Hawkesbury City Council

attachment 3

to

item 205

Schedule of Flood Related Development Controls

October 2020

date of meeting: 27 October 2020

location: by audio-visual link

time: 6:30 p.m.

Hawkesbury City Council

Schedule of Flood Related Development Controls

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Schedule of Flood Related Development Controls

The requirements within this Schedule are to be applied to development on flood affected land to which Clause 6.3 – *Flood Planning* of *Hawkesbury Local Environmental Plan 2012* applies, in accordance with Hawkesbury City Council's Flood Policy 2020.

A. HOW TO APPLY THIS SCHEDULE

In order to determine what controls apply to development the following procedure should be undertaken:

1. Determine what flood information is available for the site, including flood levels and velocity of flood waters. (Flood Advice)

2. Determine what hazard categories (H1 - H6) and which hydraulic classification (Floodway or Flood Storage) applies to the site. (Flood Advice)

3. Review Table 2 – *Compatibility of Land Uses with Hazard Categories* within the Schedule of Flood Related Development Controls to determine if your development is compatible or not with the hazard category of the site.

4. Address how the development meets the relevant development controls in this 'Schedule of Flood Related Development Controls'.

5. Submit all information to Council for assessment having regard to Section D - *Information Required* of this Schedule.

B. DEFINITIONS

Australian height datum (AHD)	a common national surface level datum approximately corresponding to mean sea level.
Compatible development	is development for a type of land use shown as being compatible for a Hazard Category within Table 2 to this Schedule.
Design flood	is a statistical estimate of a flood based on probability analysis of flood and/or rainfall data.
Development application (DA)	is a formal request for consent to carry out proposed development, such as change of use of land, subdivide land, and carry out building, landscaping and other work.
Effective warning time	the time available after receiving advice of an impending flood and before the floodwaters prevent appropriate flood response actions being undertaken. The effective warning time is typically used to evacuate people, transport their possessions, move farm equipment, move stock and raise furniture.
Filling of Land	is the raising of the natural ground level of the land by the importation of fill material to the site or by earthworks being carried out on the site, however does not include topdressing.
Flood	relatively high stream flow which overtops the natural or artificial banks in any part of a stream, river, estuary, lake or dam and/or local overland flooding associated with major drainage before entering a watercourse, as defined by the Floodplain Development Manual (NSW Government 2005).

Flood advice	Written advice obtained from Council which details the hazard category of a site and which hydraulic classification (Floodway or Flood Storage) applies to that site.
Flood compatible building materials	materials used for the reduction or elimination of flood damage including those materials that are resistant to damage when inundated.
Flood fringe areas	the remaining area of flood prone land after floodway and flood storage areas have been defined.
Flood hazard	the potential for damage to property or risk to persons during a flood.
Flood liable land	is synonymous with **flood prone land**, that is land susceptible to flooding by the Probable Maximum Flood (PMF) event.
Flood planning level (FPL)	the level of a 1:100 ARI (average recurrent interval) flood event.
Flood risk	the risk to human life and property and is the combination of the consequences of flooding and the likelihood of flooding.
Floodplain	area of land which is subject to inundation by floods up to and including the Probable Maximum Flood (PMF) event - that is, flood liable land.
Flood probability	the size of a flood is described in terms of the chance or probability of that flood occurring in any 1 year, and for example can be expressed in the following ways: • 1 in 100 year flood event; • 1:100 ARI (Average Recurrence Interval); • 1% AEP (Annual Exceedance Probability). Average Recurrent Interval (ARI) is measured in years: e.g. a 100 year ARI flood is a flood that occurs (or is exceeded) on average once every 100 years. Annual Exceedance Probability (AEP) is measured as a percentage: e.g. a 1% AEP flood is a flood that occurs (or is exceeded) on average once every 100 years. Also expressed as a 100 year event.
Flood storage areas	those parts of the floodplain that are important for the temporary storage of floodwaters during the passage of a flood.
Floodway areas	those areas of the floodplain where a significant discharge of water occurs during floods. They often align with naturally defined channels. Floodways are areas that even if only partially blocked, would cause a significant redistribution of flood flow, or a significant increase in flood levels.
Habitable floor area	a room used for normal domestic activities and includes a bedroom, living room, lounge room, music room, television room and/or home theatre room, kitchen, dining room, sewing room, study, playroom/rumpus room and sunroom. It excludes a bathroom, laundry, water closet, food-storage pantry, walk in wardrobe, corridor, hallway, lobby, photographic darkroom, clothes drying room, and other spaces of a specialised nature that are occupied only infrequently.

Habitable floor level	means the level of the habitable floor area provided in reference to the Australian Height Datum (AHD).
Incompatible development	is development for a type of land use shown as being incompatible for a Hazard Category within Table 2 to this Schedule.
Local overland flooding	flood inundation by local runoff rather than overbank discharge from a stream, river, estuary, lake or dam.
Probable maximum flood (PMF)	is the largest flood that could conceivably occur at a particular location. The PMF defines the extent of the floodplain.
Raised building construction	is building construction utilising bearers and joist or suspended slab techniques.
Regional evacuation route	is the evacuation routes shown on Map 1: *Regional Evacuation Routes within the Hawkesbury-Nepean Valley* of Chapter 4, Volume 3 of the Hawkesbury Nepean Flood Plan (State Emergency Services, September 2015).

C. FLOOD HAZARD

Flood Hazard Categories

The potential harm resulting from a flood is known as the flood hazard. Flood hazard categories are a key tool used to determine flood severity and for assessing the suitability of future land uses.

The vulnerability of the community and its assets can be described by using thresholds related to the stability of people as they walk or drive through flood waters, or shelter in a building during a flood.

Hazard categories provide guidance on how a flood may impact on people, vehicles and buildings. The categories are based on thresholds that compare the velocity and depth of a flood peak. Additional flood hazards may include, but are not limited to, poor visibility, uneven surfaces, slippery surfaces, debris and contaminated water. These types of hazards are not included in the hazard categories.

For the purposes of the Flood Policy 2020 and the Schedule of Flood Related Development Controls the hazard categories within the *Australian Disaster Resilience Handbook Collection, Guideline 7-3 Flood Hazard* have been adopted and provides a general classification for flood hazard, incorporating 6 flood hazard categories (H1 – H6). Handbook 7 and its associated guidelines are considered to be best practice in terms of flood risk management.

The *Australian Disaster Resilience Handbook Collection* can be viewed at:

