FLOOD PRONE LAND CODE

1 Purpose of the Code

The purpose of this code is to provide direction and controls on the planning and management of development on flood prone land (defined as land below the 1 in 100 year ARI flood level) to:

- reduce the potential for a loss of life or injury to residents and visitors; and
- ensure development proposals do not increase the potential for flood damage to occur, not only to the development itself but also to other properties; and
- ensure development proposals do not adversely affect the behaviour of floodwaters; and
- minimise the potential of Rockhampton's residents being subjected to the difficulties and dangers of floods; and
- restrict development in areas adversely affected by severe flooding; and
- reduce the intensity of existing development on flood prone land; and
- restrict development in locations that do not have safe and trafficable access during the defined flood event; and
- reduce the potential for damage to the structure and contents of buildings, damage to public property and loss of commercial production; and
- ensure that strategic community facilities, and their supporting infrastructure/services required during an emergency are outside and significantly above the flood prone land; and
- protect the hydraulic capacity and ecological functions of the City's river and creeks; and
- ensure that no additional demands are placed on emergency services as a result of development on flood prone land or isolated by flooding.

2 Application of the Code

The map attached to this code identifies most flood prone land in the City (more particularly flooding caused by the Fitzroy River in times of flood and not localised flooding events) and generally defines 'Low Hazard Areas' and 'High Hazard Areas' as defined in section 3 below. A more precise boundary of land that is flood prone land is shown, where it occurs, on the Planning Area Map for each Area in Chapter 3 of this planning scheme.

The map attached to this code is only a general indicator of the flood hazard and hydraulic categories that occur in the Fitzroy River floodplain. For development within the floodplain the flood hazard and hydraulic category must be determined for the site in order that an assessment of the development against this code can be done. Therefore, prior to considering section 5 of this code, the flood hazard and hydraulic category for the site is to be determined in accordance with Planning Scheme Policy No. 14 - Flood Plain Management.

Due to the characteristics of flood prone land that is defined as having a Low Hazard classification, and the low concern for development defined as minor development in this code, minor development is exempt from this code when on land;

(1) determined to have a Low Hazard, and

(2) determined to be a flood storage area or flood fringe area (but not a floodway), and will therefore not require a detailed assessment against this code. Assessment against Planning Scheme Policy No. 14 - Flood Plain Management will however still be necessary to ascertain that the land is of a Low Hazard category and not a floodway.

Building works being the **demolition** of a building or structure is also **exempt** from this code in all instances. All development (other than minor development) is restricted in both;

(a) the low hazard and high hazard areas; and

(b) on land that is not flood prone land but isolated by a floodway,

except if compliance with all parts of this code can be achieved. Therefore the Flood Prone Land Code will apply to the following development:

✓ = Code Applies ✗ = Code Not Applicable	Development in the locations below						
	High Hazard Floodway	High Hazard Flood Storage	High Hazard Flood Fringe	Low Hazard Floodway	Low Hazard Flood Storage	Low Hazard Flood Fringe	Non Flood Prone Land isolated by a Floodway in times of flood
Minor development	✓	✓	✓	✓	✗	✗	✗
Other Assessable development	✓	✓	✓	✓	✓	✓	✓

For code assessable development, the code for assessment consists of the secondary code(s) listed below:

- Water Quality and Water Quantity Code – where any part of the proposal is located within a waterway corridor; and
- Biodiversity / Nature Conservation Code; and
- Filling or Excavation Code.

3 Definitions

For the purposes of applying this code the following definitions are applicable and are to be used instead of any other definition for the same term mentioned in this planning scheme in addition to other definitions contained in section 3.7 of this planning scheme.

Average Recurrence Interval (ARI):	means a statistical estimate of the average period in years between the occurrence of a flood of a given size or larger (e.g. floods with a discharge as big as or larger than the 100 year ARI flood event will occur on average once every 100 years). The ARI of a flood event gives no indication of when a flood of that size will occur next.
Defined Flood Event	As defined in section 3.7 of this planning scheme.

