

Appendix 3.1

Drawings of the Proposed Scheme

Cork County Council

Douglas Flood Relief Scheme (Including Togher Culvert)

Proposed Scheme Drawings

ARUP

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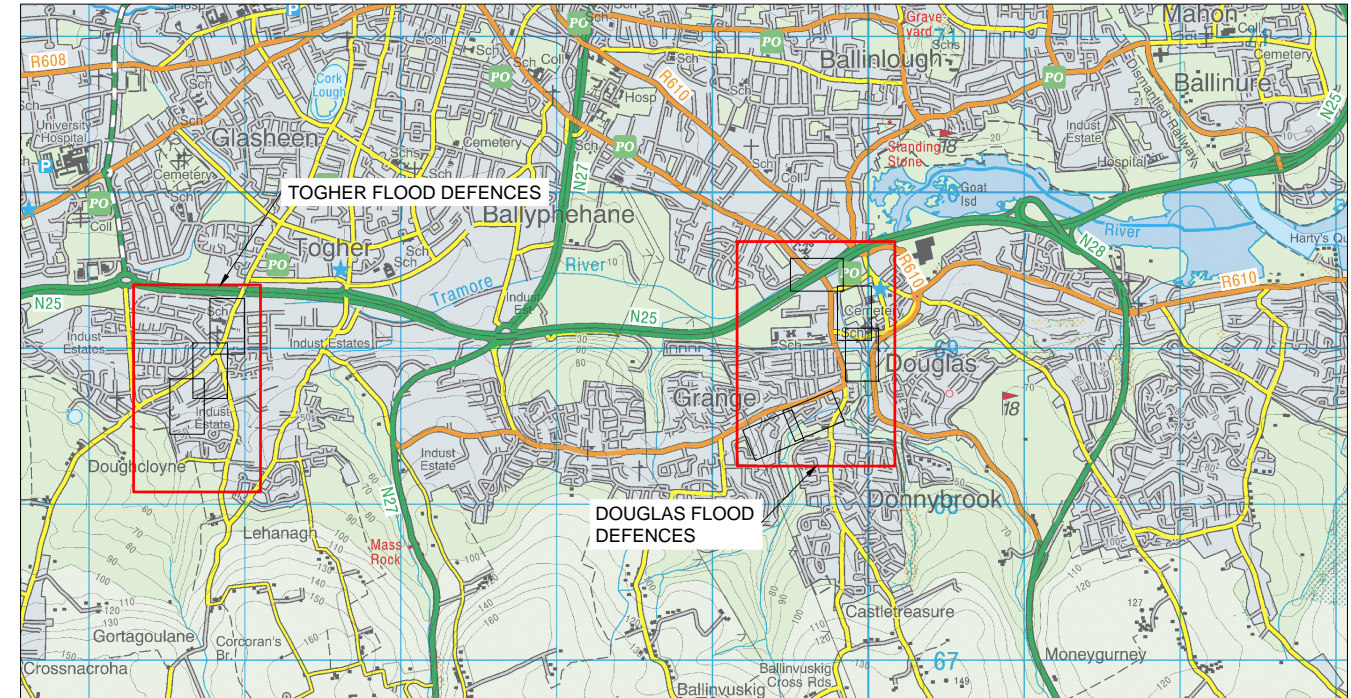
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Cork County Council

Douglas Flood Relief Scheme (including Togher Culvert)

Proposed Scheme Drawings

Drawing Number	Drawing Name
C-000-001	Cover Sheet
C-000-002	Index Sheet
C-000-003	Key Plan
C-000-004	Existing Flood Extents and Proposed Flood Benefit Area (Sheet 1 of 3)
C-000-005	Existing Flood Extents and Proposed Flood Benefit Area (Sheet 2 of 3)
C-000-006	Existing Flood Extents and Proposed Flood Benefit Area (Sheet 3 of 3)
C-000-007	Proposed Togher Flood Defences - (Sheet 1 of 3)
C-000-008	Proposed Togher Flood Defences - (Sheet 2 of 3)
C-000-009	Proposed Togher Flood Defences - (Sheet 3 of 3)
C-000-010	Proposed Douglas Flood Defences - (Sheet 1 of 5)
C-000-011	Proposed Douglas Flood Defences - (Sheet 2 of 5)
C-000-012	Proposed Douglas Flood Defences - (Sheet 3 of 5)
C-000-013	Proposed Douglas Flood Defences - (Sheet 4 of 5)
C-000-014	Proposed Douglas Flood Defences - (Sheet 5 of 5)
C-000-015	Proposed Flood Defences - Sections (Sheet 1 of 3)
C-000-016	Proposed Flood Defences - Sections (Sheet 2 of 3)
C-000-017	Proposed Flood Defences - Sections (Sheet 3 of 3)
C-000-018	Proposed Flood Defences - Togher Details Sheet 1 of 2
C-000-019	Proposed Flood Defences - Togher Details Sheet 2 of 2
C-000-020	Proposed Tree Replanting - Togher Sheet 1 of 2
C-000-021	Proposed Tree Replanting - Togher Sheet 2 of 2
C-000-022	Proposed Tree Replanting - Douglas Sheet 1 of 2
C-000-023	Proposed Tree Replanting - Douglas Sheet 1 of 2



