Appendix B

APPENDIX B: AVAILABLE DATA

Name of File	Type of Data	Date Received
Flood Study.pdf	Wagonga Inlet Flooding Investigation by Gary Blumberg and Associates	27 April 2012
Wagonga_Inlet_Estuary_ Processes_Study.pdf	Wagonga Inlet Estuary Processes Study by MHL	28 May 2012
wagonga.xyz	Bathymetry of Wagonga Inlet	27 April 2012
53175SH1.pdf	Plan of Wagonga Inlet Hydrographic Survey	27 April 2012
ESC_lakes_REF&policies_final.pdf	Report of Eurobodalla Coastal Lakes Entrance Management Policies – Review of Environmental Factors	27 April 2012
Multiple JPG files	Photos of flooding in the 2010 event	3 May 2012
bridges_culverts.tab	Shape-file of points showing location of bridges or culverts	7 May 2012
buildings.tab	Shape-file of polylines outlining council owned buildings and land (including ovals etc)	7 May 2012
cadastre.tab	Shape-file of property polygons	7 May 2012
contour_10m.tab	Ground contours	7 May 2012
roads.tab	Centre-lines of roads including the road name as an attribute	7 May 2012
sepp14.tab	Shape-file of polygons of SEPP 14 Wetlands	7 May 2012
sepp71.tab	Shape-file of polygons of SEPP 71 Coastal Lakes	7 May 2012
sewgpipe.tab	Pipes carrying sewer water via gravity	7 May 2012
sewrpipe.tab	Pipes carrying sewer water via pressure	7 May 2012
sewnode.tab	Shape-file of points connected to sewrpipe.tab and sewgpipe.tab	7 May 2012
sewtplant.tab	Shape-file of polygons outlining treatment plant infrastructure, such as drying beds and sludge ponds	7 May 2012
stwpipe.tab	Pipes carrying stormwater	7 May 2012
stwnode.tab	Shape-file of points connected to stwpipe.tab	7 May 2012
watercourse.tab	Shape-file of polylines outlining the shoreline of waterbodies (lakes etc) and the centre-line of watercourses	7 May 2012
Narooma_2010 as TAB and ECW files	Aerials from 2010	7 May 2012
KE#### as TAB and ECW files	Aerials from 2006	7 May 2012
Multiple THN files	Raw LiDAR collected in 2006	7 May 2012
LSZ_20120316.shp	Eurobodalla LEP 2012 (specifying lot size)	10 May 2012
LZN_20120315.shp	Eurobodalla LEP 2011 (specifying zones)	10 May 2012
Rain Gauge Data.csv	Continuous Pluviometer Rainfall Data for Council owned stations at Narooma and Tuross Head	29 May 2012

Bridge Data Wagonga and Dalmeny.xlsx	Data for Council owned bridges on Wagonga Scenic Drive and Dalmeny Drive	29 May 2012
Barlows Bay (Live).csv Bermagui (Live).csv Ulladulla Harbour (Live).csv	Data from Water Level Stations owned by MHL	25 June 2012
Barlows Bay Rain (Live).csv	Data from Continuous Pluviometer Stations owned by MHL	25 June 2012
HM01X_Data_069017.txt HM01X_Data_069148.txt	Data from Continuous Pluviometer Stations owned by BOM	6 July 2012
Multiple XYZ files	Raw LiDAR collected in 2012	12 April 2013

Appendix C

APPENDIX C: COMMUNITY CONSULTATION

C1. MEDIA RELEASE

Image C 1: Media Release, 12th September 2012

Wednesday, 12 September 2012

Flood stories wanted for Narooma catchment study

Eurobodalla Shire Council together with WMA Water is seeking your stories and photos on flooding in the Wagonga Inlet and Mummuga and Kianga lakes for a study they are preparing on the catchment areas.

"We are after local knowledge and personal experiences from residents and businesses to contribute to the development of a flood study," said Eurobodalla Shire Council's Planning and Sustainability Director, Lindsay Usher.

