Item 3

10 January 2024

Glasgow City Council

Operational Performance and Delivery Scrutiny Committee

Report by Executive Director of Neighbourhoods, Regeneration and Sustainability

Contact: Brendan Frankgate (Roads), Tel: 0141 276 7504
David Hay (Flooding), Tel: 0141 287 8602

Flooding: Council Response, Gully Maintenance and Drainage Capacity

Purpose of Report:

This report has been prepared in response to a request from the Committee to answer the following three questions:

(a) What processes were in place for this Council to respond to flooding events, and in particular extreme flash flooding events like those experienced by many citizens lately?

(b) Was the current gully cleaning programme effective enough to help alleviate flooding, and did complaints about gully cleaning tie in with areas not yet reached as part of the gulley cleaning programme or not?

(c) What was the capacity of the Victorian infrastructure, and could it cope with flooding events?

Recommendations:

It is recommended that the Committee note the:

1. Arrangements in place to respond to flooding.
2. Effectiveness of the gully cleaning programme.
3. Capacity challenges facing our drainage infrastructure.

Ward No(s):	Citywide: ✓
Local member(s) advised: No	consulted: No

***PLEASE NOTE THE FOLLOWING**:*

Any Ordnance Survey mapping included within this Report is provided by Glasgow City Council under licence from the Ordnance Survey in order to fulfil its public function to make available Council-held public domain information. Persons viewing this mapping should contact Ordnance Survey Copyright for advice where they wish to licence Ordnance Survey mapping/map data for their own use. The OS web site can be found at <http://www.ordnancesurvey.co.uk> "

If accessing this Report via the Internet, please note that any mapping is for illustrative purposes only and is not true to any marked scale

1. Introduction

1.1. Recent rainfall storms have caused localised flooding in the city.

1.2. This report has been prepared in response to a request from the Committee to answer the following three questions:

(a) What processes were in place for this Council to respond to flooding events, and in particular extreme flash flooding events like those experienced by many citizens lately?

(b) Was the current gully cleaning programme effective enough to help alleviate flooding, and did complaints about gully cleaning tie in with areas not yet reached as part of the gulley cleaning programme or not?

(c) What was the capacity of the Victorian infrastructure, and could it cope with flooding events?

2. Council Response to Flooding

2.1. When severe weather is forecasted, the Severe Weather Control Room at Eastgate is set up. This allows the effective co-ordination and deployment of resources through access to the video feed from CCTV cameras throughout the city. The Severe Weather Control Room was set up in response to the Met Office Amber Weather Warning for heavy rain on 7 October 2023.

2.2. The Control Room is staffed by experienced duty controllers. They are responsible for issuing regular Directorate Briefing Notes during the period of the severe weather/ weather warning to update on the weather, the allocation of resources, number of reports and to allow urgent/high risk incidents to be escalated.

2.3. NRS Roads have a fleet of five gully cleaning vehicles based at the Gartcraig depot. Additionally, during the preparation for forecast severe weather/heavy rain, arrangements are made to hire in large capacity tankers to assist with removing flood water and vactor (high pressure) vehicles (see typical image below) to assist with clearing blocked gullies.



Vactor vehicle for drain cleaning

2.4. During periods of heavy rain, Roads Inspectors are deployed to provide feedback on flood locations and the associated risk to vehicle movements.

2.5. Good communication during severe weather contributes to an effective response. Elected members are issued briefings via the Chief Executive's Department so they are aware of the NRS Roads preparedness and the weather outlook. The GCC Comms teams will issue social media updates as required.

2.6. Where the severity of flooding causes internal flooding to residential properties, the Council's Resilience Unit will lead the corporate response including obtaining support from HSCP and the emergency services.

3. Effectiveness of Gully Cleaning Programme

3.1. NRS has a comprehensive, risk based, cyclical gully maintenance programme for the city's 78,000 road gullies. Gullies are assigned one of three categories, which determines the frequency of inspection and cleaning:

Category 1 - Gullies serving locations with elevated flood risk are cleaned and emptied three times per year.

Category 2 - Arterial/main road gullies are cleaned and emptied once per year.

Category 3 - Neighbourhood gullies are cleaned and emptied once every two to three years.

3.2. The cyclical gully maintenance programme is successful in gaining access to over 80% of gullies for inspection and cleaning. This high access rate is facilitated through the promotion and displaying of Temporary Traffic Regulation Orders to suspend parking and community engagement.

3.3. Information on the gully maintenance programme is provided on the Council website (see below link).

https://glasgow.gov.uk/index.aspx?q=gully+cleaning&go.x=0&go.y=0&articleid=17096.

3.4. Where gullies are unable to be accessed due to jammed grates or covers, these gullies are assigned to a follow-up programme due to the need for engineering works to resolve these issues.

3.5. The volume of blocked gully reports received from a particular neighbourhood is influenced by multiple factors including:

- Seasonality, distribution and intensity of rainfall across the city;

- Capacity of Scottish Water sewers; and
- Status of the leaf sweeping programme at the time of heavy rainfall during the autumn.

