pipework. Dilution systems for radioactive waste will be required.
7. Careful consideration must be given to the choice of materials used for above and below ground drainage systems, taking into account, foundations of buildings, fluid contents, the risk of noise break out and the risk of



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- fire damage.
8. Kitchens and catering outlets
 - a. All kitchen and catering outlets must employ some form of grease removal and management system within the drainage installation.
 - b. Grease management to all hot food catering facilities shall be by installing grease removal machines to pre-rinse and pot wash sinks and combi-ovens.
 - c. No bio-systems shall be used.
 - d. External Grease Traps / interceptors shall also be employed wherever feasible and practical.
 - e. Kitchen waste systems shall be robust and suitable to receive high temperature discharges and be easy to clean.
 - f. Branch discharge pipes from macerators should be as short as possible.
 9. All above ground drainage designs shall be provided with suitable accessible rodding facilities including all transitions between above and below ground drainage services at the lowest most outlet on each stack.
 10. Suspended drainage runs shall be kept as straight as practical from A to B without deviation.
 11. All changes of direction shall be made with either long radius bends or 45° bends.
 12. Suspended pipework to be arranged such that rodding access points are not required and that rodding of the pipework can be carried out safely from the floor level above the offset.
 13. All rodding access points are to be installed on pipework above the flood levels of the sanitary appliances discharging into them.
 14. Branch pipework that is discharging into a suspended main drain must be made with a 45° branch swept in the direction of the flow.
 15. Rodding access must always be provided on all pipes prior to discharge into the underground drainage system.
 16. Sufficient access doors shall be provided to enable all pipework to be tested and maintained effectively.
 17. Wet floor showers must be provided with a good quality shower drain that incorporates a removable trap and sediment bucket and be suitable to receive the type of floor finish and making a waterproof seal between the outlet and floor. The floor must be graded evenly to the shower drain to prevent water escaping out of the shower area.
 18. All heads of underground drainage shall be identified and the pipes extended above ground and vented to atmosphere.
 19. All vent pipe terminals must discharge to atmosphere at such a height and position that foul air does not cause a nuisance or health hazard.
 20. All uPVC pipework shall be jointed by solvent welding with allowance for expansion.
 21. Sink traps shall be two-piece tubular with 75mm water seal.
 22. All pipework passing through sensitive areas to be acoustically insulated. Designers shall pay particular attention to the need for acoustic insulation and any pipework running through occupied spaces including teaching, research, office and break out areas, and any spaces designed at NC45 or below, must be so treated. Push fit acoustic pipework should be avoided.
 23. All uPVC pipework passing through structure / fire compartments shall utilise surface mounted steel fire collars. The use of concealed intumescent fire wraps will not be accepted.

Design Components

Item	Manufacturer	Comments
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Drainage Pipework	Polypipe Terrain	Solvent welded above ground drainage shall be provided as standard.
	Vulcathene (Durapipe)	Vulcathene HDPE shall be used in all laboratory drainage systems using electro fusion welding to the vertical stacks. Compression type within the laboratories for connecting to the outlets to aid future modification.
	Saint Gobain	Cast iron drainage shall be used in all areas where risk of damage may be prevalent such as car parks/ loading bays etc or a noise nuisance.
	Kimax	Borosilicate glass pipework shall in areas which deal with the distribution of radioactive waste.
Internal Grease Removal Machines	Fatstrippa	Grease Removal machines shall contain no moving parts, and have the capability of permanently removing fats, oils and grease.
Waste Lifting Pumps	Homa Sanipower	Units shall be used as a last resort when local connections to underground drainage are not accessible. Every endeavour shall be made to connect directly to a gravity drainage system.
Submersible Pumps	Flowmech Environmental Homa	Submersible Pumps shall be complete with level sensors and integral control panel with the ability to connect back to the on-site BMS. All pumping installations shall be commissioned by the supplier of the pumping equipment.
Fire Collars	Dufaylite Developments Limited	Steel Pipe Collars to be used c/w intumescent material