The catchments around Narooma are known to be at risk from flooding and Mr Usher says the study will help council meet its responsibilities under the NSW Government's Flood Prone Land Policy and also help council to plan for and manage flood risks in these areas.

"Community involvement in the study is vital. We are specifically interested in any historical records of flooding like photographs and flood marks and in hearing people's stories about floods in these catchments," Mr Usher said.

A newsletter and questionnaire will soon be mailed to residents within each catchment although people do not need to live in the flood prone areas to participate, says Mr Usher. "Anyone with flood information on these areas can jump online and complete the questionnaire."

The questionnaire can be completed at https://www.surveymonkey.com/s/W5VZV9R or via a link on council's homepage, www.esc.nsw.gov.au. Hard copies of the survey are available at Narooma library.

Residents can also bring their photos and stories of past flood events to the WMA Water information booth at Narooma library on Monday 17 September, between 4.00 and 7.00pm.

Residents wanting more information on the flood study are invited to contact Eurobodalla Shire Council's coastal and flood planner, Norm Lenehan, on 4474 1374 or via email to norman.lenehan@eurocoast.nsw.gov.au.

For all **media enquiries**, please contact Eurobodalla Shire Council, on **T** 4474 1012, **M** 0408 200 191 or via email to council.media@eurocoast.nsw.gov.au

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Eurobodalla Shire Council

Appendix D

APPENDIX D: MATRIX OF SCENARIOS

D1. WAGONGA INLET

	Rainfall Probability	Ocean Probability	Ocean Conditions – Initial Water Level	Ocean Conditions – Continuing	Entrance Conditions – Initial	Entrance Conditions – Continuing	Lake Conditions – Initial Water Level
Historic Flood Modelling							
2008 (Calibration Tidal)	2008 Rainfall (No Rainfall)	2008 Tide	+ 0.346 m AHD	As recorded	Training Wall– 90% Impervious	Constant	+0.07 m AHD (Narooma Wharf) -0.18 m AHD (Barlows Bay)
1999 (Calibration Rainfall)	1999 Rainfall	1999 Tide	+ 0.454 m AHD	As recorded	Training Wall– 90% Impervious	Constant	+0.23 m AHD (Narooma Wharf) +0.03 m AHD (Barlows Bay)
2007 (Validation Rainfall)	2007 Rainfall	2007 Tide	+ 0.107 m AHD	As recorded	Training Wall– 90% Impervious	Constant	+0.04 m AHD (Narooma Wharf) +0.06 m AHD (Barlows Bay)
2010 (Validation Rainfall)	2010 Rainfall	2010 Tide	- 0.565 m AHD	As recorded	Training Wall– 90% Impervious	Constant	-0.08 m AHD (Narooma Wharf) -0.24 m AHD (Barlows Bay)
Historic Flood Modelling – Sensitivity							
Tide Level (without 0.1 m decrease)	No Rainfall	2008 Tide (without 0.1 m decrease)	+ 0.446 m AHD	As recorded	Training Wall– 90% Impervious	Constant	+0.07 m AHD (Narooma Wharf) -0.18 m AHD (Barlows Bay)
Training Wall Gaps – 100% Impervious	No Rainfall	2008 Tide	+ 0.346 m AHD	As recorded	Training Wall– 100% Impervious	Constant	+0.07 m AHD (Narooma Wharf) -0.18 m AHD (Barlows Bay)
Training Wall Gaps – 50% Impervious	No Rainfall	2008 Tide	+ 0.346 m AHD	As recorded	Training Wall– 50% Impervious	Constant	+0.07 m AHD (Narooma Wharf) -0.18 m AHD (Barlows Bay)
Design Flood Modelling – Critical Storm Duration							
1% AEP Rainfall Event	1% AEP Rainfall	Constant Water Level	0.60 m AHD	0.60 m AHD	Training Wall– 90% Impervious	Constant	0.60 m AHD
PMF Rainfall Event	PMF Rainfall	Constant Water Level	0.60 m AHD	0.60 m AHD	Training Wall– 90% Impervious	Constant	0.60 m AHD
Design Flood Modelling							
HHWS Ocean Event	No Rainfall	HHWS	0.445 m AHD	0.995 m AHD Peak	Training Wall– 90% Impervious	Constant	Ocean – Initial Water Level
5% AEP Ocean Event	No Rainfall	5% AEP Elevated Ocean Level	0.64 m AHD	1.90 m AHD Peak	Training Wall– 90% Impervious	Constant	Ocean – Initial Water Level
1% AEP Ocean Event	No Rainfall	1% AEP Elevated Ocean Level	0.66 m AHD	2.00 m AHD Peak	Training Wall– 90% Impervious	Constant	Ocean – Initial Water Level
20% AEP Rainfall Event	20% AEP Rainfall	HHWS + Neap Tide	0.075 m AHD	0.995 m AHD Peak	Training Wall– 90% Impervious	Constant	Ocean – Initial Water Level
10% AEP Rainfall Event	10% AEP Rainfall	HHWS + Neap Tide	0.075 m AHD	0.995 m AHD Peak	Training Wall– 90% Impervious	Constant	Ocean – Initial Water Level
5% AEP Rainfall Event	5% AEP Rainfall	HHWS + Neap Tide	0.075 m AHD	0.995 m AHD Peak	Training Wall– 90% Impervious	Constant	Ocean – Initial Water Level
2% AEP Rainfall Event	2% AEP Rainfall	5% AEP Elevated Ocean Level	0.95 m AHD	1.90 m AHD Peak	Training Wall– 90% Impervious	Constant	Ocean – Initial Water Level
1% AEP Rainfall Event	1% AEP Rainfall	5% AEP Elevated Ocean Level	0.95 m AHD	1.90 m AHD Peak	Training Wall– 90% Impervious	Constant	Ocean – Initial Water Level
	5% AEP Rainfall	1% AEP Elevated Ocean Level	1.01 m AHD	2.00 m AHD Peak	Training Wall– 90% Impervious	Constant	Ocean – Initial Water Level
	1% AEP Rainfall	HHWS + Neap Tide	0.075 m AHD	0.995 m AHD Peak	Training Wall– 90% Impervious	Constant	Ocean – Initial Water Level
0.5% AEP Rainfall Event	0.5% AEP Rainfall	1% AEP Elevated Ocean Level	1.01 m AHD	2.00 m AHD Peak	Training Wall– 90% Impervious	Constant	Ocean – Initial Water Level