https://knowledge.aidr.org.au/resources/handbook-managing-the-floodplain/

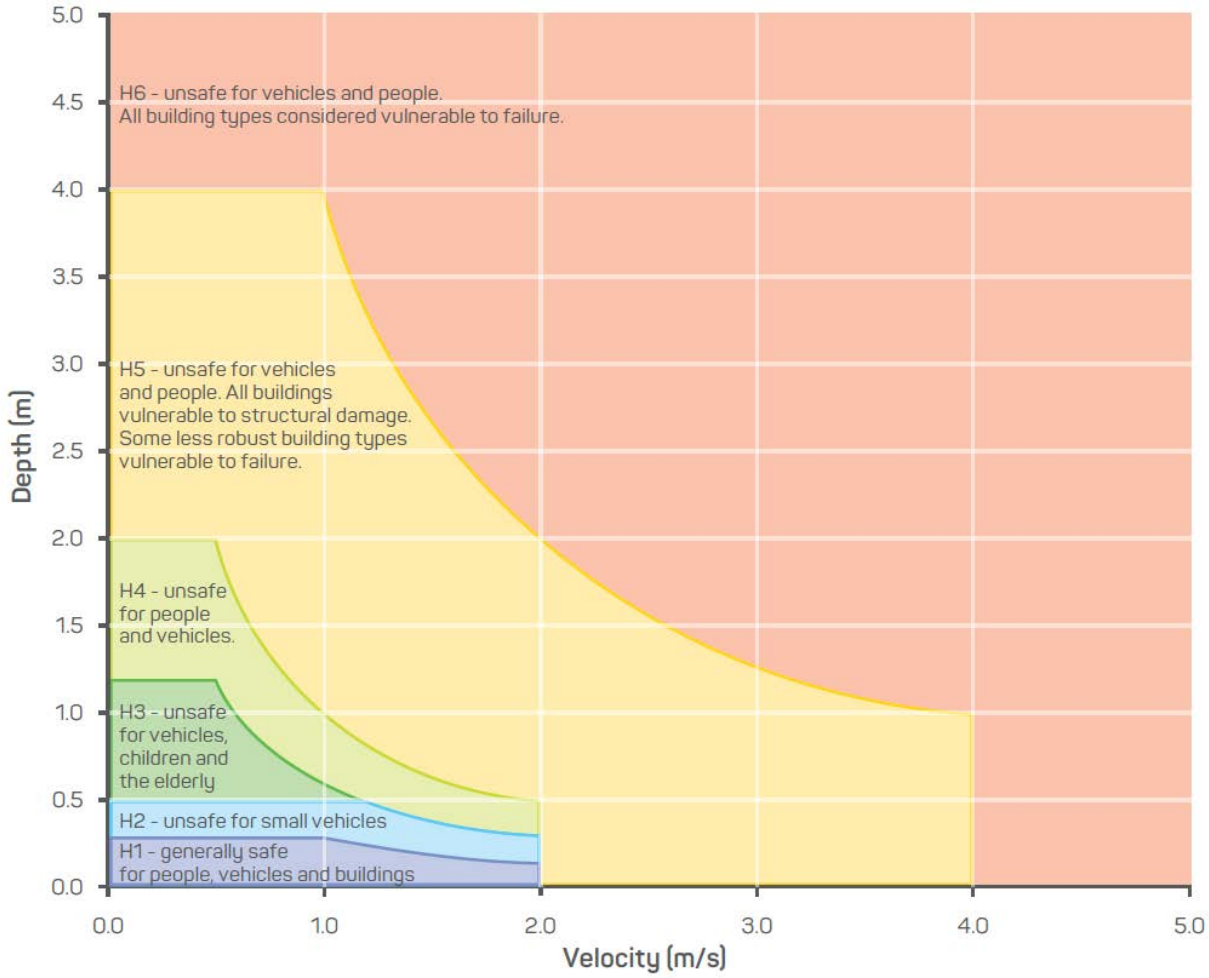

Figure 1

General Flood Hazard Vulnerability Curves
(Australian Disaster Resilience Handbook Collection, Guideline 7-3 Flood Hazard)

Table 1

General Flood Hazard Vulnerability Thresholds

(Australian Disaster Resilience Handbook Collection, Guideline 7-3 Flood Hazard)

Hazard Vulnerability Category	Description
H1	Generally safe for vehicles, people and buildings
H2	Unsafe for small vehicles
H3	Unsafe for vehicles, children and the elderly
H4	Unsafe for vehicles and people
H5	Unsafe for vehicles and people. All building types vulnerable to structural damage. Some less robust building types vulnerable to failure.
H6	Unsafe for vehicles and people. All building types considered vulnerable to failure.

Note: Whilst Hazard Category H1 identifies a general level of safety for vehicles based on laboratory controlled conditions relating to depth and velocity of floodwaters only, other hazards may still be present such as poor road conditions and unseen obstacles. As such, the advice from emergency services **Not to Drive through Flood Waters** remains relevant.

Use of Flood Hazard Categories

The hazard categories used in this Schedule relate to the 1:100 ARI flood event. Hazard categories are a general classification and other factors should be taken into consideration when locating and designing development.

Clause 6.3(3)(a) of *Hawkesbury Local Environmental Plan 2012* requires a consent authority to be satisfied that a development *is compatible with the flood hazard of the land*.

The compatibility of new development with the hazard categories is dependent on:

- type of the development (e.g. residential, commercial, industrial, agricultural, open space)
- sensitivity of the development to the hazard (e.g. aged care, child care centres, group homes)
- density/scale of the development
- frequency and times of use of a building
- design and structure of a building

The compatibility of development involving the redevelopment, additions or alterations or ancillary structures to existing development needs to consider whether or not it will:

- maintain or lower density, both in built form and occupancy.
- reduce the exposure to floodwaters and the potential for damage by
  - using flood proof building design and construction.
  - locating on higher land.
  - raising floor levels and habitable floor levels.

- maintain existing flow paths to ensure that other properties are not adversely affected by new buildings.

- not increase the reliance on emergency management through consideration of the emergency management difficulties in the area.

Compatibility of Development with Flood Hazard

Table 2 in this Schedule groups land uses into development types according to the sensitivity of each use to flooding. The table uses a combination of development types and hazard categories in order to identify developments as being either compatible or incompatible.

The land uses listed within Table 2 in this Schedule correspond to land uses defined by Hawkesbury Local Environmental Plan 2012.

The hazard categories used are those within the *Australian Disaster Resilience Handbook Collection, Guideline 7-3 Flood Hazard*. The parameters of these hazard categories are reproduced in Figure 1 - *General Flood Hazard Vulnerability Curves* and Table 1 – *General flood Hazard Vulnerability Thresholds.*

Development can be within a number of different Hazard Categories. New development will only be supported if it is compatible with all Hazard Categories in which it is situated, and complies with the development controls of the highest applicable Hazard Category.

If a land use, or part of a use, is incompatible with a Hazard Category, the relocation or redesign of the development to fit into a compatible hazard will be required.

Additions, alterations, rebuilding or redevelopment of existing development within a compatible Hazard Category must comply with the requirements listed under New Development in the 'Schedule to Flood Related Development Controls'.

Table 2

Compatibility of Land Uses with Hazard Categories

Legend: **X – Incompatible**
C – Compatible

Note: Other factors need to be taken into consideration when determining the hazard category, such as access to safe evacuation facilities and the available warning times.

	Hazard Category					
Land Use	H1	H2	H3	H4	H5	H6
Critical Uses and Facilities • Emergency services facilities • Public administration building that may provide an important contribution to the notification or evacuation of the community during flood events (e.g. SES Headquarters and Police Stations) • Hospitals • Telecommunications facility • Electricity generating works • Water treatment facility	X	X	X	X	X	X
Sensitive Uses and Facilities • Biosolids treatment facility; • Boarding house • Caravan park • Childcare centres • Community facility (not considered a critical use) • Correctional centre • Educational establishments • Group homes (permanent) • Group homes (transitional) • Hostel • Residential care facility • Respite day care centres • School • Seniors housing • Sewage treatment plant	C	X	X	X	X	X
Single Residential Uses • Dwelling house • Exhibition home • Exhibition village • Home business • Home industry • Home occupation • Home occupation (sex service) • Rural worker's dwelling	C	C	C	X	X	X
Multi Residential Uses • Attached dwelling • Dual occupancy (attached) • Dual occupancy (detached) • Multi dwelling housing	C	C	C	X	X	X

	Hazard Category					
Land Use	H1	H2	H3	H4	H5	H6
• Residential flat building • Secondary dwelling, • Semi-detached dwelling • Shop top housing						
Tourist Accommodation Uses • Backpackers accommodation • Bed and breakfast accommodation • Eco-tourist facilities • Farm stay accommodation • Hotel or motel accommodation • Serviced apartment • Camping grounds	C	C	C	X	X	X
Commercial Uses 1 • Animal boarding or training establishment • Crematorium; • Funeral homes • Medical centres • Mortuary • Health consulting rooms • Health services facility (other than hospitals) • Home based child care centre • Veterinary hospital	C	C	C	X	X	X
Commercial Uses 2 • Air transport facility; • Airport; • Amusement centres • Bulky goods premises • Business premises (other than funeral homes) • Cellar door premises • Entertainment facilities • Food and drink premises • Function centre • Garden centres • Hardware and building supplies • Industrial retail outlets • Kiosks • Landscaping material supplies • Markets • Neighbourhood shop • Office premises • Plant nurseries • Pubs • Registered clubs • Restaurant or café • Restricted premises • Retail premises • Roadside stalls • Rural supplies • Sex service premises • Shop • Takeaway food and drink premises • Timber yard • Vehicle sales or hire premises • Wholesale suppliers	C	C	C	C	X	X

	Hazard Category					
Land Use	H1	H2	H3	H4	H5	H6
Industrial Uses • Agricultural produce industries • Boat building and repair facilities • Depots • Freight transport facility • General industries • Industrial training facility; • Light industry • Livestock processing industries • Rural Industries • Sawmill or log processing industries • Stock and sale yards • Transport depot • Truck depot • Vehicle body repair workshop • Vehicle repair station • warehouse or distribution centre	C	C	C	C	X	X
Commercial/Industrial – Highly Vulnerable Uses • Hazardous industries • Hazardous storage establishments • Heavy industrial storage establishments • Heavy industries • Highway service centres • High technology industries • Information and education facility • Liquid fuel depots • Offensive industries • Offensive storage establishments • Resource recovery facility • Self-storage units • Service station • Storage premises • Waste disposal facility • Waste or resource management	C	C	C	X	X	X
Agricultural Uses 1 • Aquaculture • Extensive agriculture • Bee keeping • Dairy (pasture-based) • Horticulture • Viticulture • Turf farming • Forestry	C	C	C	C	C	C
Agricultural Uses 2 • Intensive livestock agriculture • Intensive plant agriculture • Feed lots • Dairies (restricted) • Piggeries • Poultry farms	C	C	C	C	X	X

	Hazard Category					
Land Use	H1	H2	H3	H4	H5	H6
Recreational Uses 1 • Recreation facility (indoor) • Recreation facility (major)	C	C	C	C	X	X
Recreational Uses 2 • Recreation area • Recreational facility (outdoor) • Water recreation structure (including Jetty; Marina; Boat launching ramp, mooring, mooring pen) • Charter and tourism boating facility	C	C	C	C	C	C
Earthworks • Extractive industry* • Mining* • Open cut mining* • Drainage works	C	C	C	C	C	C
Other Uses 1 • Airstrip • Cemetery; • Environmental facility • Environmental protection works • Helipad • signage • Farm building*	C	C	C	C	C	C
Other Uses 2 • Air transport facility; • Airport • Heliport; • Passenger transport facility; • Place of public worship; • Public administration building (other than critical uses and facilities); • Research station	C	C	C	C	X	X

Note 1: Where development is not specified within the Land Uses outlined above, Council will determine whether the proposed development is compatible with the Flood Hazard Category of the land based on the documentation provided with any development application.

