

THE IMPORTANCE OF PUBLIC PARTICIPATION IN DRAINAGE STUDIES

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SUMMARY

The large number of major storms which have been experienced in Sydney and other NSW coastal towns in the last ten years have produced a number of significant flood events in urban areas. The collection and collation of flood data from these events using public participation can often provide a very useful data base for Councils to use as input into flood and urban drainage studies. With appropriate engineering interpretation, the data base may then be used as a basis for decision making for engineering works and planning controls in floodprone areas.

1. INTRODUCTION

The series of major flood events in the Sydney metropolitan area in the mid to late 1980s (plus very localised major events in the early 1980s in urban regions close to Sydney) saw the issue of urban flooding become a very pressing and major concern for both the NSW State and local governments.

For many metropolitan Sydney Councils the 1980s events represented occasions of urban flooding that had never (or at most rarely) been experienced in the 1960s or 1970s. Hence although virtually all Councils had urban trunk drainage system capacities that were quite modest (typically having a theoretical capacity to collect and convey the runoff from a 5 year average recurrence interval (ARI) event but an actual capacity of something less) the lack of major storms in the 1960s through to the mid 1980s had meant that the consequences of significant system surcharge had not been experienced and therefore had not been assessed.

(This contrasts with mainstream flood issues which, partly because of the valley-wide floods experienced in the 1950s and 1960s, had been under review since the mid 1970s. The culmination, following a series of state government circulars that addressed the issues of floodplain development, was the development of a State Government flood prone land policy and the 1986 publication of a Floodplain Development Manual, **Reference 1.**)

Hence in the late 1980s local government authorities were relatively suddenly confronted with the issue of how to address the "new" problem of urban flooding.

The 1980s also saw the increasingly wide-spread use of the provisions of the NSW Environmental Planning and Assessment Act (1979) which provided the framework for the regulation of development as well as protection of the environment. Within the Act (Section 149) there is a provision for a Certificate which specifies various matters (including potential flood inundation) relating to any property. The application, and the associated wording, of a flood notation on a Section 149 Certificate has subsequently proven to be a very thorny issue for Councils because of its perceived impact on the value of individual properties. This has placed considerable pressure on local councils to define as accurately as possible the extent and nature of flood problems throughout their local areas.

2. THE USE OF QUESTIONNAIRES

Urbanised areas subject to flooding and stormwater inundation often contain numbers of residents who have a valuable knowledge of the local flood problem. There is a need to access that information and in the Consultant's experience that can be achieved by the use of a resident questionnaire.

Well designed flood questionnaires can provide both an effective and efficient (in terms of time and expense) tool for local authorities to:

- ♦ obtain local flood information
- ♦ raise public awareness of local flood issues
- ♦ promote public involvement in flooding issues.

However, while the principle of using resident questionnaires is straightforward its application is not. Considerable care in the use of questionnaires is required since the response rate can be highly variable. In the Consultant's experience the variability appears to be related to a number of factors:

- ♦ The recent history of flooding: If there has been one or more major floods in very recent times, then study area occupants will have clear memories of both a date (or dates) and the impact of the stormwater/floodwaters on their property (or if not within their own property then within their neighbourhood). Hence they will find it relatively easy to document those events. (If recent flood events have been "minor" or there has been no recent flooding it is often beneficial for the questionnaire to list the months and years of known historical events to help residents focus on these events.)
- ♦ The resident's understanding of what the questionnaires will be used for: It is the Consultant's experience that the authority sending out the questionnaire should deliberately and carefully explain the purpose of the questionnaire. (This could be achieved simply through the careful wording of the covering letter that accompanies the questionnaire or also involve a public meeting which is called to discuss the local flood problem.) The bottom line is that the authority needs to already have a clear strategy in place or otherwise be committed to developing a strategy in conjunction with the local residents. With a strategy in place, the residents will better understand how the returned questionnaires will assist in the investigation of their problem and the subsequent development of a plan/construction of works to "solve" their problems.

This aspect, of the resident's understanding what the questionnaire would be used for, is most important. We know of cases where residents who have experienced very serious flood problems have been most reluctant, or indeed refused, to return the questionnaire because they fear (not unreasonably) that the information will enter the public domain and/or Council will identify their property as having a flood problem. Either result could have a very significant impact on the re-sale value of the property. A Council's approach to the issuing of Section 149 (EP&A Act) notations (**References 2 and 3**) may well have a dominating influence on how individual residents respond or not to the questionnaire.