PMF Rainfall Event	PMF Rainfall	1% AEP Elevated Ocean Level	1.01 m AHD	2.00 m AHD Peak	Training Wall– 90% Impervious	Constant	Ocean – Initial Water Level
Design Flood Modelling – Sensitivity							
Roughness Variation	1% AEP Rainfall	HHWS + Neap Tide	0.075 m AHD	0.995 m AHD Peak	Training Wall– 90% Impervious	Constant	Ocean – Initial Water Level
Climate Change (Rainfall Increase)	1% AEP Rainfall Increased	HHWS + Neap Tide	0.075 m AHD	0.995 m AHD Peak	Training Wall– 90% Impervious	Constant	Ocean – Initial Water Level
Climate Change (Sea Level Rise)	1% AEP Rainfall	5% AEP Elevated Ocean Level	1.05 m AHD 1.18 m AHD 1.34 m AHD 1.67 m AHD	2.00 m AHD (2030 Scenario) 2.13 m AHD (2050 Scenario) 2.29 m AHD (2070 Scenario) 2.62 m AHD (2100 Scenario)	Training Wall– 90% Impervious	Constant	Ocean – Initial Water Level
	5% AEP Rainfall	1% AEP Elevated Ocean Level	1.11 m AHD 1.24 m AHD 1.40 m AHD 1.73 m AHD	2.10 m AHD (2030 Scenario) 2.23 m AHD (2050 Scenario) 2.39 m AHD (2070 Scenario) 2.72 m AHD (2100 Scenario)	Training Wall– 90% Impervious	Constant	Ocean – Initial Water Level
Timing of Ocean Peak	1% AEP Rainfall	5% AEP Elevated Ocean Level	1.46 m AHD (- 3 hrs) 0.07 m AHD (+ 3 hrs)	1.90 m AHD Peak	Training Wall– 90% Impervious	Constant	Ocean – Initial Water Level
	5% AEP Rainfall	1% AEP Elevated Ocean Level	1.53 m AHD (- 3 hrs) 0.09 m AHD (+ 3 hrs)	2.00 m AHD Peak	Training Wall– 90% Impervious	Constant	Ocean – Initial Water Level