(DFE):

Flood Fringe:	As defined in section 3.7 of this planning scheme.
Flood Prone Land:	As defined in section 3.7 of this planning scheme.
Flood Resilient Materials	includes the use of materials that are capable of being submerged under water for a period of at least 24 hours without requiring their replacement and are capable of being washed down with a water hose. It includes materials such as cement, masonry, tile, steel, glass, etc. and does not include carpet, most timber products or the like.
Flood Storage Areas:	As defined in section 3.7 of this planning scheme.
Floodway:	As defined in section 3.7 of this planning scheme.
High hazard:	As defined in section 3.7 of this planning scheme.
Livable Floor or Room Area:	Means a room or floor area used for normal domestic activities including any room intended or adaptable for sleeping, eating or cooking and including laundry and toilets.
Low hazard:	As defined in section 3.7 of this planning scheme.
Minor Development:	Includes the following; (a) Excavation or Filling when the Excavation or Filling Code does not apply; or (b) Building Work to which the provisions of the Building Code of Australia do apply that involves minor repair and maintenance work to an existing building or structure only where minor repair and maintenance works means works associated with the general care of the materials, parts or structural support of an existing building or structure and includes; (1) emergency work (including demolition if not a heritage place); and (2) maintenance, repair or replacement of elements in the construction of the building or structure where it does not result in an increase in the enclosed area or the conversion of a non habitable room to a habitable room; and (3) repainting, re plumbing, rewiring and the like; or

(c) minor 'once-off' additions to existing buildings only; or
(d) swimming pools

Minor 'once-off' additions: Represent no more than a 10% or 25m^2, whichever is the lesser, increase in the Gross Floor Area of the building within any 4 year period provided the increase is for;
(a) a non habitable room, area or structure; or
(b) a habitable room located no lower than the existing floor level.

Q100: As defined in section 3.7 of this planning scheme.

Residential Building: Means a building used for a residential use listed in section 3.7 of this planning scheme.

4 Explanation

This code regulates development on flood prone land to prevent development from occurring that worsens the impacts of flooding. The basis of this code is the 1999 Draft Flood Plain Management Policy for Rockhampton City, which is also in part incorporated as background information, directions and data into Planning Scheme Policy No. 14 - Flood Plain Management.

The Q100 (1:100 year average recurrence interval (ARI) flood) has been adopted as the boundary where development is assessed against the requirements of this code. This is not to be construed as the maximum probable flood and land above the Q100 flood level is not necessarily immune from flood inundation by another flood event with different hydraulic characteristics. This policy focuses on addressing regional flooding from the Fitzroy River and not stormwater, local or creek flooding issues, which need to be separately assessed. However, there are some exceptions to this, such as

(a) the controlling of development on flood prone land caused by stormwater, local or creek flooding; and
(b) the minimum trafficable access requirements for all development which may be isolated by stormwater, local or creek flooding.

Flooding caused by the Fitzroy River has a duration that is prolonged and as a result, its effects and consequences are prolonged. Stormwater, local or creek flooding is however of a short duration and correspondingly so are its effects and consequences. Therefore, the standards and/or requirements in this code for each type of flooding may differ.

5 Performance Criteria and Acceptable Solutions

PART A – REQUIREMENTS APPLICABLE TO ALL DEVELOPMENT

Performance Criteria		Acceptable Solutions	
Structural Design and Location			
P1	The capacity and	**A1.1**	In a high hazard or low hazard floodway,

Performance Criteria	Acceptable Solutions
function of floodways and flood storage areas are preserved in high and low hazard areas.	development involving; (i) building works[1], or (ii) filling or excavation, or (iii) changes in the natural surface level of the land; or (iv) the storage of materials, goods, equipment or the like on the land that cannot be easily and quickly removed from the site; does not occur. **A1.2.1** **OR** In a high hazard or low hazard storage area; (i) filling or excavation, or (ii) changes in the natural surface level of the land; or (iii) the storage of materials, goods, equipment or the like on the land that cannot be easily and quickly removed from the site; does not occur. **A1.2.2** **AND** The development; (i) has land immediately surrounding the site developed for the same or a similar purpose; and (ii) is the only practical development option for the land; and (iii) the depth of flood waters do not exceed two (2) metres in depth based on modelling of the defined flood event.
Access	
P2 Safe access from the development site to the Central Business District or the Gracemere township is available during the defined flood event. *Note: Development not on flood prone land must still comply with this Performance Criterion.*	**A2.1.1** A material change of use and/or buildings works; (i) that is not for the purposes of community infrastructure listed in Table 3 or a residential use[2]; or (ii) for a Bed and Breakfast, Home Occupation, Home Based Business, House, Caretakers Residence, Small Lot House or Display House / Office: (1) in a residential Area or Precinct; or (2) not in a residential Area or Precinct but involving the use of an existing building used lawfully for a residential use (whether or not involving building works internal to the existing building) or it's curtilage; or

[1] This does not include internal building works to an existing building, as these do not affect the capacity and function of a floodway.

