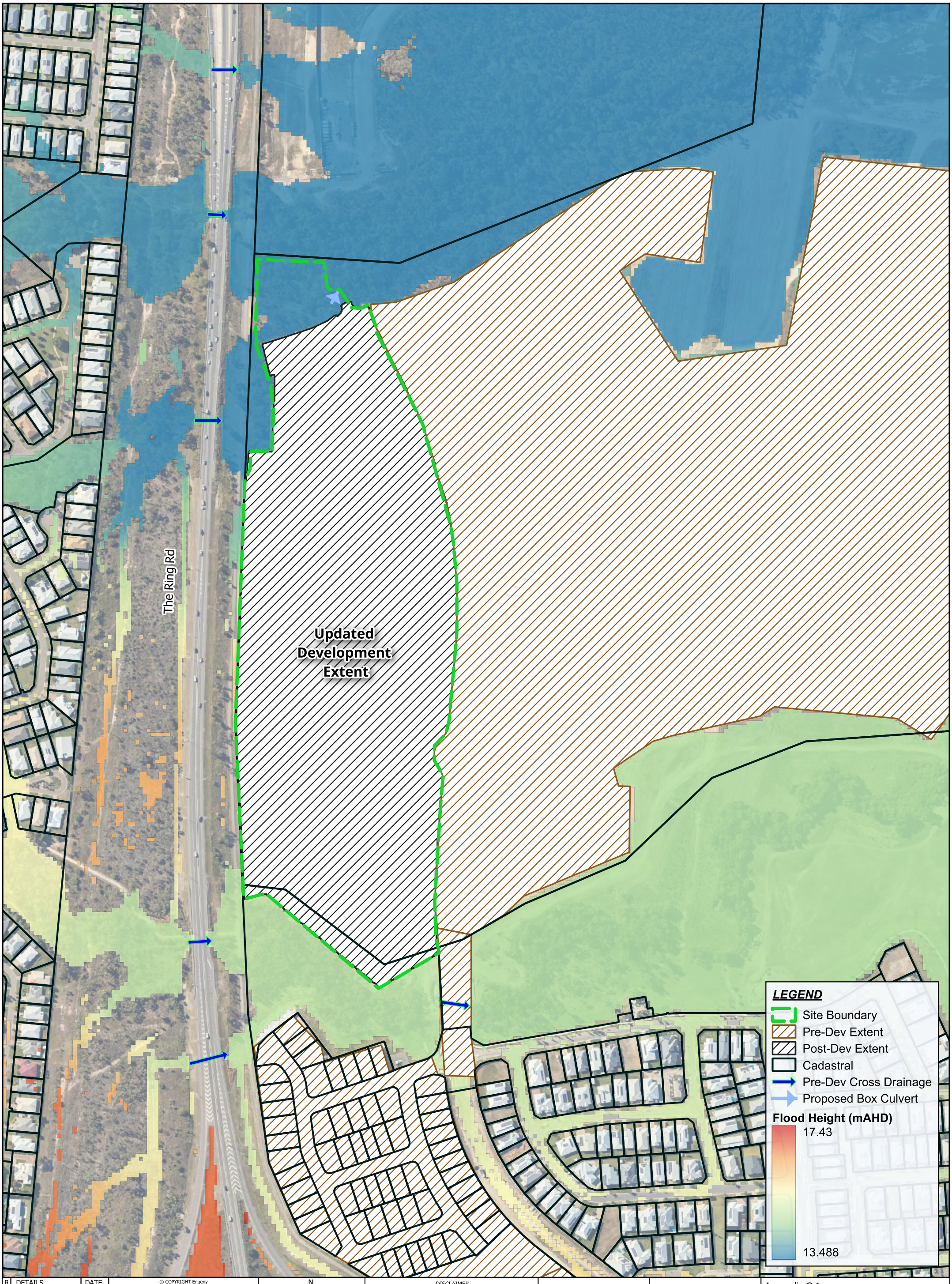
APPENDIX C: POST-DEVELOPED TUFLOW FLOOD MODEL RESULTS



R	DETAILS	DATE
1	Client Review	19-11-2024

DRAWN	DW	CHECKED	NF
APPROVED	DN	DATE	19-11-2024

NOTES:

N

0 0.03 0.06 km

SCALE @ A3 - 1:3,424
GDA94 / MGA zone 55

DISCLAIMER
Engeny has endeavoured to ensure accuracy and completeness of the data. Engeny assumes no legal liability or responsibility for any decisions or actions resulting from the information contained within this map.

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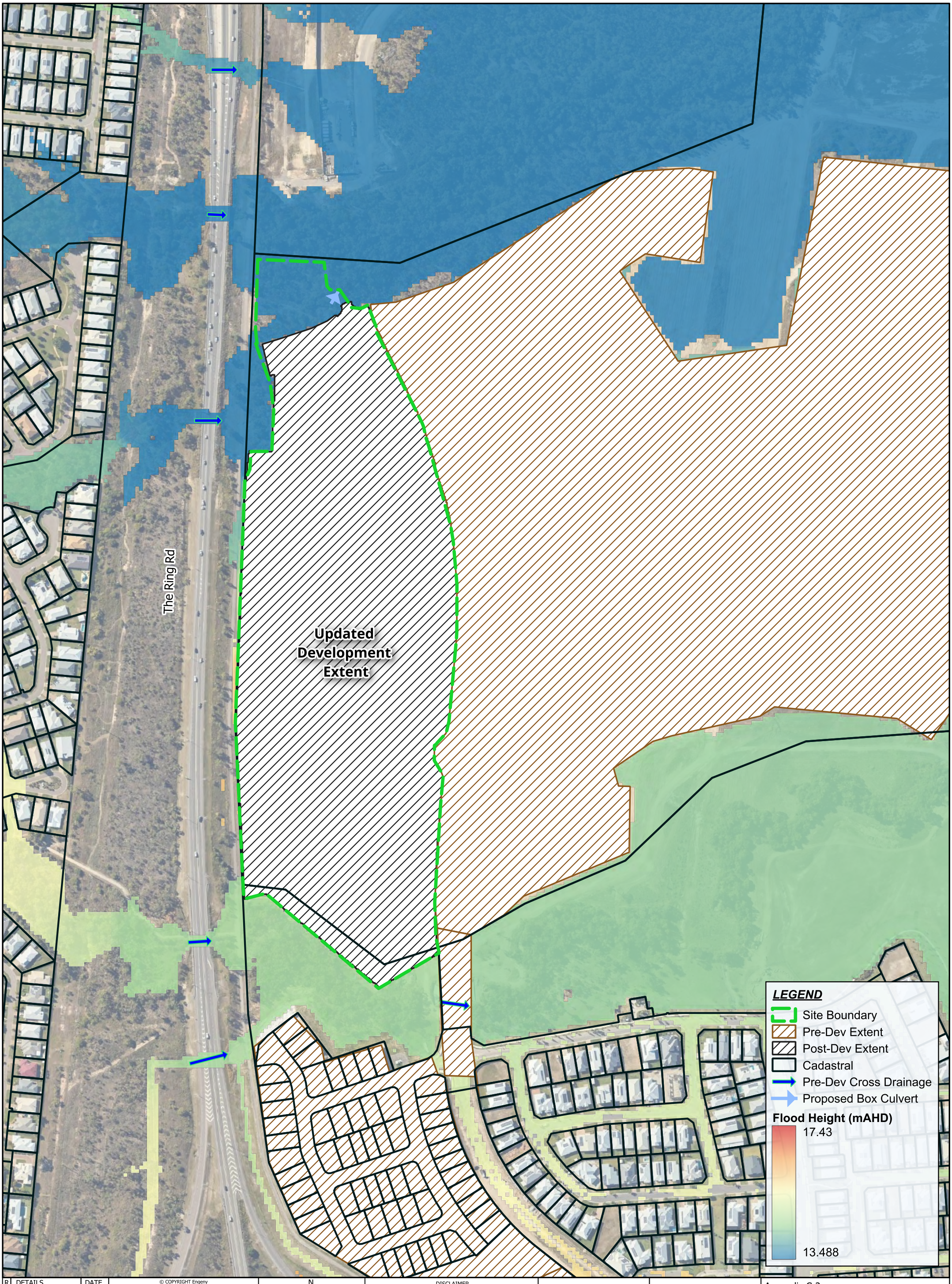
GemLife

Appendix C-1

Harris Crossing Development
Flood Impact Assessment Report
1% AEP Flood Level
Post-Development Scenario

Drg Ref.
BBNE01219_0001-SKE-0001

Q:\BNE_Projects\BNE001376 Ruby Developments Pty Ltd\BBNE01218_0001 Gemlife Harris Crossing\05 Design\QGIS\Workspace\BBNE01218_0001 Gemlife TUFLOW model.qgz



R	DETAILS	DATE
1	Client Review	19-11-2024

DRAWN	DW	CHECKED	NF
APPROVED	DN	DATE	19-11-2024

NOTES:

N

0 0.03 0.06 km

SCALE @ A3 - 1:3,424
GDA94 / MGA zone 55

DISCLAIMER
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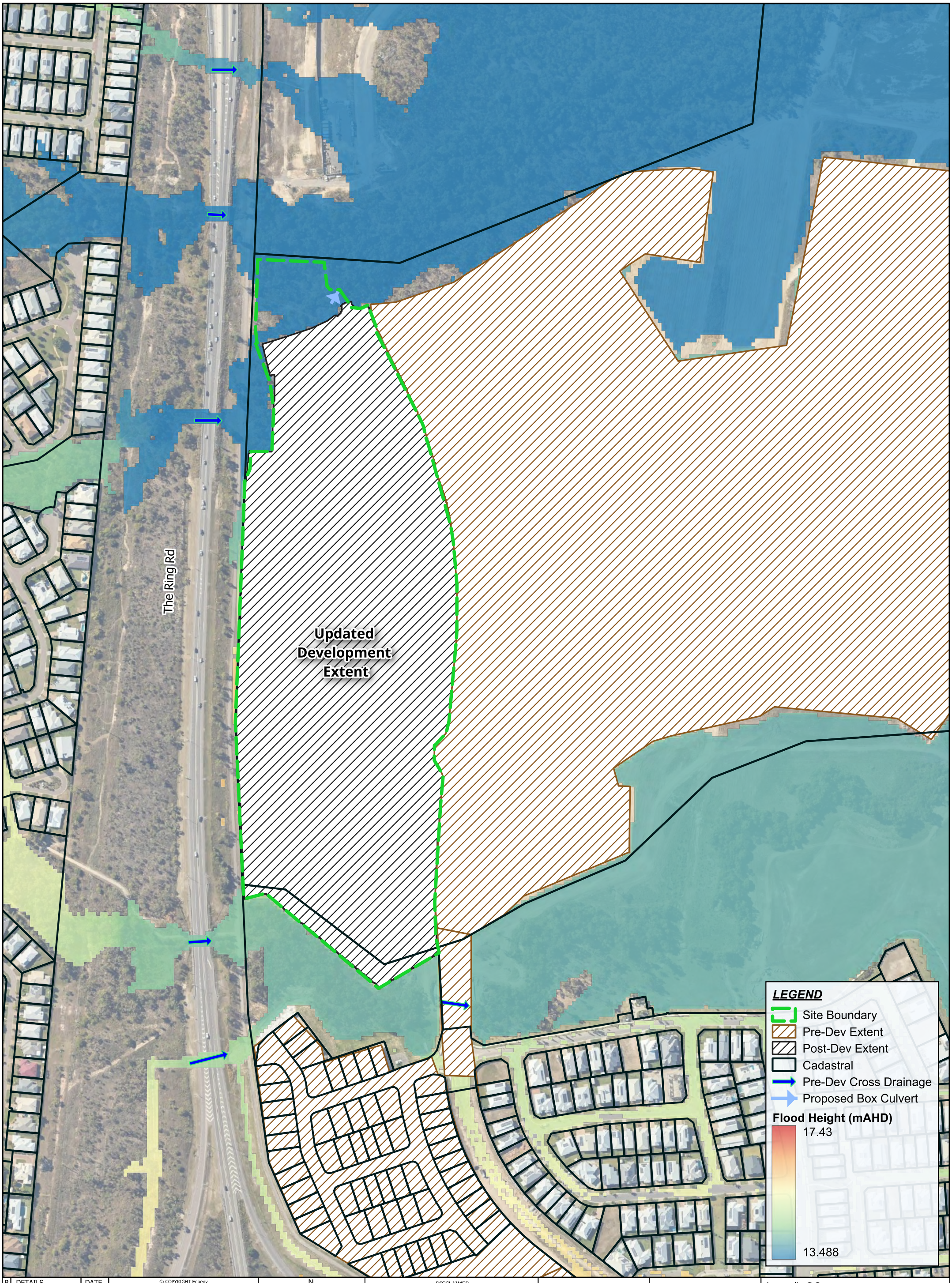
Appendix C-2

Harris Crossing Development
Flood Impact Assessment Report
2% AEP Flood Level
Post-Development Scenario