D2. KIANGA LAKE

	Rainfall Probability	**Ocean Probability**	**Ocean Conditions – Initial Water Level**	**Ocean Conditions – Continuing**	**Entrance Conditions – Initial**	**Entrance Conditions – Continuing**	**Lake Conditions – Initial Water Level**
Historic Flood Modelling							
1999 (Calibration Rainfall)	1999 Rainfall	1999 Tide	+ 0.454 m AHD	As recorded	Closed Entrance (2.0 m AHD)	Breakout: Commences at 2.0 m AHD Duration of 4 hours	0.6 m AHD
2007 (Validation Rainfall)	2007 Rainfall	2007 Tide	+ 0.107 m AHD	As recorded	Closed Entrance (2.0 m AHD)	Breakout: Commences at 2.0 m AHD Duration of 4 hours	0.6 m AHD
2010 (Validation Rainfall)	2010 Rainfall	2010 Tide	- 0.565 m AHD	As recorded	Closed Entrance (2.0 m AHD)	Breakout: Commences at 2.0 m AHD Duration of 4 hours	0.6 m AHD
Historic Flood Modelling – Sensitivity							
IWL 2.0 m AHD	2010 Rainfall	2010 Tide	-0.565 m AHD	As recorded	Closed Entrance (2.0 m AHD)	Constant (i.e. Closed)	2.0 m AHD
IWL 1.0 m AHD	2010 Rainfall	2010 Tide	-0.565 m AHD	As recorded	Closed Entrance (2.0 m AHD)	Constant (i.e. Closed)	1.0 m AHD
Entrance Open	2010 Rainfall	2010 Tide	-0.565 m AHD	As recorded	Open Entrance	Constant (i.e. Open)	Ocean – Initial Water Level
Entrance Closed	2010 Rainfall	2010 Tide	-0.565 m AHD	As recorded	Closed Entrance (2.0 m AHD)	Constant (i.e. Closed)	2.0 m AHD
Breakout Duration 2 hrs	2010 Rainfall	2010 Tide	-0.565 m AHD	As recorded	Closed Entrance	Breakout: Commences at 2.0 m AHD Duration of 2 hours	0.6 m AHD
Breakout Duration 6 hrs	2010 Rainfall	2010 Tide	-0.565 m AHD	As recorded	Closed Entrance	Breakout: Commences at 2.0 m AHD Duration of 6 hours	0.6 m AHD
Breakout Duration 12 hrs	2010 Rainfall	2010 Tide	-0.565 m AHD	As recorded	Closed Entrance	Breakout: Commences at 2.0 m AHD Duration of 12 hours	0.6 m AHD
Design Flood Modelling – Critical Storm Duration							
1% AEP Rainfall Event	1% AEP Rainfall	Constant Water Level	0.60 m AHD	0.60 m AHD	Closed Entrance	Constant	0.60 m AHD

