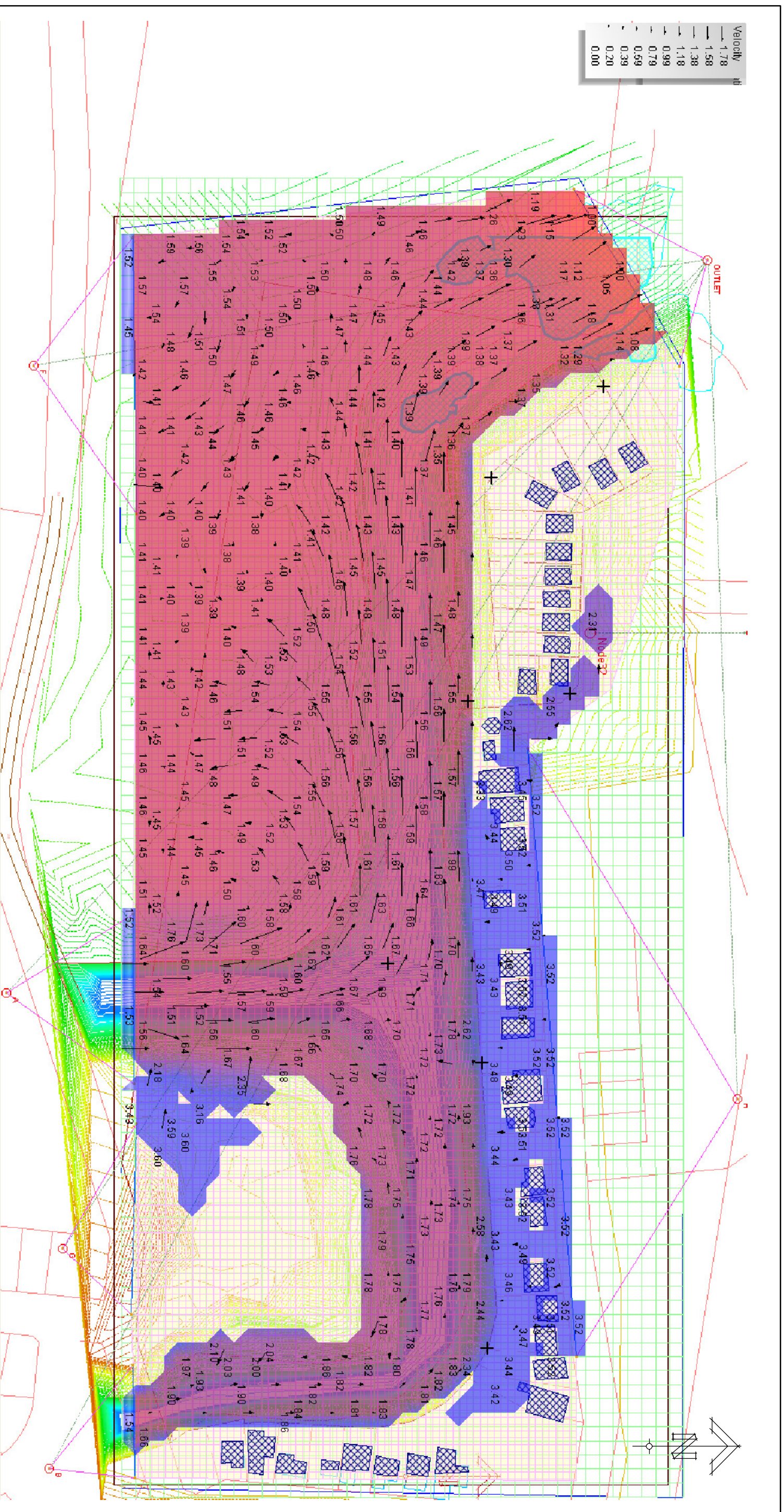


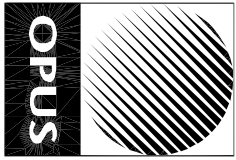


KENMAR FARMS PTY LTD
ENGINEERING IMPACT ASSESSMENT

LOT 4 DP876253
WILLOW AVENUE
BOGANGAR, NSW

FIGURE No. 7.5

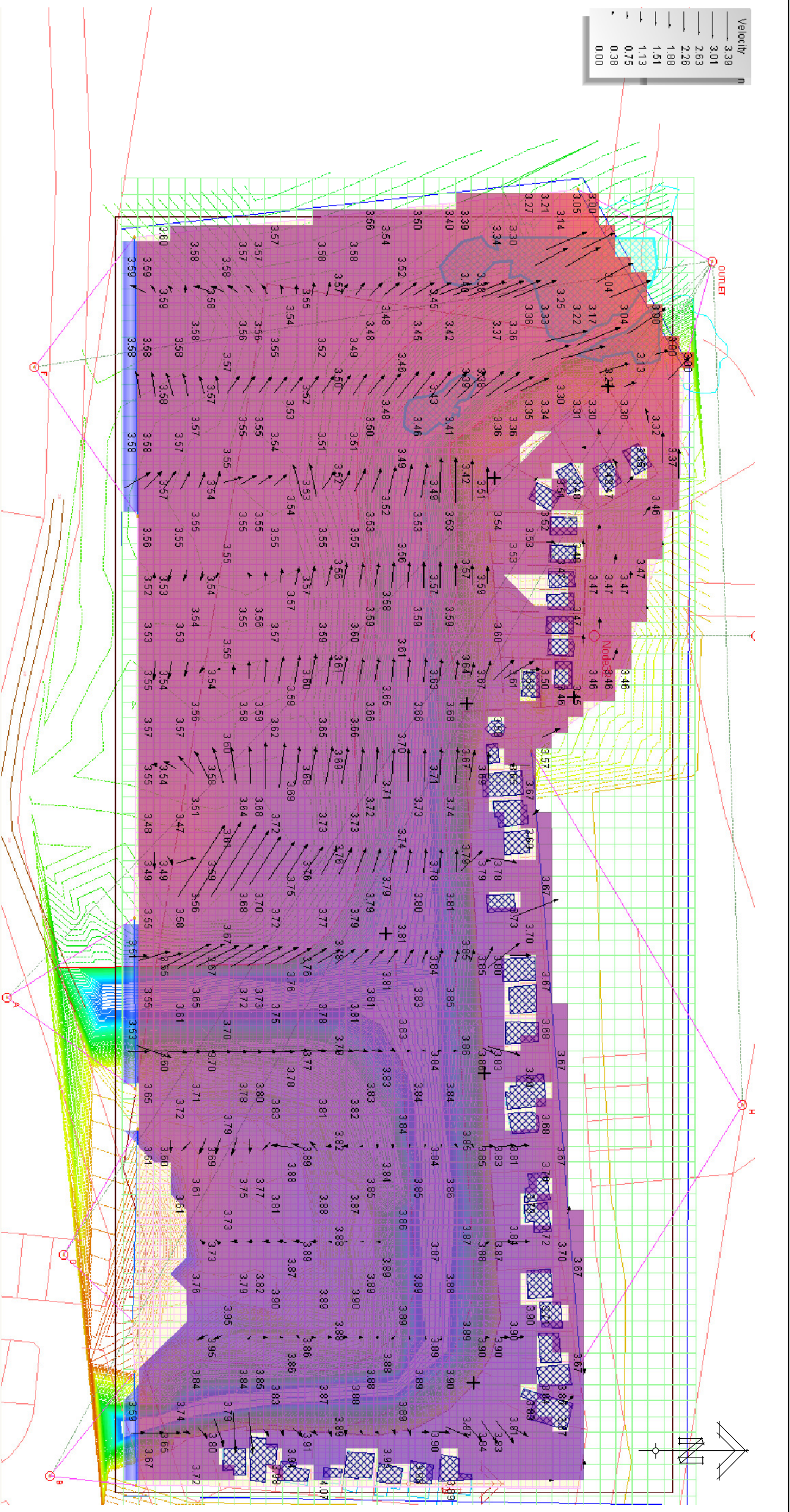
PROPOSED CASE 1.0m OUTFALL
10% INTENSITY INCREASE Q100 STORM



A.B.N. 79 086 342 065

OPUS QANTEC McWILLIAM

1/10 Rivendell
PO Box 6389
Tweed Heads South NSW 2486
Telephone: (07) 5523 1755
Facsimile: (07) 5523 9664
E-Mail: tweedheads@opusqmcw.com.au