* Applications for farm buildings within Hazard Categories H5 and H6 are to be supported by engineering design/certification to demonstrate that buildings can withstand the impacts of flooding.

* Extractive industries, mining and open cut mining are unsuitable within Floodways as development involving earthworks/excavation, cut, fill, changes to topography, and removal of vegetation can significantly alter flood behavior over the broader floodplain.

D. DEVELOPMENT CONTROLS

1. Development in Hazard Category H1

1.1 New Development and Additions and Alterations to, or Rebuilding and Redevelopment of, existing lawful Compatible Development in Hazard Category H1

Permissibility

H1.1 Development for the purposes of uses listed as:

- Critical Uses and Facilities

in Table 2 of this Schedule are not permitted on land within Hazard Category H1.

Land Levels

H1.2 A new building must not be erected on any land lying at a level lower than 0.3 metres below the Flood Planning Level (1:100 ARI flood level for the land).

Floor Levels

H1.3 All floor levels, including habitable floor levels, must be no lower than the Flood Planning Level (1:100 ARI flood level for the land).

H1.4 Where the lowest floor area is elevated above ground level (where raised building construction is used), the undercroft area must not be enclosed. No walls, doors, blockwork, cladding or the like is to be affixed around or within the undercroft area. Decorative features will be considered on merit.

H1.5 Undercroft areas are not to be used for parking within Hazard Category H1 and therefore shall not exceed 1m above ground level.

Cut and Fill

H1.6 A balance of cut and fill must be used on the site to create a level building platform or driveway access on land. Cut and fill must not exceed a depth of 1m of cut or 1m of fill.

H1.7 Importation of fill to the land/property is not permitted, other than for the purposes of permitting fill to a maximum depth of 0.3m to provide for slab on ground construction within a drop edge beam, at a level at or above the Flood Planning Level (1:100 ARI flood level for the land).

Building

H1.8 All buildings and structures must be constructed using flood compatible building materials.

Emergency Management

H1.9 An Evacuation Capability Assessment must be provided (See Section E – *Information Required* of this Schedule).

H1.10 A Site Flood Emergency Response Plan must be provided when elements of the development, including vehicular and pedestrian access are below the Flood Planning Level (See Section E – *Information Required* of this Schedule).

H1.11 Where it has been demonstrated that evacuation of a property located within the MacDonald Valley or Colo Valley is not possible, 'sheltering in place' may be considered for residential and sensitive development subject to the development or a refuge being provided on land having a

level above the Probable Maximum Flood. The refuge must either be located on the subject land, or be a community provided building previously approved for use as a flood refuge. Details of the capacity of the building, the likely time period of isolation, the provision of food, fresh water and effluent disposal facilities, as well as other necessary supplies (such as batteries, radio, torch, first aid kit, medication, candles etc) must be provided with any development application.

In addition, should the development rely on a community provided refuge, details in regard to the distance the development is located from the refuge, the identification of hazards along the route between the development and the refuge and demonstrating that the refuge can be accessed during flood events up to and including the 1:100 ARI flood event, is also to be provided.

1.2 Additions and Alterations to, or Rebuilding and Redevelopment of, existing lawful Incompatible Development in Hazard Category H1

Permissibility

H1.12 Additions and alterations to, or the rebuilding or redevelopment of, existing lawful incompatible development must not be located within a higher Hazard Category than that in which the existing development is situated.

Land Levels

H1.13 Additions to, or replacement buildings of, existing lawful incompatible development must not be erected on any land lying at a level lower than 0.3 metres below the Flood Planning Level (1:100 ARI flood level for the land).

Floor Levels

H1.14 All floor levels, including habitable floor levels, must be no lower than the Flood Planning Level (1:100 ARI flood level for the land).

H1.15 Where the lowest floor area is elevated above ground level (where raised building construction is used), the undercroft area must not be enclosed. No walls, doors, blockwork, cladding or the like is to be affixed around or within the undercroft area. Decorative features will be considered on merit.

H1.16 Undercroft areas are not to be used for parking within Hazard Category H1 and therefore shall not exceed 1m above ground level.

Cut and Fill

H1.17 A balance of cut and fill must be used on the site to create a level building platform or driveway access on land. Cut and fill must not exceed a depth of 1m of cut or 1m of fill.

H1.18 Importation of fill to the land/property is not permitted, other than for the purposes of permitting fill to a maximum depth of 0.3m to provide for slab on ground construction within a drop edge beam, at a level at or above the Flood Planning Level (1:100 ARI flood level for the land).

Building

H1.19 All additions, alterations or replacement buildings must be constructed using flood compatible building materials.

Emergency Management

H1.20 An Evacuation Capability Assessment must be provided for any additions, rebuilding or redevelopment of existing development that results in an intensification of residential occupancy (See Section E – *Information Required* of this Schedule).

H1.21 A Site Flood Emergency Response Plan must be provided when elements of the development, including vehicular and pedestrian access are below the Flood Planning Level (See Section E – *Information Required* of this Schedule).

H1.22 Where it has been demonstrated that evacuation of a property located within the MacDonald Valley or Colo Valley is not possible, 'sheltering in place' may be considered for residential and sensitive development subject to a refuge being provided on land having a level above the Probable Maximum Flood. The refuge must either be located on the subject land, or be a community provided building previously approved for use as a flood refuge. Details of the capacity of the building, the likely time period of isolation, the provision of food, fresh water and effluent disposal facilities, as well as other necessary supplies (such as batteries, radio, torch, first aid kit, medication, candles etc) must be provided with any development application.

In addition, should the development rely on a community provided refuge, details in regard to the distance the development is located from the refuge, the identification of hazards along the route between the development and the refuge and demonstrating that the refuge can be accessed during flood events up to and including the 1:100 ARI flood level event, is also to be provided.

2. Development in Hazard Category H2

2.1 New Development and Additions and Alterations to, or Rebuilding and Redevelopment of, existing lawful Compatible Development in Hazard Category H2

Permissibility

H2.1 Development for the purposes of uses listed as:

- Critical Uses and Facilities and
- Sensitive Uses and Facilities

in Table 2 of this Schedule are not permitted on land within Hazard Category H2.

Land Levels

H2.2 A new building must not be erected on any land lying at a level lower than 0.5 metres below the Flood Planning Level (1:100 ARI flood level for the land).

Floor Levels

H2.3 All floor levels, including habitable floor levels, must be no lower than the Flood Planning Level (1:100 ARI flood level for the land).

H2.4 Where the lowest floor area is elevated above ground level (where raised building construction is used), the undercroft area must not be enclosed. No walls, doors, blockwork, cladding or the like is to be affixed around or within the undercroft area. Decorative features will be considered on merit.

H2.5 Undercroft areas are not to be used for parking within Hazard Category H2 and therefore shall not exceed 1m above ground level.

Cut and Fill

H2.6 A balance of cut and fill must be used on the site to create a level building platform or driveway access on land. Cut and fill must not exceed a depth of 1m of cut or 1m of fill.

H2.7 Importation of fill to the land/property is not permitted, other than for the purposes of permitting fill to a maximum depth of 0.3m to provide for slab on ground construction within a drop edge beam, at a level at or above the Flood Planning Level (1:100 ARI flood level for the land).

Building

H2.8 All buildings and structures must be constructed using flood compatible building materials.

Emergency Management

H2.9 An Evacuation Capability Assessment must be provided (See Section E – *Information Required* of this Schedule).