PMF Rainfall Event	PMF Rainfall	Constant Water Level	0.60 m AHD	0.60 m AHD	Closed Entrance	Constant	0.60 m AHD
Design Flood Modelling							
HHWS Ocean Event	No Rainfall	HHWS	0.445 m AHD	0.995 m AHD Peak	Open Entrance	Constant	Ocean – Initial Water Level
5% AEP Ocean Event	No Rainfall	5% AEP Elevated Ocean Level	0.640 m AHD	2.35 m AHD Peak	Open Entrance	Constant	Ocean – Initial Water Level
1% AEP Ocean Event	No Rainfall	1% AEP Elevated Ocean Level	0.66 m AHD	2.55 m AHD Peak	Open Entrance	Constant	Ocean – Initial Water Level
20% AEP Rainfall Event	20% AEP Rainfall	HHWS + Neap Tide	-0.155 m AHD	0.995 m AHD Peak	Closed Entrance	Constant	0.6 m AHD
10% AEP Rainfall Event	10% AEP Rainfall	HHWS + Neap Tide	-0.155 m AHD	0.995 m AHD Peak	Closed Entrance	Constant	0.6 m AHD
5% AEP Rainfall Event	5% AEP Rainfall	HHWS + Neap Tide	-0.155 m AHD	0.995 m AHD Peak	Closed Entrance	Constant	0.6 m AHD
2% AEP Rainfall Event	2% AEP Rainfall	5% AEP Elevated Ocean Level	1.02 m AHD	2.35 m AHD Peak	Closed Entrance	Constant	0.6 m AHD
1% AEP Rainfall Event	1% AEP Rainfall	5% AEP Elevated Ocean Level	1.02 m AHD	2.35 m AHD Peak	Closed Entrance	Constant	0.6 m AHD
	5% AEP Rainfall	1% AEP Elevated Ocean Level	1.17 m AHD	2.55 m AHD Peak	Closed Entrance	Constant	0.6 m AHD
	1% AEP Rainfall	HHWS + Neap Tide	-0.155 m AHD	0.995 m AHD Peak	Closed Entrance	Constant	0.6 m AHD
0.5% AEP Rainfall Event	0.5% AEP Rainfall	1% AEP Elevated Ocean Level	1.17 m AHD	2.55 m AHD Peak	Closed Entrance	Constant	0.6 m AHD
PMF Rainfall Event	PMF Rainfall	1% AEP Elevated Ocean Level	2.45 m AHD (45min, 60min) 2.16 m AHD (2 hr)	2.55 m AHD Peak	Closed Entrance	Constant	0.6 m AHD
Design Flood Modelling – Sensitivity							
Roughness Variation	1% AEP Rainfall	HHWS + Neap Tide	0.075 m AHD	0.995 m AHD Peak	Closed Entrance (2.0 m AHD)	Constant	0.6 m AHD
Climate Change (Rainfall Increase)	1% AEP Rainfall Increased	HHWS + Neap Tide	0.075 m AHD	0.995 m AHD Peak	Closed Entrance (2.0 m AHD)	Constant	0.6 m AHD
Climate Change (Sea Level Rise)	1% AEP Rainfall	5% AEP Elevated Ocean Level	1.12 m AHD 1.25 m AHD 1.41 m AHD 1.74 m AHD	2.45 m AHD (2030 Scenario) 2.58 m AHD (2050 Scenario) 2.74 m AHD (2070 Scenario) 3.07 m AHD (2100 Scenario)	Closed Entrance (2.0 m AHD)	Constant	0.6 m AHD
Timing of Ocean Peak	1% AEP Rainfall	5% AEP Elevated Ocean Level	1.02 m AHD (- 3 hrs) 1.97 m AHD (+ 3 hrs)	2.35 m AHD Peak	Closed Entrance (2.0 m AHD)	Constant	0.6 m AHD
	5% AEP Rainfall	1% AEP Elevated Ocean Level	1.17 m AHD (- 3 hrs) 2.16 m AHD (+ 3 hrs)	2.55 m AHD Peak	Closed Entrance (2.0 m AHD)	Constant	0.6 m AHD