- ♦ Method of delivery: In our experience, hand delivery of questionnaires is preferred to mailing. This has several advantages. Firstly that the authority can be assured that the questionnaires have reached each targeted address. Secondly, by numbering the questionnaires and their forwarding envelopes and noting in the field which addresses received which questionnaires it is clear which properties in potential trouble spots (e.g. sagpoints in roads) are responding (or not responding as the case may be).

- ♦ Method of return: Some form of reply-paid envelope is essential; for example, Australia Post's Free Post system.

3. A CASE STUDY OF PUBLIC PARTICIPATION

Bewsher Consulting Pty Ltd recently completed the Terrys Creek Stormwater Management Study for the Water Board (Reference 4). The study brief called for the investigation of both water quantity and quality problems throughout the 4 square kilometre urban catchment in one of Sydney's north-western suburbs. Arising out of that investigation the Consultant was called upon to examine the options for structural and non-structural works to address any problem areas. The brief stressed the importance of involving the public in the various stages of the study including the provision of information to all Water Board rate payers within the catchment area.

In consultation, the Water Board and the Consultant determined that the most effective way of informing the public about the commencement of the study would be to send out a questionnaire to all rate payers. To that end the Consultant and Water Board devised a questionnaire format that would facilitate resident responses re flooding and water quality issues. The questionnaire included additional detailed questions for those residents living in suspected flood-prone areas. While the overall response to the questionnaire was disappointing there was much valuable information obtained from the returned forms which greatly assisted the process of investigating historical flood events.

There was also a public display held part-way through the study. The location for the display was carefully chosen and due also to advance publicity and the eye-catching nature of the display itself, there was an excellent response from the public.

Both the delivery of the questionnaire and the holding of the public display saw residents make flood-time photographs (and in one case, a video recording) available to the study team. These proved to be invaluable in the investigation of the catchment flood problems.

4. CONCLUSIONS

- ♦ Resident questionnaires are a very effective way of gathering information about past flood events;
- ♦ To maximise the response rate, Councils need to develop a clearly defined and public strategy that will result in improvements to current flood and drainage problems;
- ♦ Any "thorough" drainage or flood investigation which does not involve the participation of flood-prone residents is bound to be discredited in the eyes of those same residents (who have much at stake in the results of such an investigation).

5. REFERENCES

1. NSW Government (1986) "Floodplain Development Manual" PWD Report No 86101 ISBN 0 7240 30115
2. Still, D C & Ritchie, P (1992) "The Definition of Hazard in Relation to Urban Flooding" Inter. Symposium on Urban Stormwater Management Sydney 4-7 February. Institution of Engineers, Australia NCP 92/1
3. Bewsher, D & Prior, N (1992) "Section 149 Certificates with Flooding and Stormwater Inundation Notations" Proceedings of 32nd Annual Flood Mitigation Conference. Bankstown 12-15 May.
4. Bewsher Consulting Pty Ltd (1991) "Terrys Creek SWC No. 91 Catchment Management Study" 3 Volumes. Commissioned by the Sydney Water Board. ISBN 0 7305 87495

QUESTIONNAIRE TASKS

- 1. COVERING LETTER**
- 2. QUESTIONNAIRES PREPARED AND NUMBERED**
- 3. QUESTIONNAIRES HAND DELIVERED**
- 4. USE OF REPLY PAID ENVELOPES**
- 5. FOLLOW-UP OF RESPONSES, AS REQUESTED BY RESPONDENTS.**

DRAINAGE STUDY OUTLINE

- 1. STUDY OBJECTIVES DEFINED**
- 2. QUESTIONNAIRE PREPARED AND DELIVERED**
- 3. QUESTIONNAIRES RETURNED AND PROCESSED IN DATA BASE FORMAT**
- 4. INITIAL ASSESSMENT OF HISTORICAL FLOODING**
- 5. FIELD SURVEY**
- 6. ENGINEERING ANALYSIS AND REPORTING**

1. Please provide your address details below.

Address:

.....

.....Postcode ...

Name (optional):

2. How long have you lived at this address (or owned this property) ?

... Years (If less than one year
please state number of
months)

... Months

3. Your residential status with regard to this property.

Owner residing at property.

Tenant only.

Owner not residing at property.