H2.10 A Site Flood Emergency Response Plan must be provided when elements of the development, including vehicular and pedestrian access are below the Flood Planning Level (See Section E – *Information Required* of this Schedule).

H2.11 Where it has been demonstrated that evacuation of a property located within the MacDonald Valley or Colo Valley is not possible, 'sheltering in place' may be considered for residential and sensitive development subject to a refuge being provided on land having a level above the Probable Maximum Flood. The refuge must either be located on the subject land, or be a community provided building previously approved for use as a flood refuge. Details of the capacity

of the building, the likely time period of isolation, the provision of food, fresh water and effluent disposal facilities, as well as other necessary supplies (such as batteries, radio, torch, first aid kit, medication, candles etc) must be provided with any development application.

In addition, should the development rely on a community provided refuge, details in regard to the distance the development is located from the refuge, the identification of hazards along the route between the development and the refuge and demonstrating that the refuge can be accessed during flood events up to and including the 1:100 ARI flood event, is also to be provided.

2.2 Additions and Alterations to, or Rebuilding and Redevelopment of, existing lawful Incompatible Development in Hazard Category H2

Permissibility

H2.12 Additions and alterations to, or the rebuilding or redevelopment of, existing lawful incompatible development must not be located within a higher Hazard Category than that in which the existing development is situated.

Land Levels

H2.13 Additions to, or replacement buildings of, existing lawful incompatible development must not be erected on any land lying at a level lower than 0.5 metres below the Flood Planning Level (1:100 ARI flood level for the land).

Floor Levels

H2.14 All floor levels, including habitable floor levels, associated with the rebuilding or redevelopment of existing lawful incompatible development must be no lower than the Flood Planning Level (1:100 ARI flood level for the land).

H2.15 All floor levels, including habitable floor levels, associated with additions or alterations to existing lawful incompatible development must be no lower than the Flood Planning Level (1:100 ARI flood level for the land). Where this is not practical due to compatibility with the height of adjacent buildings, or compatibility with the floor level of existing buildings, or the need for access for persons with disabilities, a lower floor level may be considered. In these circumstances, the floor level must be as high as practical, and, when undertaking alterations or additions no lower than the existing floor level.

H2.16 Where the lowest floor area is elevated above ground level (where raised building construction is used), the undercroft area must not be enclosed. No walls, doors, blockwork, cladding or the like is to be affixed around or within the undercroft area. Decorative features will be considered on merit.

H2.17 Undercroft areas are not to be used for parking within Hazard Category H2 and therefore shall not exceed 1m above ground level.

Cut and Fill

H2.18 A balance of cut and fill must be used on the site to create a level building platform or driveway access on land. Cut and fill must not exceed a depth of 1m of cut or 1m of fill.

H2.19 Importation of fill to the land/property is not permitted, other than for the purposes of permitting fill to a maximum depth of 0.3m to provide for slab on ground construction within a drop edge beam, at a level at or above the Flood Planning Level (1:100 ARI flood level for the land).

Building

H2.20 All additions, alterations or replacement buildings must be constructed using flood compatible building materials.

Emergency Management

H2.21 An Evacuation Capability Assessment must be provided for any additions or redevelopment of existing development that results in an intensification of residential occupancy (See Section E – *Information Required* of this Schedule).

H2.22 A Site Flood Emergency Response Plan must be provided when elements of the development, including vehicular and pedestrian access are below the Flood Planning Level (See Section E – *Information Required* of this Schedule).

H2.23 Where it has been demonstrated that evacuation of a property located within the MacDonald Valley or Colo Valley is not possible, 'sheltering in place' may be considered for residential and sensitive development subject to a refuge being provided on land having a level above the Probable Maximum Flood. The refuge must either be located on the subject land, or be a community provided building previously approved for use as a flood refuge. Details of the capacity of the building, the likely time period of isolation, the provision of food, fresh water and effluent disposal facilities, as well as other necessary supplies (such as batteries, radio, torch, first aid kit, medication, candles etc) must be provided with any development application.

In addition, should the development rely on a community provided refuge, details in regard to the distance the development is located from the refuge, the identification of hazards along the route between the development and the refuge and demonstrating that the refuge can be accessed during flood events up to and including the 1:100 ARI flood event, is also to be provided.

3. Development in Hazard Category H3

3.1 New Development and Additions and Alterations to, or Rebuilding and Redevelopment of, existing lawful Compatible Development in Hazard Category H3

Permissibility

H3.1 Development for the purposes of uses listed as:

- Critical Uses and Facilities and
- Sensitive Uses and Facilities

in Table 2 of this Schedule are not permitted on land within Hazard Category H3.

H3.2 Development for the purposes of uses listed as Earthworks in Table 2 of this Schedule must demonstrate that the development will not increase flood effects elsewhere, having regard to:

- changes in flood levels and velocities caused by changes to flow paths, and
- the cumulative impact of development within the floodplain.

Land Levels

H3.3 A new building must not be erected on any land lying at a level lower than 1.2 metres below the Flood Planning Level (1:100 ARI flood level for the land).

Floor Levels

H3.4 All floor levels, including habitable floor levels, of buildings for the purposes of uses listed as:

- Single Residential Uses,
- Multi Residential Uses and
- Tourist Accommodation Uses

in Table 2 of this Schedule must be no lower than the Flood Planning Level (1:100 ARI flood level for the land). (Raised building construction)

H3.5 All floor levels of buildings for the purposes of uses listed as:

- Commercial Uses 1,
- Commercial Uses 2,
- Industrial Uses
- Commercial/Industrial – Highly Vulnerable Uses
- Agricultural Uses 1
- Agricultural Uses 2
- Recreational Uses 1
- Earthworks
- Other Uses 1
- Other Uses 2

in Table 2 of this Schedule must be no lower than 1.2 metres below the Flood Planning Level (1:100 ARI flood level for the land).

H3.6 All floor levels of non-habitable buildings and structures ancillary to development permitted within Hazard Category H3, such as garages, carports and other outbuildings, must be no lower than 1.2m below the Flood Planning Level (1:100 ARI flood level for the land).

H3.7 Where the lowest floor area is elevated above ground level (where raised building construction is used), the undercroft area must not be enclosed. No walls, doors, blockwork, cladding or the like is to be affixed around or within the undercroft area. Decorative features will be considered on merit.

H3.8 Undercroft areas may be used for car parking purposes.

H3.9 An undercroft area shall not exceed 2.1m above ground level. Any slab installed for car parking purposes shall be at ground level to maintain a clearance of 2.1m to the underside of the lowest floor area.

H3.10 Where required by Hawkesbury City Council, an area must be provided within the building for the storage of goods, valuable possessions or potentially hazardous or polluting materials at a level above the Flood Planning Level (1:100 ARI flood level for the land).

Cut and Fill

H3.11 The filling of the land/property, for any purposes, is not permitted.

H3.12 A balance of cut and fill must be used on the site to create a level building platform or driveway access on land. Cut and fill must not exceed a depth of 1m of cut or 1m of fill.

Flood Behaviour

H3.13 Any new buildings or structures must not block, or redirect, flow paths.

Building

H3.14 All buildings and structures must be constructed using flood compatible building materials.

H3.15 An engineering report, prepared by a suitably qualified and experienced structural engineer, must be provided to demonstrate that new buildings and structures are able to withstand forces from floodwater, impacts from debris, and buoyancy forces (See Section E – *Information Required* of this Schedule).

Emergency Management

H3.16 An Evacuation Capability Assessment must be provided (See Section E – *Information Required* of this Schedule).

H3.17 A Site Flood Emergency Response Plan must be provided when elements of the development, including vehicular and pedestrian access are below the Flood Planning Level (See Section E – *Information Required* of this Schedule).

H3.18 Where it has been demonstrated that evacuation of a property located within the MacDonald Valley or Colo Valley is not possible, 'sheltering in place' may be considered for residential and sensitive development subject to a refuge being provided on land having a level above the Probable Maximum Flood. The refuge must either be located on the subject land, or be a community provided building previously approved for use as a flood refuge. Details of the capacity of the building, the likely time period of isolation, the provision of food, fresh water and effluent disposal facilities, as well as other necessary supplies (such as batteries, radio, torch, first aid kit, medication, candles etc) must be provided with any development application.

In addition, should the development rely on a community provided refuge, details in regard to the distance the development is located from the refuge, the identification of hazards along the route between the development and the refuge and demonstrating that the refuge can be accessed during flood events up to and including the 1:100 ARI flood level event, is also to be provided.

3.2 Additions and Alterations to, or Rebuilding and Redevelopment of, existing lawful Incompatible Development in Hazard Category H3

Permissibility

H3.19 Additions and alterations to, or the rebuilding or redevelopment of, existing lawful incompatible development must not be located within a higher Hazard Category than that in which the existing development is situated.

