

GREATER LITHGOW CITY COUNCIL

INTERIM POLICY FOR FLOOD LIABLE LAND

1992

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1.0 COUNCIL'S POLICY

1.1 BACKGROUND:

The valley in which the City of Lithgow is located has been subjected to frequent flooding since the earliest years of settlement. These floods have had an effect on the physical environment of the valley as well as causing social and economic hardship to the valley's inhabitants.

In 1977 the State Government moved to implement policies aimed to remove all buildings, structures, filling and excavation, whether temporary or permanent, which could effect the flow of flood waters and be placed at risk or cause damage elsewhere in time of flood.

In October, 1984, the Minister for Planning and Environment released a discussion paper on the review of the State Government's Policy for flood prone lands. This discussion paper indicated that it had become apparent that it was neither practical nor appropriate to remove a major portion of the existing development from flood prone land and led to the publication in December, 1986, of the State Government's "Floodplain Development Manual". The Manual stipulated that the basic objectives of the Government dealing with flood prone matters would be centred around reducing the impact of flooding and flood liability on the general public and reduce the losses resulting from flooding. That is:

- a) The impact of flooding and flood liability on existing developed areas shall be reduced by flood mitigation works and measures, the removal of unnecessary development and building controls and the voluntary acquisition of property in hazardous areas;
- b) The potential for flood losses in all new developed areas shall be contained by the application of effective planning and development controls;

- c) A merit approach to all development and building decisions which takes account of social, economic and ecological as well as flooding considerations should be followed.

In 1990 Council engaged Kinhill Engineers Pty. Limited to prepare the Lithgow Floodplain Management Study. This Study formulated a management plan for the flood affected area. The Study area included the urbanised floodplains of Farmers Creek, State Mine Creek and Vale of Clwydd Creek. The recommendations contained in this Study have been prioritised by Council's Floodplain Management Committee.

1.2 AIMS AND OBJECTIVES:

The overall aims and objectives of this Policy are:

- a) Reduce the impact of flooding and flood liability on individual owners and occupiers;
- b) Limit the potential risk to life and property resulting from flooding;
- c) To contain the potential for flood losses in all new developed areas by the application of effective building, planning and development control;
- d) Adopt a merit approach to all development and building decisions which considers social, economic and ecological issues, together with flooding;
- e) To reduce the risk and implications of flooding to existing areas by flood mitigation works and other measures;
- f) To prevent the introduction of unsuitable land uses into the land identified by Council as being flood liable.

1.3 DETERMINATION OF STANDARD FLOOD:

Council has adopted for the Policy the 1% Annual Exceedence Probability as the standard flood.

Since 1986 there have been two events that caused flooding in the City of Lithgow. These occurred in February, 1990 and August, 1990, and have been assigned an Annual Exceedence Probability (A.E.P.) of between 50% and 90%. The highest flood event at Lithgow occurred in March, 1978 and is estimated as a 7% A.E.P. event. The extent of flooding in a 1% A.E.P. event has been assessed by the Lithgow Floodplain Management Study.

1.4 CONSIDERATION OF FLOODS LARGER THAN THE STANDARD FLOOD:

It must be stressed that the standard flood is not in most cases the largest flood than can occur.

It is necessary for all developments to take into account this factor. Developments that will have a significant impact on extent of flooding experienced by adjoining or surrounding properties, should an extreme flood be experienced, may be asked to consider floods larger than the standard flood event.

The Probable Maximum Flood (P.M.F.) which is the flood calculated to be the maximum which is likely to occur may need to be considered in some developments as deemed by Council.

Council reserves the right to impose a higher level flood standard depending upon the nature and circumstances surrounding each development proposal.

2.0 DEFINITIONS

Australian Height Datum (A.H.D.) - a common national plane of level corresponding approximately to mean sea level.

Annual Exceedence Probability (A.E.P.) - probability of exceedence of a given discharge within one year. A.E.P. is expressed as a percentage (%).

Flood - relatively high stream flow which overtops the natural or artificial bank in any part of a stream or river.

Flood Development Affected Land - land which is not more than 0.5 metres above the standard flood.

Flood Fringe - the remaining area of land affected by flooding after floodway and flood storage areas have been defined.

Flood Hazard - potential for damage to property or persons due to flooding.

Flood Liable Land - land which would be inundated as a result of a standard flood.

Floodplain - the portion of a valley adjacent to the creek channel which is covered with water when the creek overflows during floods.

Flood Proofing - a combination of measures incorporated in the design and/or construction and alteration of individual building or structures subject to flooding for the reduction or elimination of flooding damages.

Flood Storage - those parts of the floodplain that are important for the temporary storage of flood waters during the passage of a flood. Adverse impacts on flood behaviour, if these areas were filled, generally relate to an increase in flood levels greater than 0.1 metres, however this can vary from site to site.

