Ref: DSD T 1/50/32 27 September 2000

Drainage Services Department
Technical Circular No. 14/2000

Temporary Flow Diversions and Temporary Works Affecting Capacity in Stormwater Drainage Systems

Introduction

As well as DSD's own work for maintaining or improving stormwater drains, channels and nullahs, there are also many instances where work by others may involve the construction of permanent works within, over or adjacent to DSD's stormwater drainage systems. During the course of these works, inadequate temporary flow diversions and/or poor temporary works design adversely affecting the flow have the potential to lead to flooding during heavy rain and the consequences may be very severe.

2. This circular provides guidance on the basic principles to be applied when assessments are made on the adequacy of proposed temporary flow diversions and/or temporary works design applicable to various periods throughout the year. Historical rainfall information is provided for consideration in the assessment of potential drainage impacts and the level of risk due to such works.

Rainfall Distribution Throughout the Year

3. Hong Kong's climate includes a distinct wet season period where there is a very high risk of extreme rainfall events and a distinct dry season with a comparatively much lower risk of heavy rain. This can be seen from the chart of hourly rainfall recorded for each month of the year during the period from

1884 to 1999 as shown in Appendix A. Storm return periods and their corresponding rainfall intensities are also indicated on the chart for information.

4. The chart is for general information only, but it indicates in broad terms that, when assessing the issues related to temporary flow diversion and temporary works design, it should be considered that the wet season is from 1 April to 31 October and the dry season is from 1 November to 31 March. However, for situations where a proper analysis of risks and justification is undertaken, it may be that the designated wet and dry season periods can be adjusted to suit a particular temporary flow diversion or temporary works design.

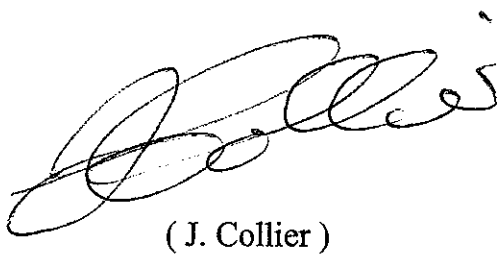
Design of Works affecting Drains, Channels, Nullahs and Rivers

5. When a potential drainage impact is anticipated, no matter whether the works are permanent or temporary in nature, the project proponent needs to submit a Drainage Impact Assessment (DIA) for DSD's approval. The requirements of the DIA are set out in the WBTC No. 18/95 (for public sector projects), DSD TC No. 3/95 (for private sector projects) and DSD's Stormwater Drainage Manual.

6. For the design of temporary works affecting the hydraulic capacity of stormwater drains and rivers and for the design of temporary flow diversion during the period of the dry season, a pragmatic requirement taking into account the rainfall distribution as shown in the Chart may be acceptable. The project proponent must include in the design an assessment of the risks involved which include all relevant factors such as rainfall, location, sensitivity to flooding, consequences of flooding, risk to life and limb, and the length of time for the works. It must be demonstrated that the proposed works will not cause an unacceptable increase in level of flooding risk during the period of the temporary works or flow diversion. For the period of the wet season, sufficient mitigation works or flow diversions shall be provided such that the capacity of the drain or

river is, in general, no less than that existing before the commencement of the works.

7. As well as the hydraulic design, careful consideration shall be given to the practical implications of the risks that may arise from the temporary works or flow diversion proposals. For example, partial obstructions within channels, abrupt transitions or sharp changes in alignment of temporary diversions may create the potential for blockages to occur arising from floating debris during heavy rain; increased amount of siltation, etc. Where the design of some proposals may rely upon contingency measures to quickly remove the installed temporary works from the drainage systems in order to provide sufficient flow capacity during adverse weather conditions, any such contingency measures and associated procedures shall be demonstrated to be 'fail-safe'.