H3.20 Additions, alterations or redevelopment of existing lawful Critical Uses and Sensitive Uses must not increase the residential occupancy of the land i.e. no additional bedrooms are permitted or additional long term sites within caravan parks.

H3.21 Additions and alterations of existing lawful incompatible development for the purposes of uses listed as Earthworks in Table 2 of this Schedule must demonstrate that the development will not increase flood effects elsewhere, having regard to:

- changes in flood levels and velocities caused by changes to flow paths, and
- the cumulative impact of development within the floodplain.

Land Levels

H3.22 Additions to, or replacement buildings of, existing lawful incompatible development must not be erected on any land lying at a level lower than 1.2 metres below the Flood Planning Level (1:100 ARI flood level for the land).

Floor Levels

H3.23 All floor levels, including habitable floor levels, associated with the rebuilding or redevelopment of existing lawful incompatible development must be no lower than the Flood Planning Level (1:100 ARI flood level for the land).

H3.24 All floor levels, including habitable floor levels, associated with additions or alterations to existing lawful incompatible development must be no lower than the Flood Planning Level (1:100 ARI flood level for the land). Where this is not practical due to compatibility with the height of adjacent buildings, or compatibility with the floor level of existing buildings, or the need for access for persons with disabilities, a lower floor level may be considered. In these circumstances, the floor level must be as high as practical, and, when undertaking alterations or additions no lower than the existing floor level.

H3.25 Where the lowest floor area is elevated above ground level (where raised building construction is used), the undercroft area must not be enclosed. No walls, doors, blockwork, cladding or the like is to be affixed around or within the undercroft area. Decorative features will be considered on merit.

H3.26 Undercroft areas may be used for car parking purposes.

H3.27 An undercroft area shall not exceed 2.1m above ground level. Any slab installed for car parking purposes shall be at ground level to maintain a clearance of 2.1m to the underside of the lowest floor area.

H3.28 Where required by Hawkesbury City Council, an area must be provided within the building for the storage of goods, valuable possessions or potentially hazardous or polluting materials at a level above the Flood Planning Level (1:100 ARI flood level for the land).

Cut and Fill

H3.29 The filling of the land/property, for any purposes, is not permitted.

H3.30 A balance of cut and fill must be used on the site to create a level building platform or driveway access on land. Cut and fill must not exceed a depth of 1m of cut or 1m of fill.

Flood Behaviour

H3.31 Any additions or replacement buildings must not block, or redirect, flow paths.

Building

H3.32 All additions, alterations or replacement buildings must be constructed using flood compatible building materials.

H3.33 An engineering report, prepared by a suitably qualified and experienced structural engineer, must be provided to demonstrate that new buildings and structures, including caravans and premanufactured homes are able to withstand forces from floodwater, impacts from debris, and buoyancy forces (See Section E – *Information Required* of this Schedule).

Emergency Management

H3.34 An Evacuation Capability Assessment must be provided for any additions or redevelopment of existing development that results in an intensification of residential occupancy (See Section E – *Information Required* of this Schedule).

H3.35 A Site Flood Emergency Response Plan must be provided when elements of the development, including vehicular and pedestrian access are below the Flood Planning Level (See Section E – *Information Required* of this Schedule).

H3.36 Where it has been demonstrated that evacuation of a property located within the MacDonald Valley or Colo Valley is not possible, 'sheltering in place' may be considered for residential and sensitive development subject to a refuge being provided on land having a level above the Probable Maximum Flood. The refuge must either be located on the subject land, or be a community provided building previously approved for use as a flood refuge. Details of the capacity of the building, the likely time period of isolation, the provision of food, fresh water and effluent disposal facilities, as well as other necessary supplies (such as batteries, radio, torch, first aid kit, medication, candles etc) must be provided with any development application.

In addition, should the development rely on a community provided refuge, details in regard to the distance the development is located from the refuge, the identification of hazards along the route between the development and the refuge and demonstrating that the refuge can be accessed during flood events up to and including the 1:100 ARI flood event, is also to be provided.

4. Development in Hazard Category H4

4.1 New Development and Additions and Alterations to, or Rebuilding and Redevelopment of, existing lawful Compatible Development in Hazard Category H4

Permissibility

H4.1 Development for the purposes of uses listed as:

- Critical Uses and Facilities,
- Sensitive Uses and Facilities,
- Single Residential Uses,
- Multi Residential Uses,
- Tourist Accommodation Uses,
- Commercial Uses 1,
- Commercial/Industrial – Highly Vulnerable Uses

in Table 2 of this Schedule are not permitted on land within Hazard Category H4.

H4.2 Development is not permitted in a floodway area or flow path, other than:

- open style fencing that does not impede floodwater flows; or

- ancillary buildings or structures to agriculture or recreational uses where it is demonstrated that the development will not increase flood effects elsewhere, having regard to:

  - loss of flood storage,
  - changes in flood levels and velocities caused by changes to flow paths,
  - the cumulative impact of development within the floodplain, and
  - the development withstanding forces from floodwater, impacts from debris, and buoyancy forces.

H4.3 Development for the purposes of uses listed as Earthworks in Table 2 of this Schedule must demonstrate that the development will not increase flood effects elsewhere, having regard to:

- changes in flood levels and velocities caused by changes to flow paths, and
- the cumulative impact of development within the floodplain.

Land Levels

H4.4 A new building must not be erected on any land lying at a level lower than 2.0 metres below the Flood Planning Level (1:100 ARI flood level for the land).

Floor Levels

H4.5 All floor levels of buildings for the purposes of uses listed as:

- Commercial Uses 2,
- Industrial Uses
- Agricultural Uses 1
- Agricultural Uses 2
- Recreational Uses 1
- Recreational Uses 2
- Earthworks
- Other Uses 1
- Other Uses 2

in Table 2 of this Schedule must be no lower than 2 metres below the Flood Planning Level (1:100 ARI flood level for the land).

H4.6 All floor levels of non-habitable buildings and structures ancillary to development permitted in Hazard Category H4, such as garages, carports and other outbuildings, must be no lower than 2m below the Flood Planning Level (1:100 ARI flood level for the land).

H4.7 Where the lowest floor area is elevated above ground level (where raised building construction is used), the undercroft area must not be enclosed. No walls, doors, blockwork, cladding or the like is to be affixed around or within the undercroft area. Decorative features will be considered on merit.

H4.8 Undercroft areas may be used for car parking purposes.

H4.9 An undercroft area shall not exceed 2.1m above ground level. Any slab installed for car parking purposes shall be at ground level to maintain a clearance of 2.1m to the underside of the lowest floor area.

H4.10 Where required by Hawkesbury City Council, an area must be provided within the building for the storage of goods, valuable possessions or potentially hazardous or polluting materials at a level above the Flood Planning Level (1:100 ARI flood level for the land).

Cut and Fill

H4.11 The filling of the land/property, for any purposes, is not permitted.

H4.12 A balance of cut and fill must be used on the site to create a level building platform or driveway access on land. Cut and fill must not exceed a depth of 1m of cut or 1m of fill.

Building

H4.13 All buildings and structures must be constructed using flood compatible building materials.

H4.14 An engineering report, prepared by a suitably qualified and experienced structural engineer, must be provided to demonstrate that new buildings and structures are able to withstand forces from floodwater, impacts from debris, and buoyancy forces (See Section E – *Information Required* of this Schedule).

Emergency Management

H4.15 An Evacuation Capability Assessment must be provided (See Section E – *Information Required* of this Schedule).

H4.16 A Site Flood Emergency Response Plan must be provided when elements of the development, including vehicular and pedestrian access are below the Flood Planning Level (See Section E – *Information Required* of this Schedule).

H4.17 Where it has been demonstrated that evacuation of a property located within the MacDonald Valley or Colo Valley is not possible, 'sheltering in place' may be considered for residential and sensitive development subject to a refuge being provided on land having a level above the Probable Maximum Flood. The refuge must either be located on the subject land, or be a community provided building previously approved for use as a flood refuge. Details of the capacity of the building, the likely time period of isolation, the provision of food, fresh water and effluent disposal facilities, as well as other necessary supplies (such as batteries, radio, torch, first aid kit, medication, candles etc) must be provided with any development application.

In addition, should the development rely on a community provided refuge, details in regard to the distance the development is located from the refuge, the identification of hazards along the route

between the development and the refuge and demonstrating that the refuge can be accessed during flood events up to and including the 1:100 ARI flood event, is also to be provided.