Location Plan

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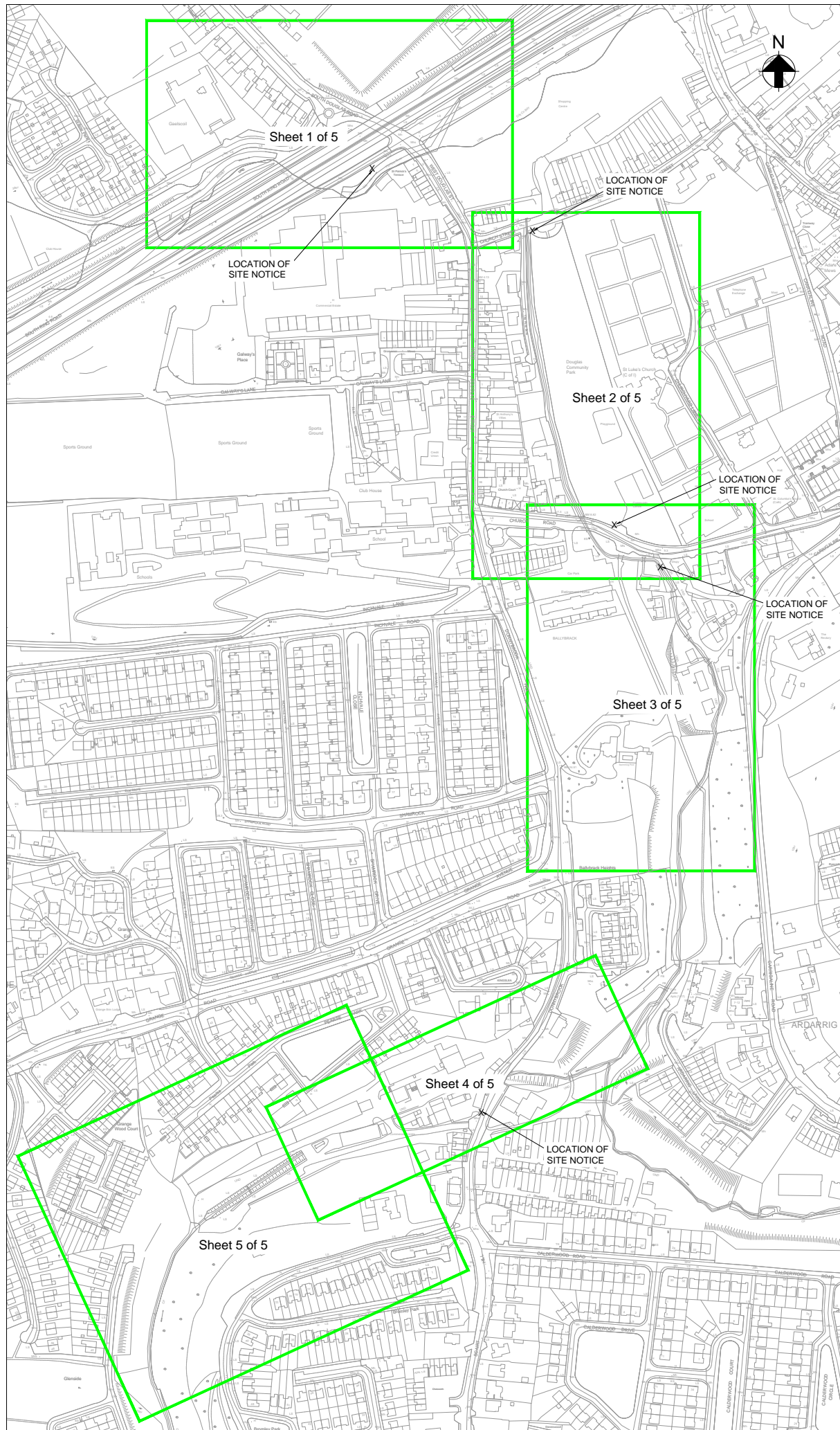
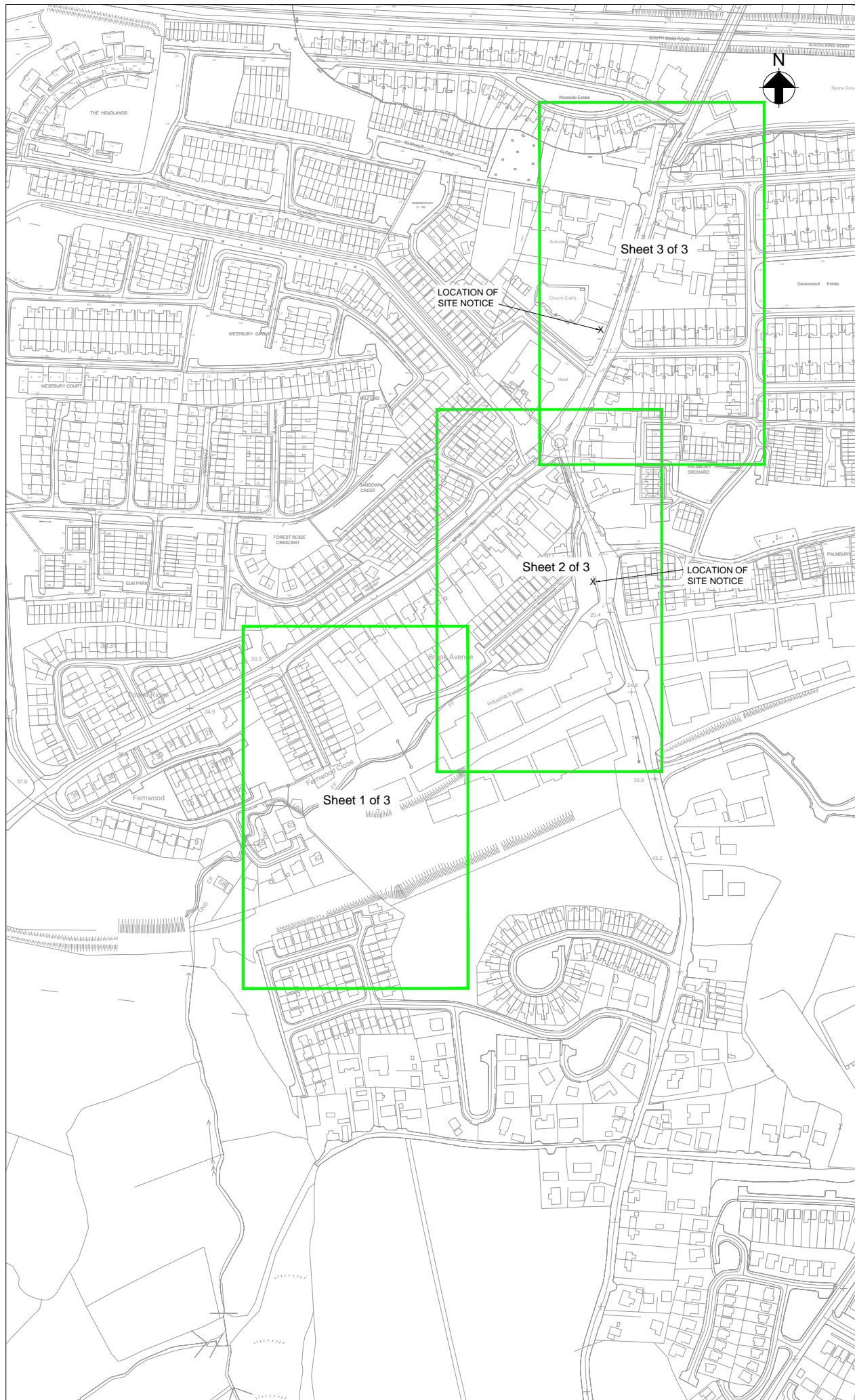
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Client

Cork County Council

Project Title
Douglas Flood Relief Scheme
(Including Togher Culvert)

Drawing Title

Key Plan

Scale at A1 1:5,000 Scale at A3 1:10,000

Role Planning

Suitability Preliminary

Arup Job No 234335-00 Rev PL1

Name C-000-003



Notes:
 1. The 1 in 100 year fluvial flood extents shown on this map have been reproduced from the Lee Catchment Flood Risk Assessment and Management Study current scenario maps (Ref: M6/UA/EXT/CURS/001 & 002).



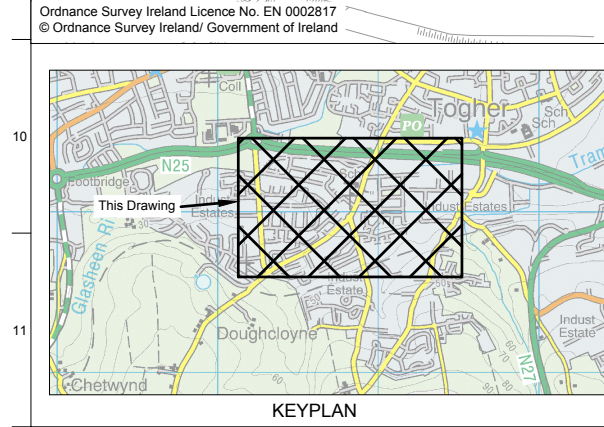
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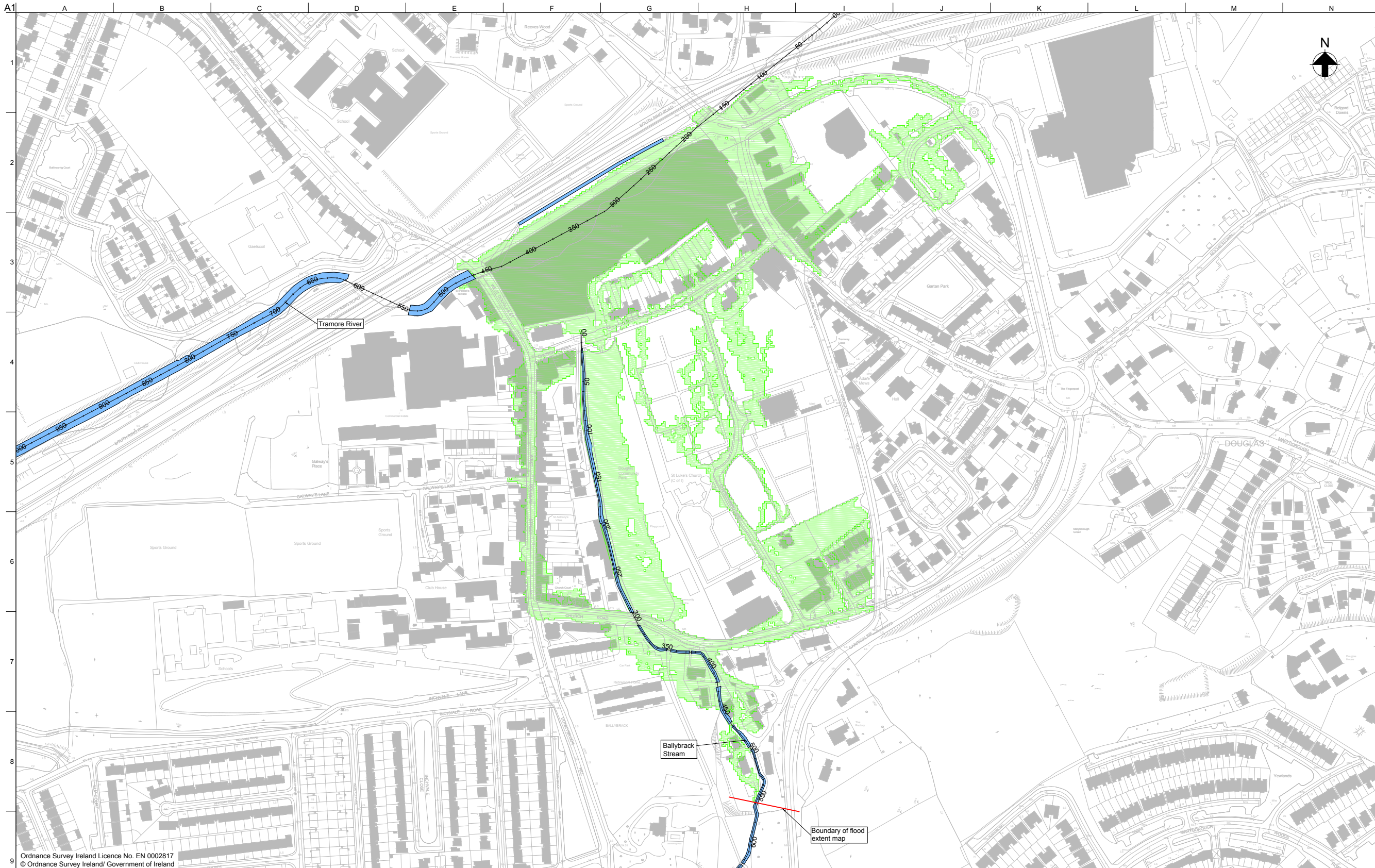
Client
 Cork County Council