Floodways - those areas where a significant volume of water flows during floods are often aligned with obvious naturally defined channels. Floodways are areas which, even if only partially blocked, would cause a significant redistribution of flood flow, which may in turn adversely effect other areas. Additionally, areas in which development may be adversely effected by the passage of flood waters other than by immersion alone. They are often, but not necessarily, the areas of deeper flow or the areas where higher velocity occur.

Habitable Room - a living area such as a lounge room, dining room, rumpus room, kitchen and bedroom. This Policy adopts the definition used in Ordinance 70, Local Government Act, 1919 and specifically excludes domestic garages.

High Hazard - possible danger to life and limb, evacuation by trucks difficult, potential for structural damage, social disruption and financial losses could be high.

Infill Development - refers to the development of vacant blocks of land and extension/additions to existing developments that are generally surrounded by developed properties.

Low Hazard - should it be necessary, people and their possessions could be evacuated by trucks. Able bodied adults would have difficulty wading.

Probable Maximum Flood - the maximum anticipated flood event for that creek.

Safe Flood Access - for the purposes of this Policy, safe flood access is generally considered satisfactory when the depth flooding over vehicular driveways and roads is limited to approximately a quarter of a metre with low velocities.

Standard Flood - for the purposes of this Policy, a standard flood is a flood having an Annual Exceedence Probability of 1%. The appropriate flood level for the standard flood shall be determined by Council's Manager, Engineering Services.

Survey Plan - means a plan prepared by a Surveyor registered under the Surveyors Act, 1929, which shows:

1. The boundaries of the allotment of land and its location with respect to any road on which the land has a boundary.
2. The location of any proposed building, work, road or accessway in relation to the boundaries of the land.
3. The existing level to Australian Height Datum of:
 - a) an existing road or accessway, and
 - b) the ground at each corner of the allotment, and
 - c) the ground around the perimeter of of any proposed building or work.
4. The finished floor level to A.H.D. of all floors within any proposed building.
5. The extent of the finished level to A.H.D. of any proposed excavation or filling of land.

3.0 DEVELOPMENT CONTROL

3.1 APPLICATION OF POLICY:

This Policy shall apply to the development of land within the City of Greater Lithgow designated as being "Flood Development Affected".

In determining any application for development on land designated as flood liable Council shall take into account those matters listed under Section 90 of the Environmental Planning and Assessment Act, 1979, and/or Section 313 and 333 of the Local Government Act, 1919, as appropriate.

The contents of the Policy are to be used by Council as a guide only and compliance with this Policy does not automatically ensure approval. Each application will be considered on the merits of the proposal.

3.2 GENERAL REQUIREMENTS:

Council will consider development in flood liable land but will not grant consent to development in floodways or in high hazard areas. Regard will be given to such matters as depth and nature of flood waters, whether the area forms flood storage; the nature and risk posed to the development by flood waters, and whether the development lies in an area classed as "Floodway", "Flood Fringe" or "Flood Storage".

The applicant shall be required to demonstrate to the satisfaction of Council:

1. That the development will not increase the flood hazard to other properties as well as including details on the structural adequacy of any building works associated with the development with regard to the effects of flood waters. All applications for development shall be accompanied by a survey plan.
2. That the proposed building materials are suitable.
3. That buildings are sited in the optimum position to avoid flood waters and allow evacuation. Council shall also take into consideration whether structures or filling are likely to affect flood behaviour and whether consultation with other authorities is considered necessary e.g. N.S.W. Public Works Department, N.S.W. Department of Water Resources.

3.3 SPECIFIC REQUIREMENTS:

3.3.1 RESIDENTIAL/NEW DEVELOPMENT/SINGLE DWELLINGS:

- a) Floor levels of habitable rooms shall be at least 0.5 metres above the standard flood;
- b) The lowest floor level of habitable rooms shall be not more than 3.0 metres above ground level;

- c) Any portion of buildings subject to inundation shall be built from flood compatible materials;
- d) Flood free access shall be provided where practicable;
- e) All services associated with the development shall be adequately flood proofed.

3.3.2 RESIDENTIAL/MINOR EXTENSIONS:

This clause does not apply to minor extensions for the purpose of dual occupancy development.

- a) Once only extensions with the floor area up to 30 m² may be approved with floor levels below the standard flood, if the applicant can demonstrate that no practical alternatives exist for construction the extension above the standard flood;
- b) Once only extensions which increase the existing floor area by between 30 and 35 m² may be approved with floor levels at or above the standard flood;
- c) Extensions greater than 35 m² will be treated as a new development.