4.2 Additions and Alterations to, or Rebuilding and Redevelopment of, existing lawful Incompatible Development in Hazard Category H4

Permissibility

H4.18 Additions and alterations to, or the rebuilding or redevelopment of, existing lawful incompatible development must not be located within a higher Hazard Category than that in which the existing development is situated.

H4.19 Additions and alterations to, or the rebuilding or redevelopment of, existing lawful incompatible development must not increase the residential occupancy of the land i.e. no additional bedrooms are permitted.

H4.20 An increase in the number of caravan sites within existing lawful caravan parks is not permitted within Hazard Category H4.

H4.21 Additions and alterations to existing lawful incompatible development for the purposes of uses listed as Earthworks in Table 2 of this Schedule must demonstrate that the development will not increase flood effects elsewhere, having regard to:

- changes in flood levels and velocities caused by changes to flow paths, and
- the cumulative impact of development within the floodplain.

H4.22 Additions or replacement buildings must not be located within a floodway area or flow path.

H4.23 Additions to, or the rebuilding or redevelopment of, existing lawful uses located within an incompatible Hazard Category must not increase the size of the original building as approved and constructed at the commencement of the Flood Policy 2020 by more than $20m^2$.

H4.24 Ancillary development, such as garages and outbuildings, associated with existing lawful uses located within an incompatible Hazard Category must not exceed $20m^2$ in total area for all ancillary development.

Note: Whilst the area for additions, replacement buildings or ancillary development may meet the $20m^2$ area limit, the proposed development must still meet the other requirements of this Schedule.

Land Levels

H4.25 Additions to, or replacement buildings of, existing lawful incompatible development must not be erected on any land lying at a level lower than 2.0 metres below the Flood Planning Level (1:100 ARI flood level for the land).

Floor Levels

H4.26 All floor levels, including habitable floor levels, associated with the rebuilding or redevelopment of existing lawful incompatible development must be no lower than the Flood Planning Level (1:100 ARI flood level for the land).

H4.27 All floor levels, including habitable floor levels, associated with additions or alterations to existing lawful incompatible development must be no lower than the Flood Planning Level (1:100 ARI flood level for the land). Where this is not practical due to compatibility with the height of adjacent buildings, or compatibility with the floor level of existing buildings, or the need for access for persons with disabilities, a lower floor level may be considered. In these circumstances, the floor

level must be as high as practical, and, when undertaking alterations or additions no lower than the existing floor level.

H4.28 Where the lowest floor area is elevated above ground level (where raised building construction is used), the undercroft area must not be enclosed. No walls, doors, blockwork, cladding or the like is to be affixed around or within the undercroft area. Decorative features will be considered on merit.

H4.29 Undercroft areas may be used for car parking purposes.

H4.30 An undercroft area shall not exceed 2.1m above ground level. Any slab installed for car parking purposes shall be at ground level to maintain a clearance of 2.1m to the underside of the lowest floor area.

H4.31 Where required by Hawkesbury City Council, an area must be provided within the building for the storage of goods, valuable possessions or potentially hazardous or polluting materials at a level above the Flood Planning Level (1:100 ARI flood level for the land).

Cut and Fill

H4.32 The filling of the land/property, for any purposes, is not permitted.

H4.33 A balance of cut and fill must be used on the site to create a level building platform or driveway access on land. Cut and fill must not exceed a depth of 1m of cut or 1m of fill.

Building

H4.34 All additions, alterations or replacement buildings must be constructed using flood compatible building materials.

H4.35 An engineering report, prepared by a suitably qualified and experienced structural engineer, must be provided to demonstrate that new buildings and structures are able to withstand forces from floodwater, impacts from debris, and buoyancy forces (See Section E – *Information Required* of this Schedule).

Emergency Management

H4.36 An Evacuation Capability Assessment must be provided for any additions or redevelopment of existing compatible uses that result in an intensification of occupancy of the site, such as an increase in number of employees (See Section E – *Information Required* of this Schedule).

H4.37 A Site Flood Emergency Response Plan must be provided when elements of the development, including vehicular and pedestrian access are below the Flood Planning Level (See Section E – *Information Required* of this Schedule).

H4.38 Where it has been demonstrated that evacuation of a property located within the MacDonald Valley or Colo Valley is not possible, 'sheltering in place' may be considered for residential and sensitive development subject to a refuge being provided on land having a level above the Probable Maximum Flood. The refuge must either be located on the subject land, or be a community provided building previously approved for use as a flood refuge. Details of the capacity of the building, the likely time period of isolation, the provision of food, fresh water and effluent disposal facilities, as well as other necessary supplies (such as batteries, radio, torch, first aid kit, medication, candles etc) must be provided with any development application.

In addition, should the development rely on a community provided refuge, details in regard to the distance the development is located from the refuge, the identification of hazards along the route between the development and the refuge and demonstrating that the refuge can be accessed during flood events up to and including the 1:100 ARI flood event, is also to be provided.

5. Development in Hazard Category H5

5.1 New Development and Additions and Alterations to, or Rebuilding and Redevelopment of, existing lawful Compatible Development in Hazard Category H5

Permissibility

H5.1 Development for the purposes of uses listed as:

- Critical Uses and Facilities,
- Sensitive Uses and Facilities,
- Single Residential Uses,
- Multi Residential Uses,
- Tourist Accommodation Uses,
- Commercial Uses 1,
- Commercial Uses 2,
- Industrial Uses,
- Commercial/Industrial – Highly Vulnerable Uses,
- Agricultural Uses 2,
- Recreational Uses 1 and
- Other Uses 2

in Table 2 of this Schedule are not permitted on land within Hazard Category H5.

H5.2 Development is not permitted in a floodway area or flow path, other than:

- open style fencing that does not impede floodwater flows; or

- ancillary buildings or structures to agriculture or recreational uses where it is demonstrated that the development will not increase flood effects elsewhere, having regard to:

    - loss of flood storage,
    - changes in flood levels and velocities caused by changes to flow paths,
    - the cumulative impact of development within the floodplain, and
    - the development withstanding forces from floodwater, impacts from debris, and buoyancy forces.

H5.3 Development for the purposes of uses listed as Earthworks in Table 2 of this Schedule must demonstrate that the development will not increase flood effects elsewhere, having regard to:

- changes in flood levels and velocities caused by changes to flow paths, and
- the cumulative impact of development within the floodplain.

Land Levels

H5.4 A building must not be erected on any land lying at a level lower than 3.0 metres below the Flood Planning Level (1:100 ARI flood level for the land).

Floor Levels

H5.5 All floor levels of buildings for the purposes of uses listed as:

- Agricultural Uses 1
- Recreational Uses 2
- Earthworks
- Other Uses 1

in Table 2 of this Schedule must be no lower than 3 metres below the Flood Planning Level (1:100 ARI flood level for the land).

H5.6 All floor levels of non-habitable buildings and structures ancillary to development permitted in Hazard Category H5, such as garages, carports and other outbuildings, must be no lower than 3m below the Flood Planning Level (1:100 ARI flood level for the land).

H5.7 Where the lowest floor area is elevated above ground level (where raised building construction is used), the undercroft area must not be enclosed. No walls, doors, blockwork, cladding or the like is to be affixed around or within the undercroft area. Decorative features will be considered on merit.

H5.8 Undercroft areas may be used for car parking purposes.

H5.9 An undercroft area shall not exceed 2.1m above ground level. Any slab installed for car parking purposes shall be at ground level to maintain a clearance of 2.1m to the underside of the lowest floor area.

H5.10 Where required by Hawkesbury City Council, an area must be provided within the building for the storage of goods, valuable possessions or potentially hazardous or polluting materials at a level above the Flood Planning Level (1:100 ARI flood level for the land).

Cut and Fill

H5.11 The filling of the land/property, for any purposes, is not permitted.

H5.12 A balance of cut and fill must be used on the site to create a level building platform or driveway access on land. Cut and fill must not exceed a depth of 1m of cut or 1m of fill.

Building

H5.13 All buildings and structures must be constructed using flood compatible building materials.

H5.14 An engineering report, prepared by a suitably qualified and experienced structural engineer, must be provided to demonstrate that new buildings and structures are able to withstand forces from floodwater, impacts from debris, and buoyancy forces (See Section E – *Information Required* of this Schedule).

Emergency Management

H5.15 An Evacuation Capability Assessment must be provided (See Section E – *Information Required* of this Schedule).

H5.16 A Site Flood Emergency Response Plan must be provided when elements of the development, including vehicular and pedestrian access are below the Flood Planning Level (See Section E – *Information Required* of this Schedule).