Project Title
 Douglas Flood Relief Scheme
 (Including Togher Culvert)

Drawing Title
 Existing Flood Extents and
 Proposed Flood Benefit Area
 Sheet 1 of 3
 Scale at A1 1:2000 Scale at A3 1:4000
 Role Civil
 Suitability Planning
 Arup Job No 234335-00 Rev PL1
 Name C-000-004



- Legend**
- Benefiting Lands (Defended Against Flood Events up to 1 in 100 Year Fluvial Event)
 - 1% AEP Fluvial Flood Extent (1 in 100yr Fluvial)
 - Watercourse
 - 4150 Channel Centreline and Chainage



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Client
Cork County Council

Project Title
**Douglas Flood Relief Scheme
(Including Togher Culvert)**

Drawing Title
**Existing Flood Extents and
Proposed Flood Benefit Area
Sheet 2 of 3**

Scale at A1 1:2000 Scale at A3 1:4000

Role Civil

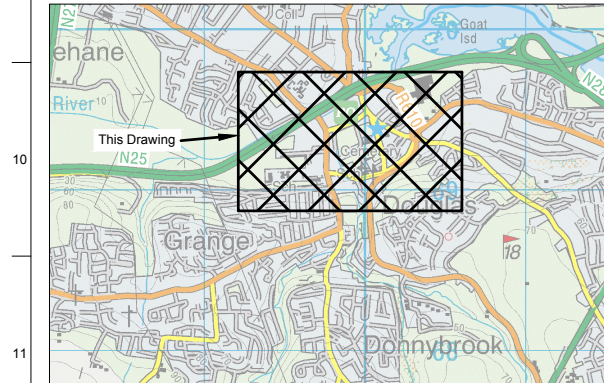
Suitability Planning

Arup Job No **234335-00** Rev **PL1**

Name **C-000-005**

Legend

- Benefiting Lands (Defended Against Flood Events up to 1 in 100 Year Fluvial Event)
- 1% AEP Fluvial Flood Extent (1 in 100yr Fluvial)
- Watercourse
- 150 Channel Centreline and Chainage





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Project Title
**Douglas Flood Relief Scheme
(Including Togher Culvert)**

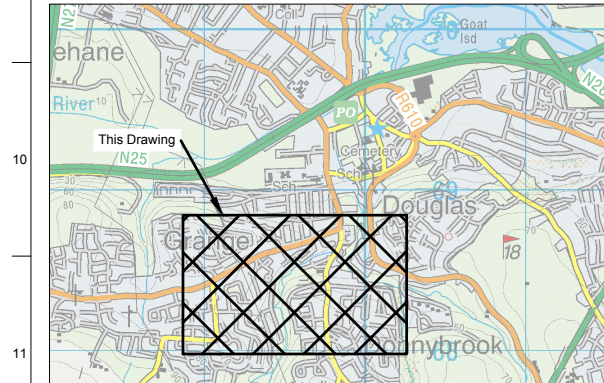
Drawing Title
**Existing Flood Extents and
Proposed Flood Benefit Area
Sheet 3 of 3**

Scale at A1 1:1000 Scale at A3 1:2000

Role Civil

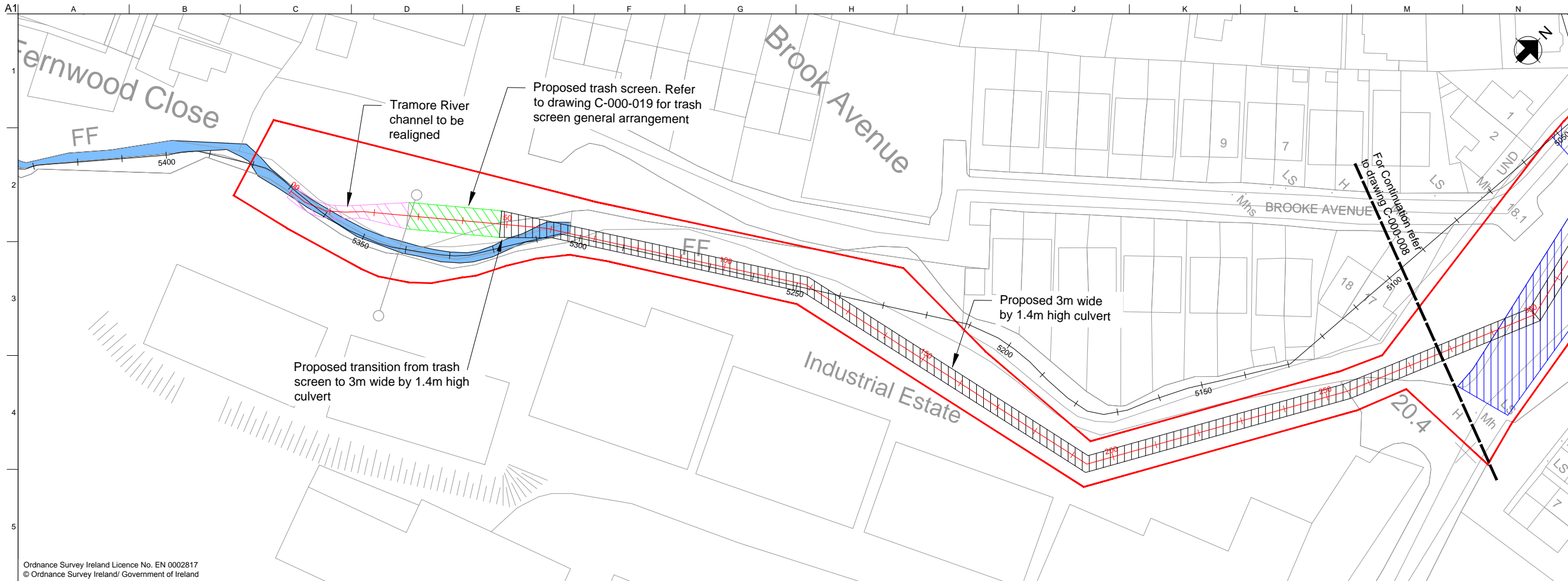
Suitability Planning

Arup Job No 234335-00	Rev PL1
Name C-000-006	



Legend

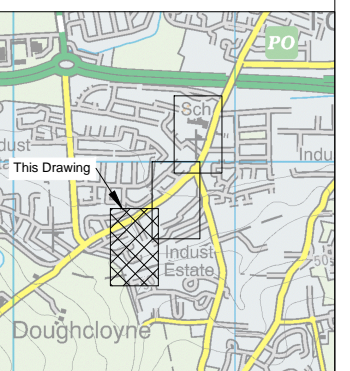
- Benefiting Lands (Defended Against Flood Events up to 1 in 100 Year Fluvial Event)
- 1% AEP Fluvial Flood Extent (1 in 100yr Fluvial)
- Watercourse
- 150 Channel Centreline and Chainage