D3. MUMMUGA LAKE

	Rainfall Probability	Ocean Probability	Ocean Conditions – Initial Water Level	Ocean Conditions – Continuing	Entrance Conditions – Initial	Entrance Conditions – Continuing	Lake Conditions – Initial Water Level
Historic Flood Modelling							
1999 (Calibration Rainfall)	1999 Rainfall	1999 Tide	+ 0.454 m AHD	As recorded	Closed Entrance (1.175 m AHD)	Breakout: Commences at 1.175 m AHD Duration of 4 hours	0.6 m AHD
2007 (Validation Rainfall)	2007 Rainfall	2007 Tide	+ 0.107 m AHD	As recorded	Closed Entrance (1.175 m AHD)	Breakout: Commences at 1.175 m AHD Duration of 4 hours	0.6 m AHD
2010 (Validation Rainfall)	2010 Rainfall	2010 Tide	- 0.565 m AHD	As recorded	Closed Entrance (1.175 m AHD)	Breakout: Commences at 1.175 m AHD Duration of 4 hours	0.6 m AHD
Historic Flood Modelling – Sensitivity							
IWL 1.175 m AHD	2010 Rainfall	2010 Tide	-0.565 m AHD	As recorded	Closed Entrance	Constant (i.e. Closed)	1.175 m AHD
Entrance Open	2010 Rainfall	2010 Tide	-0.565 m AHD	As recorded	Open Entrance	Constant (i.e. Open)	Ocean – Initial Water Level
Entrance Closed	2010 Rainfall	2010 Tide	-0.565 m AHD	As recorded	Closed Entrance	Constant (i.e. Closed)	1.175 m AHD

Breakout Duration 2 hrs	2010 Rainfall	2010 Tide	-0.565 m AHD	As recorded	Closed Entrance	Breakout: Commences at 1.175 m AHD Duration of 2 hours	0.6 m AHD
Breakout Duration 4 hrs	2010 Rainfall	2010 Tide	-0.565 m AHD	As recorded	Closed Entrance	Breakout: Commences at 1.175 m AHD Duration of 4 hours	0.6 m AHD
Breakout Duration 6 hrs	2010 Rainfall	2010 Tide	-0.565 m AHD	As recorded	Closed Entrance	Breakout: Commences at 1.175 m AHD Duration of 6 hours	0.6 m AHD
Breakout Duration 12 hrs	2010 Rainfall	2010 Tide	-0.565 m AHD	As recorded	Closed Entrance	Breakout: Commences at 1.175 m AHD Duration of 12 hours	0.6 m AHD
Design Flood Modelling – Critical Storm Duration							
1% AEP Rainfall Event	1% AEP Rainfall	Constant Water Level	0.60 m AHD	0.60 m AHD	Closed Entrance	Constant	0.60 m AHD
PMF Rainfall Event	PMF Rainfall	Constant Water Level	0.60 m AHD	0.60 m AHD	Closed Entrance	Constant	0.60 m AHD
Design Flood Modelling							
HHWS Ocean Event	No Rainfall	HHWS	0.445 m AHD	0.995 m AHD Peak	Open Entrance	Constant	Ocean – Initial Water Level
5% AEP Ocean Event	No Rainfall	5% AEP Elevated Ocean Level	0.64 m AHD	2.35 m AHD Peak	Open Entrance	Constant	Ocean – Initial Water Level
1% AEP Ocean Event	No Rainfall	1% AEP Elevated Ocean Level	0.66 m AHD	2.55 m AHD Peak	Open Entrance	Constant	Ocean – Initial Water Level
20% AEP Rainfall Event	20% AEP Rainfall	HHWS + Neap Tide	0.845 m AHD (120min) -0.295 m AHD (540min) 0.075 m AHD (2880min)	0.995 m AHD Peak	Closed Entrance	Constant	0.6 m AHD
10% AEP Rainfall Event	10% AEP Rainfall	HHWS + Neap Tide	0.845 m AHD (120min) -0.295 m AHD (540min) 0.075 m AHD (2880min)	0.995 m AHD Peak	Closed Entrance	Constant	0.6 m AHD
2% AEP Rainfall Event	2% AEP Rainfall	5% AEP Elevated Ocean Level	1.97 m AHD (120min) 1.31 m AHD (540min) 1.23 m AHD (2880min)	2.35 m AHD Peak	Closed Entrance	Constant	0.6 m AHD
1% AEP Rainfall Event	1% AEP Rainfall	5% AEP Elevated Ocean Level	1.97 m AHD (120min) 1.31 m AHD (540min) 1.23 m AHD (2880min)	2.35 m AHD Peak	Closed Entrance	Constant	0.6 m AHD
	5% AEP Rainfall	1% AEP Elevated Ocean Level	2.16 m AHD (120min) 1.47 m AHD (540min) 1.35 m AHD (2880min)	2.55 m AHD Peak	Closed Entrance	Constant	0.6 m AHD
	1% AEP Rainfall	HHWS + Neap Tide	0.845 m AHD (120min) -0.295 m AHD (540min) 0.075 m AHD (2880min)	0.995 m AHD Peak	Closed Entrance	Constant	0.6 m AHD
0.5% AEP Rainfall Event	0.5% AEP Rainfall	1% AEP Elevated Ocean Level	2.16 m AHD (120min) 1.47 m AHD (540min) 1.35 m AHD (2880min)	2.55 m AHD Peak	Closed Entrance	Constant	0.6 m AHD
PMF Rainfall Event	PMF Rainfall	1% AEP Elevated Ocean Level	2.16 m AHD (120min) 1.47 m AHD (540min) 1.35 m AHD (2880min)	2.55 m AHD Peak	Closed Entrance	Constant	0.6 m AHD
Design Flood Modelling – Sensitivity							
Roughness Variation	1% AEP Rainfall	HHWS + Neap Tide	0.845 m AHD (120min) -0.295 m AHD (540min) 0.075 m AHD (2880min)	0.995 m AHD Peak	Closed Entrance	Constant	0.6 m AHD
Climate Change (Rainfall Increase)	1% AEP Rainfall Increased	HHWS + Neap Tide	0.845 m AHD (120min) -0.295 m AHD (540min) 0.075 m AHD (2880min)	0.995 m AHD Peak	Closed Entrance	Constant	0.6 m AHD

