

The map displays the study area with hazard levels and proposed development. The legend indicates:

- High Hazard (Red)
- Medium Hazard (Green)
- Low Hazard (Blue)
- Study Area (Black outline)
- Proposed Development (Hatched pattern)

The map shows a large area of Low Hazard (Blue) surrounding the study area. The study area is outlined in black. Within the study area, there is a large area of High Hazard (Red) and a smaller area of Medium Hazard (Green). A hatched area represents the proposed development. The map also shows the location of the proposed development relative to the study area and the surrounding hazard levels. The map includes a north arrow and a scale bar.

The resulting flood impacts for the 100 year ARI event are minimal/none, with no increase in flood hazards or flood levels on surrounding properties (including the recently subdivided Lot 304(2)). The pre/post-developed flood risk precinct classification is presented in table 2 (below).

Location	Pre Developed Flood Risk	Post Developed Flood Risk
Main Channel	High	High
Entire Site	Low/none	Low/none
Newton Road	Medium	Low
Victoria Street	Medium	Medium/Low

Table 1: Pre-developed Flood Risk Precinct

Table 1 indicates that the flood risk for the site and surrounding roads decreases or remains the same. The performance criteria outlined in FFCC's 11.8.2 was found to comply with the proposed development. Further discussions regarding flood levels and their relative impacts on this area and other developments are discussed in NL150032\_E10 – Flood Impact Assessment report.

Additionally, it shall be noted that the results of the flood study indicate that no section of the proposed building will be in contact with flood waters for the 100 year storm event (plus freeboard). This addresses section 11.11 f) in Chapter 11 of the DCP, which is considered to be non-applicable.

## Schedule 6 Compliance

The following subsections address the site specific requirements as outlined in Schedule 6 of Chapter 11 of the DCP.

### Floor Levels (5, 6 and 7)

Sections 5, 6 and 7: as both habitable and non habitable floors are above the 100 year storm event plus freeboard level, and no section of a habitable floor level is 1.5m above the natural surface, the Floor Levels section is considered to be satisfactory.

## Building Components and Methods (1)

Section 1: The pavement of the carpark is raised such that there is adequate clearance between the minimum base of the building (i.e. toe of building structure) being set at 43.80m AHD), with the highest flood level being 43.75m AHD (including freeboard) based off Cardno's flood modelling Data files.

Note: Finer detail is not shown on the PDF plans provided by Cardno. Data files can be provided upon request to assess flood levels in finer detail. As no sections of building are below the 100 year ARI (plus freeboard level) this section is deemed non-applicable, as all building materials will be clear of the 100 year flood event plus freeboard.

## Structural Soundness (2)

Section 2: Similarly, as stated above, as the no building sections are within the 100 year storm event plus freeboard, this section is deemed non-applicable.

## Flood Effects (2)

Section 2: The proposed development does not cause an increase in flood depth, velocity or hazard downstream or on any surrounding properties. Therefore, the flood effects are considered to be satisfactory.



Section 7: Bollards have been proposed to be provided in the carpark area (between the interface of the carpark and the channel), around the vicinity affected by the 100 year storm event, as indicated on Northrop's Stormwater Management Plan C303 (Rev A). The bollards are to be spaced 1.3m apart and be designed to withstand the expected forces of floating cars during the 100 year storm event.

An evacuation route between the building and north-western driveway access has been determined to be a reliable and safe evacuation path. *Cardno's* Figure D1 indicates a clear path free of 100 year flood levels for both front and rear exits. Additionally, it can be seen in figure 3 (below) that the depth of inundation on the driveway during a 100 year flood is no greater than:

- 
- Depth (metres)
- 0.10 to 0.3
  - 0.3 to 0.5
  - 0.5 to 1.0
  - > 1.0
- Study Area
- Proposed Development
- Front Evacuation Path
- Front Evacuation Path
- VICTORIA ST
- WETHERILL RD
- Figure D1 100Year ARI Flood Depths  
Proposed Development (v8)
- Cardno
- 59915187  
May 2017
- Flood Modelling - 449 Victoria Street, Wetherill Park

*Figure 3 - Evacuation Path*

## Management and Design (2, 3 and 5)

## Conclusion


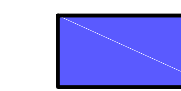
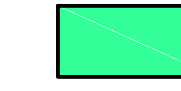

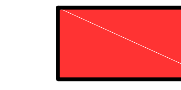

We trust this meets your requirements, however should you require anything further, please do not hesitate to contact the undersigned.