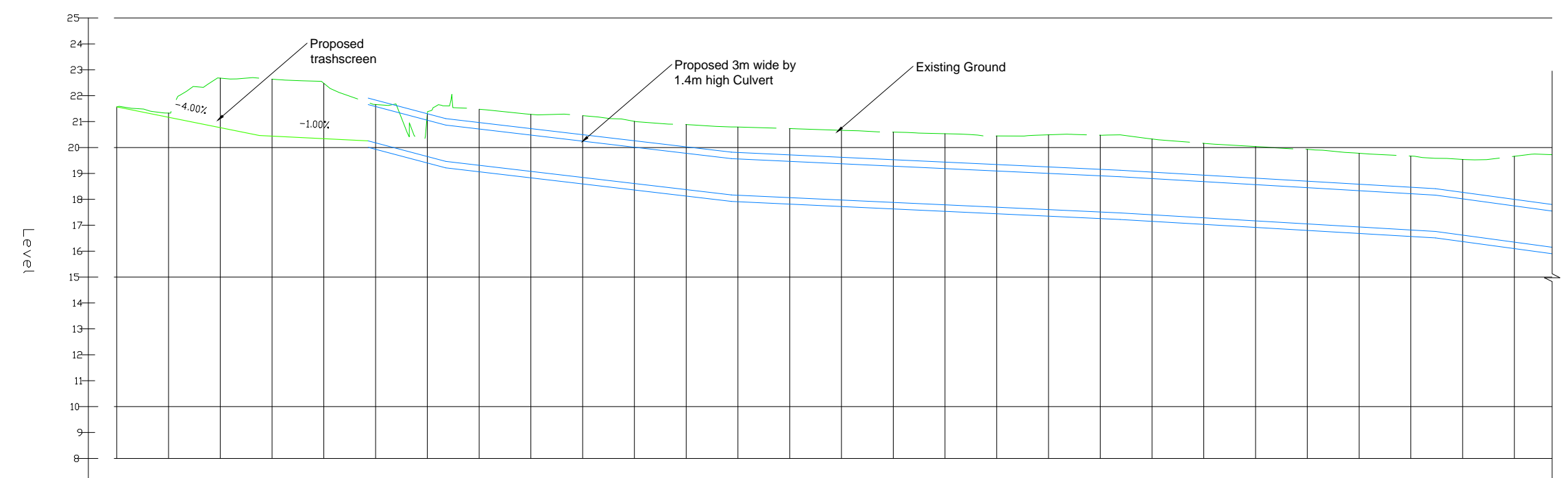
- ### Legend
- Proposed Regrading
 - Proposed Culvert
 - Proposed Works Area
 - Watercourse
 - Location and Reference of Cross Section
 - Proposed Channel Realignment
 - Proposed Trash Screen
 - Proposed Culvert Chainage
 - Tramore River Chainage

Notes:

1. All levels are in Metres Ordnance Datum Malin Head (mOD) unless otherwise noted.



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Chainage	00.000	10.000	20.000	30.000	40.000	50.000	60.000	70.000	80.000	90.000	100.000	110.000	120.000	130.000	140.000	150.000	160.000	170.000	180.000	190.000	200.000	210.000	220.000	230.000	240.000	250.000	260.000	270.000
Existing Ground Levels	21.568	21.330	22.678	22.639	22.480	21.661	21.292	21.478	21.279	21.230	21.012	20.887	20.790	20.732	20.665	20.594	20.532	20.448	20.481	20.475	20.330	20.162	20.039	19.932	19.779	19.670	19.542	19.661
Pipe Gradient						5.27%				2.35%							0.93%						1.17%					2.7
Invert Level						20.26	19.46						18.17									17.47					16.76	



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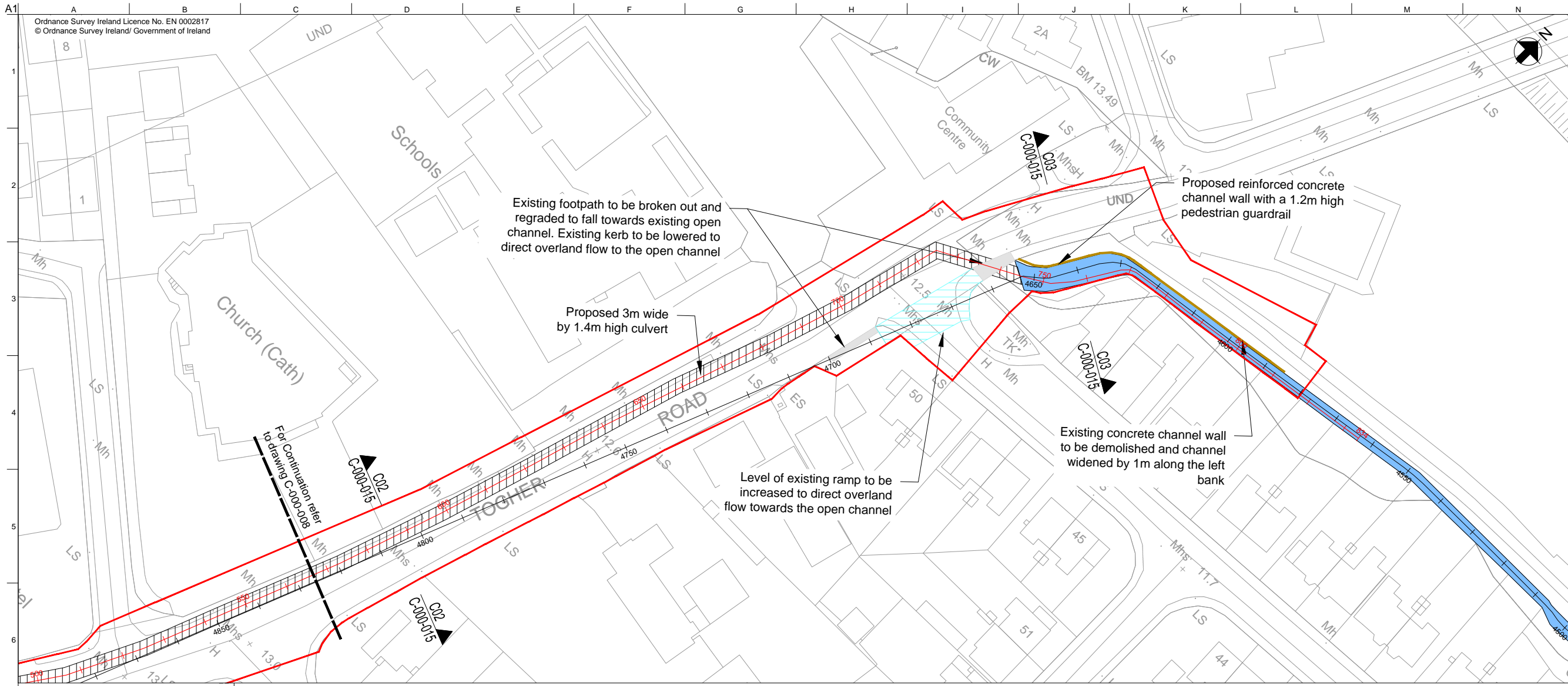
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Client:
Cork County Council

Project Title:
Douglas Flood Relief Scheme (Including Togher Culvert)

Drawing Title:
Proposed Togher Flood Defences (Sheet 1 of 3)

Scale at A1: 1:500 Scale at A3: 1:1000
Role: Civil
Suitability: Planning
Anup Job No: **234335-00** Rev: **PL1**
Name: **C-000-007**