Climate Change (Sea Level Rise)	1% AEP Rainfall	5% AEP Elevated Ocean Level	2.07 m AHD (120min) 1.41 m AHD (540min) 1.33 m AHD (2880min)	2.45 m AHD (2030 Scenario)	Closed Entrance	Constant	0.6 m AHD
			2.20 m AHD (120min) 1.54 m AHD (540min) 1.46 m AHD (2880min)	2.58 m AHD (2050 Scenario)			
			2.36 m AHD (120min) 1.70 m AHD (540min) 1.62 m AHD (2880min)	2.74 m AHD (2070 Scenario)			
			2.69 m AHD (120min) 2.03 m AHD (540min) 1.95 m AHD (2880min)	3.07 m AHD (2100 Scenario)			
Timing of Ocean Peak	1% AEP Rainfall	5% AEP Elevated Ocean Level	Add 3 hrs 2.26 m AHD (120min) 1.02 m AHD (540min) 0.40 m AHD (2880min)	2.35 m AHD Peak	Closed Entrance	Constant	0.6 m AHD
			Minus 3 hrs 1.02 m AHD (120min) 1.78 m AHD (540min) 1.69 m AHD (2880min)				
	5% AEP Rainfall	1% AEP Elevated Ocean Level	Add 3 hrs 2.45 m AHD (120min) 1.17 m AHD (540min) 0.51 m AHD (2880min)	2.55 m AHD Peak	Closed Entrance	Constant	0.6 m AHD
			Minus 3 hrs 1.17 m AHD (120min) 1.96 m AHD (540min) 1.80 m AHD (2880min)				

