

**Development**

**At**

**Clouston Street, Glasgow**

**New City Vision**

**Drainage Report G2379-05-31 Rev B**

**September 2012**

<b>Contents</b>	<b>2</b>
1.0 Introduction	3
2.0 Preliminary Enquiries and Consultations	3
3.0 Flood Risk Assessment	3
4.0 Existing Drainage	3
5.0 Proposed Foul Drainage	3
6.0 Proposed Surface Water Drainage	4
7.0 Surface Water Flow Paths	5
8.0 SUDS	5
9.0 Summary	5
10.0 Appendices	6

## **1.0 Introduction**

New City Vision propose to construct 90 No dwellings which consist of a mix of apartments, townhouses and mews housing on open landscape ground at Clouston Street Glasgow. The site is bounded to the south by Clouston Street, to the north by Kelbourne Street, to the west by existing houses accessed from Garrioch Road and to the east by Sanda Street. The location of the site is indicated on drawing No G2379-LP1 Rev A

Rennie & Kirkwood Ltd have been appointed by New City Vision to prepare a Roads and Drainage Design in accordance with current standards and specifications of Scottish Water, SEPA and Glasgow City Council in terms of quality and quantity of discharge and flooding issues pertaining to this development.

## **2.0 Preliminary Investigations and Consultations**

The engineer has carried out investigations into establishing the extents of the current public drainage network and carried out a site visit to determine all possible outfall options

## **3.0 Flood Risk Assessment**

The Flood Risk Assessment is not included as part of the report and will be carried out by a specialist to be appointed by the developer.

## **4.0 Existing Drainage**

Drainage Records have been obtained from Scottish Water and confirms the local drainage public sewer network is a combined sewer system. This information is shown Scottish Water Record drawing OP/PJFQD348

Existing Foul Drainage – There are no foul flows from the existing site that discharge to the existing public combined sewer

Existing Surface Water Drainage – There are no surface flows from the existing site that discharge to the existing public combined sewer

## **5.0 Proposed Foul Drainage**

It is proposed to discharge the foul flows from proposed new development to the existing combined sewer in Kelbourne Street. The anticipated foul flows from the site are anticipated at 0.55L/s calculated at  $(90 \times 2.1 \times 250 / 24 \times 60 \times 60)$  L/s. A Development Impact Assessment has been submitted to Scottish Water and we await their response to the application. The foul drainage proposals are indicated on Drawing No G2379-PD1 Rev B.

## 6.0 Proposed Surface Water Drainage

The River Kelvin is located some 100m northwest of the proposed site and the topography does theoretically allow a gravity connection to the river to be made. The engineer has considered this option but various factors render the construction of an outfall pipe to the River Kelvin impractical. We would comment as follows

1. There is a sheer 10m rock face between Garrioch Road and the River Kelvin and not only would the construction of an outfall pipe have major construction safety issues, the maintenance of such a pipe would have similar issues.
2. As the sub grade is rock at Garrioch Road a thrust bore would not be possible and the location of existing mains services at the junction of Clouston Street and Garrioch Road prevents the excavation of a pit for a thrust bore.
3. Any outfall sewer taken down this route would be in the region of 4-6m deep in the roads and there are listed buildings and structures that would be at threat from damage during the rock excavation in the sewer trenches.

It is therefore proposed to discharge the surface water discharge from the new development to the existing combined sewer in Kelbourne Road. The surface water run off will be restricted to less than the 1 in 2 year Greenfield run off rate and the surface water attenuated to meet current Scottish Water requirements. The surface water drainage proposals are indicated on Drawing No G2379-PD1 Rev B.

### 6.1 Greenfield Run Off Rate

Scottish Water have a general Greenfield run off rate of 5L/s/ha. It is proposed to restrict the surface water flows from the new development to a total of 6L/s which equates to Greenfield run off rate of 4L/s/ha

### 6.2 Surface Water Attenuation

Scottish Water requires attenuation to be provided for the 1 in 30 year storm event. Scottish Water will adopt underground attenuation structures with the attenuation capacity up to the 1 in 30 year storm event.

Attenuation will be provided by 400m<sup>3</sup> of Stormcell units located in the open landscape adjacent Kelbourne Street. The attenuation volume provided is for the 1 in includes 20% allowance for climatic change and attenuation calculations are attached to the report. The attenuation and flow restriction proposals are indicated on Drawing No G2379-PD1 Rev B and the areas that contribute to the run off are identified on Drawing No G2379-HS1 Rev B.

## **7.0 Surface Water Flow Paths**

It is a drainage design requirement of any new development that “safe” surface water flow paths are provided through the site to ensure no properties are at risk from flooding during severe storm events. Drawing No G2379-FP2 identifies the existing pre development surface water flow routes and Drawing No G2379-FP1 Rev B identifies the post development surface water flow path routes. The latter drawing shows that free surface water flow routes are provided and follow the same natural existing flow routes of the undeveloped site. The proposed site levels are indicated on Drawing No G2379-PD1 Rev B.

## **8.0 SUDS**

As the surface water flows are discharging to a combined sewer treatment of the surface water run off is not required as stated in GBR 10 & 11 of the CAR Regulations.

## **9.0 Summary**

The proposed foul and surface water drainage proposals comply with design criteria as required to comply with Scottish Water, Glasgow City and SEPA.

**Appendices**

Appendix 1 – Site Location Plan Dwg G2379-LP1 Rev A

Appendix 2 – Scottish Water Drainage Records Dwg OP/PJFQD348

Appendix 3 – Proposed Levels and Drainage Layout Dwg G2379-PD1 Rev B

Appendix 4 – 1 in 30 Year Attenuation Calculations

Appendix 5 – Hardstanding Layout Dwg G2379-HS1 Rev B

Appendix 6 – Post Development Surface Water Flowpaths Dwg G2379-FP1 Rev B

Appendix 7 – Pre Development Surface Water Flowpaths Dwg G2379-FP2