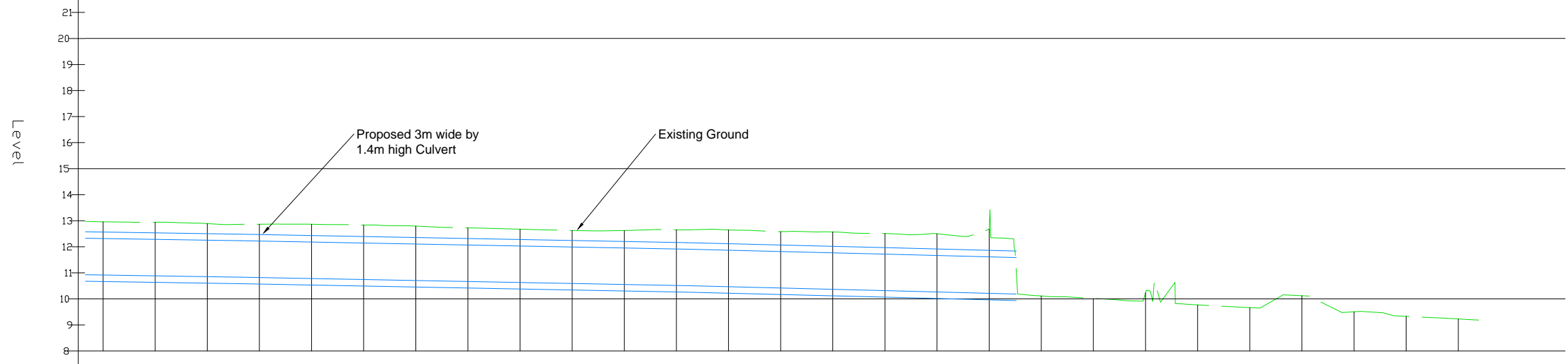
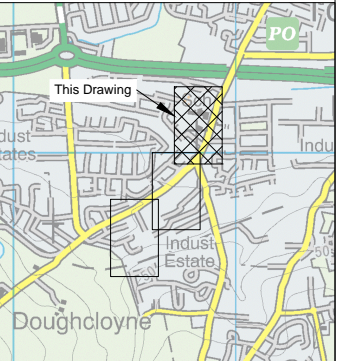


Legend

- Proposed Culvert
- Proposed Concrete Channel Wall and Pedestrian Guardrail
- Proposed Works Area
- Watercourse
- Location and Reference of Cross Section
- Proposed Culvert Chainage
- Tramore River Chainage

Notes:

1. All levels are in Metres Ordnance Datum Malin Head (mOD) unless otherwise noted.



Chainage	570,000	580,000	590,000	600,000	610,000	620,000	630,000	640,000	650,000	660,000	670,000	680,000	690,000	700,000	710,000	720,000	730,000	740,000	750,000	760,000	770,000	780,000	790,000	800,000	810,000	820,000	830,000	840,000	850,500
Existing Ground Levels	12.956	12.943	12.889	12.864	12.864	12.835	12.793	12.726	12.676	12.627	12.625	12.652	12.648	12.580	12.571	12.508	12.488	12.678	10.112	10.017	10.234	9.768	9.663	10.121	9.505	9.329	9.228		
Pipe Gradient									0.38%				0.50%				0.51%												
Invert Level				10.83								10.51			10.30														

KEYPLAN

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Client
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Project Title
Douglas Flood Relief Scheme (Including Togher Culvert)

Drawing Title
Proposed Togher Flood Defences (Sheet 3 of 3)

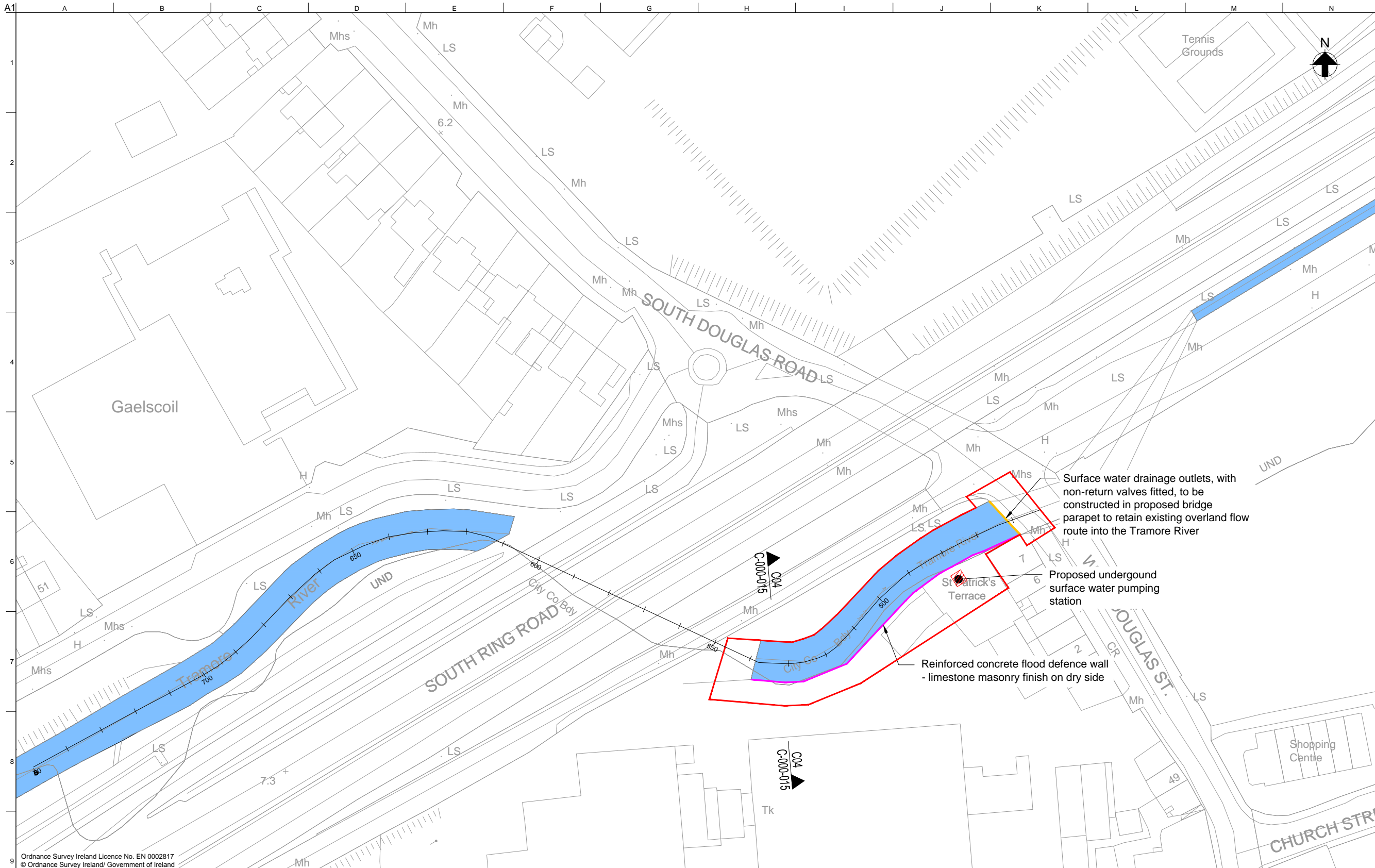
Scale at A1: 1:500 Scale at A3: 1:1000

Role: Civil

Suitability: Planning

Arup Job No: **234335-00** Rev: **PL1**

Name: **C-000-009**



Notes:
 1. All levels are in Metres Ordnance Datum Main Head (mOD) unless otherwise noted.

Surface water drainage outlets, with non-return valves fitted, to be constructed in proposed bridge parapet to retain existing overland flow route into the Tramore River

Proposed underground surface water pumping station

Reinforced concrete flood defence wall - limestone masonry finish on dry side

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Project Title
 Douglas Flood Relief Scheme
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Drawing Title
 Proposed Douglas Flood Defences
 (Sheet 1 of 5)

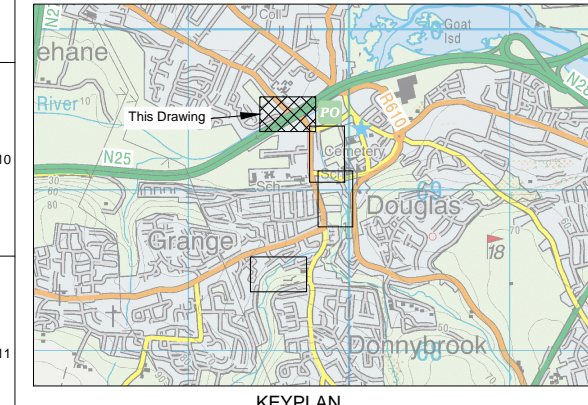
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Role Civil