4. Have you ever experienced any flooding or drainage problems at this address?

No. (If "No" then proceed to Question 10)

Yes. (If "Yes" then proceed to Question 5)

5. Can you remember the dates of storms which produced flooding? Please indicate these below. Please list these with the worst storm placed first in the list. (The following storm dates (as advised by ??? City Council) may be of some help in assisting your memory: - February 1955, March 1978, November 1984, January 1988, June 1989 and February 1990).

Dates of worst storms:

1.

2.

3.

6. If possible please draw a sketch map of your property and show on it where the flood water comes from and where it goes to. If possible, show depths of floodwaters. Show any other details that you think may be relevant and return it with this questionnaire.

7. What parts of your property are flooded? (You may tick more than one box).

Worst Storm

Other Storms

No flooding

No flooding

Backyard

Backyard

Frontyard

Frontyard

Garage

Garage

House
(above floor)

House
(above floor)

House
(below floor)

House
(below floor)

Other

Other

8. Have you previously written to Council in connection with flooding and drainage problems in your area ?

No.

Yes.

If "yes" please attach copies of your correspondence (if available) and provide a list of the dates of the correspondence below.

Dates of correspondence:

.....

9. During severe storms, what is the approximate cost of damage caused by flood or drainage water on your property ?

Worst Storm

Other Storms

No damage

No damage

0-\$500

0-\$500

\$500-\$1000

\$500-\$1000

\$1000-\$2000

\$1000-\$2000

More than \$2000

More than
\$2000

Approx \$. . .

Approx \$. . .

10. If you know about any flooding in the general area please indicate this below. Also if you have any other comments about the cause or source of that flooding in your area please make these in the space below.

.....

.....

.....

11. If you have any suggestions for resolving any drainage problems in your area, indicate these below or on a separate sketch.

.....

.....

.....

.....

12. Do you have any photographs or other information about flooding in your area which you would be prepared to make available to the Consultant or Council?

No.

Yes. (If "yes" please provide your telephone number in Question 14 below so that we may contact you).

13. Would you like to be interviewed by Council's Consultant to discuss your particular drainage problems and the information provided in this questionnaire?

No.

Yes. (If "yes" please provide your telephone number in Question 14 below so that we may contact you).

14. If you have answered "yes" in Questions 12 or 13, or if you have any other information which you think would be relevant please provide your telephone number below so that we may contact you.

Home Phone: (Ask for)

