

**APPENDIX C – TUFLOW MODELLING ASSUMPTIONS**

## DIGITAL TERRAIN MODEL (DTM)

The terrain for the Creek TUFLOW model consists of the ALS data provided by Blacktown Council. Modifications to the terrain were incorporated to reflect the proposed development in the developed conditions.

A grid size of 4 m was adopted in the TUFLOW model. This grid size was found to be a reasonable balance between computing time and flooding definition.

## Conveyance Of Flows From Upstream Catchments

Flows from a number of upstream catchments adjacent to the Precinct need to be managed through the site. Where the upstream catchment is greater than 15 hectares, it is proposed to provide a drainage channel from the boundary of the Precinct to collect and convey the flows through the site. Where the upstream catchment area is less than 15 hectares, it is proposed to capture and pipe the flows until the total catchment area exceeds 15 hectares, at which point an open drainage channel will be provided to convey the flows.

## Catchment Roughness

One of the advantages of using TUFLOW for the hydraulic assessment is that different landuse can be assigned different roughness factors. For the MPP the following roughness assumptions are summarised in the below table.

**TABLE 1.1 – ADOPTED TUFLOW MATERIAL ROUGHNESS**

Material ID	Manning's "n"	Description
1	0.03	Default Floodplain
2	Buildings.csv	Buildings
4	0.04	Open Space
5	0.013	Asphaltic Concrete Surfaces
6	0.022	Unsealed Roads
7	0.05	Light Vegetation
8	0.08	Medium Vegetation
9	0.1	High Vegetation
10	0.013	Concrete Surfaces
13	0.1	Development Lots
14	0.05	Rural Zoning
15	0.045	Creeklines
16	0.08	Bushlands
17	0.07	Drainage Corridor

## Boundary Conditions

The boundary conditions adopted in the TUFLOW model are as follows:

- **UPSTREAM** – Flow hydrographs were applied as inputs at the upstream boundary of the MPP.
- **LOCAL INFLOWS** – Local inflow hydrographs were included in the model at locations representing tributaries through the MPP from upstream catchments.
- **DOWNSTREAM** – The MPP Precinct is affected by the regional flood events. Two (2) downstream boundary condition scenarios were considered for the Post Exhibition assessments and modelled, with the two (2) different tailwater levels (See Section 6.2).