



Johnson Matthey Project X

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DOCUMENT TITLE:
Annexe Building Drainage Philosophy

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ABBREVIATIONS

3CR	3 rd Century Refinery
RWO	Rainwater Outlet
RWP	Rainwater Pipe
SW	Storm Water
FW	Foul Water
OWS	Oily Water Service
JM	Johnson Matthey
MH	Manhole
VRP	Value Recovery Plant
TBC	To Be Confirmed
VC	Vitrified Clay
uPVC	Unplasticized Polyvinyl Chloride
PC Ring	Precast Ring Manhole
UG	Underground
SS	Safety Shower

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1. **INTRODUCTION**

1.1 **BACKGROUND**

Johnson Matthey (JM) is developing the 3CR project which aims to produce five platinum group metals (Platinum, Palladium, Rhodium, Iridium and Ruthenium).

1.2 **OBJECTIVE**

The purpose of this philosophy is to define the requirements for the design and engineering of the various drainage systems, also, that all JM requirements to meet owner specifications along with meeting the best practices for environmental and safety regulations are achieved.

The intent is that:

- Each system is described.
- How each system is collected.
- How each system is discharged and managed.

1.3 **SCOPE**

This philosophy details the drainage requirements of the Annex building only.

1.4 **SUSTAINABILITY & STRATEGY**

The proposed development area footprint is 0.23 hectares and is located within the main JM facility. The development area, in common with the overall site, is currently made up of impervious hard standing materials with existing drainage methods to collect, transport, treat and discharge the surface water run-off at a restricted rate, in conjunction with JM's associated attenuation facilities. To allow for future climate change, the design basis run-off intensity will be increased by 40%, however, hydraulic calculations confirm that the existing drainage facilities have sufficient capacity for the design increase. In line with the recommendations of both CIRIA 753 (SuDS) and BS-752, the best approach is to manage the run-off as close to the source as possible. In doing so, the new drainage works will maximise sustainability during site preparation, site construction and the life cycle of the new facility.

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2. DRAINAGE SYSTEMS

2.1 RAINWATER DRAINAGE

The Annexe building roof will have rainwater outlets (RWO) installed to collect rainwater on the roof. The number of outlets are sized and positioned in accordance with current Building Regulations along with BS 8301. The RWO,s are connected to rainwater pipes (RWP) which will run vertically down the building adjacent to the perimeter walls. Under the roof level, there will be lateral connections so that 2 RWO's are combined to a single vertical RWP. At the ground floor, the RWP will run underground (UG) and connect to a storm water (SW) manhole (MH). The MH's will be linked by vitrified clay (VC) pipes. The system will then tie-in to the existing JM SW network. The SW arrives at the Value Recovery Plant (VRP) to be managed thereafter by JM. The material for internal RWP's will be unplasticised polyvinyl chloride (uPVC), the material for MH's will be precast concrete rings (PC Ring) with class D400 covers. The SW network will be laid to gravity falls to maintain a self-cleansing velocity.

2.2 PROCESS DRAINAGE

For a detailed explanation of the internal process drainage philosophy within the Annexe building refer to Document Number: X2JM-225-000-DBD-001-0002-00 section 2.2. The main principle is that process drainage will be collected and discharged to channels and a sump at the ground floor. The handling of the collected process drainage will be managed by JM operational staff.

2.3 FOUL DRAINAGE

The Annexe building toilet on the first floor will be piped to discharge through the perimeter wall and run vertically to be below the grade, connecting to a new foul water (FW) MH. The MH outlet pipe will run and interface with the existing FW system. The FW material to the new MH will be UPVC, the material for the MH will be PC Ring, the drain run to the interface will be VC. All drainage lines will be laid to gravity falls.

2.4 FIREWATER DELUGE DRAINAGE

In the event of a firewater deluge scenario, the firewater run-off will collect at the ground floor and enter the process drainage sump. The sump will have a firewater overflow which will connect to a drainage header below the ground floor slab. The header will discharge to a sump/pump outside the building. The sump/pump will then discharge to another sump/pump (SU747) which services the MFB. From SU747, the firewater will be routed aboveground to the VRP and be managed by JM. The material for the drainage header will be VC. The drain header will be laid to gravity falls.

2.5 SAFETY SHOWER DRAINAGE

The safety showers (SS) above the ground floor will be connected to uPVC piping which will link together laterally and discharge vertically to the ground floor process drain sumps. The ground floor SS's will have horizontal uPVC drain lines under the floor slab which will connect to the process drain sumps. The handling of the collected SS drains will be managed by JM operational staff.

2.6 OILY WATER DRAINAGE

Diesel Generators and Transformers will be located outside of the Annexe building, the equipment will be located within bunded enclosures that will have a sump for the collection of contaminated rainwater and oily water spills. The sump outlet will connect

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to a drain header which will discharge to a propriety oily water separator. The separator will have a treated discharge outlet which, in turn, will connect to the SW network.

3. REFERENCES

1. X2JM-210-000--SKT-001-0001-01 - Annexe Building Drainage Layout