B.1.4 IH 124 – Index Flood Estimation

ARUP

Job Title	Midleton FRS
Job Number	252803
Calculation	Institute of Hydrology Report No.124

1.0 Subcatchment: 19_990_4

2.0 Physical Catchment Descriptors:

AREA	=	2.55	km^2	Catchment Area
SAAR	=	1014	mm	Standard annual average rainfall (1961-1990)
SOIL	=	0.30		Base flow index derived from soils data

3.0 Mean Annual Flood (Rural)

Qbar (rural, PCD) $Qbar_{rural} = 0.00108 (AREA^{0.89} \times SAAR^{1.17} \times SOIL^{2.17})$

Qbar (rural, PCD) = **0.60** m^3/s

4.0 Adjustment for Urbanisation

CWI		125.00		Catchment Wetness Index
CIND	=	*102.4SOIL + 0.28(CWI - 125)*		
CIND	=	**30.72**		
URBAN	=	**0.00**		Fraction of urbanised area in the catchment

Qu bar/Qr bar = $(1 + URBAN)^{2NC} [1 + URBAN\{(21/CIND) - 0.3\}]$

Nc = *0.92-0.00024.S* or *for 500 ≤ SAAR ≤ 1100mm*; *0.74-0.000082.SAAR* *for 1100 ≤ SAAR ≤ 3000mm*

Nc	=	**0.68**	
Qu bar/Qr bar	=	**0.68**	
Qbar_urban	=	**0.60**	m^3/s

5.0 Standard Factorial Error

Standard Factorial Error	=	1.65	
Qbar (68% Confidence)	=	**0.99**	m^3/s

ARUP

Job Title	Midleton FRS
Job Number	252803
Calculation	Institute of Hydrology Report No.124

1.0 Subcatchment: 19_1462_5

2.0 Physical Catchment Descriptors:

AREA	=	8.25	km^2	Catchment Area
SAAR	=	1103	mm	Standard annual average rainfall (1961-1990)
SOIL	=	0.30		Base flow index derived from soils data

3.0 Mean Annual Flood (Rural)

Qbar (rural, PCD) $Qbar_{rural} = 0.00108 (AREA^{0.89} \times SAAR^{1.17} \times SOIL^{2.17})$

Qbar (rural, PCD) = **1.88** m^3/s

4.0 Adjustment for Urbanisation

CWI		125.00		Catchment Wetness Index
CIND	=	*102.4SOIL + 0.28(CWI - 125)*		
CIND	=	**30.72**		
URBAN	=	**0.00**		Fraction of urbanised area in the catchment

Qu bar/Qr bar = $(1 + URBAN)^{2NC} [1 + URBAN\{(21/CIND) - 0.3\}]$

Nc = *0.92-0.00024.S, or for 500 ≤ SAAR ≤ 1100mm*; *0.74-0.000082.SAAR for 1100 ≤ SAAR ≤ 3000mm*

Nc	=	**0.65**	
Qu bar/Qr bar	=	**0.65**	
Qbar_urban	=	**1.88**	m^3/s

5.0 Standard Factorial Error

Standard Factorial Error	=	1.65	
Qbar (68% Confidence)	=	**3.10**	m^3/s

ARUP

Job Title	Midleton FRS
Job Number	252803
Calculation	Institute of Hydrology Report No.124

1.0 Subcatchment: 19_1462_5

2.0 Physical Catchment Descriptors:

AREA	=	12.72	km^2	Catchment Area
SAAR	=	1171	mm	Standard annual average rainfall (1961-1990)
SOIL	=	0.30		Base flow index derived from soils data

3.0 Mean Annual Flood (Rural)

Qbar (rural, PCD) $Qbar_{rural} = 0.00108 (AREA^{0.89} \times SAAR^{1.17} \times SOIL^{2.17})$

Qbar (rural, PCD) = **2.96** m^3/s

4.0 Adjustment for Urbanisation

CWI		125.00		Catchment Wetness Index
CIND	=	*102.4SOIL + 0.28(CWI - 125)*		
CIND	=	**30.72**		
URBAN	=	**0.00**		Fraction of urbanised area in the catchment

Qu bar/Qr bar = $(1 + URBAN)^{2NC} [1 + URBAN\{(21/CIND) - 0.3\}]$

Nc = *0.92-0.00024.S* or *for 500 ≤ SAAR ≤ 1100mm*; *0.74-0.000082.SAAR* *for 1100 ≤ SAAR ≤ 3000mm*

Nc	=	**0.64**	
Qu bar/Qr bar	=	**0.64**	
Qbar_urban	=	**2.96**	m^3/s

5.0 Standard Factorial Error

Standard Factorial Error	=	1.65	
Qbar (68% Confidence)	=	**4.89**	m^3/s

ARUP

Job Title	Midleton FRS
Job Number	252803
Calculation	Institute of Hydrology Report No.124

1.0 Subcatchment: 19_1721_7

2.0 Physical Catchment Descriptors:

AREA	=	10.33	km^2	Catchment Area
SAAR	=	1059	mm	Standard annual average rainfall (1961-1990)
SOIL	=	0.30		Base flow index derived from soils data

3.0 Mean Annual Flood (Rural)

Qbar (rural, PCD) $Qbar_{rural} = 0.00108 (AREA^{0.89} \times SAAR^{1.17} \times SOIL^{2.17})$