Drg Ref.
BBNE01219_0001-SKE-0001

Q:\BNE_Projects\BNE001376 Ruby Developments Pty Ltd\BBNE01218_0001 Gemlife Harris Crossing\05 Design\QGIS\Workspace\BBNE01218_0001 Gemlife TUFLOW model.qgz



R	DETAILS	DATE
1	Client Review	19-11-2024

DRAWN	DW	CHECKED	NF
APPROVED	DN	DATE	19-11-2024

NOTES:

N

0 0.03 0.06 km

SCALE @ A3 - 1:3,424
GDA94 / MGA zone 55

DISCLAIMER
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QLD Government Open Data Source

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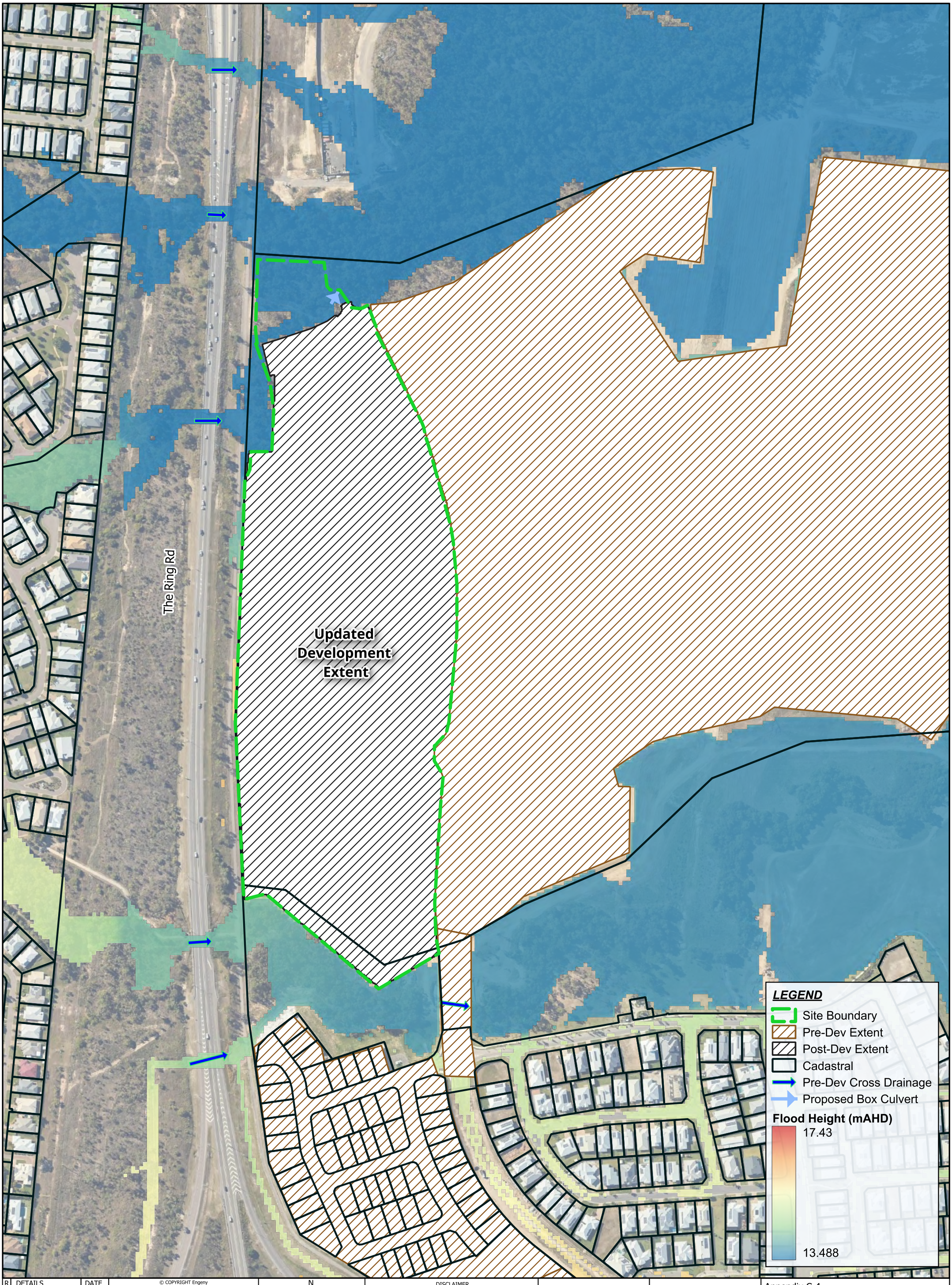
Appendix C-3

Harris Crossing Development
Flood Impact Assessment Report
5% AEP Flood Level
Post-Development Scenario

Drg Ref.
BBNE01219_0001-SKE-0001

Q:\BNE_Projects\BNE001376 Ruby Developments Pty Ltd\BBNE01218_0001 Gemlife Harris Crossing\05 Design\QGIS\Workspace\BBNE01218_0001 Gemlife TUFLOW model.qgz



R	DETAILS	DATE
1	Client Review	19-11-2024

DRAWN	DW	CHECKED	NF
APPROVED	DN	DATE	19-11-2024

NOTES:

N

0 0.03 0.06 km

SCALE @ A3 - 1:3,424
GDA94 / MGA zone 55

DISCLAIMER
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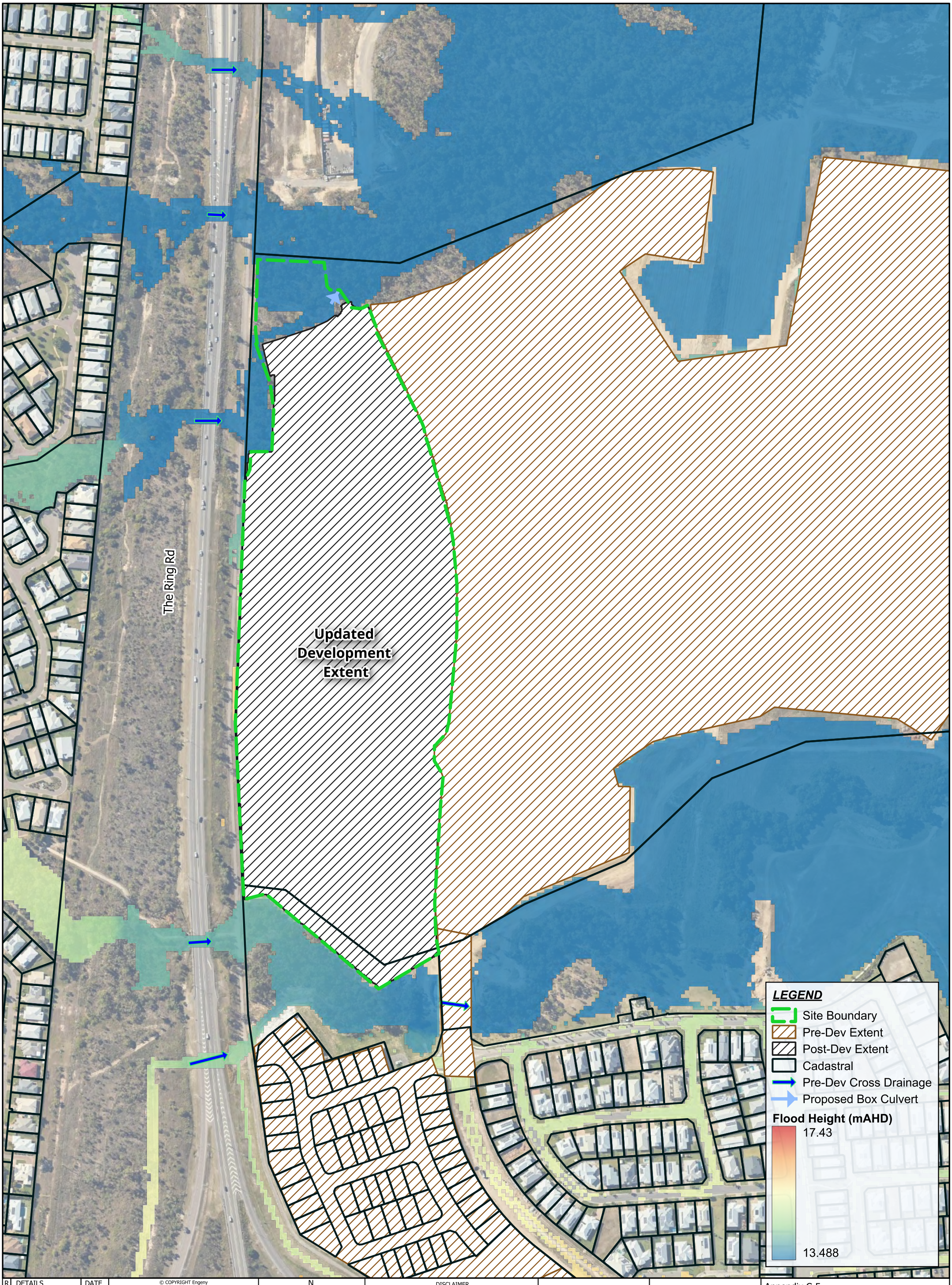
Appendix C-4

Harris Crossing Development
Flood Impact Assessment Report
10% AEP Flood Level
Post-Development Scenario

Drg Ref.
BBNE01219_0001-SKE-0001

Q:\BNE_Projects\BNE001376 Ruby Developments Pty Ltd\BBNE01218_0001 Gemlife Harris Crossing\05 Design\QGIS\Workspace\BBNE01218_0001 Gemlife TUFLOW model.qgz



R	DETAILS	DATE
1	Client Review	19-11-2024

DRAWN	DW	CHECKED	NF
APPROVED	DN	DATE	19-11-2024

NOTES:

N

0 0.03 0.06 km

SCALE @ A3 - 1:3,424
GDA94 / MGA zone 55

DISCLAIMER
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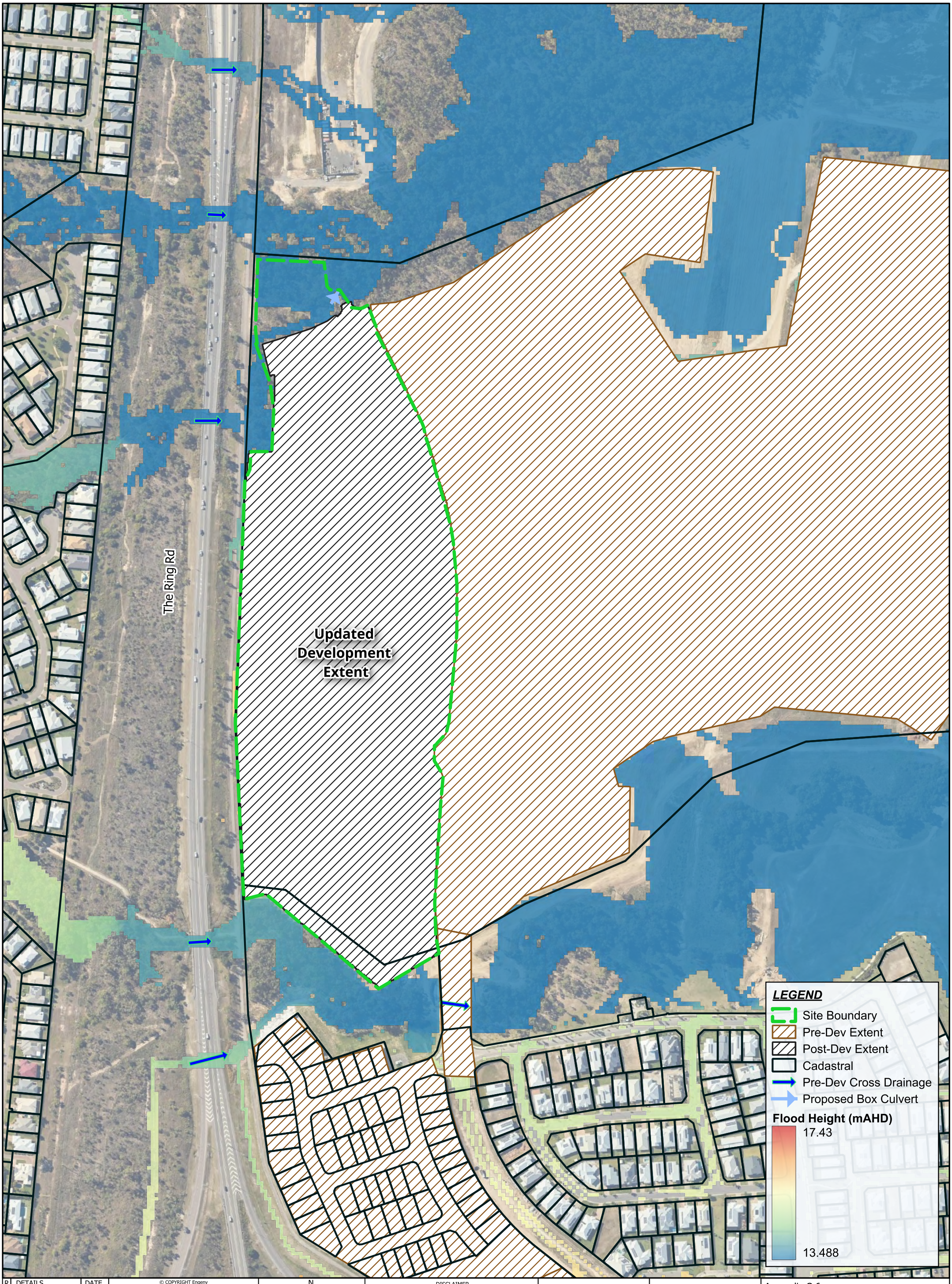
Appendix C-5