KENMAR FARMS PTY LTD
ENGINEERING IMPACT ASSESSMENT

LOT 4 DP876253
WILLOW AVENUE
BOGANGAR, NSW

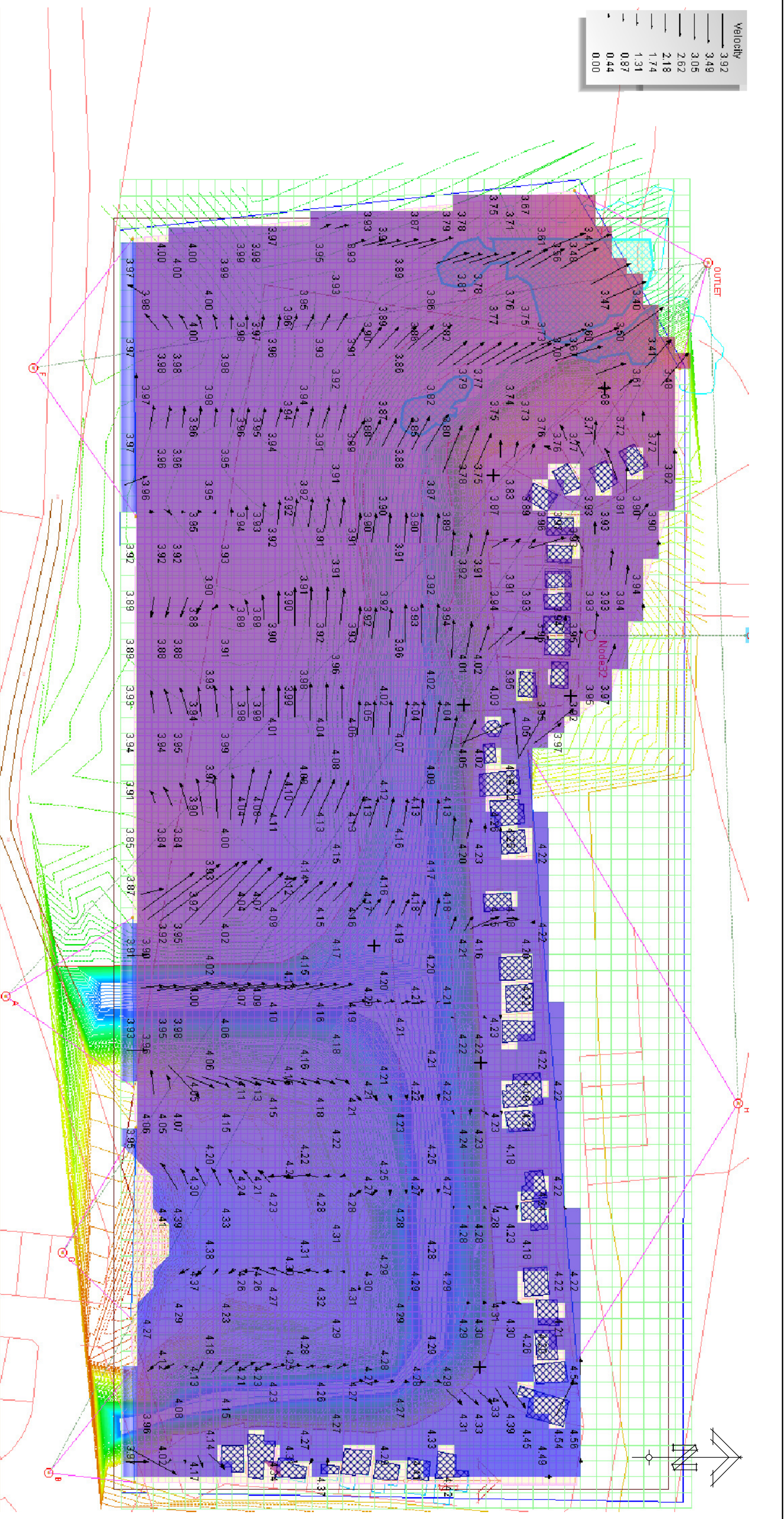
FIGURE No. 7.6

PROPOSED CASE 3.0m OUTFALL
Q5 STORM



OPUS QANTEC McWILLIAM

A.B.N. 79 086 342 065
1/10 Rivendell
PO Box 6389
Tweed Heads South NSW 2486
Telephone: (07) 5523 1755
Facsimile: (07) 5523 9664
E-Mail: tweedheads@opusqmcw.com.au