3.3.3 NON HABITABLE EXTENSIONS OR ALTERATIONS, OUTBUILDINGS AND SWIMMING POOLS:

- a) All electrical services shall be adequately flood proofed;
- b) All flood sensitive equipment (including electric motor and switches) shall be located above standard flood (see Appendix A).

3.3.4 INDUSTRIAL/COMMERCIAL NEW DEVELOPMENT:

- a) Floor levels shall be at least 0.5 metres above the standard flood or the building shall be flood proofed to at least 0.5 metres above the standard flood;
- b) Flood free access shall be provided where practicable.

3.3.5 INDUSTRIAL/COMMERCIAL EXTENSIONS AND INFILL DEVELOPMENT:

Where the application is for an extension to an existing flood liable building or for new development that can be classed as infill development, Council may approve of the development with a floor level below the standard flood if it can be demonstrated by the applicant that all practicable measures will be taken to prevent or minimise the impact of flooding. In considering such applications and determining the required floor level Council shall take into account such matters as:

- a) The nature of the business to be carried out;
- b) The frequency and depth of flooding;
- c) The potential in property loss;
- X d) The utility of the building for its proposed use;
- e) Whether the filling of the site or raising of the floor levels would render the development of the property unworkable or uneconomical;
- f) Whether the raising of the floor levels would be out of character with adjacent buildings. Any portion of the proposed building extension subject to inundation shall be built from flood compatible materials.

3.3.6 CHANGE OF USE OF EXISTING BUILDINGS:

Development consent for change of use of an existing building with floor levels below the standard flood will only be given where it can be demonstrated by the applicant that:

- a) There is no foreseeable risk of pollution associated with the proposed use of the building in the event that the standard flood occurs;
- b) All practical measures shall be taken to minimise the risk of damage to the property to be kept or stored therein by the standard flood. These measures could include:
 - 1. Flood proof the building to the level of the standard flood by construction of the wall or levee bank.
 - 2. Raise the floor level of the building to the level of the standard flood.

3. Flood proof the building to the level of standard flood to prevent the entry of water.
4. Store all equipment, machinery and stock above the flood level.

Any proposal to flood proof the building shall be subject to the conditions of the Policy.

3.3.7 RURAL USES:

Applications for minor extensions to existing buildings and new buildings associated with rural uses that are below the standard flood, other than residential buildings, will be considered on their merits having regard to the proposed use and the potential for property loss.

3.3.8 REZONING OF LAND:

- a) Council will not support the rezoning of any land located in a floodway or high hazard area;
- b) Council will generally not support the rezoning of rural land situated below the standard flood where the development of that land may require or permit the erection of buildings or works even if the surface of the land can be raised to a level above the standard flood by means of land filling;
- c) Where the flood liable land is currently zoned to permit urban development Council will generally not support the rezoning of land to permit a higher economic use.

3.3.9 SUBDIVISION:

- a) Council will not support the subdivision of any land located in floodway or high hazard areas;
- b) Subdivision of flood liable land that either consolidates or does not create additional lots will be considered on its merits;
- c) Subdivision of flood liable land in rural zones creating additional allotments will generally not be supported. Where the applicant can demonstrate that the flood hazard is classified as low and for each allotment there is sufficient area of land (a minimum of 1,000 m²) above the standard flood to allow for the erection of all buildings and all ancillary works to be used in conjunction with development to be carried out on that allotment, then Council may consider a subdivision application. Flood free access shall also be provided;

- d) Generally, land situated within existing residential/commercial and industrial zones may only be subdivided to enable its development for urban purposes where the level of existing land to be developed is not lower than the standard flood. All lots created by such subdivision shall have the portion of the lot that can be built upon filled to a level of at least 0.5 metres above the the standard flood;
- e) If any filling is required on flood liable land then the requirements of Section 3.3.11 also applies.

3.3.10 MULTI-UNIT HOUSING:

Attached Dwellings
Villas
Town Houses
Cluster Housing
Dual Occupancy
Residential Flat Buildings
Caravan Parks

Multi-Unit housing applications will be similarly treated as per subdivisions.

3.3.11 FILLING OF FLOOD LIABLE LAND:

Council will not grant consent to filling of floodways or high hazard areas. The filling of other flood liable land will generally not be supported however a merits based approach is adopted. An application to fill land shall also incorporate the purpose for the which the filling is to be undertaken. Council may consider such an application when the following criteria are met:

1. Flood levels are not increased by more than 0.1 metres by the proposed filling.
2. Downstream velocities are not increased by more than 10% by the proposed filling.
3. The proposed filling does not redistribute flows by more than 15%.
4. The potential for cumulative effects of possible filling proposals in that area is minimal.
5. The development potential of surrounding properties is not adversely effected by the filling material.