Harris Crossing Development
Flood Impact Assessment Report
20% AEP Flood Level
Post-Development Scenario

Drg Ref.
BBNE01219_0001-SKE-0001

Q:\BNE_Projects\BNE001376 Ruby Developments Pty Ltd\BBNE01218_0001 Gemlife Harris Crossing\05 Design\QGIS\Workspace\BBNE01218_0001 Gemlife TUFLOW model.qgz



R	DETAILS	DATE
1	Client Review	19-11-2024

DRAWN	DW	CHECKED	NF
APPROVED	DN	DATE	19-11-2024

NOTES:

N

0 0.03 0.06 km

SCALE @ A3 - 1:3,424
GDA94 / MGA zone 55

DISCLAIMER
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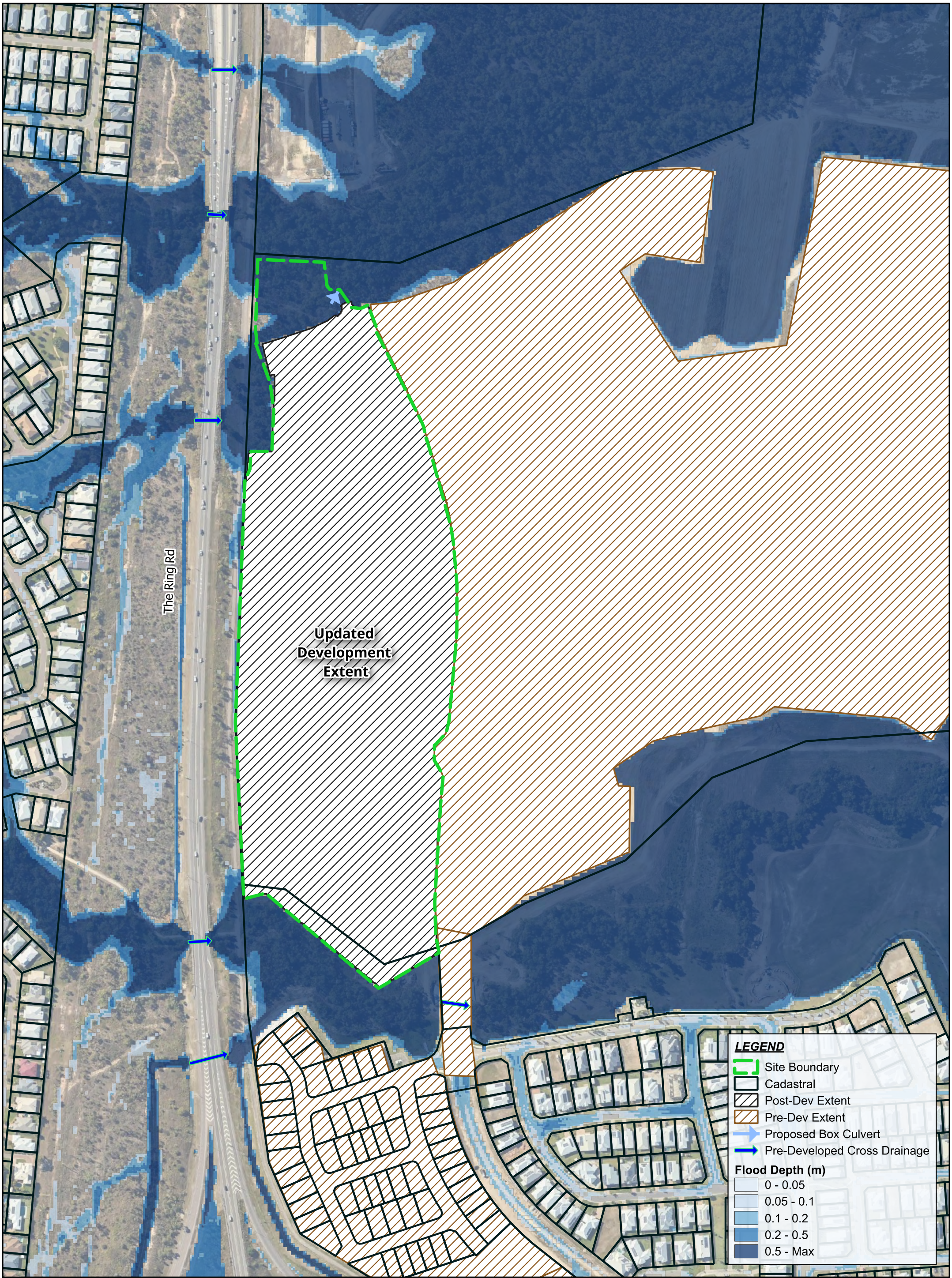
Appendix C-6

Harris Crossing Development
Flood Impact Assessment Report
39% AEP Flood Level
Post-Development Scenario

Drg Ref.
BBNE01219_0001-SKE-0001

Q:\BNE_Projects\BNE001376 Ruby Developments Pty Ltd\BBNE01218_0001 Gemlife Harris Crossing\05 Design\QGIS\Workspace\BBNE01218_0001 Gemlife TUFLOW model.qgz



R	DETAILS	DATE
1	Client Review	19-11-2024

DRAWN	DW	CHECKED	NF
APPROVED	DN	DATE	19-11-2024

NOTES:

N

0 0.03 0.06 km

SCALE @ A3 - 1:3,424
GDA94 / MGA zone 55

DISCLAIMER
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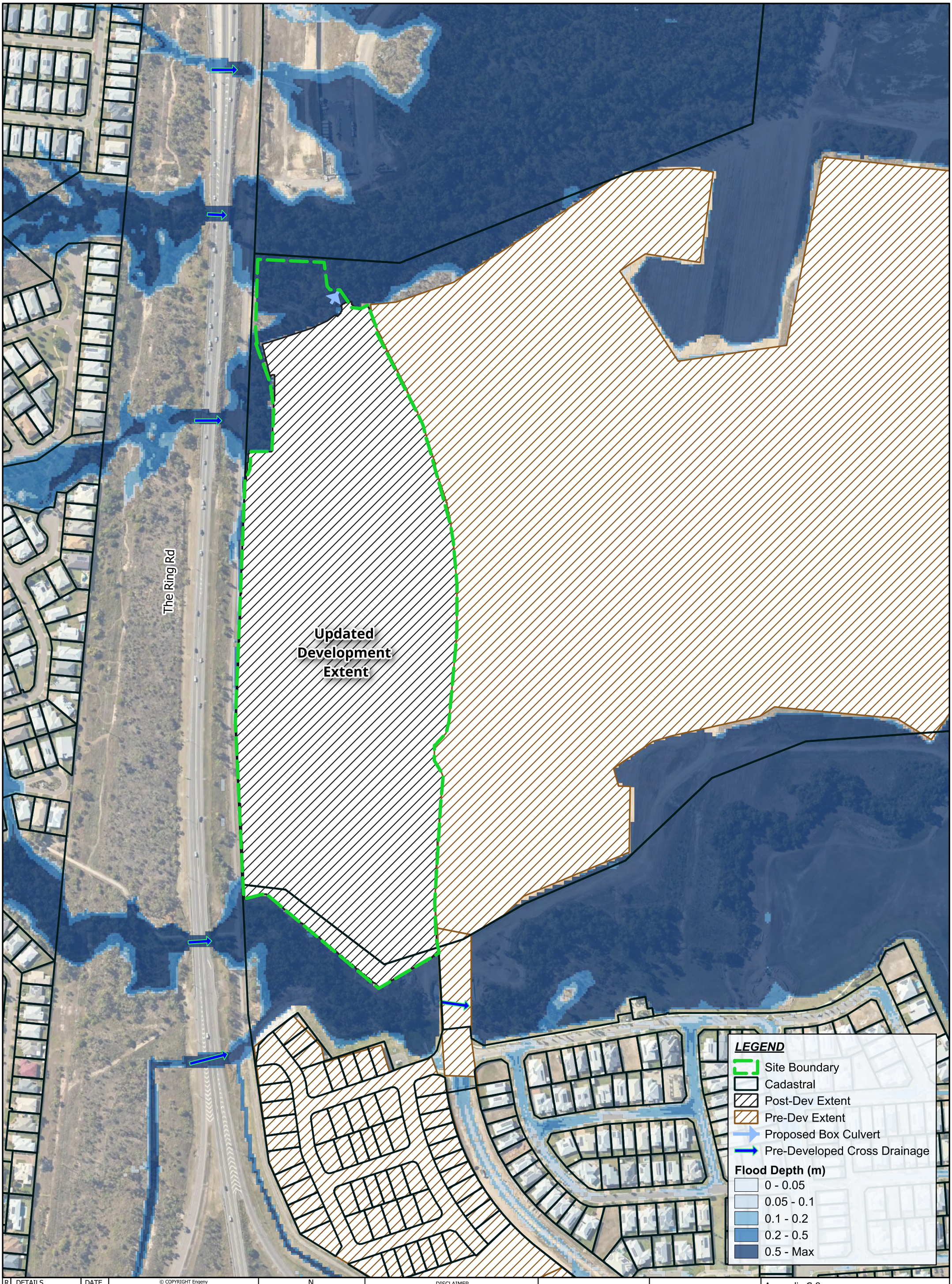
Appendix C-7

Harris Crossing Development
Flood Impact Assessment Report
1% AEP Flood Depth
Post-Development Scenario

Drg Ref.
BBNE01219_0001-SKE-0001

Q:\BNE_Projects\BNE001376 Ruby Developments Pty Ltd\BBNE01218_0001 Gemlife Harris Crossing\05 Design\QGIS\Workspace\BBNE01218_0001 Gemlife TUFLOW model.qgz



R	DETAILS	DATE
1	Client Review	19-11-2024

DRAWN	DW	CHECKED	NF
APPROVED	DN	DATE	19-11-2024

NOTES:

N

0 0.03 0.06 km

SCALE @ A3 - 1:3,424
GDA94 / MGA zone 55

DISCLAIMER
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Appendix C-8

Harris Crossing Development
Flood Impact Assessment Report
2% AEP Flood Depth
Post-Development Scenario

Drg Ref.
BBNE01219_0001-SKE-0001

Q:\BNE_Projects\BNE001376 Ruby Developments Pty Ltd\BBNE01218_0001 Gemlife Harris Crossing\05 Design\QGIS\Workspace\BBNE01218_0001 Gemlife TUFLOW model.qgz

The Ring Rd

Updated Development Extent

LEGEND

- Site Boundary
- Cadastral
- Post-Dev Extent
- Pre-Dev Extent
- Proposed Box Culvert
- Pre-Developed Cross Drainage

Flood Depth (m)

- 0 - 0.05
- 0.05 - 0.1
- 0.1 - 0.2
- 0.2 - 0.5
- 0.5 - Max

R	DETAILS	DATE
1	Client Review	19-11-2024

DRAWN	DW	CHECKED	NF
APPROVED	DN	DATE	19-11-2024

NOTES:

N

0 0.03 0.06 km

SCALE @ A3 - 1:3,424
GDA94 / MGA zone 55

DISCLAIMER
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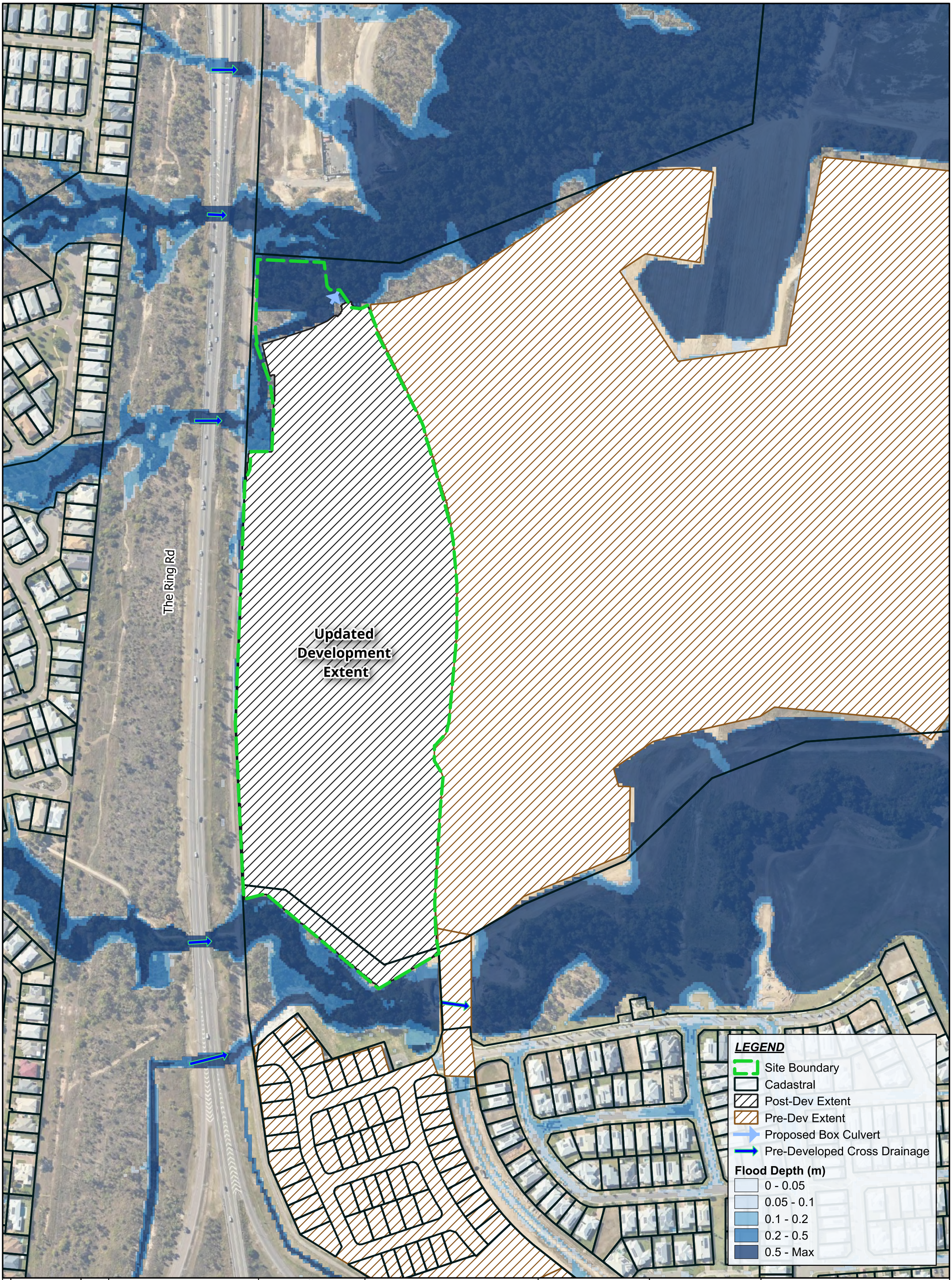
GemLife

Appendix C-9

Harris Crossing Development
Flood Impact Assessment Report
5% AEP Flood Depth
Post-Development Scenario

Drg Ref.
BBNE01219_0001-SKE-0001

Q:\BNE_Projects\BNE00176 Ruby Developments Pty Ltd\BBNE01218_0001 Gemlife Harris Crossing\05 Design\QGIS\Workspace\BBNE01218_0001 Gemlife TUFLOW model.qgz



R	DETAILS	DATE
1	Client Review	19-11-2024

DRAWN	DW	CHECKED	NF
APPROVED	DN	DATE	19-11-2024

NOTES:

N

0 0.03 0.06 km

SCALE @ A3 - 1:3,424
GDA94 / MGA zone 55

DISCLAIMER
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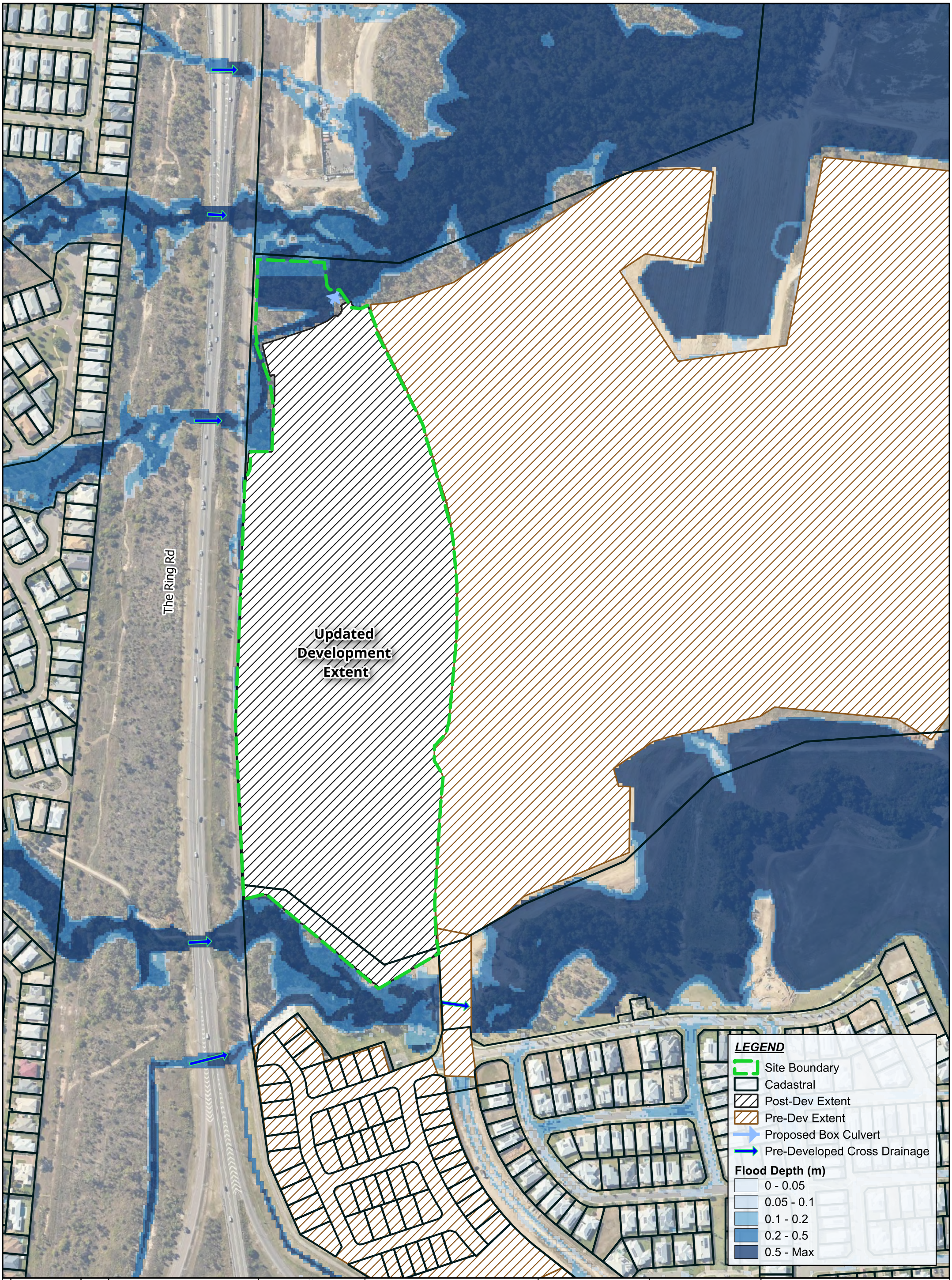
Appendix C-10

Harris Crossing Development
Flood Impact Assessment Report
10% AEP Flood Depth
Post-Development Scenario

Drg Ref.
BBNE01219_0001-SKE-0001

Q:\BNE_Projects\BNE001376 Ruby Developments Pty Ltd\BBNE01218_0001 Gemlife Harris Crossing\05 Design\QGIS\Workspace\BBNE01218_0001 Gemlife TUFLOW model.qgz



R	DETAILS	DATE
1	Client Review	19-11-2024

DRAWN	DW	CHECKED	NF
APPROVED	DN	DATE	19-11-2024

NOTES:

N

0 0.03 0.06 km

SCALE @ A3 - 1:3,424
GDA94 / MGA zone 55

DISCLAIMER
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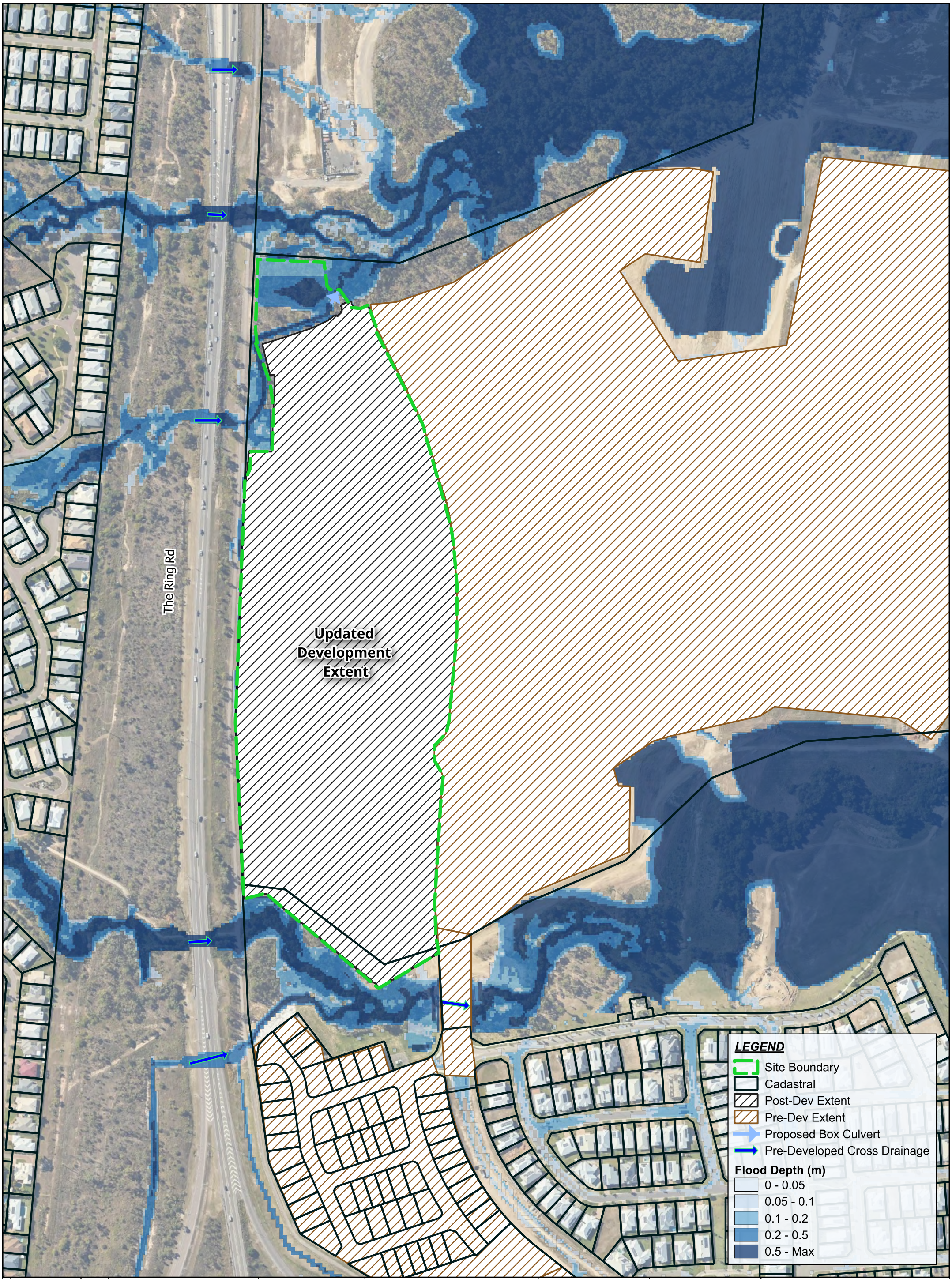
Appendix C-11

Harris Crossing Development
Flood Impact Assessment Report
20% AEP Flood Depth
Post-Development Scenario

Drg Ref.
BBNE01219_0001-SKE-0001

Q:\BNE_Projects\BNE001376 Ruby Developments Pty Ltd\BBNE01218_0001 Gemlife Harris Crossing\05 Design\QGIS\Workspace\BBNE01218_0001 Gemlife TUFLOW model.qgz



R	DETAILS	DATE
1	Client Review	19-11-2024

DRAWN	DW	CHECKED	NF
APPROVED	DN	DATE	19-11-2024

NOTES:

N

0 0.03 0.06 km

SCALE @ A3 - 1:3,424
GDA94 / MGA zone 55

DISCLAIMER
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DATA SOURCE
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Appendix C-12

Harris Crossing Development
Flood Impact Assessment Report
39% AEP Flood Depth
Post-Development Scenario

Drg Ref.
BBNE01219_0001-SKE-0001

Q:\BNE_Projects\BNE001376 Ruby Developments Pty Ltd\BBNE01218_0001 Gemlife Harris Crossing\05 Design\QGIS\Workspace\BBNE01218_0001 Gemlife TUFLOW model.qgz

The Ring Rd

Updated Development Extent

LEGEND

- Cadastral
- Pre-Developed Cross Drainage
- Proposed Box Culvert
- Post-Dev Extent
- Pre-Dev Extent
- Site Boundary

Velocity (m/s)

- 0 - 0.5
- 0.5 - 1
- 1 - 1.5
- 1.5 - 2
- 2 - 3
- > 3

R	DETAILS	DATE
1	Client Review	19-11-2024

DRAWN	DW	CHECKED	NF
APPROVED	DN	DATE	19-11-2024

NOTES:

N

0 0.03 0.06 km

SCALE @ A3 - 1:3,424
GDA94 / MGA zone 55

DISCLAIMER
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DATA SOURCE
QLD Government Open Data Source

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GemLife

Appendix C-13

Harris Crossing Development
Flood Impact Assessment Report
1% AEP Flood Velocity
Post-Development Scenario

Drg Ref.
BBNE01219_0001-SKE-0001

Q:\BNE_Projects\BNE001376 Ruby Developments Pty Ltd\BBNE01218_0001 Gemlife Harris Crossing\05 Design\QGIS\Workspace\BBNE01218_0001 Gemlife TUFLOW model.qgz

The Ring Rd

Updated Development Extent

LEGEND

- Cadastral
- Pre-Developed Cross Drainage
- Proposed Box Culvert
- Post-Dev Extent
- Pre-Dev Extent
- Site Boundary

Velocity (m/s)

- 0 - 0.5
- 0.5 - 1
- 1 - 1.5
- 1.5 - 2
- 2 - 3
- > 3

R	DETAILS	DATE
1	Client Review	19-11-2024

DRAWN	DW	CHECKED	NF
APPROVED	DN	DATE	19-11-2024

NOTES:

N

0 0.03 0.06 km

SCALE @ A3 - 1:3,424
GDA94 / MGA zone 55

DISCLAIMER
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DATA SOURCE
QLD Government Open Data Source

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Appendix C-14

Harris Crossing Development
Flood Impact Assessment Report
2% AEP Flood Velocity
Post-Development Scenario

Drg Ref.
BBNE01219_0001-SKE-0001

Q:\BNE_Projects\BNE001376 Ruby Developments Pty Ltd\BBNE01218_0001 Gemlife Harris Crossing\05 Design\QGIS\Workspace\BBNE01218_0001 Gemlife TUFLOW model.qgz

The Ring Rd

Updated Development Extent

LEGEND

- Cadastral
- Pre-Developed Cross Drainage
- Proposed Box Culvert
- Post-Dev Extent
- Pre-Dev Extent
- Site Boundary

Velocity (m/s)

- 0 - 0.5
- 0.5 - 1
- 1 - 1.5
- 1.5 - 2
- 2 - 3
- > 3

R	DETAILS	DATE
1	Client Review	19-11-2024

DRAWN	DW	CHECKED	NF
APPROVED	DN	DATE	19-11-2024

NOTES:

N

0 0.03 0.06 km

SCALE @ A3 - 1:3,424
GDA94 / MGA zone 55

DISCLAIMER
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DATA SOURCE
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Appendix C-15

Harris Crossing Development
Flood Impact Assessment Report
5% AEP Flood Velocity
Post-Development Scenario

Drg Ref.
BBNE01219_0001-SKE-0001

Q:\BNE_Projects\BNE001376 Ruby Developments Pty Ltd\BBNE01218_0001 Gemlife Harris Crossing\05 Design\QGIS\Workspace\BBNE01218_0001 Gemlife TUFLOW model.qgz

The Ring Rd

Updated Development Extent

LEGEND

- Cadastral
- Pre-Developed Cross Drainage
- Proposed Box Culvert
- Post-Dev Extent
- Pre-Dev Extent
- Site Boundary

Velocity (m/s)

- 0 - 0.5
- 0.5 - 1
- 1 - 1.5
- 1.5 - 2
- 2 - 3
- > 3

R	DETAILS	DATE
1	Client Review	19-11-2024

DRAWN	DW	CHECKED	NF
APPROVED	DN	DATE	19-11-2024

NOTES:

N

0 0.03 0.06 km

SCALE @ A3 - 1:3,424
GDA94 / MGA zone 55

DISCLAIMER
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DATA SOURCE
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Appendix C-16

Harris Crossing Development
Flood Impact Assessment Report
10% AEP Flood Velocity
Post-Development Scenario

Drg Ref.
BBNE01219_0001-SKE-0001

Q:\BNE_Projects\BNE001376 Ruby Developments Pty Ltd\BBNE01218_0001 Gemlife Harris Crossing\05 Design\QGIS\Workspace\BBNE01218_0001 Gemlife TUFLOW model.qgz

The Ring Rd

Updated Development Extent

LEGEND

- Cadastral
- Pre-Developed Cross Drainage
- Proposed Box Culvert
- Post-Dev Extent
- Pre-Dev Extent
- Site Boundary

Velocity (m/s)

- 0 - 0.5
- 0.5 - 1
- 1 - 1.5
- 1.5 - 2
- 2 - 3
- > 3

R	DETAILS	DATE
1	Client Review	19-11-2024

DRAWN	DW	CHECKED	NF
APPROVED	DN	DATE	19-11-2024

NOTES:

N

0 0.03 0.06 km

SCALE @ A3 - 1:3,424
GDA94 / MGA zone 55

DISCLAIMER
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DATA SOURCE
QLD Government Open Data Source

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Appendix C-17

Harris Crossing Development
Flood Impact Assessment Report
20% AEP Flood Velocity
Post-Development Scenario

Drg Ref.
BBNE01219_0001-SKE-0001

Q:\BNE_Projects\BNE001376 Ruby Developments Pty Ltd\BBNE01218_0001 Gemlife Harris Crossing\05 Design\QGIS\Workspace\BBNE01218_0001 Gemlife TUFLOW model.qgz

The Ring Rd

Updated Development Extent

LEGEND

- Cadastral
- Pre-Developed Cross Drainage
- Proposed Box Culvert
- Post-Dev Extent
- Pre-Dev Extent
- Site Boundary

Velocity (m/s)

- 0 - 0.5
- 0.5 - 1
- 1 - 1.5
- 1.5 - 2
- 2 - 3
- > 3

R	DETAILS	DATE
1	Client Review	19-11-2024

DRAWN	DW	CHECKED	NF
APPROVED	DN	DATE	19-11-2024

NOTES:

N

0 0.03 0.06 km

SCALE @ A3 - 1:3,424
GDA94 / MGA zone 55

DISCLAIMER
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QLD Government Open Data Source

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Appendix C-18

Harris Crossing Development
Flood Impact Assessment Report
39% AEP Flood Velocity
Post-Development Scenario

Drg Ref.
BBNE01219_0001-SKE-0001

Q:\BNE_Projects\BNE001376 Ruby Developments Pty Ltd\BBNE01218_0001 Gemlife Harris Crossing\05 Design\QGIS\Workspace\BBNE01218_0001 Gemlife TUFLOW model.qgz

The Ring Rd

Updated Development Extent

LEGEND

- Site Boundray
- Post-Dev Extent
- Pre-Dev Extent
- Pre-Developed Cross Drainage
- Proposed Box Culvert
- Cadastral

Afflux (m)

- -10 to -1
- -1 to -0.5
- -0.5 to -0.3
- -0.3 to -0.1
- -0.1 to -0.05
- -0.05 to -0.01
- -0.01 to 0.01
- 0.01 to 0.05
- 0.05 to 0.1
- 0.1 to 0.3
- 0.3 to 0.5
- 0.5 to 1
- 1 to 10
- Was wet now dry
- Was dry now wet

R	DETAILS	DATE
1	Client Review	19-11-2024

DRAWN	DW	CHECKED	NF
APPROVED	DN	DATE	19-11-2024

NOTES:

N

0 0.03 0.06 km

SCALE @ A3 - 1:3,424
GDA94 / MGA zone 55

DISCLAIMER
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DATA SOURCE
QLD Government Open Data Source

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GemLife

Appendix C-19

Harris Crossing Development
Flood Impact Assessment Report
1% AEP WSL Afflux
Post-Development Scenario

Drg Ref.
BBNE01219_0001-SKE-0001

Q:\BNE_Projects\BNE001376 Ruby Developments Pty Ltd\BBNE01218_0001 Gemlife Harris Crossing\05 Design\QGIS\Workspace\BBNE01218_0001 Gemlife TUFLOW model.qgz

The Ring Rd

Updated Development Extent

LEGEND

- Site Boundray
- Post-Dev Extent
- Pre-Dev Extent
- Pre-Developed Cross Drainage
- Proposed Box Culvert
- Cadastral

Afflux (m)

- -10 to -1
- -1 to -0.5
- -0.5 to -0.3
- -0.3 to -0.1
- -0.1 to -0.05
- -0.05 to -0.01
- -0.01 to 0.01
- 0.01 to 0.05
- 0.05 to 0.1
- 0.1 to 0.3
- 0.3 to 0.5
- 0.5 to 1
- 1 to 10
- Was wet now dry
- Was dry now wet

R	DETAILS	DATE
1	Client Review	19-11-2024

DRAWN	DW	CHECKED	NF
APPROVED	DN	DATE	19-11-2024

NOTES:

N

0 0.03 0.06 km

SCALE @ A3 - 1:3,424
GDA94 / MGA zone 55

DISCLAIMER
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DATA SOURCE
QLD Government Open Data Source

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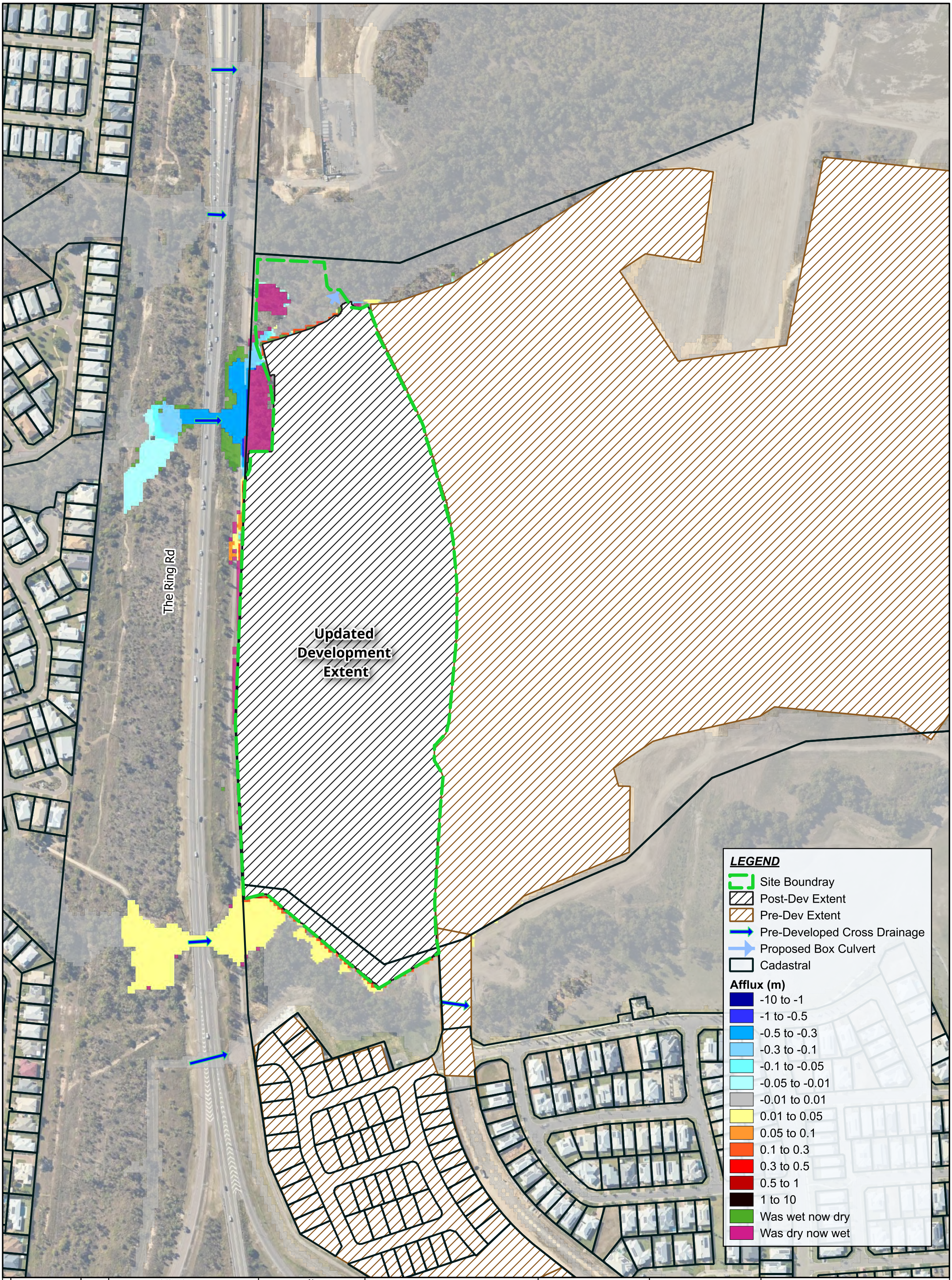
GemLife

Appendix C-20

Harris Crossing Development
Flood Impact Assessment Report
2% AEP WSL Afflux
Post-Development Scenario

Drg Ref.
BBNE01219_0001-SKE-0001

Q:\BNE_Projects\BNE001376 Ruby Developments Pty Ltd\BBNE01218_0001 Gemlife Harris Crossing\05 Design\QGIS\Workspace\BBNE01218_0001 Gemlife TUFLOW model.qgz



R	DETAILS	DATE
1	Client Review	19-11-2024

DRAWN	DW	CHECKED	NF
APPROVED	DN	DATE	19-11-2024

NOTES:

N

0 0.03 0.06 km

SCALE @ A3 - 1:3,424
GDA94 / MGA zone 55

DISCLAIMER
Engeny has endeavoured to ensure accuracy and completeness of the data. Engeny assumes no legal liability or responsibility for any decisions or actions resulting from the information contained within this map.