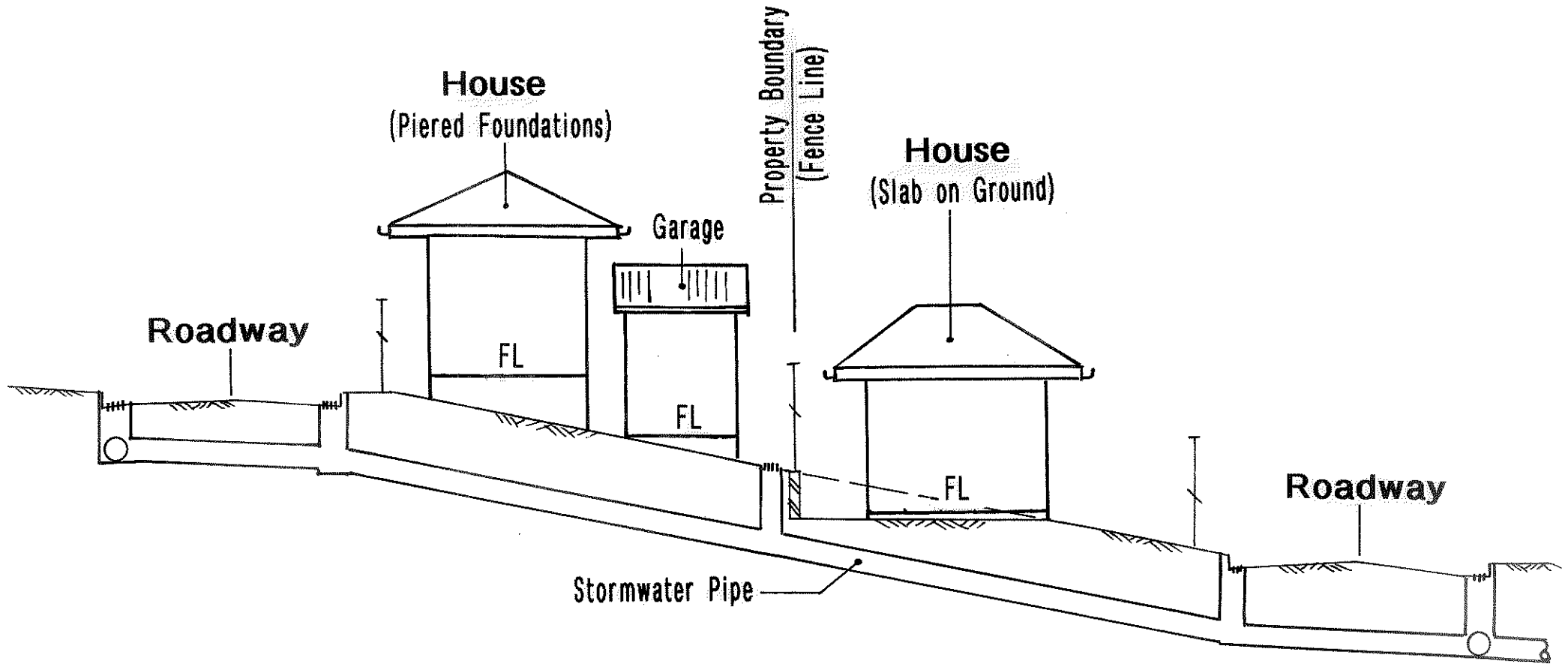
Best time to call is

Work Phone: (Ask for)

Best time to call is

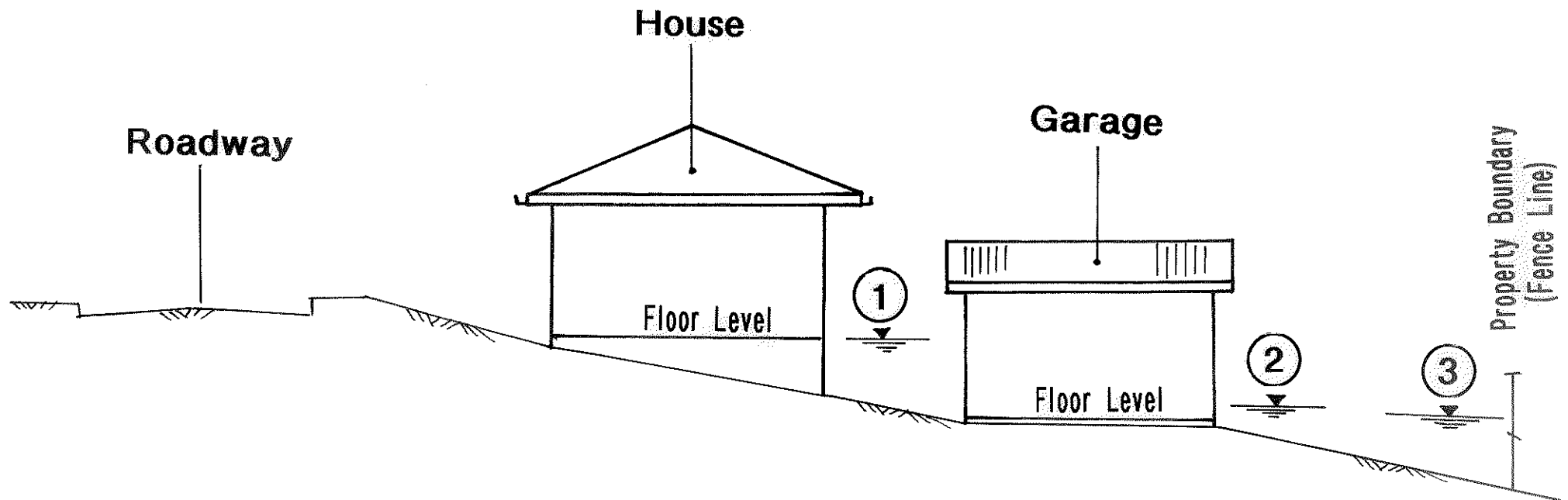
TYPICAL SURVEY LEGEND

N.F.	NO FENCE
P	PALING
P & R	POST AND RAIL
WM	WELD MESH
C.B.	COLOURBOND
AL.W.I.	ALUMINIUM WROUGHT IRON
CW	CYCLONE WIRE
PER	PERGOLA
M.R.O.	METAL ROOF OVER
T.D.	TIMBER DECK
G.S.	GARDEN SHED
T.S.	TIMBER SHED
A.G.P.	ABOVE GROUND POOL
I.G.P.	INGROUND POOL
C.P.	CARPORT
GAR.	GARAGE