Performance Criteria	Acceptable Solutions
	A2.1.2 (iii) that complies with Performance Criterion P10 of this code; has access to an existing constructed road regardless of the road's immunity to flooding from the Fitzroy River but has immunity from stormwater, local or creek flooding in gaining access to that constructed road in accordance with the Type of Low Hazard Access specified for each land use category below in Table 1 and detailed in Appendix 2.

Use Category	Type of Low Hazard Access	DFE*
Rural Use	Type 2	50
Residential Use	Type 1	50
Commercial Use	Type 2	50
Industry Use	Type 2	50
Community / Recreation Use	For those specified in Table 3; 300mm below the corresponding RFL	50
	For those not specified in Table 3; no requirements	
Miscellaneous Use	Type 2 for a Tourist Facility and Veterinary Hospital only – for other uses no requirements	50

Table 1

* In determining the type of access to a site, the DFE above is to be used instead of Q100.

OR

Access routes[3] between the development site and the Central Business District or the Gracemere township are trafficable during the Defined Flood Event and do not exceed the Type of Low Hazard Access specified for each use category below in Table 2 and detailed in Appendix 2. For development that is not a material change of use, the applicable use category is the intended use for the development.

Example: A Reconfiguring a Lot to create residential allotments would need to comply with the residential use category.

[2] Other than those instances mentioned in (ii) and (iii).
[3] Access routes include the dedicated road to the site and the driveway within the site. This includes an access easement.

Performance Criteria	Acceptable Solutions
	A2.2

Use Category	Type of Low Hazard Access	DFE
Rural Use	Type 2	100
Residential Use	Type 1	100
Commercial Use	Type 2	100
Industry Use	Type 2	100
Community / Recreation Use	For those specified in Table 3; 300mm below the corresponding RFL.	100
	For those not specified in Table 3; not applicable.	
Miscellaneous Use	Type 2 for a Tourist Facility and Veterinary Hospital only – for other uses not applicable.	100

Table 2

AND
There are no new allotments created in areas that will be isolated by a high or low hazard floodway within the Defined Flood Event.

Note 1: A determination on access requirements to a community/recreation use where access is not completely flood free will take into account:
(i) the location of other related or dependant community uses; and
(ii) proximity to the community the proposed facility is intended to serve; and
(iii) the role of the facility during a defined flood event; and
(iv) whether the community use is an essential service.

Note 2: Development for a residential use on land in a high hazard floodway has an approved evacuation plan that addresses the following aspects:
(i) What is the evacuation time; and
(ii) What types of vehicles are necessary for evacuation purposes; and
(iii) What is the distance to flood free land; and
(iv) What is the evacuation route;

Performance Criteria	Acceptable Solutions
	and *(v) At what stage of the flood will the evacuation routes be cut.*
Environmental Considerations	
P3 Development protects and enhances the environmental values in a Waterway corridor, including its banks and associated vegetation.	**A3.1** Development is carried out in accordance with the **Water Quality and Water Quantity Code,** and, where relevant the **Biodiversity / Nature Conservation Code.** **AND** **A3.2** No development is carried out in a Waterway corridor.
Public Safety	
P4 The proposal prevents the intensification of the overall flood impacts within the community by: (a) not significantly increasing the overall level of flood damage and community disruption in high hazard areas, and (b) not creating any unacceptable impacts on flood levels and flows in a high hazard area i.e. a zero net loss in flood storage; and (c) ensuring the outside storage of any goods or equipment will not contribute to the overall level of flood damage and community disruption in both high and low hazard areas.	**A4** No Acceptable Solution specified.