DATA SOURCE
QLD Government Open Data Source

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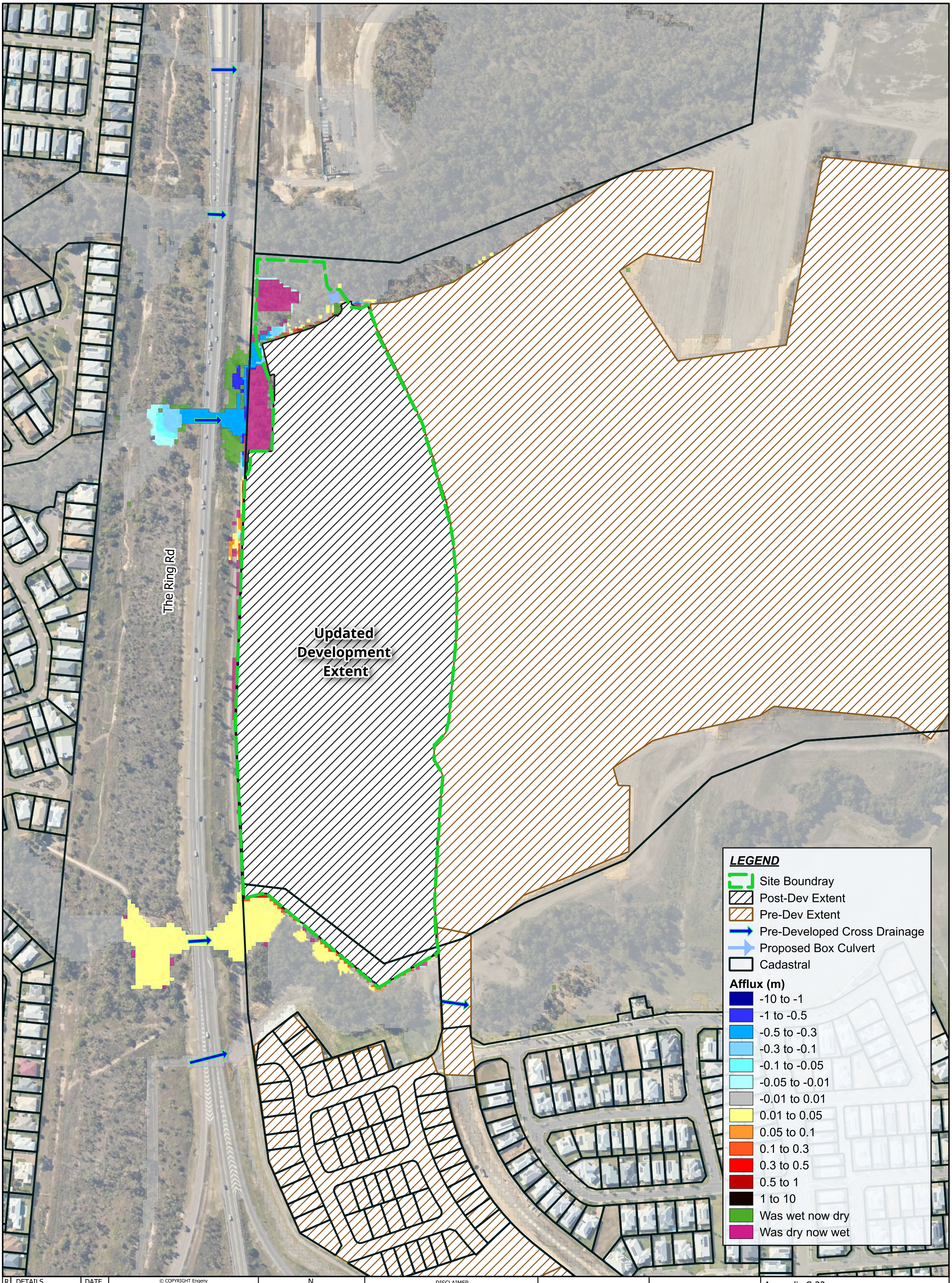
GemLife

Appendix C-21

Harris Crossing Development
Flood Impact Assessment Report
5% AEP WSL Afflux
Post-Development Scenario

Drg Ref.
BBNE01219_0001-SKE-0001

Q:\BNE_Projects\BNE001376 Ruby Developments Pty Ltd\BBNE01218_0001 Gemlife Harris Crossing\05 Design\QGIS\Workspace\BBNE01218_0001 Gemlife TUFLOW model.qgz



R	DETAILS	DATE
1	Client Review	19-11-2024

DRAWN	DW	CHECKED	NF
APPROVED	DN	DATE	19-11-2024

NOTES:

N

0 0.03 0.06 km

SCALE @ A3 - 1:3,424
GDA94 / MGA zone 55

DISCLAIMER
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DATA SOURCE
QLD Government Open Data Source

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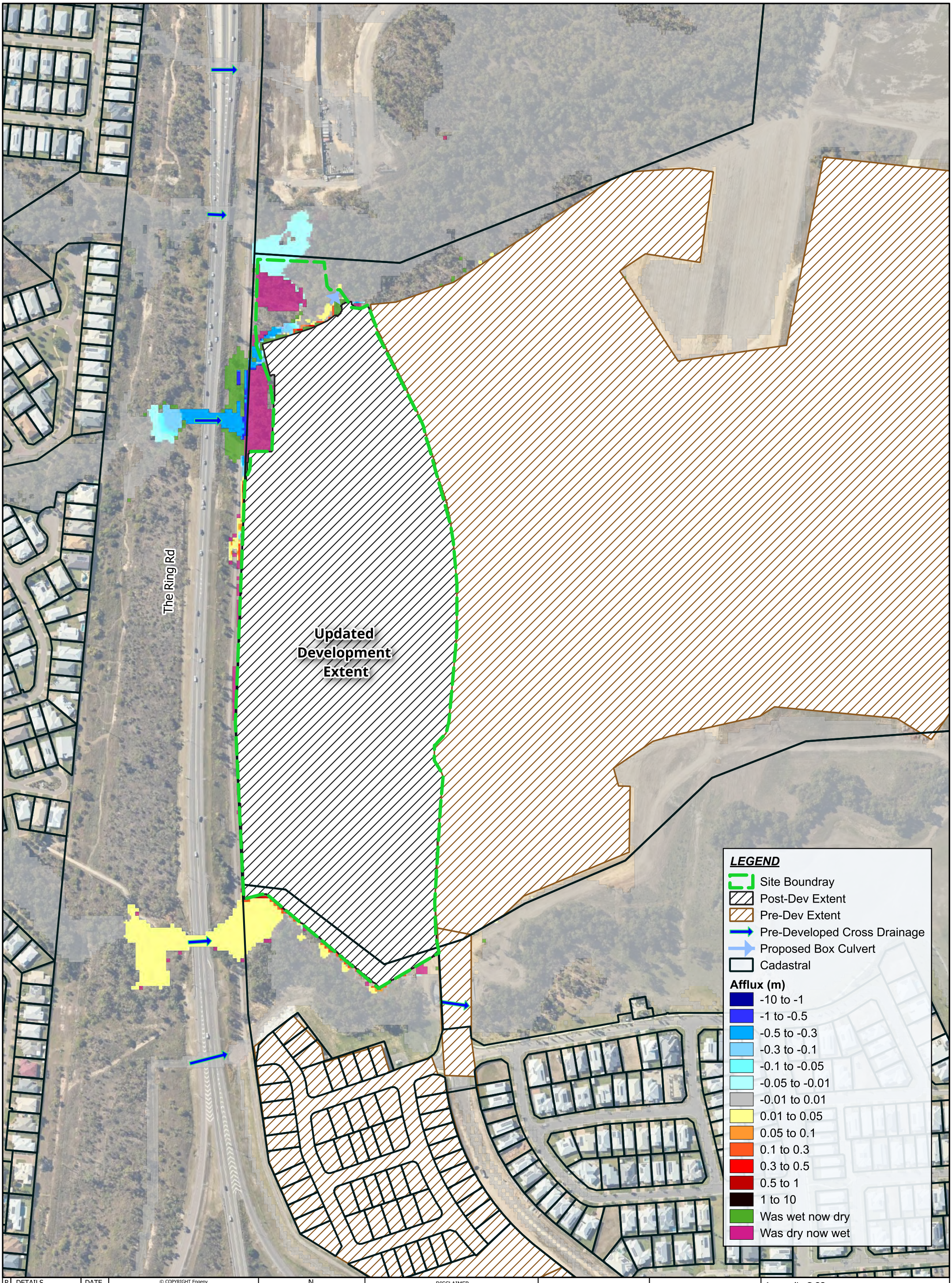
Appendix C-22

Harris Crossing Development
Flood Impact Assessment Report
10% AEP WSL Afflux
Post-Development Scenario

Drg Ref.
BBNE01219_0001-SKE-0001

Q:\BNE_Projects\BNE001376 Ruby Developments Pty Ltd\BBNE01218_0001 Gemlife Harris Crossing\05 Design\QGIS\Workspace\BBNE01218_0001 Gemlife TUFLOW model.qgz



R	DETAILS	DATE
1	Client Review	19-11-2024

DRAWN	DW	CHECKED	NF
APPROVED	DN	DATE	19-11-2024

NOTES:

N

0 0.03 0.06 km

SCALE @ A3 - 1:3,424
GDA94 / MGA zone 55

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DATA SOURCE
QLD Government Open Data Source

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GemLife

Appendix C-23

Harris Crossing Development
Flood Impact Assessment Report
20% AEP WSL Afflux
Post-Development Scenario

Drg Ref.
BBNE01219_0001-SKE-0001

Q:\BNE_Projects\BNE001376 Ruby Developments Pty Ltd\BBNE01218_0001 Gemlife Harris Crossing\05 Design\QGIS\Workspace\BBNE01218_0001 Gemlife TUFLOW model.qgz

The Ring Rd

Updated Development Extent

LEGEND

- Site Boundray
- Post-Dev Extent
- Pre-Dev Extent
- Pre-Developed Cross Drainage
- Proposed Box Culvert
- Cadastral

Afflux (m)

- -10 to -1
- -1 to -0.5
- -0.5 to -0.3
- -0.3 to -0.1
- -0.1 to -0.05
- -0.05 to -0.01
- -0.01 to 0.01
- 0.01 to 0.05
- 0.05 to 0.1
- 0.1 to 0.3
- 0.3 to 0.5
- 0.5 to 1
- 1 to 10
- Was wet now dry
- Was dry now wet

R	DETAILS	DATE
1	Client Review	19-11-2024

DRAWN	DW	CHECKED	NF
APPROVED	DN	DATE	19-11-2024

NOTES:

N

0 0.03 0.06 km

SCALE @ A3 - 1:3,424
GDA94 / MGA zone 55

DISCLAIMER
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DATA SOURCE
QLD Government Open Data Source