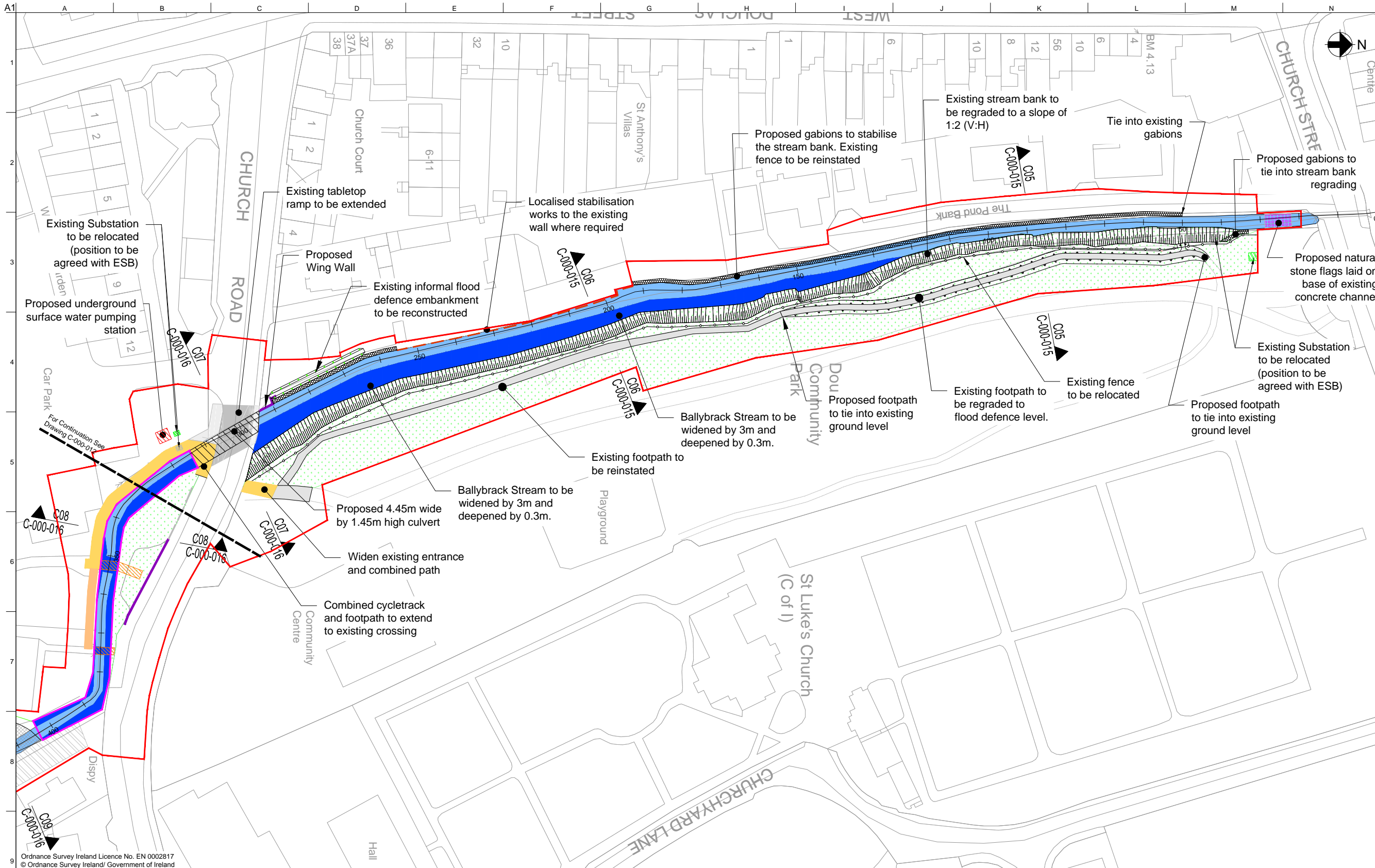
Suitability Planning

Arup Job No 234335-00 Rev PL1

Name C-000-010



- Legend**
- Proposed Works Area
 - Existing Watercourse
 - Proposed 1.2m High Reinforced Concrete Flood Defence Wall
 - Proposed 1.2m High Reinforced Concrete Bridge Parapet
 - Tramore River Chainage
- Location and Reference of Cross Section
- ▲ C01 C-000-001
 - ▲ C01 C-000-001
- Scale 150



Notes:
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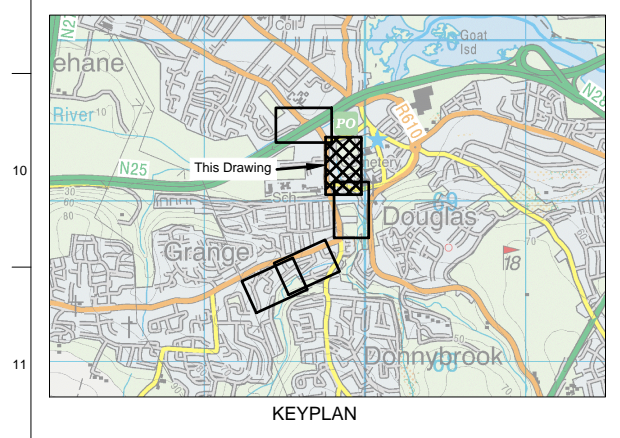
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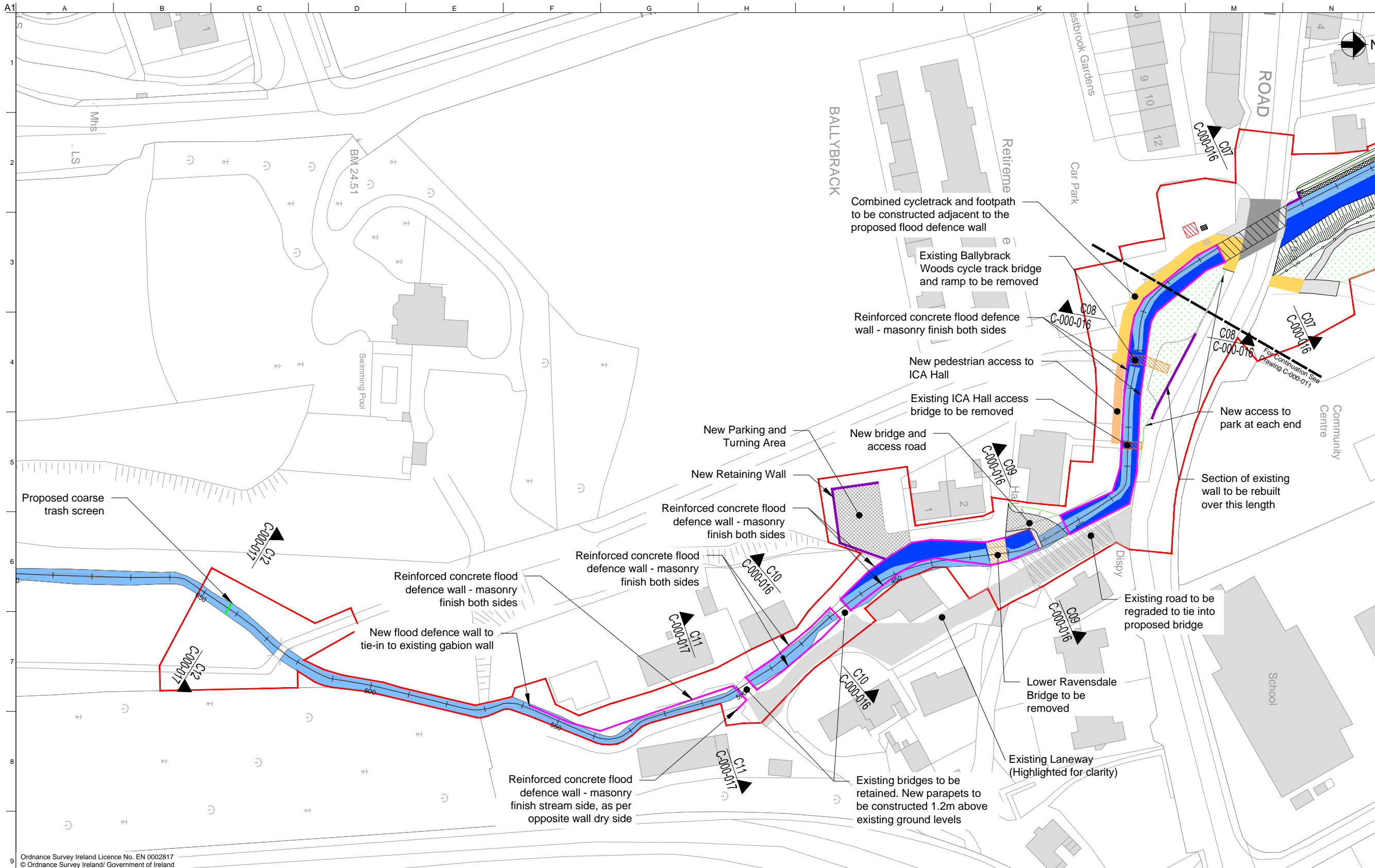
Project Title
**Douglas Flood Relief Scheme
 (Including Togher Culvert)**