KENMAR FARMS PTY LTD
ENGINEERING IMPACT ASSESSMENT

LOT 4 DP876253
WILLOW AVENUE
BOGANGAR, NSW

FIGURE NO. 7.7

PROPOSED CASE 3.4m OUTFALL
Q5 STORM

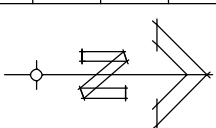
OPUS QANTEC McWILLIAM

A.B.N. 79 086 342 065



1/10 Rivendell
PO Box 6389
Tweed Heads South NSW 2486
Telephone: (07) 5523 1755
Facsimile: (07) 5523 9664
E-Mail: tweedheads@opusqmcw.com.au

CATCHMENT	AREA (ha)	ARI (yrs) MINOR/MAJOR	tc (min.)%IMP	SUBCATCHMENT Q5(m ³ /sec)	SUBCATCHMENT Q100(m ³ /sec)
A	0.9428	5 / 100	15	0.227	0.451
B	0.4172	5 / 100	5	0.166	0.324
TOTAL	1.3600	5 / 100	15	0.336	0.668

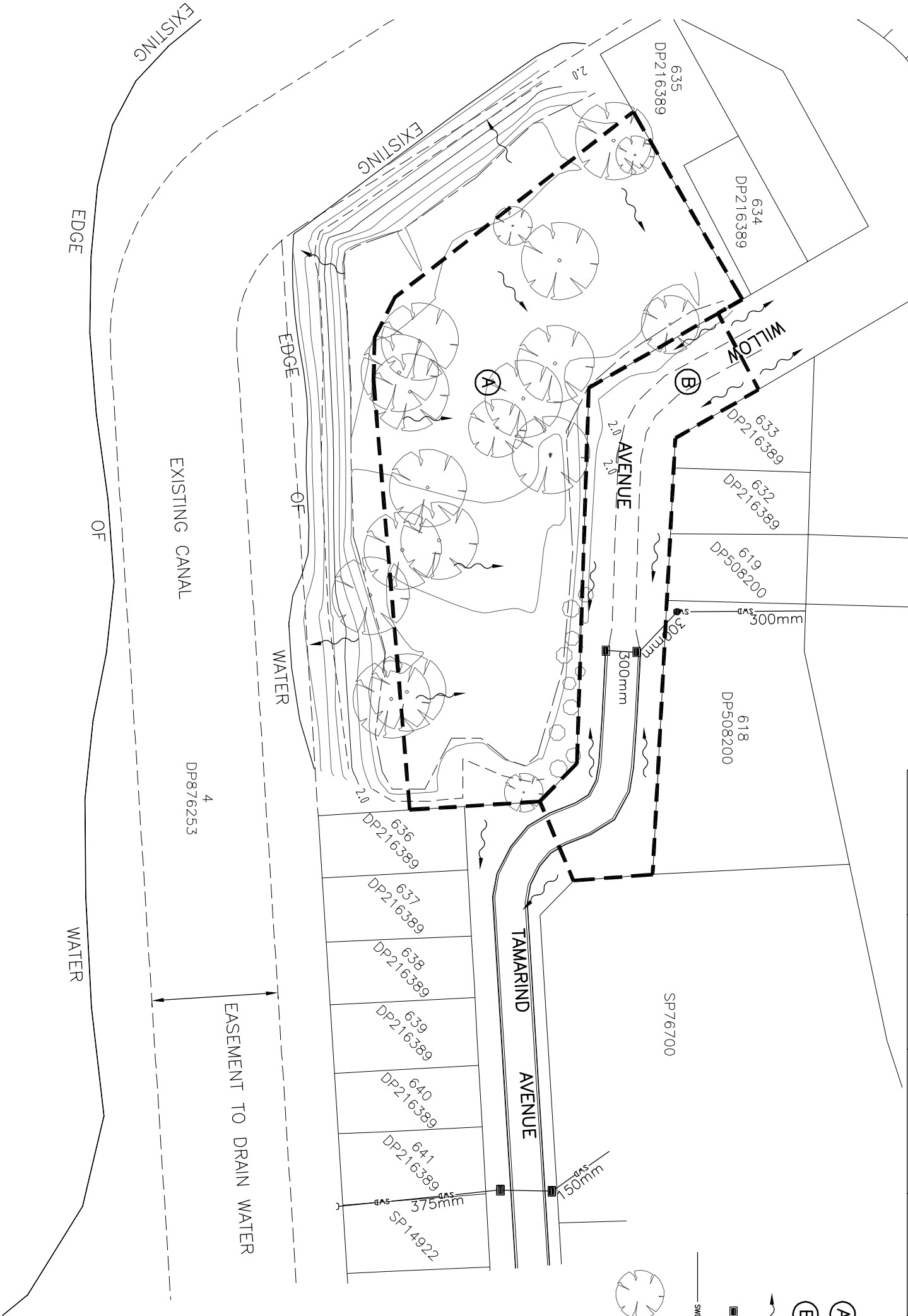


LEGEND

- (A)