PART B – REQUIREMENTS APPLICABLE TO MATERIAL CHANGE OF USE OR BUILDING WORKS ONLY

Performance Criteria	Acceptable Solutions
P5 Community infrastructure[4] is; (a) able to function effectively during and immediately after a defined flood event, or (b) of a type that needs to be protected due to its historical or cultural significance.	**A5** Community Infrastructure is not located on land below the Recommended Flood Level (RFL) contained in Table 3 below for that community infrastructure and has at least one road access that will remain trafficable for the performance of emergency evacuations for all floods up to and including the RFL.
P6 Flood damage is avoided by using the appropriate design, location and construction techniques for buildings and structures within the floodplain.	**A6.1** If within a floodway, the building or structure is certified by a qualified and experienced structural engineer in accordance with **Planning Scheme Policy No. 14 – Flood Plain Management**; **A6.2** **AND** All services and utilities connected to the property, including electrical outlets, are to be designed or installed at such a height that they are a minimum of 500mm above the Defined Flood Event. **A6.3** **AND** Non livable room areas may be below the

Recommended flood levels for community infrastructure

Type of Community Infrastructure	Recommended Flood Level
Emergency Services	1:500 ARI
Emergency Shelters	1:200 ARI
Police facilities	1:200 ARI
Hospital	1:500 ARI
Nursing homes, aged care and child care facilities	1:200 ARI
Stores of valuable records or items of historic or cultural significance (eg. galleries and libraries)	1:500 ARI
Power stations	1:500 ARI
Major Switch Yards	1:500 ARI
Substations	1:500 ARI
Sewerage Treatment Plants*	1:100 ARI
Water Treatment Plants*	1:200 ARI

Table 3

* The recommended flood level applies only to electrical and other equipment that, if damaged by floodwater or debris, would prevent the plant from resuming normal function quickly after a flood event. This equipment should either be protected from damage or designed to withstand inundation

[4] Community infrastructure, are those uses listed in Table 3.

Performance Criteria		Acceptable Solutions	
			level of the defined flood event provided they are designed and constructed using flood resilient materials.
For a Residential Use Category[5] of Development only			
P7	Extensions to existing residential buildings do not exacerbate the impacts and consequences caused by flooding. *Note:* *If in an area defined as a High Hazard Floodway, High Hazard Flood Storage or Low Hazard Floodway, the development will need to be carried out in accordance with an approved flood statement in accordance with* ***Planning Scheme Policy No. 14 – Flood Plain Management****.*	**A7.1**	Extensions that are a minor 'once off' addition occur in accordance with one of the following circumstances: (i) For an existing residential building with a floor level below the Defined Flood Event: (1) the floor level of the extension is not below the existing floor level; and (2) there is no increase in the number of dwelling units or accommodation units (but does not provide for a relatives apartment[6]). OR (ii) For an existing residential building with a floor level at or above the Defined Flood Event (or that will and can be raised to comply): (1) all liveable floor areas (existing and proposed will be at or above the level of the defined flood event); and (2) there is no increase in the number of dwelling units or accommodation units; and (3) the total number of bedrooms does not exceed four; and (4) the level of the raised residential building (if raised) does not exceed 3 metres above the natural or finished ground level (where mounding or earthworks are proposed), and the height and form is consistent with the amenity of the surrounding area.
		A7.2	**OR** Extensions that are not a 'minor once off' addition have all liveable floor areas for the extension located 500mm above the level of the defined flood event.
P8	Flood damage, damage to property and social disruption to residential landowners and the community in general is avoided by using the appropriate	**A8.1**	For new development intended or able to be used for a residential use, the floor level of all livable room areas (or residential sites as defined in the caravan/cabin park code) are no less than 500mm above the Defined Flood Event.

[5] Refer to section 3.7 of this Planning Scheme.
[6] As defined in the House Code.