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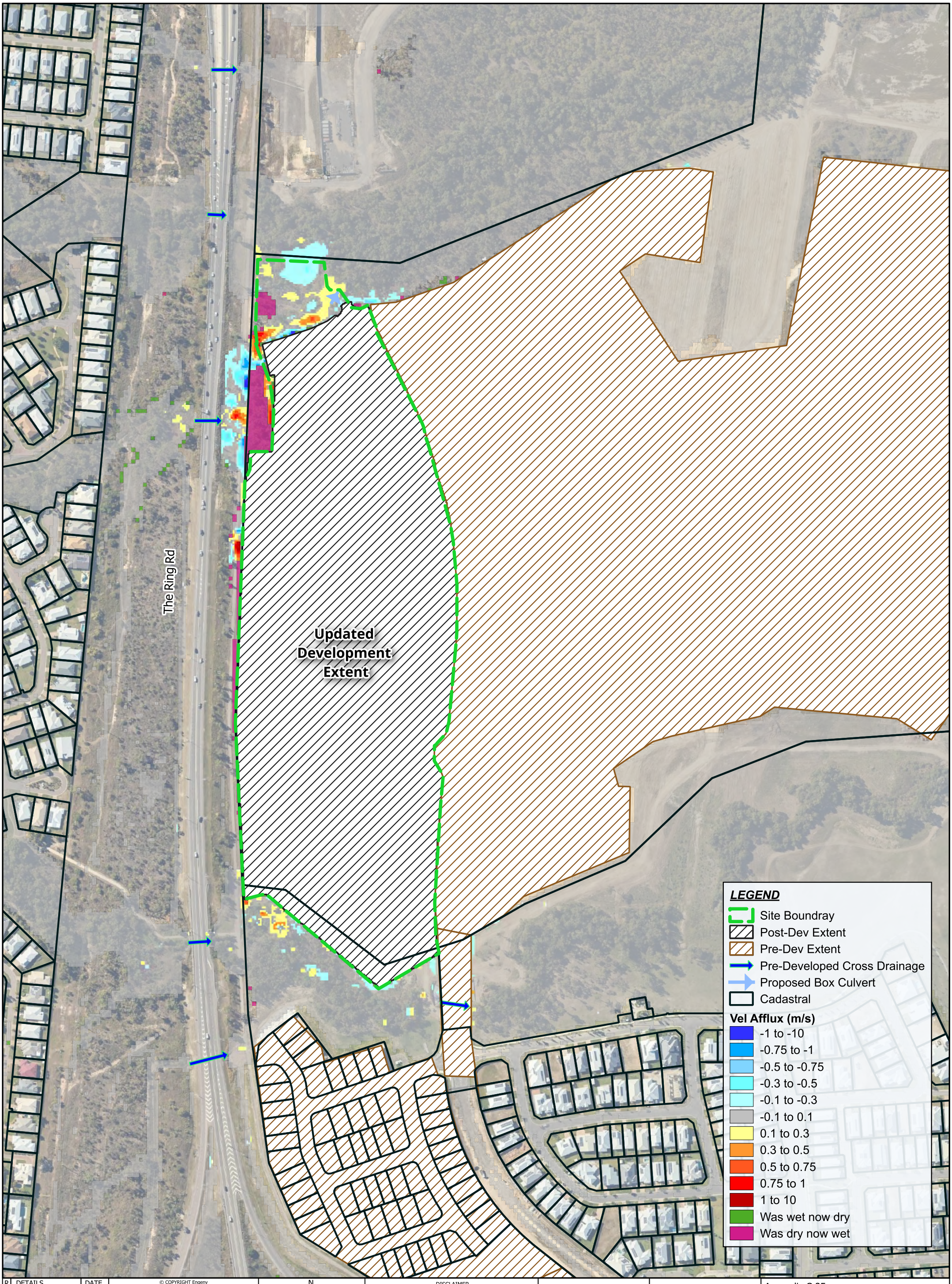
Appendix C-24

Harris Crossing Development
Flood Impact Assessment Report
39% AEP WSL Afflux
Post-Development Scenario

Drg Ref.
BBNE01219_0001-SKE-0001

Q:\BNE_Projects\BNE001376 Ruby Developments Pty Ltd\BBNE01218_0001 Gemlife Harris Crossing\05 Design\QGIS\Workspace\BBNE01218_0001 Gemlife TUFLOW model.qgz



R	DETAILS	DATE
1	Client Review	19-11-2024

DRAWN	DW	CHECKED	NF
APPROVED	DN	DATE	19-11-2024

NOTES:

N

0 0.03 0.06 km

SCALE @ A3 - 1:3,424
GDA94 / MGA zone 55

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DATA SOURCE
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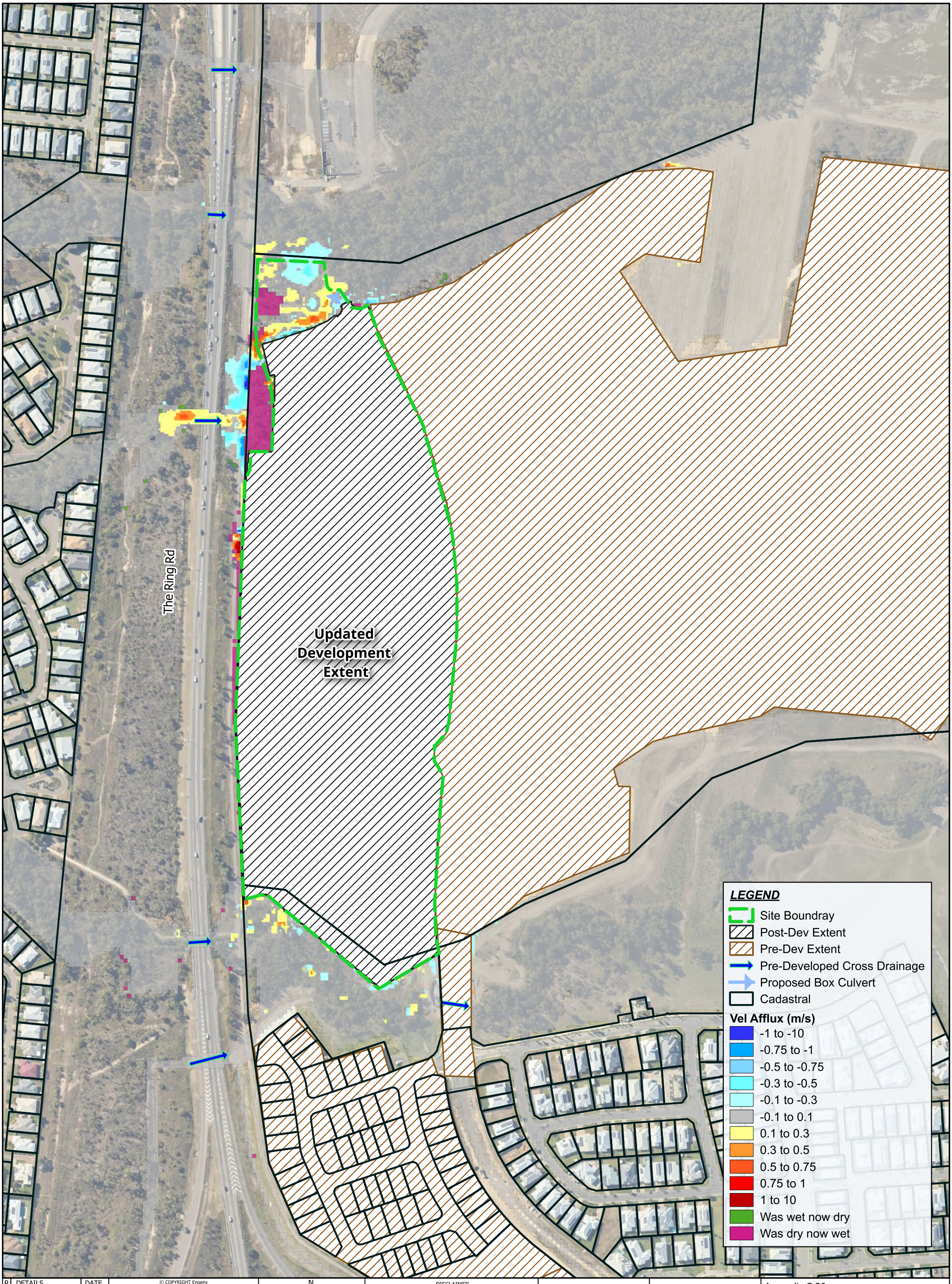
Appendix C-25

Harris Crossing Development
Flood Impact Assessment Report
1% AEP Velocity Afflux
Post-Development Scenario

Drg Ref.
BBNE01219_0001-SKE-0001

Q:\BNE_Projects\BNE001376 Ruby Developments Pty Ltd\BBNE01218_0001 Gemlife Harris Crossing\05 Design\QGIS\Workspace\BBNE01218_0001 Gemlife TUFLOW model.qgz



R	DETAILS	DATE
1	Client Review	19-11-2024

DRAWN	DW	CHECKED	NF
APPROVED	DN	DATE	19-11-2024

NOTES:

N

0 0.03 0.06 km

SCALE @ A3 - 1:3,424
GDA94 / MGA zone 55

DISCLAIMER
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DATA SOURCE
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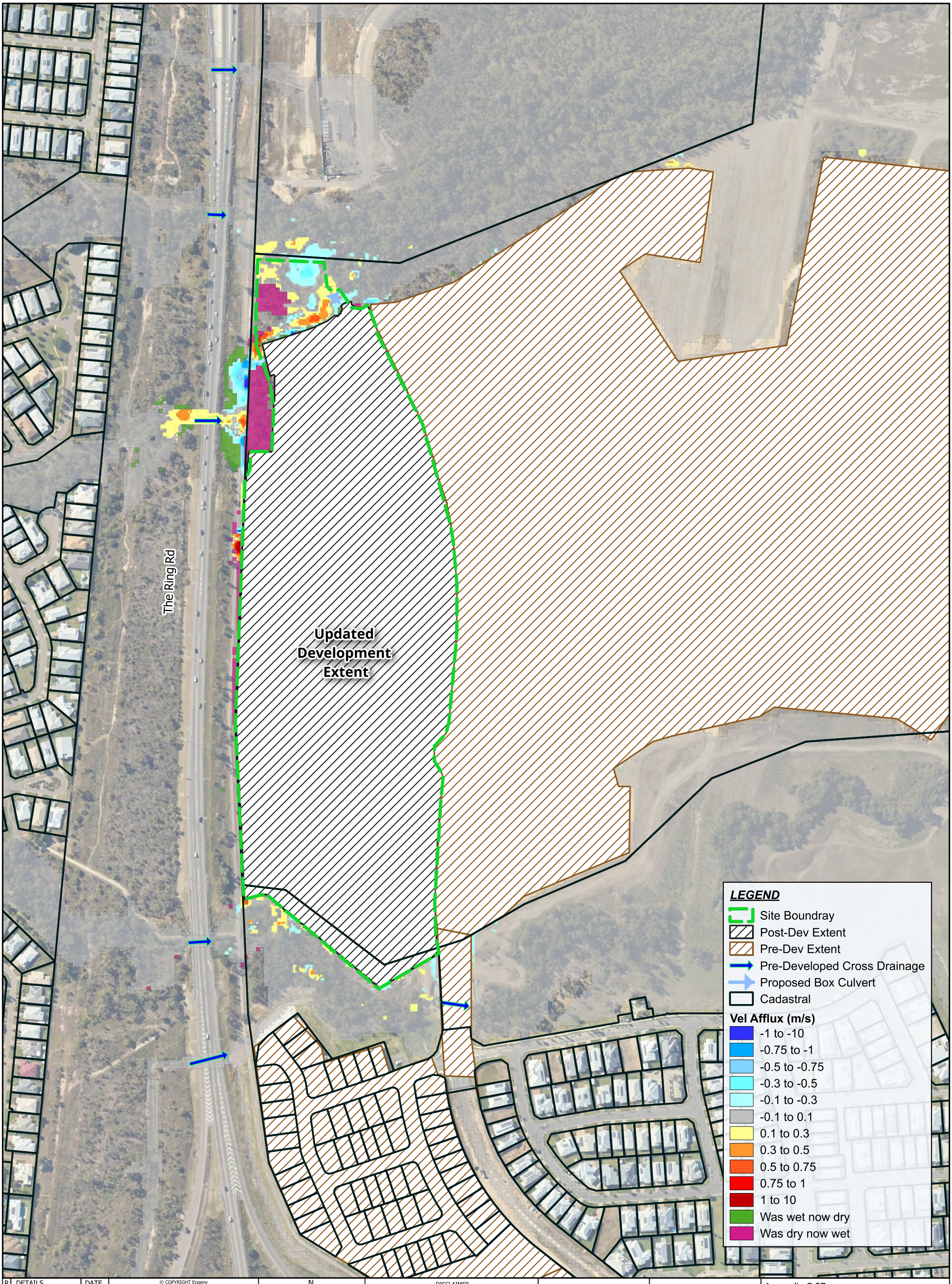
Appendix C-26

Harris Crossing Development
Flood Impact Assessment Report
2% AEP Velocity Afflux
Post-Development Scenario

Drg Ref.
BBNE01219_0001-SKE-0001

Q:\BNE_Projects\BNE001376 Ruby Developments Pty Ltd\BBNE01218_0001 Gemlife Harris Crossing\05 Design\QGIS\Workspace\BBNE01218_0001 Gemlife TUFLOW model.qgz



R	DETAILS	DATE
1	Client Review	19-11-2024

DRAWN	DW	CHECKED	NF
APPROVED	DN	DATE	19-11-2024

NOTES:

N

0 0.03 0.06 km

SCALE @ A3 - 1:3,424
GDA94 / MGA zone 55

DISCLAIMER
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DATA SOURCE
QLD Government Open Data Source

ENGENY

GemLife

Appendix C-27

Harris Crossing Development
Flood Impact Assessment Report
5% AEP Velocity Afflux
Post-Development Scenario

Drg Ref.
BBNE01219_0001-SKE-0001

Q:\BNE_Projects\BNE001376 Ruby Developments Pty Ltd\BBNE01218_0001 Gemlife Harris Crossing\05 Design\QGIS\Workspace\BBNE01218_0001 Gemlife TUFLOW model.qgz

The Ring Rd

Updated Development Extent

LEGEND

- Site Boundray
- Post-Dev Extent
- Pre-Dev Extent
- Pre-Developed Cross Drainage
- Proposed Box Culvert
- Cadastral

Vel Afflux (m/s)

- -1 to -10
- -0.75 to -1
- -0.5 to -0.75
- -0.3 to -0.5
- -0.1 to -0.3
- -0.1 to 0.1
- 0.1 to 0.3
- 0.3 to 0.5
- 0.5 to 0.75
- 0.75 to 1
- 1 to 10
- Was wet now dry
- Was dry now wet