EXISTING CATCHMENT A (9428m²)
- (B)

EXISTING CATCHMENT B (4172m²)
- EXISTING OVERLAND FLOW
- EXISTING GULLY PITS
- EXISTING STORMWATER DRAINAGE
- EXISTING TREES AND VEGETATION TO BE
RETAINED (REFER LANDSCAPE CONCEPT
PLAN)



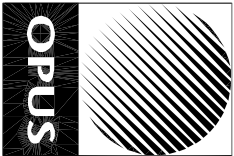
KENMAR FARMS PTY LTD
ENGINEERING IMPACT ASSESSMENT

LOT 4 DP876253
WILLOW AVENUE
BOGANGAR, NSW

FIGURE NO. 8.1

EXISTING DRAINAGE PLAN

OPUS QANTEC McWILLIAM

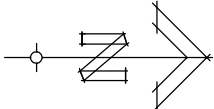


A.B.N. 79 086 342 065

1/10 Rivendell
PO Box 6389
Tweed Heads South NSW 2486
Telephone: (07) 5523 1755
Facsimile: (07) 5523 9664
E-Mail: tweedheads@opusqmcw.com.au

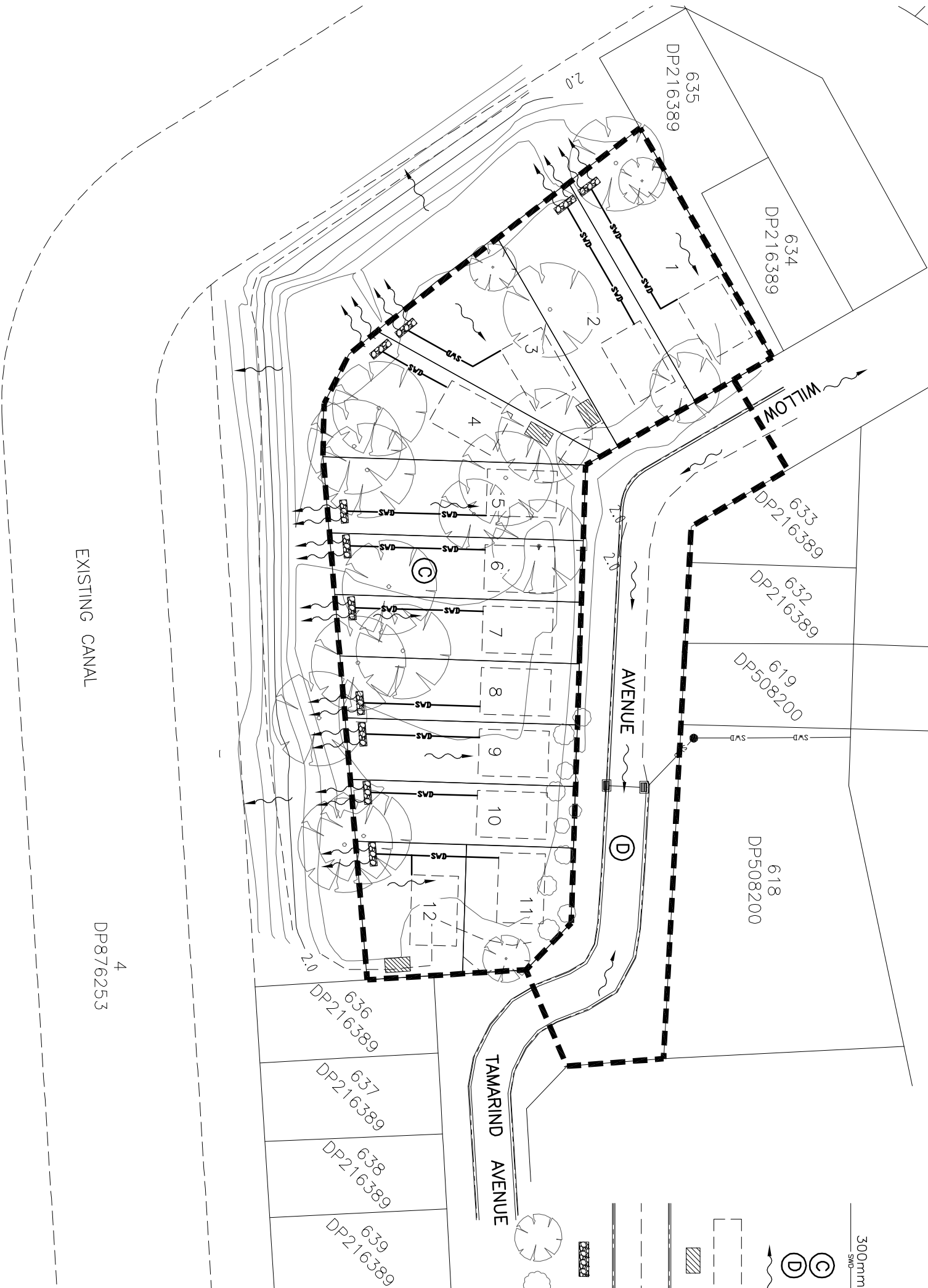


CATCHMENT	AREA (ha)	ARI (yrs) MINOR/MAJOR	tc (min) % IMP	SUBCATCHMENT Q5(m³/sec)	SUBCATCHMENT Q100(m³/sec)
C	0.7628	5 / 100	15	0.183	0.365
D	0.4172	5 / 100	5	0.166	0.324
TOTAL	1.1800	5 / 100	15	0.297	0.591



LEGEND

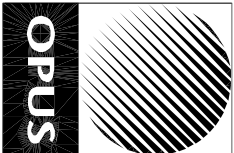
- 300mm SMD
- EXISTING STORMWATER DRAINAGE
- CATCHMENT C (0.7628m²)
- CATCHMENT D (0.4172m²)
- OVERLAND FLOW
- INDICATIVE 10m x 15m BUILDING PAD
- PROPOSED VISITOR CAR PARKS
- EXISTING KERB AND GUTTER
- EXISTING EDGE OF BITUMEN
- PROPOSED KERB AND GUTTER
- GRAVEL INFILTRATION/ SURCHARGE PITS
- EXISTING TREES AND VEGETATION TO BE RETAINED (REFER LANDSCAPE CONCEPT PLAN)