TYPICAL URBAN ENVIRONMENT

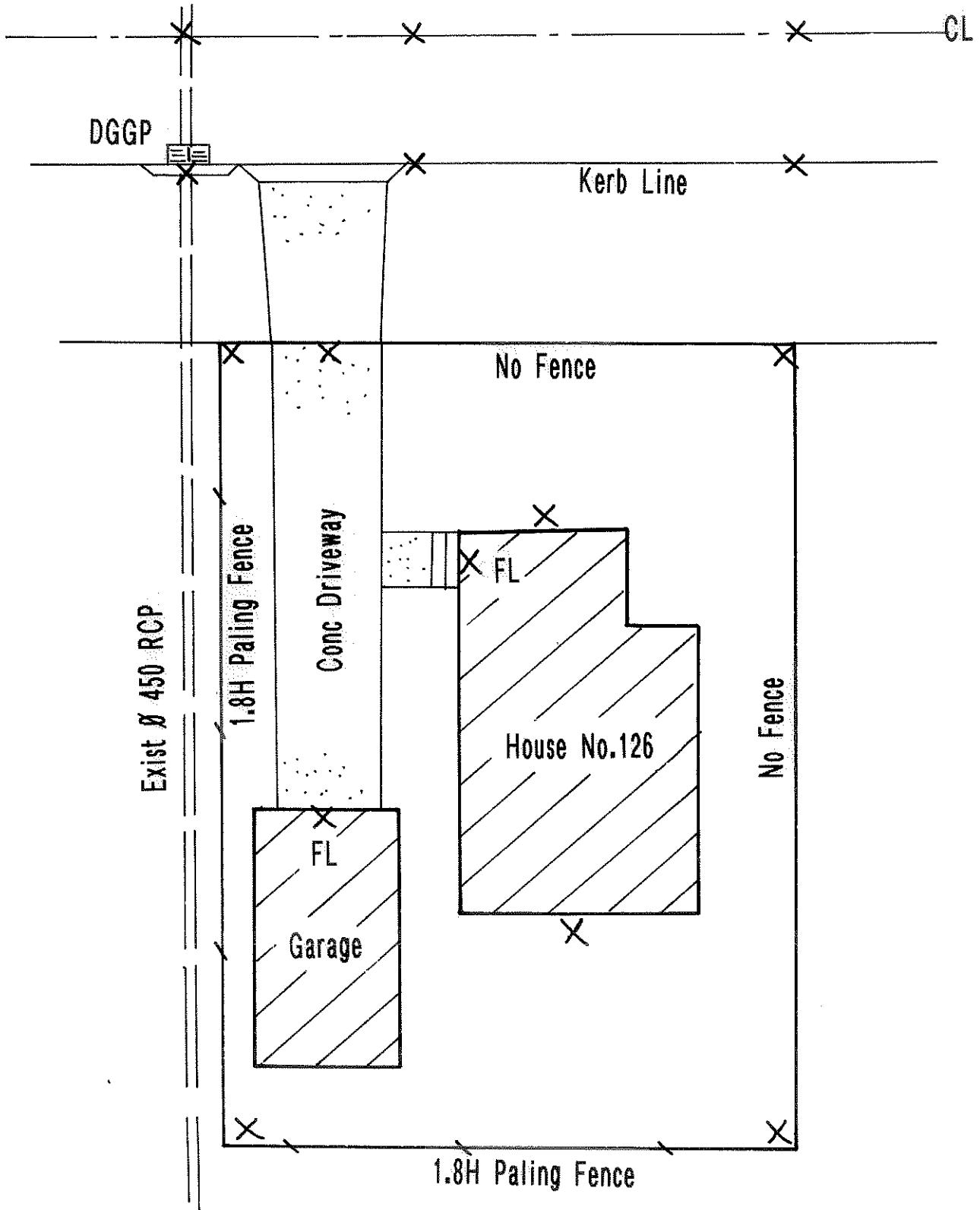
**HOLROYD CITY COUNCIL
HAZARD CRITERIA
For 5% AEP (or 20yr ARI) Flood Event**



- 1. No Inundation of Enclosed Floor Areas**
- 2. Inundation of Minor Buildings,
e.g. Garages not to Exceed 200mm**
- 3. Inundation of Undeveloped part of Property
is not to Exceed 500mm**



ROAD



TYPICAL ALLOTMENT SURVEY DETAIL

(USUAL SCALE 1 : 500)