Performance Criteria		Acceptable Solutions	
	design, location and construction techniques for buildings and structures within the floodplain.	**A8.2**	**OR** Liveable room areas (or residential sites as defined in the caravan/cabin park code) may be below the level of the defined flood event but are not subjected to flooding due to the installation of flood proofing measures (approved by the Rockhampton Regional Council) such as bunds, dykes, levee banks, flood walls or the like[7]. *Note: It will be a condition of any approval that a certificate from a licensed surveyor is submitted to Rockhampton Regional Council prior to "lock up" stage of the building construction (or prior to the commencement of the use for a caravan/cabin park) certifying the building floor levels of liveable room areas (or residential site levels in a caravan/cabin park) as being 500mm above the Defined Flood Event.*
P9	New residential buildings and re-classifications of buildings or parts of a building from a non-residential use to a residential use do not exacerbate the impacts and consequences caused by flooding.	**A9.1.1** **A9.1.2** **A9.2** **A9.3** **A9.4**	The new residential building is not constructed on flood prone land. **AND** The new residential building is not created as a result of a conversion or reclassification from a non residential building. **OR** Building Works or a Material Change of Use is not located in a high or low hazard floodway and will result in there being a reduced number of dwelling units or accommodation units on the land or allotments than there were there previously. **OR** Building Works or a Material Change of Use for the purposes of a residential building only occurs on an allotment that is determined to be; (i) Low Hazard Flood Fringe; or (ii) Low Hazard Flood Storage; or (iii) High Hazard Flood Fringe.

[7] To ensure structural adequacy.

			OR Building Works or a Material Change of Use for the purposes of a House, Small Lot House or Caretakers Residence only occurs on an allotment that was privately owned and vacant on the **A9.5** commencement day of this planning scheme and located within the Depot Hill Residential Area – East Depot Hill Precinct. **OR** **A9.6** Building Works or a Material Change of Use for the purposes of a residential building only occurs within the Central Business District Area. **OR** Building Works or a Material Change of Use for the purposes of a residential building only occurs when in accordance with Performance Criteria P10 of this code.
P10	Development for a residential building in any Rural Area or Special Use Area is carried out, when unavoidably necessary, having proper regard to mitigating the effects, impacts and consequences of flooding. *Note:* *The development will need to be carried out in accordance with an approved flood statement in accordance with* ***Planning Scheme Policy No. 14 – Flood Plain Management***	**A10.1**	At the location of the proposed development, the depth multiplied by velocity calculation is equal to or less than 0.5m^2/s where: (i) the depth of inundation does not exceed 0.8 metres; and (ii) the subject land is not in a floodway; and (iii) the livable floor area is 500mm above the level of the defined flood event.
		A10.2	**AND** The development is only for the purposes of a house or caretakers residence (but not both) and has been demonstrated to be essential to a bona-fide rural use of the land[8] and is located on the least flood affected part of the site.
For a Commercial or Industrial Use Category[5] of Development only			
P11	New buildings or uses for a non-residential purpose or an extension to an existing non-residential building	**A11**	A minimum of 30% of the gross floor area of the building is at least 500 mm above the level of the defined flood event for the storage of goods in the times of flood.

[8] Includes demonstrating that it must be located on the site and cannot be located on an alternative less flood affected site for whatever reason.

[9] For example an alternative, permanently available, storage facility located elsewhere not on flood prone land or the capacity to store a large number of items vertically rather than horizontally, thus requiring less area.

or use is able to mitigate all possible impacts and consequences caused by flooding. *Note:* *To have less than 30% of the gross floor area of the building at least 500 mm above the level of the defined flood event, it will be necessary to demonstrate that on the basis of the following, that a smaller area if any, is appropriate:* *(a) acceptable alternative flood proofing measures in accordance with* ***Planning Scheme Policy No. 14 - Flood Plain Management*** *can be reliably provided; and* *(b) an acceptable contingency plan is provided and approved[9]; and* *(c) the nature of the business, activity or products used requires significantly less storage space; and* *(d) the risk to staff is not increased; and* *(e) the potential goods, equipment or materials that become submerged in flood waters do not:* *(1) add to an increase in the flood debris loading of flood waters; or* *(2) result in environmental*	*Note: To remove any doubt, this area does not need to be set aside and may be used on a day to day basis as an office, storage area or the like.*

*harm as described in **Planning Scheme Policy No. 14 – Flood Plain Management**.* *Note:* *If in an area defined as a High Hazard Floodway, High Hazard Flood Storage or Low Hazard Floodway, the development needs to be carried out in accordance with an approved flood statement in accordance with **Planning Scheme Policy No. 14 – Flood Plain Management**.*	