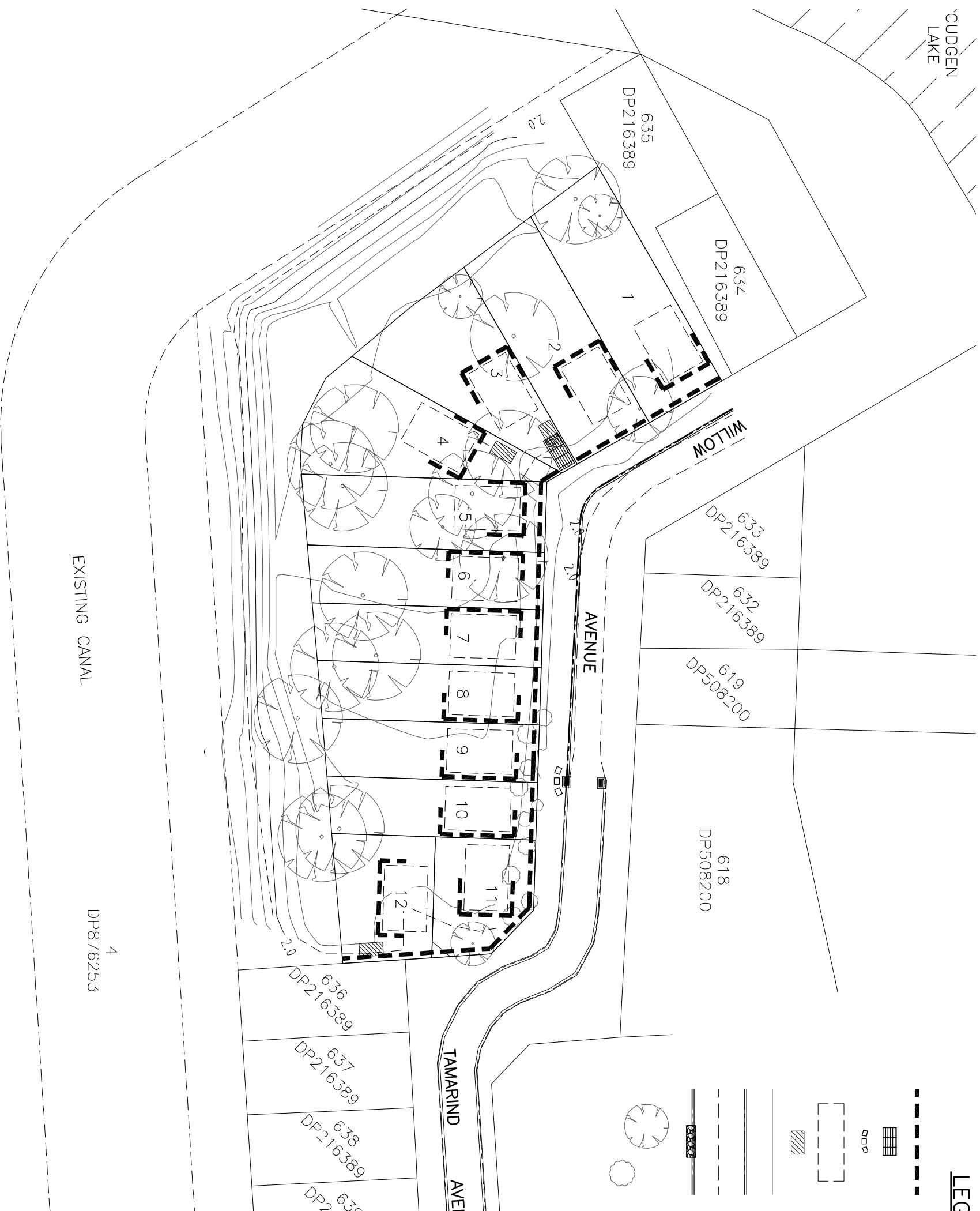
KENMAR FARMS PTY LTD
ENGINEERING IMPACT ASSESSMENT
LOT 4 DP876253
WILLOW AVENUE
BOGANGAR, NSW

FIGURE No. 8.2

PROPOSED DRAINAGE
OPUS QANTEC McWILLIAM

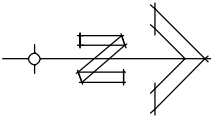


A.B.N. 79 086 342 065
1/10 Rivendell
PO Box 6389
Tweed Heads South NSW 2486
Telephone: (07) 5523 1755
Facsimile: (07) 5523 9664
E-Mail: tweedheads@opusqmcw.com.au



LEGEND

- PROPOSED SILT FENCE
- PROPOSED SHAKEDOWN DEVICE
- PROPOSED HAY BALES
- INDICATIVE 10m x 15m BUILDING PAD
- EXISTING CONTOURS (0.5m)
- EXISTING CONTOURS (0.5m)
- EXISTING KERB AND GUTTER
- EXISTING EDGE OF BITUMEN
- PROPOSED KERB AND GUTTER
- GRAVEL INFILTRATION/ SURCHARGE PITS
- EXISTING TREES AND VEGETATION TO BE RETAINED (REFER LANDSCAPE CONCEPT PLAN)



KENMAR FARMS PTY LTD
ENGINEERING IMPACT ASSESSMENT
LOT 4 DP876253
WILLOW AVENUE
BOGANGAR, NSW

FIGURE NO. 9.0

EROSION AND SEDIMENT CONTROL PLAN

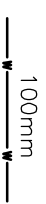
OPUS QANTEC McWILLIAM



A.B.N. 79 086 342 065
1/10 Rivendell
PO Box 6389
Tweed Heads South NSW 2486
Telephone: (07) 5523 1755
Facsimile: (07) 5523 9664
E-Mail: tweedheads@opusqmcw.com.au