R	DETAILS	DATE
1	Client Review	19-11-2024

DRAWN	DW	CHECKED	NF
APPROVED	DN	DATE	19-11-2024

NOTES:

N

0 0.03 0.06 km

SCALE @ A3 - 1:3,424
GDA94 / MGA zone 55

DISCLAIMER
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DATA SOURCE
QLD Government Open Data Source

ENGENY

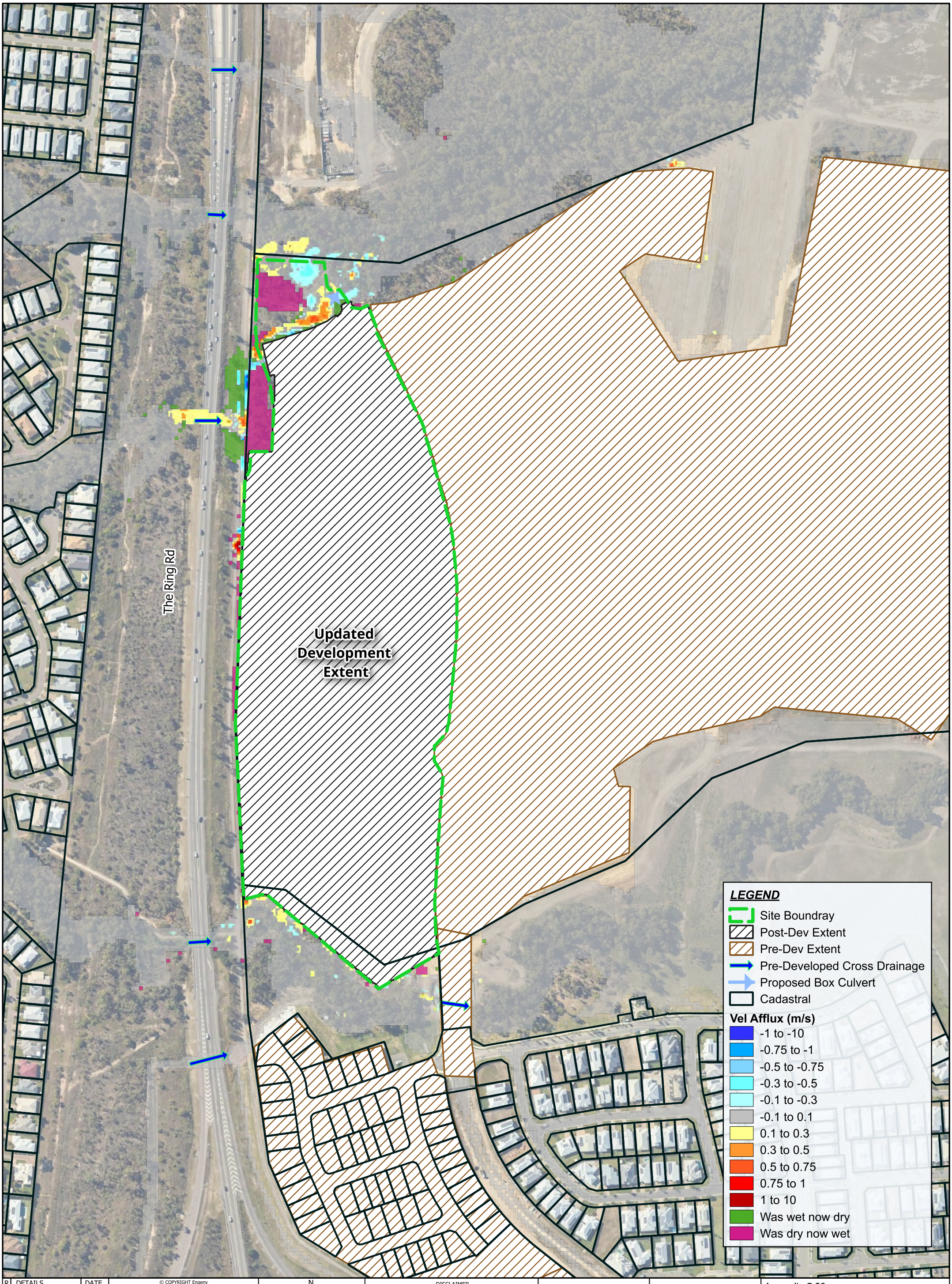
GemLife

Appendix C-28

Harris Crossing Development
Flood Impact Assessment Report
10% AEP Velocity Afflux
Post-Development Scenario

Drg Ref.
BBNE01219_0001-SKE-0001

Q:\BNE_Projects\BNE001376 Ruby Developments Pty Ltd\BBNE01218_0001 Gemlife Harris Crossing\05 Design\QGIS\Workspace\BBNE01218_0001 Gemlife TUFLOW model.qgz



R	DETAILS	DATE
1	Client Review	19-11-2024

DRAWN	DW	CHECKED	NF
APPROVED	DN	DATE	19-11-2024

NOTES:

N

0 0.03 0.06 km

SCALE @ A3 - 1:3,424
GDA94 / MGA zone 55

DISCLAIMER
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DATA SOURCE
QLD Government Open Data Source

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Appendix C-29

Harris Crossing Development
Flood Impact Assessment Report
20% AEP Velocity Afflux
Post-Development Scenario

Drg Ref.
BBNE01219_0001-SKE-0001

Q:\BNE_Projects\BNE001376 Ruby Developments Pty Ltd\BBNE01218_0001 Gemlife Harris Crossing\05 Design\QGIS\Workspace\BBNE01218_0001 Gemlife TUFLOW model.qgz

APPENDIX D: CODE ASSESSMENT

D.1 State Code Response

A review of the flooding items of State Code 1 and 6 has been undertaken and presented in the tables below.

TABLE D.1: STATE CODE 1 REVIEW

PO Item	Performance Outcome	Review
Stormwater and Overland Flow		
PO8	Stormwater run-off or overland flow from the development site does not create or exacerbate a safety hazard for users of the state-controlled road.	The flood immunity of The Ring Road up to and including the 1% AEP event is not impacted by the proposed works. Therefore, the user safety of The Ring Road is not impacted. **This item is considered satisfied.**
PO9	Stormwater run-off or overland flow from the development site does not result in a material worsening of the operating performance of the state-controlled road or road transport infrastructure.	The flood immunity of The Ring Road up to and including the 1% AEP event is not impacted by the proposed works. Therefore, the operating performance of The Ring Road is not impacted. **This item is considered satisfied.**
PO10	Stormwater run-off or overland flow from the development site does not adversely impact the structural integrity or physical condition of the state-controlled road or road transport infrastructure.	Maximum velocities around The Ring Road are maintained at low levels (1.3 m/s) and are consistent with the base case scenario maximum values. **This item is considered satisfied.**
PO11	Development ensures that stormwater is lawfully discharged.	Stormwater is discharged into the adjacent waterways that flow past the north and south boundaries of the proposed development. **This item is considered satisfied.**
Flooding		
PO12	Development does not result in a material worsening of flooding impacts within a state-controlled road.	The flood immunity of The Ring Road up to and including the 1% AEP event is not impacted by the proposed works. Minor water level increases up to 25mm are predicted to occur adjacent The Ring Road within the road reserve as a result of the updated development. These increases are relatively minor do not adversely affect the immunity of the road. Therefore, they should be considered to not constitute a material worsening of the flooding impacts for The Ring Road. **This item is considered satisfied.**
Drainage Infrastructure		
PO13	Drainage infrastructure does not create a safety hazard for users in the state-controlled road.	The flood immunity of The Ring Road up to and including the 1% AEP event is not impacted by the proposed works. Velocities adjacent The Ring Road are maintained at relatively low maximum values (1.3 m/s). Therefore, the safety hazard of The Ring Road is not impacted. **This item is considered satisfied.**
PO14	Drainage infrastructure associated with, or within, a state-controlled road is constructed, and designed to ensure the structural integrity and physical condition of existing drainage infrastructure and the surrounding drainage network.	No new drainage infrastructure is proposed with or within a state-controlled road. **This item is considered satisfied.**

TABLE D.2: STATE CODE 6 REVIEW

PO Item	Performance Outcome	Review
Stormwater and Overland Flow		
PO14	Stormwater run-off or overland flow from the development site does not create or exacerbate a safety hazard for users of a state transport corridor or state transport infrastructure.	The flood immunity of The Ring Road up to and including the 1% AEP event is not impacted by the proposed works. Therefore, the user safety of The Ring Road is not impacted. **This item is considered satisfied.**
PO15	Stormwater run-off or overland flow from the development site does not result in a material worsening of operating performance of a state transport corridor or state transport infrastructure.	The flood immunity of The Ring Road up to and including the 1% AEP event is not impacted by the proposed works. Therefore, the operating performance of The Ring Road is not impacted. **This item is considered satisfied.**
PO16	Stormwater run-off or overland flow from the development site does not interfere with the structural integrity or physical condition of the state transport corridor or state transport infrastructure.	Maximum velocities around The Ring Road are maintained at low levels (1.3 m/s) and are consistent with the base case scenario maximum values. **This item is considered satisfied.**
PO17	Development associated with a state-controlled road or road transport infrastructure ensures that stormwater is lawfully discharged.	Stormwater is discharged into the adjacent waterways that flow past the north and south boundaries of the proposed development. **This item is considered satisfied.**
Flooding		
PO18	Development does not result in a material worsening of flooding impacts within a state transport corridor or state transport infrastructure.	The flood immunity of The Ring Road up to and including the 1% AEP event is not impacted by the proposed works. Minor water level increases up to 25mm are predicted to occur adjacent The Ring Road within the road reserve as a result of the updated development. These increases are relatively minor do not adversely affect the immunity of the road. Therefore, they should be considered to not constitute a material worsening of the flooding impacts for The Ring Road. **This item is considered satisfied.**
Drainage Infrastructure		
PO19	Drainage infrastructure does not create a safety hazard in a state transport corridor.	The flood immunity of The Ring Road up to and including the 1% AEP event is not impacted by the proposed works. Velocities adjacent The Ring Road are maintained at relatively low maximum values (1.3 m/s). Therefore, the safety hazard of The Ring Road is not impacted. **This item is considered satisfied.**
PO20	Drainage infrastructure associated with, or in a state-controlled road or road transport infrastructure is constructed and designed to ensure the structural integrity and physical condition of existing drainage infrastructure and the surrounding drainage network is maintained.	No new drainage infrastructure is proposed with or within a state-controlled road. **This item is considered satisfied.**

D.2 Townsville City Council Flood Hazard Overlay Code

A review of the flooding items of the Townsville City Council flood hazard overlay code (8.2.6) has been undertaken and presented in the table below.

TABLE D.3: TCC FLOOD HAZARD OVERLAY CODE RESPONSE

PO Item	Performance Outcome	Review
PO1	Development in medium and high hazard areas is designed and located to minimise susceptibility to and potential impacts of flooding.	The proposed development is situated adjacent a region identified as "high hazard". As such, the floor levels of all habitable rooms are to be designed such that they achieve a minimum 300mm freeboard above the defined flood level. **This item is considered satisfied.**
PO2	Development in high hazard areas does not significantly impede the flow of flood waters through the site or worsen flood flows external to the site.	The level of flow impedance is consistent with the previous approved reporting. **This item is considered satisfied.**
PO3	Development does not intensify use in high hazard areas, in order to avoid risks to people and property.	All new proposed residential lots are outside of the 1% AEP flood extent with flood levels to be designed such that they achieve a minimum 300mm freeboard above the defined flood level. **This item is considered satisfied.**
PO4	Siting and layout of development maintains the safety of people and property in medium hazard areas.	All new proposed residential lots are outside of the 1% AEP flood extent with flood levels to be designed such that they achieve a minimum 300mm freeboard above the defined flood level. **This item is considered satisfied.**
PO5	Signage is provided within high and medium hazard areas to alert residents and visitors to the flood hazard.	To be addressed by the civil design.
PO6	Development within high and medium hazard areas ensures any changes to the depth, duration, velocity of flood waters are contained within the site.	Minimal impacts are observed to occur within the road reserve of The Ring Road. These impacts reach maximum values of 25mm and do not compromise the immunity of The Ring Road. As such, it is considered that these impact do not represent a material worsening. **This item is considered satisfied.**
PO7	Development within high and medium hazard areas does not directly, indirectly or cumulatively worsen flood characteristics outside the development site, having regard to: 1. increased scour and erosion; or 2. loss of flood storage; or 3. loss of or changes to flow paths; or 4. flow acceleration or retardation; or 5. reduction in flood warning times.	The updated development is not considered to worsen the flood characteristics outlined. **This item is considered satisfied.**
PO8	Facilities with a role in emergency management and vulnerable community services are able to function effectively during and immediately after flood events.	The flood immunity of The Ring Road up to and including the 1% AEP event is not impacted by the proposed works. The road crossing leading into the site maintains immunity up to the 1% AEP event. **This item is considered satisfied.**
PO9	Public safety and the environment are not adversely affected by the detrimental impacts of flooding on hazardous materials manufactured or stored in bulk.	It is not anticipated that hazardous materials will be manufactured or stored in bulk within the development extents. **This item is considered satisfied.**