PART C – REQUIREMENTS APPLICABLE TO RECONFIGURING A LOT OR OPERATIONAL WORKS ONLY

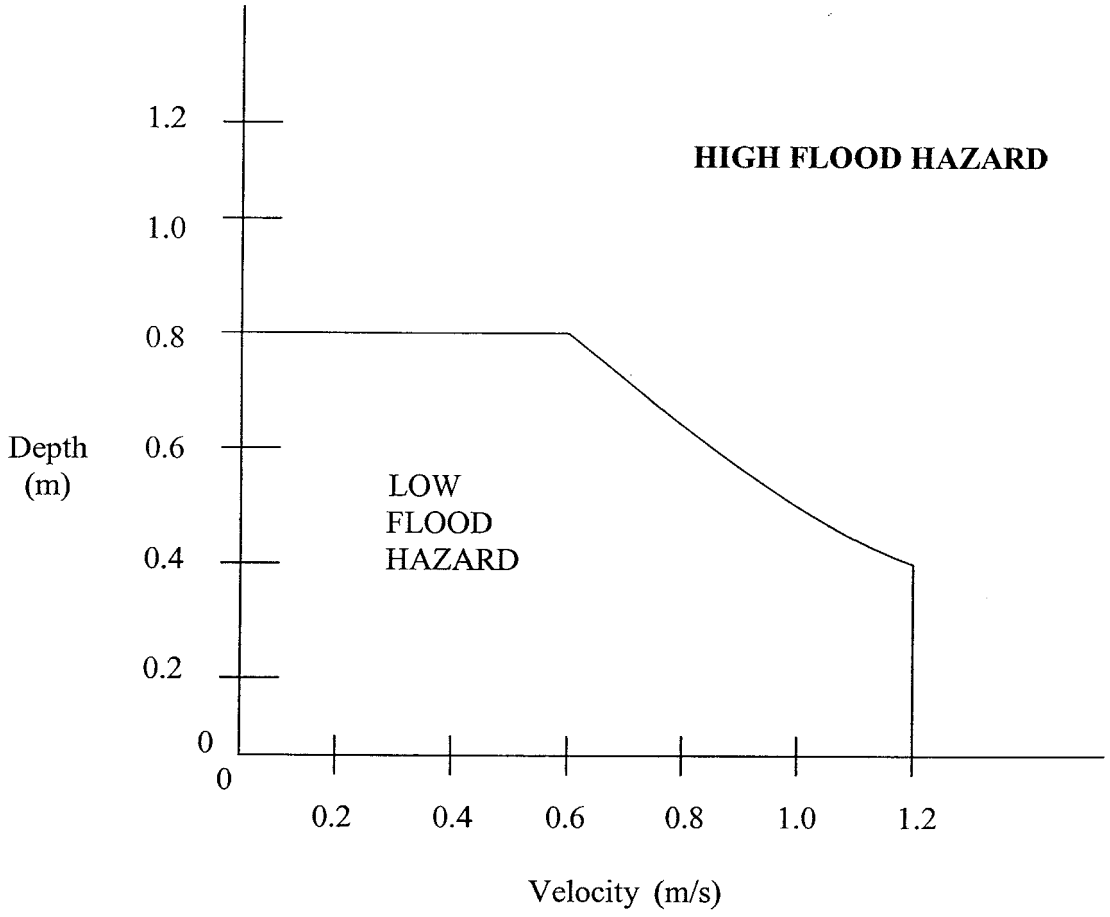
Performance Criteria		Acceptable Solutions	
P12	Any development that involves the excavation or filling of land (excluding minor development) is carried out such that 'no worsening' of floodwater levels, flow paths, velocity or flood behaviour results. *Note:* *No net worsening of floodwater levels or reduction in storage area is to result from excavation or filling;*	**A12**	No Acceptable Solution specified
Development associated with, or for, a Residential Use only			
P13	There is no increase in the number of allotments adversely affected by the Defined Flood Event.	**A13**	Any new allotment (either additional or as a result of a boundary realignment) contains a minimum area of 500m^2 of land not affected by the defined flood event able to accommodate a 15m x 15m square.
Development associated with, or for, other than a Residential Use			
P14	There is no increase in	**A14**	Any new allotment (either additional or as a

	the number of allotments adversely affected by the Defined Flood Event.		result of a boundary realignment) contains a minimum area of 1000m² of land not affected by the defined flood event able to accommodate a 20m x 25m rectangle.