H5.17 Where it has been demonstrated that evacuation of a property located within the MacDonald Valley or Colo Valley is not possible, 'sheltering in place' may be considered for residential and sensitive development subject to a refuge being provided on land having a level above the Probable Maximum Flood. The refuge must either be located on the subject land, or be a community provided building previously approved for use as a flood refuge. Details of the capacity of the building, the likely time period of isolation, the provision of food, fresh water and effluent disposal facilities, as well as other necessary supplies (such as batteries, radio, torch, first aid kit, medication, candles etc) must be provided with any development application.

In addition, should the development rely on a community provided refuge, details in regard to the distance the development is located from the refuge, the identification of hazards along the route

between the development and the refuge and demonstrating that the refuge can be accessed during flood events up to and including the 1:100 ARI flood event, is also to be provided.

5.2 Additions and Alterations to, or Rebuilding and Redevelopment of, existing lawful Incompatible Development in Hazard Category H5

Permissibility

H5.18 Additions and alterations to, or the rebuilding or redevelopment of, existing lawful incompatible development must not be located within a higher Hazard Category than that in which the existing development is situated.

H5.19 Additions or replacement buildings must not be located within a floodway area.

H5.20 Additions and alterations to, or the rebuilding or redevelopment of, existing lawful incompatible development, including uses listed as Earthworks in Table 2 of this Schedule, must demonstrate that the development will not increase flood effects elsewhere, having regard to:

- loss of flood storage,
- changes in flood levels and velocities caused by changes to flow paths,
- the cumulative impact of development within the floodplain, and
- the development withstanding forces from floodwater, impacts from debris, and buoyancy forces.

H5.21 Additions, alterations, rebuilding or redevelopment of existing lawful incompatible development must not increase the residential occupancy of the land i.e. no additional bedrooms are permitted.

H5.22 An increase in the number of caravan sites within existing lawful caravan parks is not permitted within Hazard Category H5.

H5.23 Additions to, or the rebuilding or redevelopment of, existing lawful uses located within an incompatible Hazard Category must not increase the size of the original building as approved and constructed at the commencement of the Flood Policy 2020 by more than $20m^2$.

H5.24 Ancillary development, such as garages and outbuildings, associated with existing lawful uses located within an incompatible Hazard Category must not exceed $20m^2$ in total area for all ancillary development.

Note: Whilst the area for additions, replacement buildings or ancillary development may meet the $20m^2$ area limit, the proposed development must still meet the other requirements of this Schedule.

Land Levels

H5.25 Additions to, or replacement buildings of, existing lawful incompatible development must not be erected on any land lying at a level lower than 3.0 metres below the Flood Planning Level (1:100 ARI flood level for the land).

Floor Levels

H5.26 All habitable floor levels must be no lower than the Flood Planning Level (1:100 ARI flood level for the land). Where this is not practical due to compatibility with the height of adjacent buildings, or compatibility with the floor level of existing buildings, or the need for access for persons with disabilities, a lower floor level may be considered. In these circumstances, the floor level must be as high as practical, and, when undertaking alterations or additions no lower than the existing floor level.

H5.27 Where the lowest floor area is elevated above ground level (where raised building construction is used), the undercroft area must not be enclosed. No walls, doors, blockwork, cladding or the like is to be affixed around or within the undercroft area. Decorative features will be considered on merit.

H5.28 Undercroft areas may be used for car parking purposes.

H5.29 An undercroft area shall not exceed 2.1m above ground level. Any slab installed for car parking purposes shall be at ground level to maintain a clearance of 2.1m to the underside of the lowest floor area.

H5.30 Where required by Hawkesbury City Council, an area must be provided within the building for the storage of goods, valuable possessions or potentially hazardous or polluting materials at a level above the Flood Planning Level (1:100 ARI flood level for the land).

Cut and Fill

H5.31 The filling of the land/property, for any purposes, is not permitted.

H5.32 A balance of cut and fill must be used on the site to create a level building platform or driveway access on land. Cut and fill must not exceed a depth of 1m of cut or 1m of fill.

Building

H5.33 All additions, alterations or replacement buildings must be constructed using flood compatible building materials.

H5.34 An engineering report, prepared by a suitably qualified and experienced structural engineer, must be provided to demonstrate that new buildings and structures are able to withstand forces from floodwater, impacts from debris, and buoyancy forces (See Section E – *Information Required* of this Schedule).

Emergency Management

H5.35 An Evacuation Capability Assessment must be provided for any additions or redevelopment of existing compatible uses that result in an intensification of occupancy of the site, such as an increase in number of employees (See Section E – *Information Required* of this Schedule).

H5.36 A Site Flood Emergency Response Plan must be provided when elements of the development, including vehicular and pedestrian access are below the Flood Planning Level (See Section E – *Information Required* of this Schedule).

H5.37 Where it has been demonstrated that evacuation of a property located within the MacDonald Valley or Colo Valley is not possible, 'sheltering in place' may be considered for residential and sensitive development subject to a refuge being provided on land having a level above the Probable Maximum Flood. The refuge must either be located on the subject land, or be a community provided building previously approved for use as a flood refuge. Details of the capacity of the building, the likely time period of isolation, the provision of food, fresh water and effluent disposal facilities, as well as other necessary supplies (such as batteries, radio, torch, first aid kit, medication, candles etc) must be provided with any development application.

In addition, should the development rely on a community provided refuge, details in regard to the distance the development is located from the refuge, the identification of hazards along the route between the development and the refuge and demonstrating that the refuge can be accessed during flood events up to and including the 1:100 ARI flood event, is also to be provided.

6. Development in Hazard Category H6

6.1 New Development and Additions and Alterations to, or Rebuilding and Redevelopment of, existing lawful Compatible Development in Hazard Category H6

Permissibility

H6.1 Development for the purposes of uses listed as:

- Critical Uses and Facilities,
- Sensitive Uses and Facilities,
- Single Residential Uses,
- Multi Residential Uses,
- Tourist Accommodation Uses,
- Commercial Uses 1,
- Commercial Uses 2, Industrial Uses,
- Commercial/Industrial – Highly Vulnerable Uses,
- Agricultural Uses 2,
- Recreational Uses 1 and
- Other Uses 2

in Table 2 of this Schedule are not permitted on land within Hazard Category H6.

H6.2 Development is not permitted in a floodway area or flow path, other than:

- open style fencing that does not impede floodwater flows; or

- ancillary buildings or structures to agriculture or recreational uses where it is demonstrated that the development will not increase flood effects elsewhere, having regard to:

    - loss of flood storage,
    - changes in flood levels and velocities caused by changes to flow paths,
    - the cumulative impact of development within the floodplain, and
    - the development withstanding forces from floodwater, impacts from debris, and buoyancy forces.

H6.3 Development for the purposes of uses listed as Earthworks in Table 2 of this Schedule must demonstrate that the development will not increase flood effects elsewhere, having regard to:

- changes in flood levels and velocities caused by changes to flow paths, and
- the cumulative impact of development within the floodplain.

Land Levels

H6.4 A new building must not be erected on any land lying at a level lower than 3.0 metres below the Flood Planning Level (1:100 ARI flood level for the land).

Floor Levels

H6.5 All floor levels of buildings for the purposes of uses listed as:

- Agricultural Uses 1
- Recreational Uses 2
- Earthworks
- Other Uses 1

in Table 2 of this Schedule must be no lower than 3 metres below the Flood Planning Level (1:100 ARI flood level for the land).

H6.6 All floor levels of non-habitable buildings and structures ancillary to development permitted in Hazard Category H6, such as garages, carports and other outbuildings, must be no lower than 3m below the Flood Planning Level (1:100 ARI flood level for the land).

H6.7 Where the lowest floor area is elevated above ground level (where raised building construction is used), the undercroft area must not be enclosed. No walls, doors, blockwork, cladding or the like is to be affixed around or within the undercroft area. Decorative features will be considered on merit.

H6.8 Undercroft areas may be used for car parking purposes.

H6.9 An undercroft area shall not exceed 2.1m above ground level. Any slab installed for car parking purposes shall be at ground level to maintain a clearance of 2.1m to the underside of the lowest floor area.

H6.10 Where required by Hawkesbury City Council, an area must be provided within the building for the storage of goods, valuable possessions or potentially hazardous or polluting materials at a level above the Flood Planning Level (1:100 ARI flood level for the land).

Cut and Fill

H6.11 The filling of the land/property, for any purposes, is not permitted.

H6.12 A balance of cut and fill must be used on the site to create a level building platform or driveway access on land. Cut and fill must not exceed a depth of 1m of cut or 1m of fill.

Building

H6.13 All buildings and structures must be constructed using flood compatible building materials.