Ryan Diercke  
Civil Engineer  
BE (Civil Hons1)



LEGEND

-  DENOTES EVACUATION PATH
-  DENOTES 100 YEAR ARI FLOOD DEPTHS BETWEEN 0.1 - 0.3m.
-  DENOTES 100 YEAR ARI FLOOD DEPTHS BETWEEN 0.3 - 0.5m.
-  DENOTES 100 YEAR ARI FLOOD DEPTHS BETWEEN 0.5 - 1.0m.
-  DENOTES 100 YEAR ARI FLOOD DEPTHS GREATER THAN 1.0m
-  DENOTES EXTENT OF EXISTING 100 YEAR ARI FLOOD EVENT

NOTE:

1. FLOOD EXTENTS HAVE BEEN ASSESSED AND PRODUCED BY CARONO ENGINEERS.

2. AN EVACUATION ROUTE BETWEEN THE BUILDING AND NORTH-WESTERN DRIVEWAY ACCESS HAS BEEN DETERMINED TO BE A RELIABLE AND SAFE EVACUATION PATH. CARONO'S FIGURE D1 INDICATES A CLEAR PATH FREE OF 100 YEAR FLOOD LEVELS. ADDITIONALLY, THE DEPTH OF INUNDATION ON THE DRIVEWAY DURING A 100 YEAR FLOOD IS NO GREATER THAN:

2.1. THE DEPTH AT THE ROAD, AND,

2.2. THE DEPTH AT THE CAR PARKING SPACE.




NOT FOR CONSTRUCTION

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
A	ISSUED FOR CC APPROVAL	RD	AB	AB	02.06.17



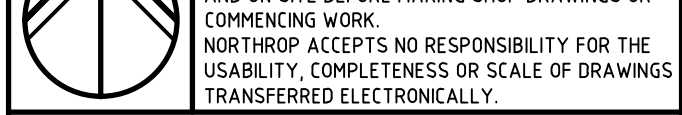
STEVENSGROUP

DRAWING NOT TO BE USED FOR CONSTRUCTION UNLESS VERIFICATION SIGNATURE HAS BEEN ADDED



NORTHROP

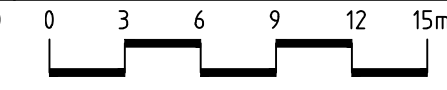
THE COPYRIGHT OF THIS DRAWING REMAINS WITH NORTHROP CONSULTING ENGINEERS PTY LTD.



NORTHROP

ALL SETOUT TO ARCHITECT'S DRAWINGS. DIMENSIONS TO BE VERIFIED WITH THE ARCHITECT AND ON SITE BEFORE MAKING SHOP DRAWINGS OR COMMENCING WORK. NORTHROP ACCEPTS NO RESPONSIBILITY FOR THE USABILITY, COMPLETENESS OR SCALE OF DRAWINGS TRANSFERRED ELECTRONICALLY.

PLANS 1:300





NORTHROP

Newcastle  
Suite 4, 215 Pacific Hwy, Charlestown NSW 2290  
P.O. Box 180, Charlestown NSW 2290  
Ph (02) 4943 1777 Fax (02) 4943 1577  
Email newcastle@northrop.com.au ABN 81 094 433 100

PROJECT

449 VICTORIA ST, WETHRILL PARK  
LOT 304 DP 1098762  
PROPOSED SUBDIVISION

DRAWING TITLE

FLOOD EVACUATION  
PLAN

JOB NUMBER

NL150032

DRAWING NUMBER

FE10

REVISION

A

DRAWING SHEET SIZE = A1