D4. DUCK POND

	Rainfall Probability	Ocean Probability	Ocean Conditions – Initial Water Level	Ocean Conditions – Continuing	Entrance Conditions – Initial	Entrance Conditions – Continuing	Lake Conditions – Initial Water Level
Historic Flood Modelling							
1999 (Calibration Rainfall)	1999 Rainfall	1999 Tide	+ 0.454 m AHD	As recorded	Closed Entrance	Constant	0.6 m AHD
2007 (Validation Rainfall)	2007 Rainfall	2007 Tide	+ 0.107 m AHD	As recorded	Closed Entrance	Constant	0.6 m AHD
2010 (Validation Rainfall)	2010 Rainfall	2010 Tide	- 0.565 m AHD	As recorded	Closed Entrance	Constant	0.6 m AHD
Design Flood Modelling – Critical Storm Duration							
1% AEP Rainfall Event	1% AEP Rainfall	Constant Water Level	0.60 m AHD	0.60 m AHD	Closed Entrance	Constant	0.60 m AHD
PMF Rainfall Event	PMF Rainfall	Constant Water Level	0.60 m AHD	0.60 m AHD	Closed Entrance	Constant	0.60 m AHD
Design Flood Modelling							
HHWS Ocean Event	No Rainfall	HHWS	0.445 m AHD	0.995 m AHD Peak	Open Entrance	Constant	Ocean – Initial Water Level
5% AEP Ocean Event	No Rainfall	5% AEP Elevated Ocean Level	0.640 m AHD	2.35 m AHD Peak	Open Entrance	Constant	Ocean – Initial Water Level
1% AEP Ocean Event	No Rainfall	1% AEP Elevated Ocean Level	0.66 m AHD	2.55 m AHD Peak	Open Entrance	Constant	Ocean – Initial Water Level
20% AEP Rainfall Event	20% AEP Rainfall	HHWS + Neap Tide	-0.155 m AHD	0.995 m AHD Peak	Closed Entrance	Constant	0.6 m AHD

10% AEP Rainfall Event	10% AEP Rainfall	HHWS + Neap Tide	-0.155 m AHD	0.995 m AHD Peak	Closed Entrance	Constant	0.6 m AHD
5% AEP Rainfall Event	5% AEP Rainfall	HHWS + Neap Tide	-0.155 m AHD	0.995 m AHD Peak	Closed Entrance	Constant	0.6 m AHD
2% AEP Rainfall Event	2% AEP Rainfall	5% AEP Elevated Ocean Level	1.02 m AHD	2.35 m AHD Peak	Closed Entrance	Constant	0.6 m AHD
1% AEP Rainfall Event	1% AEP Rainfall	5% AEP Elevated Ocean Level	1.02 m AHD	2.35 m AHD Peak	Closed Entrance	Constant	0.6 m AHD
	5% AEP Rainfall	1% AEP Elevated Ocean Level	1.17 m AHD	2.55 m AHD Peak	Closed Entrance	Constant	0.6 m AHD
	1% AEP Rainfall	HHWS + Neap Tide	-0.155 m AHD	0.995 m AHD Peak	Closed Entrance	Constant	0.6 m AHD
0.5% AEP Rainfall Event	0.5% AEP Rainfall	1% AEP Elevated Ocean Level	1.17 m AHD	2.55 m AHD Peak	Closed Entrance	Constant	0.6 m AHD
PMF Rainfall Event	PMF Rainfall	1% AEP Elevated Ocean Level	1.17 m AHD	2.55 m AHD Peak	Closed Entrance	Constant	0.6 m AHD
Design Flood Modelling – Sensitivity							
Roughness Variation	1% AEP Rainfall	HHWS + Neap Tide	0.075 m AHD	0.995 m AHD Peak	Closed Entrance	Constant	0.6 m AHD
Climate Change (Rainfall Increase)	1% AEP Rainfall Increased	HHWS + Neap Tide	0.075 m AHD	0.995 m AHD Peak	Closed Entrance	Constant	0.6 m AHD
Climate Change (Sea Level Rise)	1% AEP Rainfall	5% AEP Elevated Ocean Level	1.12 m AHD 1.25 m AHD 1.41 m AHD 1.74 m AHD	2.45 m AHD (2030 Scenario) 2.58 m AHD (2050 Scenario) 2.74 m AHD (2070 Scenario) 3.07 m AHD (2100 Scenario)	Closed Entrance	Constant	0.6 m AHD
Timing of Ocean Peak	1% AEP Rainfall	5% AEP Elevated Ocean Level	1.02 m AHD (- 3 hrs) 1.97 m AHD (+ 3 hrs)	2.35 m AHD Peak	Closed Entrance	Constant	0.6 m AHD
	5% AEP Rainfall	1% AEP Elevated Ocean Level	1.17 m AHD (- 3 hrs) 2.16 m AHD (+ 3 hrs)	2.55 m AHD Peak	Closed Entrance	Constant	0.6 m AHD