H6.14 An engineering report, prepared by a suitably qualified and experienced structural engineer, must be provided to demonstrate that new buildings and structures are able to withstand forces from floodwater, impacts from debris, and buoyancy forces (See Section E – *Information Required* of this Schedule).

Emergency Management

H6.15 An Evacuation Capability Assessment must be provided (See Section E – *Information Required* of this Schedule).

H6.16 A Site Flood Emergency Response Plan must be provided when elements of the development, including vehicular and pedestrian access are below the Flood Planning Level (See Section E – *Information Required* of this Schedule).

H6.17 Where it has been demonstrated that evacuation of a property located within the MacDonald Valley or Colo Valley is not possible, 'sheltering in place' may be considered for residential and sensitive development subject to a refuge being provided on land having a level above the Probable Maximum Flood. The refuge must either be located on the subject land, or be a community provided building previously approved for use as a flood refuge. Details of the capacity of the building, the likely time period of isolation, the provision of food, fresh water and effluent disposal facilities, as well as other necessary supplies (such as batteries, radio, torch, first aid kit, medication, candles etc) must be provided with any development application.

In addition, should the development rely on a community provided refuge, details in regard to the distance the development is located from the refuge, the identification of hazards along the route

between the development and the refuge and demonstrating that the refuge can be accessed during flood events up to and including the 1:100 ARI flood event, is also to be provided.

6.2 Additions and Alterations to, or Rebuilding and Redevelopment of, existing lawful Incompatible Development in Hazard Category H6

Permissibility

H6.18 Additions and alterations to, or the rebuilding or redevelopment of, existing lawful incompatible development, including uses listed as Earthworks in Table 2 of this Schedule, must demonstrate that the development will not increase flood effects elsewhere, having regard to:

- loss of flood storage,
- changes in flood levels and velocities caused by changes to flow paths,
- the cumulative impact of development within the floodplain, and
- the development withstanding forces from floodwater, impacts from debris, and buoyancy forces.

H6.19 Additions, alterations, rebuilding or redevelopment of existing lawful incompatible development must not increase residential occupancy of the land i.e. no additional bedrooms are permitted.

H6.20 An increase in the number of caravan sites within existing lawful caravan parks is not permitted within Hazard Category H6.

H6.21 Additions to, or the rebuilding or redevelopment of, existing lawful uses located within an incompatible Hazard Category must not increase the size of the original building as approved and constructed at the commencement of the Flood Policy 2020 by more than $20m^2$.

H6.22 Ancillary development, such as garages and outbuildings, associated with existing lawful uses located within an incompatible Hazard Category must not exceed $20m^2$ in total area for all ancillary development.

Note: Whilst the area for additions, replacement buildings or ancillary development may meet the $20m^2$ area limit, the proposed development must still meet the other requirements of this Schedule.

Land Levels

H6.23 Additions to, or replacement buildings of, existing lawful development must not be erected on any land lying at a level lower than 3.0 metres below the Flood Planning Level (1:100 ARI flood level for the land).

Floor Levels

H6.24 All habitable floor levels must be no lower than the Flood Planning Level (1:100 ARI flood level for the land). Where this is not practical due to compatibility with the height of adjacent buildings, or compatibility with the floor level of existing buildings, or the need for access for persons with disabilities, a lower floor level may be considered. In these circumstances, the floor level must be as high as practical, and, when undertaking alterations or additions no lower than the existing floor level.

H6.25 Where the lowest floor area is elevated above ground level (where raised building construction is used), the undercroft area must not be enclosed. No walls, doors, blockwork, cladding or the like is to be affixed around or within the undercroft area. Decorative features will be considered on merit.

H6.26 Undercroft areas may be used for car parking purposes.

H6.27 An undercroft area shall not exceed 2.1m above ground level. Any slab installed for car parking purposes shall be at ground level to maintain a clearance of 2.1m to the underside of the lowest floor area.

H6.28 Where required by Hawkesbury City Council, an area must be provided within the building for the storage of goods, valuable possessions or potentially hazardous or polluting materials at a level above the Flood Planning Level (1:100 ARI flood level for the land).

Cut and Fill

H6.29 The filling of the land/property, for any purposes, is not permitted.

H6.30 A balance of cut and fill must be used on the site to create a level building platform or driveway access on land. Cut and fill must not exceed a depth of 1m of cut or 1m of fill.

Building

H6.31 All additions, alterations or replacement buildings must be constructed using flood compatible building materials.

H6.32 An engineering report, prepared by a suitably qualified and experienced structural engineer, must be provided to demonstrate that new buildings and structures are able to withstand forces from floodwater, impacts from debris, and buoyancy forces (See Section E – *Information Required* of this Schedule).

Emergency Management

H6.33 An Evacuation Capability Assessment must be provided for any additions or redevelopment of existing compatible uses that result in an intensification of occupancy of the site, such as an increase in number of employees (See Section E – *Information Required* of this Schedule).

H6.34 A Site Flood Emergency Response Plan must be provided when elements of the development, including vehicular and pedestrian access are below the Flood Planning Level (See Section E – *Information Required* of this Schedule).

H6.35 Where it has been demonstrated that evacuation of a property located within the MacDonald Valley or Colo Valley is not possible, 'sheltering in place' may be considered for residential and sensitive development subject to a refuge being provided on land having a level above the Probable Maximum Flood. The refuge must either be located on the subject land, or be a community provided building previously approved for use as a flood refuge. Details of the capacity of the building, the likely time period of isolation, the provision of food, fresh water and effluent disposal facilities, as well as other necessary supplies (such as batteries, radio, torch, first aid kit, medication, candles etc) must be provided with any development application.

In addition, should the development rely on a community provided refuge, details in regard to the distance the development is located from the refuge, the identification of hazards along the route between the development and the refuge and demonstrating that the refuge can be accessed during flood events up to and including the 1:100 ARI flood event, is also to be provided.

7. Subdivision

H7.1 If the application involves the subdivision of land, the applicant must demonstrate that potential development as a consequence of the subdivision proposal can be undertaken in accordance with the requirements of this Schedule.

E. INFORMATION REQUIRED

Council's development Checklists and 'Development Application Glossary' are to be used to identify the information that is to be provided with the lodgement of a development application for particular types of development.

In addition to the submission requirements referred to in these documents, the following specific information must be provided when lodging a development application in relation to land to which this Schedule applies:

a) All applications shall be accompanied by a survey plan showing:

- The position of the existing building(s) and proposed building(s);
- The existing ground levels to Australian Height Datum around the perimeter of the building and contours (with a contour interval of 0.5m) of the site; and
- The existing and proposed floor levels to Australian Height Datum.

b) A plan showing the route/s that can be taken to gain access from the development to the Regional Flood Evacuation Route is to be provided with any development application.

c) The Evacuation Capability Assessment is to:

- demonstrate the available route/s from the development to the Regional Flood Evacuation Route;
- determine the available time for evacuation;
- identify at what point and time the access route is cut off;
- identify whether the proposed development will be capable of self-evacuation or whether it will rely on emergency services to assist in the evacuation of occupants, such as seniors housing, residential care facilities, group homes, or correctional centres;
- determine whether evacuation from the site can be achieved within the Effective Warning Time; and
- demonstrate that evacuation of the site will not adversely impact on existing evacuation capabilities.

d) A Site Flood Emergency Response Plan should relate to the landuse and site conditions in conjunction with flood behavior expected to be experienced at the site in a 1:100 ARI flood event. The plan should consider the following specific actions:

- Preparing for a flood
- Responding when a flood is likely, including evacuation routes and when to leave;
- Responding during a flood, including what to do if isolated; and
- Recovery after a flood

The flood plan should be consistent with the relevant NSW SES "Floodsafe" Guide.

e) For developments in areas where an existing catchment based flood study is not available, a flood study using a fully dynamic one or two dimensional computer model will be required, prepared in a manner consistent with the most current publication of "Australian Rainfall and Runoff" and the "Floodplain Development Manual" (FDM). From this study, the following information shall be submitted in plan form for the pre-developed and post-developed scenarios:

- Water surface contours;
- Velocity vectors;
- Velocity and depth product contours;
- Flood profiles for the full range of events for full development including all structures and works (including revegetation).

The flood study must be prepared by a suitably qualified and experienced hydrological engineer.

f) Where the controls for a particular development proposal require an assessment of structural soundness during a 1:100 ARI flood event, the following impacts must be addressed having regard to the likely depths and velocities of flood waters:

- Hydrostatic pressure;
- Hydrodynamic pressure;
- Impact of debris; and
- Buoyancy forces.

Note that the foundations of buildings need to be included in the structural analysis.

The engineering report must be prepared by a suitably qualified and experienced structural engineer.