LEGEND

- 

100mm
- 

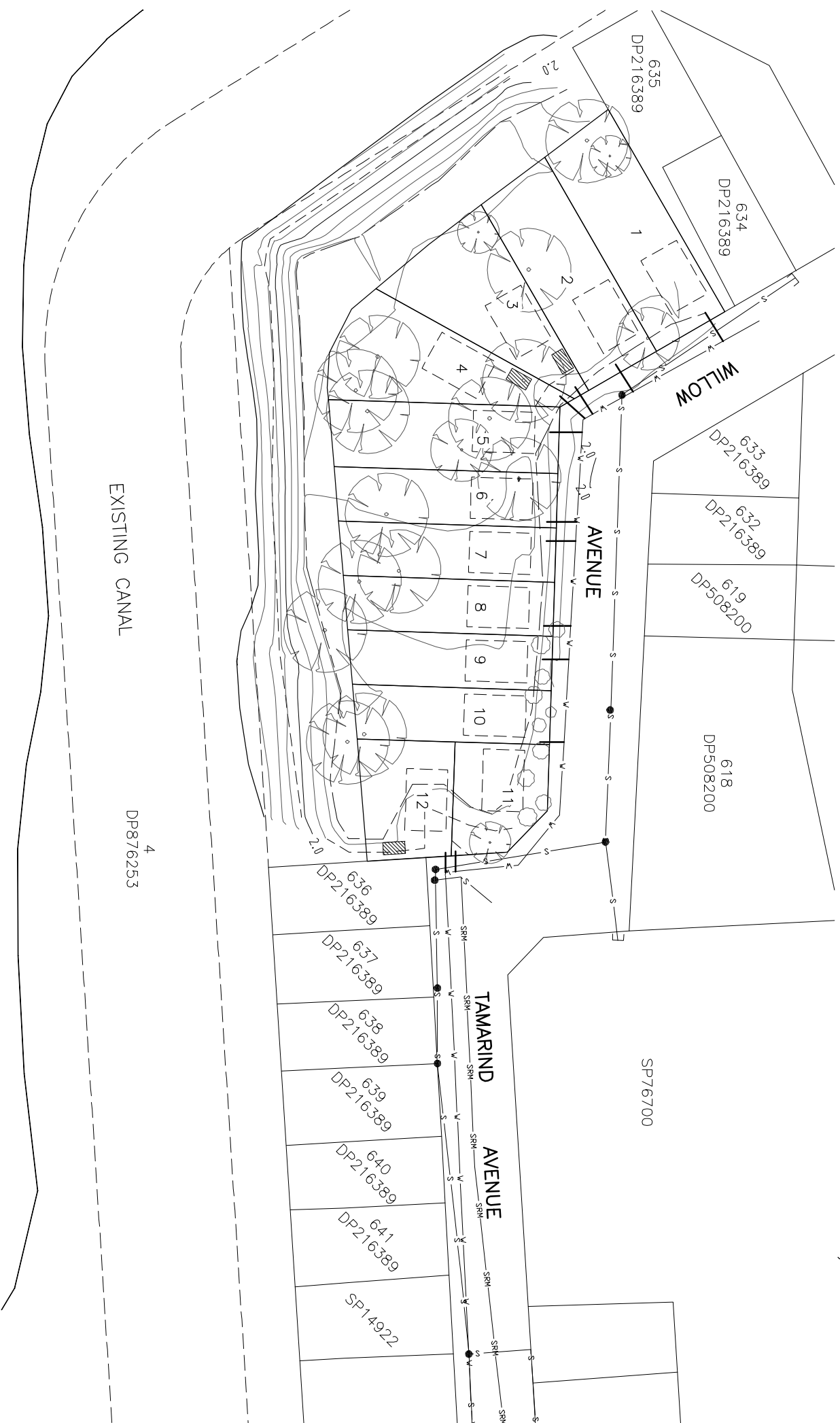
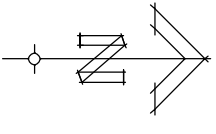
150mm
- 

100mm
SRM
- 

INDICATIVE 10m x 15m BUILDING PAD
- 

PROPOSED VISITOR CAR PARKS
- 

EXISTING TREES AND VEGETATION TO BE RETAINED (REFER LANDSCAPE CONCEPT PLAN)



KENMAR FARMS PTY LTD
ENGINEERING IMPACT ASSESSMENT

LOT 4 DP876253
WILLOW AVENUE
BOGANGAR, NSW

FIGURE NO. 10.3

PROPOSED WATER PLAN

OPUS QANTEC McWILLIAM



A.B.N. 79 086 342 065
1/10 Rivendell
PO Box 6389
Tweed Heads South NSW 2486
Telephone: (07) 5523 1755
Facsimile: (07) 5523 9664
E-Mail: tweedheads@opusqmcw.com.au