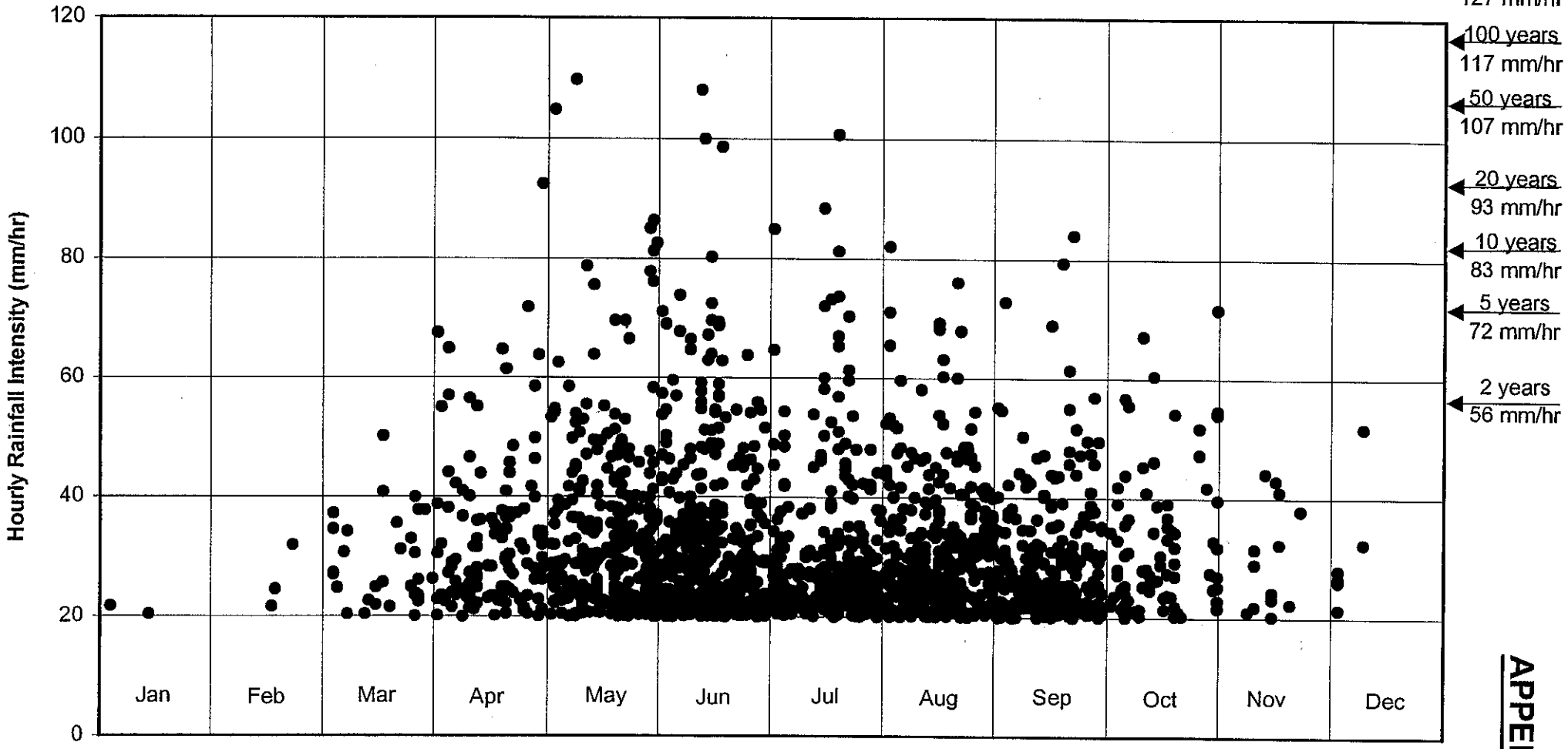
(J. Collier)

Director of Drainage Services

Distribution Of Rainfall Events Over The Years

(based on hourly rainfall records at the Hong Kong Observatory during 1884-1939 and 1947-1999)

(Notes 1 and 2)



Notes: 1. Excluding rainfall data below 20 mm/hr.
2. Based on clock-hour rainfall.
3. Based on Table 3 of the HKO's Technical Note No. 86.

APPENDIX A