6. The flood liability of buildings on surrounding properties is not increased; and
7. No local drainage flow/runoff problems are created by the filling.

The above criteria can only be addressed and satisfied by the submission of a detailed flood study report by an appropriate consulting engineer. The flood study report would involve both hydrologic and hydraulic analysis of the watercourse and the effects of the proposed filling on flood levels, flow velocities and distribution of flows as listed (1), (2) and (3) above. In addition the report needs to address items 4 to 7 listed above.

Flood studies invariably involve complex computer model analysis and are time consuming and expensive. Considerable amount of data has to be collected, examined and incorporated into the various flood study models.

Data to be collected includes:

- a) Survey cross sections of the watercourse system to provide representative topographic information;
- b) Resident interviews on past flood behaviour;
- c) Flood records in newspapers;
- d) Flood information held by Council.

The various models have to be calibrated against recorded flood data, inconsistent data has to be identified and discrepancies have to be explained.

3.4 SECTION 149 CERTIFICATES AND FLOOD REPORTS:

Existing Section 149 Certificates for allotments within the area identified in the Study carry the advice:

"The Lithgow Floodplain Management Study, dated November, 1990 supplied by Kinhill Engineers Pty. Ltd., indicates that the lot may be subject to inundation in a 1% A.E.P. flood.

Council's policy stipulates that all habitable development shall be 0.5 metres above the 1% A.E.P. flood level, which is R.L. A.H.D.

Council's records indicate that the front step of the building is at R.L. A.H.D."

The following wording has been adopted for future Section 149 Certificates:

"The land is subject to flooding in a 1% A.E.P. flood. Council's policy is to require the floor level of any new dwelling construction to be 0.5 metres above the 1% level."

APPENDIX A

DRAFT FLOOD PROOFING CODE

1. Adequate flood proofing of buildings in flood liable areas is an effective and equitable means of reducing flood damage.
2. Buildings: It is essential that flood proofing be a condition of both compatible and conditional developments in flood liable areas.

A Draft Flood Proofing Code is incorporated in the following table. This Code is based on the Department of Housing and Construction "Housing in Flood Prone Areas 1975". It is included as an example of the type of information and conditions that should be required for buildings on flood liable land. Action is currently being taken by the Australian Standards Association to produce an official flood proofing code.

CONSTRUCTION METHODS AND MATERIALS

Construction methods and materials are graded into four classes according to their resistance to flood waters.

Suitable: the materials or product which are relatively unaffected by submersion and unmitigated flood exposure and are the best available for the particular application.

Mild Effects: where the most suitable materials or products are unavailable or economic considerations prohibit their use, these materials are considered the next best choice to minimise the damage caused by flooding.

Marked Effects: "as for second preference" but considered to be more liable to damage under flood conditions.

Severe Effects: the materials or products listed here are seriously effected by flood waters and in general have to be replaced if submerged.

ELECTRICAL AND MECHANICAL EQUIPMENT

For dwellings constructed on flood liable land, the electrical and mechanical materials, equipment and installation should conform to the following requirements:

Main Power Supply: subject to the approval of Prospect County Council the incoming main commercial power service equipment, including all metering equipment shall be located above the Standard Flood Level (S.F.L.). Means shall be available to easily disconnect the dwelling from the main power supply.

Wiring: all wiring, power outlets, switches etc. should be located above the standard flood level. All electrical wiring installed below the standard flood level should be suitable for continuous submergence in water and contain no fibrous components. Only submersible type splices should be used below the standard flood level. All conduits located below the S.F.L. should also be installed in such a way that they will be self draining if subjected to flooding.

Equipment: All equipment installed below or partially below the S.F.L. should be capable of disconnection by single plug and socket assembly.

Reconnection: Should any electrical device and/or part of the wiring be flooded it should be thoroughly cleaned or replaced and checked by an approved electrical contractor before reconnection.

HEATING AND AIR CONDITIONING

Heating and air conditioning systems should be installed in areas and spaces of the house above the standard flood level. When this is not feasible every precaution should be taken to minimise the damage caused by submersion according to the following guidelines.

Fuel: heating systems using gas or oil as a fuel should have a manually operated valve located in the fuel supply line to enable fuel cutoff.

Installation: the heating equipment and fuel storage tanks should be mounted on and securely anchored to a foundation pad of sufficient mass to overcome bouyancy and prevent movement that could damage the fuel supply line. All storage tanks should be vented to an elevation of 600 millimetres above the standard flood level.

Ducting: all ductwork located above the standard flood level should be provided with openings for drainage and cleaning. Self draining may be achieved by constructing the ductwork on a suitable grade. Where ductwork must pass through a water tight wall or floor below the standard flood level, the ductwork should be protected by a closure assembly operated from above the standard flood level.