FLOOD PRONE LAND CODE – APPENDIX 1

Determination of Flood Hazard Categories

(Applicable to a Q100 ARI flood event)

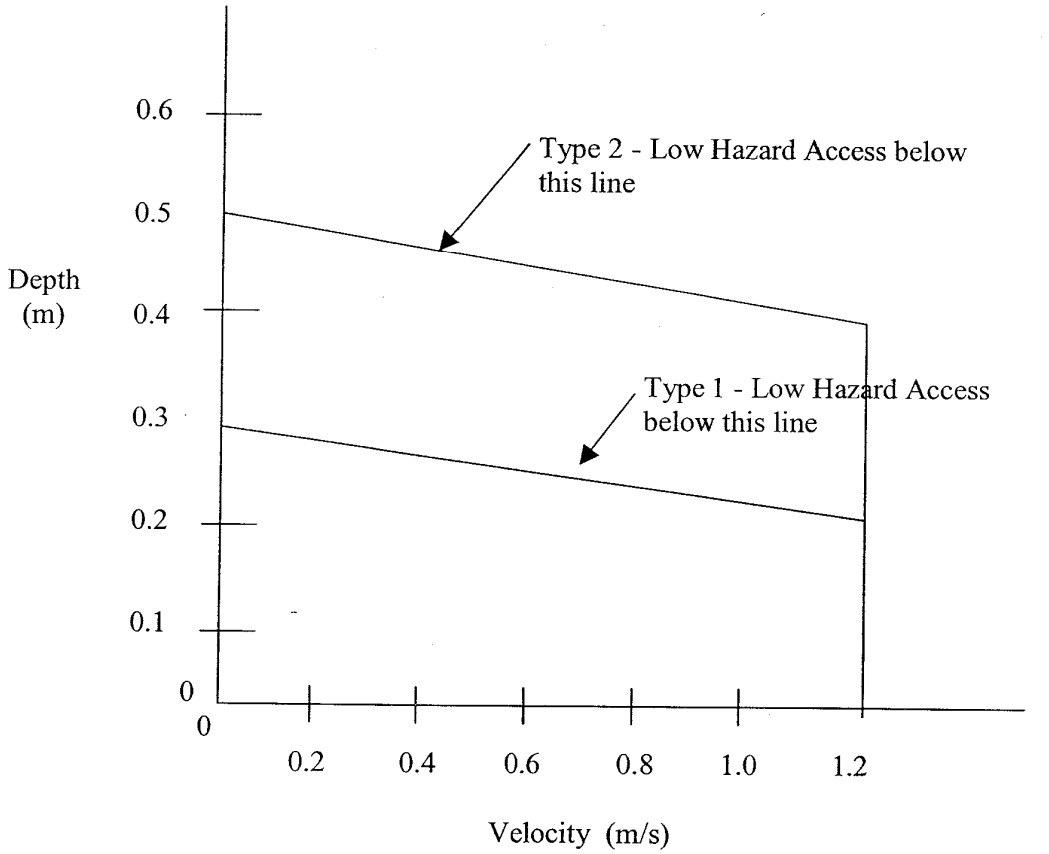


FLOOD PRONE LAND CODE – APPENDIX 2

Determination of Vehicle Access Categories

(Applicable to a Q100 ARI flood event)

Note: Vehicle instability is likely above and to the right of the lines indicated.



Type 1 Low Hazard Access	Type 2 Low Hazard Access
Means road and building access meeting the following criteria during the defined flood event. • do not exceed 0.3 metres depth at zero velocity; • do not exceed 0.2 metres depth at 1.2 m/s flood velocity; • do not exceed 1.2 m/s flood velocity; and • for flood depths of between 0.2 and 0.3 metres flood water velocities are less than 1.2 metres / second.	Means road and building access meeting the following criteria during the defined flood event. • do not exceed 0.5 metres depth at zero velocity; • do not exceed 0.4 metres depth at 1.2 m/s flood velocity; • not exceed 1.2 m/ s flood velocity; • for flood depths of between 0.4 and 0.5 metres flood water velocities are less than 1.2 metres / second.

Defined Flood Event

The Defined Flood Event is defined at the beginning of this code as being the 1 in 100 year flood event. For the purposes of calculating the Low Hazard Access under this appendix and to meet the relevant Acceptable Solutions, the Defined Flood Event to be used is that specified in Table 1 or 2 contained in this code where reference to this appendix is made. In all other instances, the DFE is to be taken as the Q100 as defined at the beginning of this code.