3.6. An increase in the volume of blocked gully reports may also be expected with a constant baseline due to the community engagement undertaken by the Council as part of the gully cleaning programme and making it easier to report blocked gullies, for example via the MyGlasgow app.

3.7. To quantify the effectiveness of the gully cleaning programme, for eight neighbourhoods, we have compared the annual average of blocked gully and flooding reports for the 3-year period prior to the introduction of the risk based, cyclical programme with the 12-month period after the gullies in these neighbourhoods were cleaned. The results of this comparative exercise are shown below:

GCC Remedy Blocked Gully & Flood Reports 2019/20 - 2022/23

Neighbourhood	Completion Date	Ave (19/20 - 21/22)	Post (22/23)	(Post vs Ave)
Ibrox / Kingston	May-22	84	76	**-8**
Pollokshields East	Jun-22	84	55	**-29**
Tollcross / West Shettleston	Jul-22	96	58	**-38**
Govanhill	Jul-22	53	43	**-10**
Hillhead / Woodlands	Aug-22	109	134	**25**
Greater Govan	Sep-22	85	97	**12**
Hyndland / Dowanhill / Partick East	Oct-22	94	167	**73**
Baillieston / Garrowhill	Dec-22	128	64	**-64**

Exceptions:
Out of the 134 reports in Hillhead/Woodlands (2022/2023), 24 were reported during November 2022 when 95 mm of rainfall was recorded (Source: SEPA Dalmarnock Gauge).This is 45 mm higher than the same month in 2021.

November 2022 was also a peak month for reporting in Greater Govan with 27 out of the 97 reports during 2022/23 recorded then.

In Hyndland / Dowanhill / Partick East 68 of the 167 reports during 2022/23 were submitted in October 2022 when a severe weather event was recorded.

4. Drainage Capacity

4.1. Different drainage assets are designed to cope with different rainfall intensities as noted below.

- Road gullies: Rainfall intensity with a 20% Annual Exceedance Probability (AEP), referred to as a 1 in 5-year return period.
- Scottish Water Sewers: Rainfall intensity with a 3.33% AEP, referred to as a 1 in 30-year return period.

4.2. Drainage infrastructure recently designed will also include an allowance for climate change.

4.3. When the design capacity of the drainage asset is exceeded in an urban area, surface water flooding will be witnessed. This could be in the form of surface water ponding on the road carriageway or overland flow to the lowest point in the sub-catchment.

4.4. The sewer network may also surcharge at low points in the network during periods of heavy rain. Surcharging is where water is forced under hydraulic pressure to flow to the surface, either out of a manhole or up through sanitary ware within a building.

4.5. Rainfall events significantly exceeding the design criteria set out above do occur. For example, it has been estimated that a rainfall event with a 0.15% AEP (1 in 670-year return period) occurred in the northwest of the city on 9 August 2021, with the intense rain falling on a catchment that was already saturated due to heavy rain over the previous 3 days.

4.6. Over and above the impact of climate change, the risk of surface water flooding in urban areas is increasing due to the loss of permeable surfacing including domestic gardens. The area of soft landscaping in domestic gardens is being reduced due to building extensions such as conservatories and the conversion of garden areas into off street parking.

4.7. Scottish Water and the Council remain the lead organisations in the Metropolitan Glasgow Strategic Drainage Partnership (MGSDP) and are continuing to invest in the city's drainage infrastructure to increase capacity, slow down the rate that surface water enters the combined sewer and to remove surface water flows from the combined sewer by diverting these flows to watercourses or surface water sewers.

4.8. The Council's investment is focused on new blue-green infrastructure that has wider benefits to local communities such as place making and biodiversity.

5. Policy and Resource Implications

Resource Implications:

Financial:	The activities described in this report are funded from existing capital and revenue budgets.
Legal:	None
Personnel:	None
Procurement:	None

Council Strategic Plan: Grand Challenge 3 - Mission 2

Deliver sustainable urban drainage and promote nature-based solutions to manage flooding and pollution.

Equality and Socio-Economic Impacts:

Does the proposal support the Council's Equality Outcomes 2021-25? Please specify.	n/a
What are the potential equality impacts as a result of this report?	No change to policy is proposed.
Please highlight if the policy/proposal will help address socio-economic disadvantage.	

Climate Impacts:

Does the proposal support any Climate Plan actions? Please specify:	No change to policy is proposed.

What are the potential climate impacts as a result of this proposal?	
Will the proposal contribute to Glasgow's net zero carbon target?	

Privacy and Data Protection Impacts:	
Are there any potential data protection impacts as a result of this report?	No
If Yes, please confirm that a Data Protection Impact Assessment (DPIA) has been carried out	

6. Recommendations

6.1. It is recommended that the Committee note the:

1. Arrangements in place to respond to flooding.
2. Effectiveness of the gully cleaning programme.
3. Capacity challenges facing our drainage infrastructure.