Qbar (rural, PCD) = **2.19** m^3/s

4.0 Adjustment for Urbanisation

CWI		125.00		Catchment Wetness Index
CIND	=	*102.4SOIL + 0.28(CWI - 125)*		
CIND	=	**30.72**		
URBAN	=	**0.00**		Fraction of urbanised area in the catchment

Qu bar/Qr bar = $(1 + URBAN)^{2NC} [1 + URBAN\{(21/CIND) - 0.3\}]$

Nc = *0.92-0.00024.S* or *for 500 ≤ SAAR ≤ 1100mm*; *0.74-0.000082.SAAR* *for 1100 ≤ SAAR ≤ 3000mm*

Nc	=	**0.67**	
Qu bar/Qr bar	=	**0.67**	
Qbar_urban	=	**2.19**	m^3/s

5.0 Standard Factorial Error

Standard Factorial Error	=	1.65	
Qbar (68% Confidence)	=	**3.61**	m^3/s

ARUP

Job Title	Midleton FRS
Job Number	252803
Calculation	Institute of Hydrology Report No.124

1.0 Subcatchment: Sink - Not indicated on FSU Web Portal (Manual)

2.0 Physical Catchment Descriptors:

AREA	=	4.21	km^2	Catchment Area
SAAR	=	1051	mm	Standard annual average rainfall (1961-1990)
SOIL	=	0.30		Base flow index derived from soils data

3.0 Mean Annual Flood (Rural)

Qbar (rural, PCD) $Qbar_{rural} = 0.00108 (AREA^{0.89} \times SAAR^{1.17} \times SOIL^{2.17})$

Qbar (rural, PCD) = **0.98** m^3/s

4.0 Adjustment for Urbanisation

CWI = 125.00 Catchment Wetness Index

CIND = $102.4SOIL + 0.28(CWI - 125)$

CIND = **30.72**

URBAN = **0.26** Fraction of urbanised area in the catchment

Qu bar/Qr bar = $(1 + URBAN)^{2NC} [1 + URBAN\{(21/CIND) - 0.3\}]$

Nc = $0.92-0.00024.S_0$ or $0.74-0.000082.SAAR$ for $500 \le SAAR \le 1100mm$ / for $1100 \le SAAR \le 3000mm$

Nc	=	**0.67**	
Qu bar/Qr bar	=	**1.17**	
Qbar_urban	=	**1.14**	m^3/s

5.0 Standard Factorial Error

Standard Factorial Error	=	1.65	
Qbar (68% Confidence)	=	**1.88**	m^3/s

ARUP

Job Title	Midleton FRS
Job Number	252803
Calculation	Institute of Hydrology Report No.124

1.0 Subcatchment: 19_1959_2 - PCDs (incl. catchment area) corrected from FSU node

2.0 Physical Catchment Descriptors:

AREA	=	10.33	km^2	Catchment Area
SAAR	=	1047	mm	Standard annual average rainfall (1961-1990)
SOIL	=	0.30		Base flow index derived from soils data

3.0 Mean Annual Flood (Rural)

Qbar (rural, PCD) $Qbar_{rural} = 0.00108 (AREA^{0.89} \times SAAR^{1.17} \times SOIL^{2.17})$

Qbar (rural, PCD) = **2.16** m^3/s

4.0 Adjustment for Urbanisation

CWI = 125.00 Catchment Wetness Index

CIND = $102.4SOIL + 0.28(CWI - 125)$

CIND = **30.72**

URBAN = **0.16** Fraction of urbanised area in the catchment

Qu bar/Qr bar = $(1 + URBAN)^{2NC} [1 + URBAN\{(21/CIND) - 0.3\}]$

Nc = $0.92-0.00024.S.$ or for $500 \le SAAR \le 1100mm$; $0.74-0.000082.SAAR$ for $1100 \le SAAR \le 3000mm$

Nc	=	**0.67**	
Qu bar/Qr bar	=	**0.96**	
Qbar_urban	=	**2.16**	m^3/s

5.0 Standard Factorial Error

Standard Factorial Error	=	1.65	
Qbar (68% Confidence)	=	**3.57**	m^3/s

ARUP

Job Title	Midleton FRS
Job Number	252803
Calculation	Institute of Hydrology Report No.124

1.0 Subcatchment: 19_711_1

2.0 Physical Catchment Descriptors:

AREA	=	21.34	km^2	Catchment Area
SAAR	=	1143	mm	Standard annual average rainfall (1961-1990)
SOIL	=	0.30		Base flow index derived from soils data

3.0 Mean Annual Flood (Rural)

Qbar (rural, PCD) $Qbar_{rural} = 0.00108 (AREA^{0.89} \times SAAR^{1.17} \times SOIL^{2.17})$

Qbar (rural, PCD) = **4.57** m^3/s

4.0 Adjustment for Urbanisation

CWI		125.00		Catchment Wetness Index
CIND	=	*102.4SOIL + 0.28(CWI - 125)*		
CIND	=	**30.72**		
URBAN	=	**0.00**		Fraction of urbanised area in the catchment

Qu bar/Qr bar = $(1 + URBAN)^{2NC} [1 + URBAN\{(21/CIND) - 0.3\}]$

Nc = *0.92-0.00024.S* or *for 500 ≤ SAAR ≤ 1100mm*; *0.74-0.000082.SAAR* *for 1100 ≤ SAAR ≤ 3000mm*

Nc	=	**0.65**	
Qu bar/Qr bar	=	**0.65**	
Qbar_urban	=	**4.57**	m^3/s

5.0 Standard Factorial Error

Standard Factorial Error	=	1.65	
Qbar (68% Confidence)	=	**7.54**	m^3/s