Drawing Title
**Proposed Douglas Flood Defences
 (Sheet 2 of 5)**

Scale at A1	1:500	Scale at A3	1:1000
Role	Civil		
Suitability	Planning		
Arup Job No	234335-00	Rev	PL1
Name	C-000-011		



- Legend**
- Proposed Works Area
 - Existing Watercourse
 - ▲ C01 ▲ C01
▲ C-000-001 ▲ C-000-001 Location and Reference of Cross Section
 - Proposed 1.2m High Flood Defence Wall
 - Proposed Flood Defence Embankment
 - Localised Bank Stabilisation Works Where Required
 - Proposed 2m Wide Footway
 - Proposed 3m Wide Footway / Cycle Track
 - Proposed Channel Widening
 - Proposed Culvert
 - Existing Bridge to be Removed
 - Ballybrack Stream Chainage



Notes:
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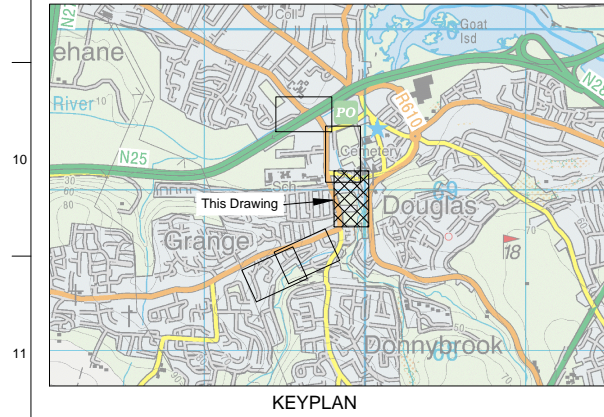
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Project Title
**Douglas Flood Relief Scheme
 (Including Togher Culvert)**

Drawing Title
**Proposed Douglas Flood Defences
 (Sheet 3 of 5)**

Scale at A1	1:500	Scale at A3	1:1000
Role	Civil		
Suitability	Planning		
Arup Job No	234335-00	Rev	PL1
Name	C-000-012		

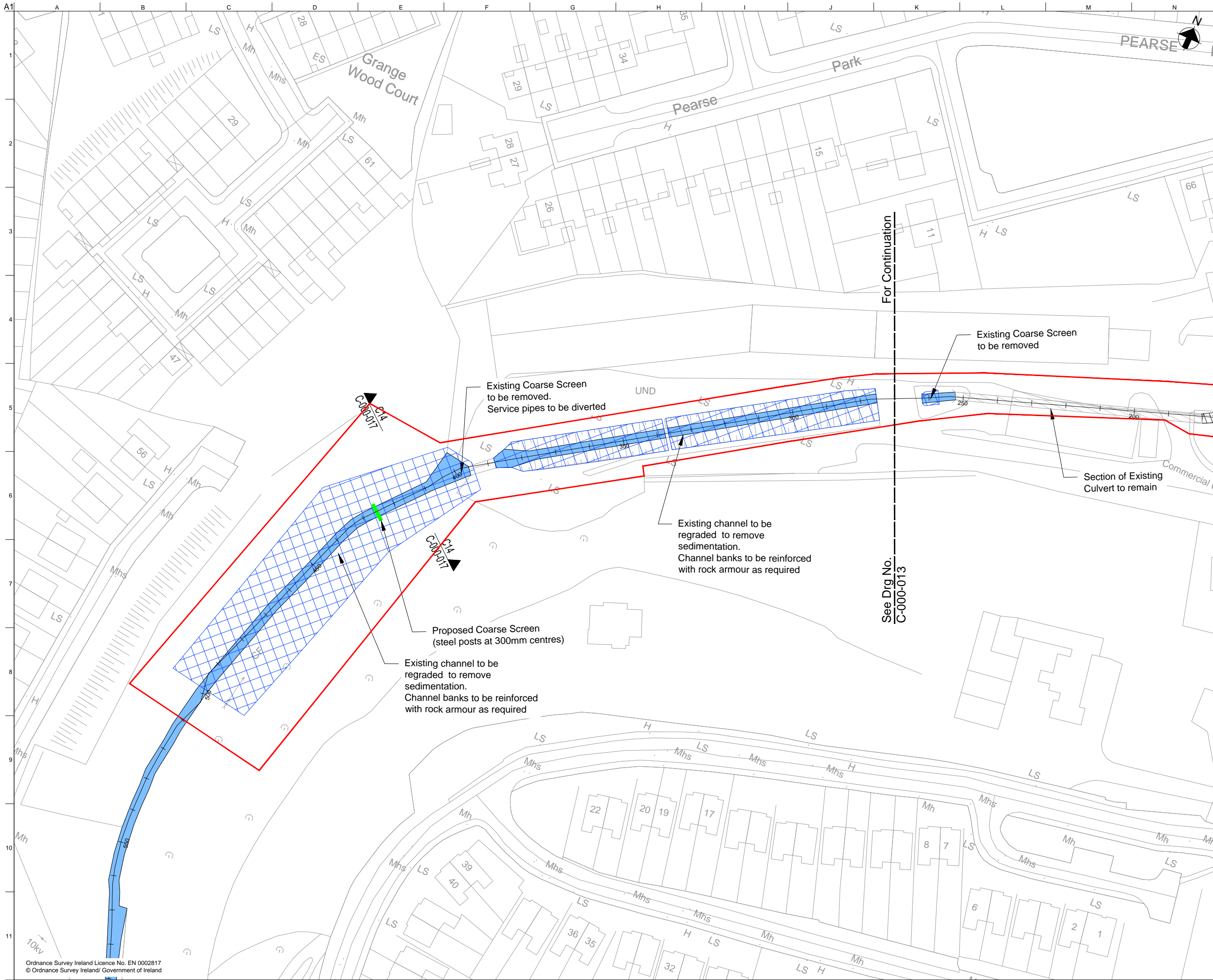
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Legend

	Proposed Works Area		Proposed 2m Wide Footway
	Existing Watercourse		Proposed 3m Wide Footway / Cycle Track
	Location and Reference of Cross Section		Proposed River Widening
	Proposed 1.2m High Reinforced Concrete Flood Defence Wall		Proposed Bridge/Culvert
	Proposed Coarse Trash Screen		Existing Bridge to be Removed
			Ballybrack Stream Chainage

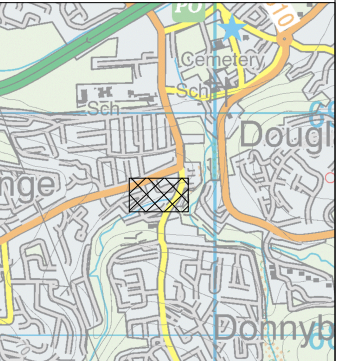
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- Legend**
- Channel Regrading
 - Proposed Culvert
 - Proposed Works Area
 - Watercourse
 - Proposed Coarse Screen
 - Location and Reference of Cross Section
 - Culvert Chainage
 - Grange Stream Chainage

Notes:

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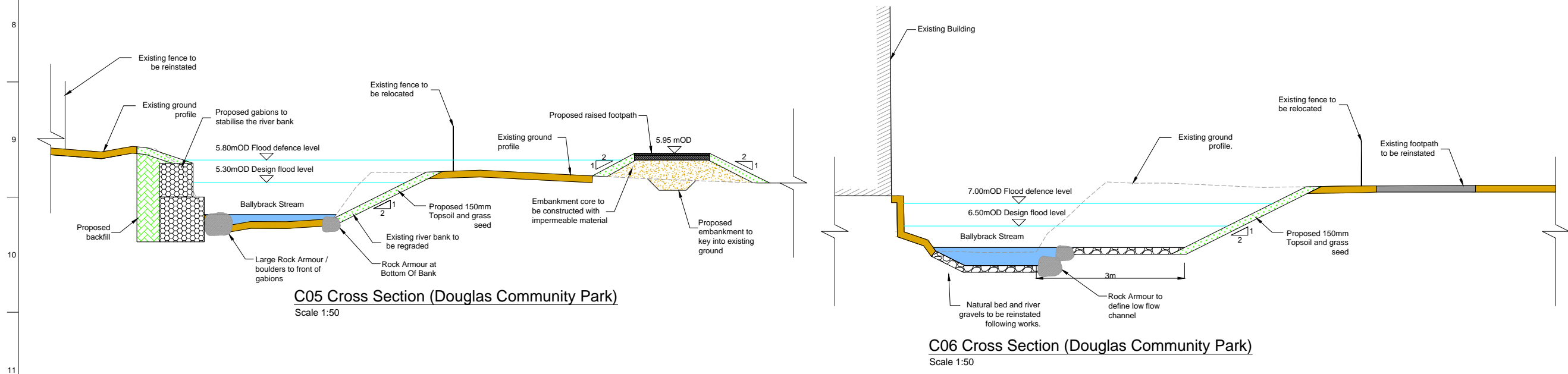
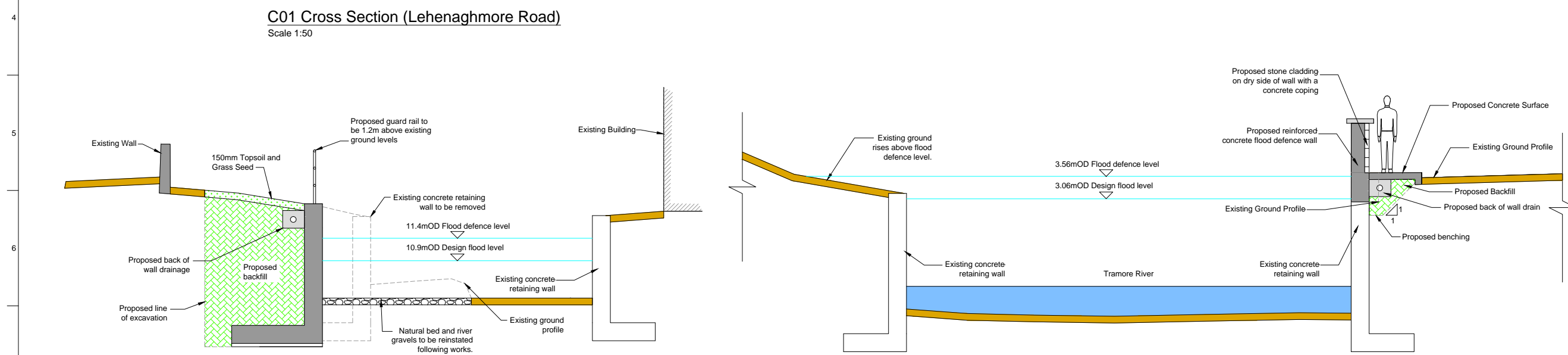
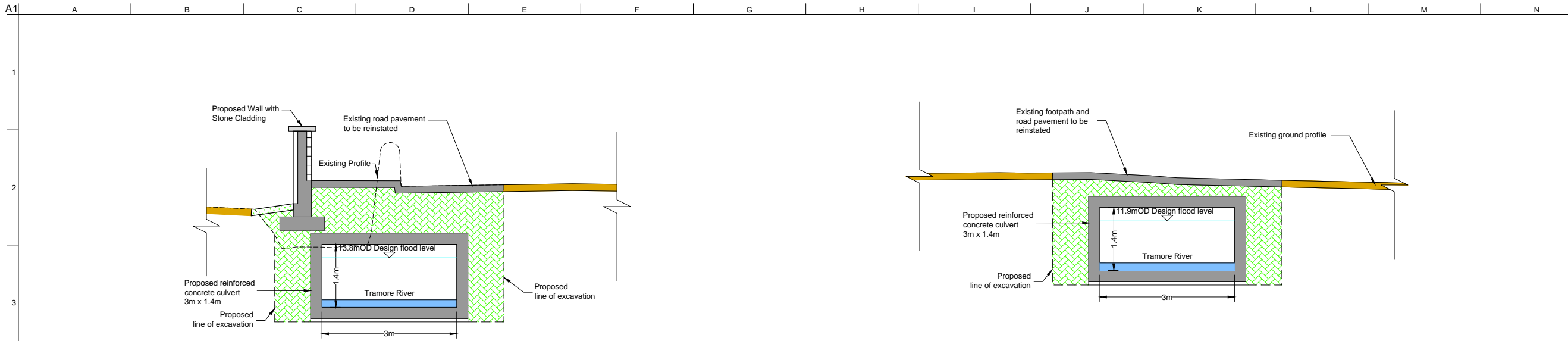
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Client
Cork County Council

Project Title
Douglas Flood Relief Scheme (Including Togher Culvert)

Drawing Title
Proposed Douglas Flood Defences (Sheet 5 of 5)

Scale at A1	1:500	Scale at A3	1:1000
Role	Civil		
Suitability	Planning		
Arup Job No	234335-00	Rev	PL1
Name	C-000-014		



Notes:
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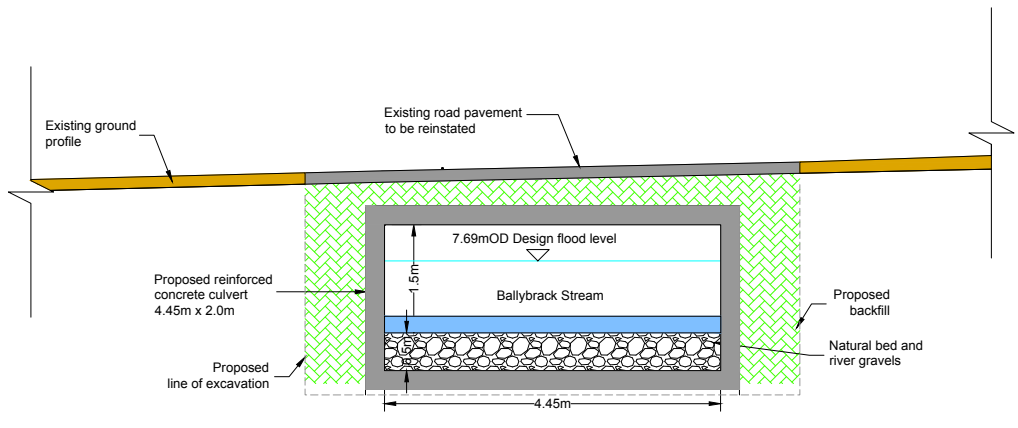
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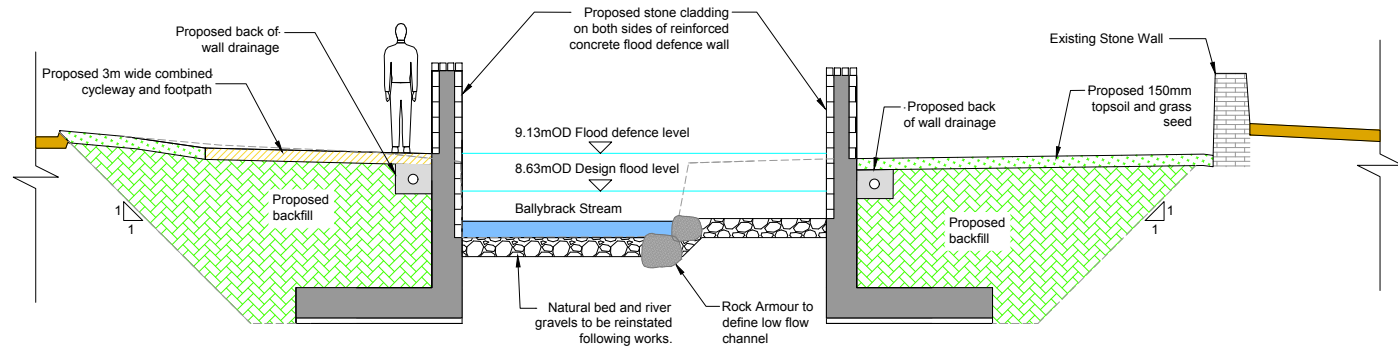
Project Title
Douglas Flood Relief Scheme (Including Togher Culvert)

Drawing Title
Proposed Flood Defences Sections Sheet 1 of 3

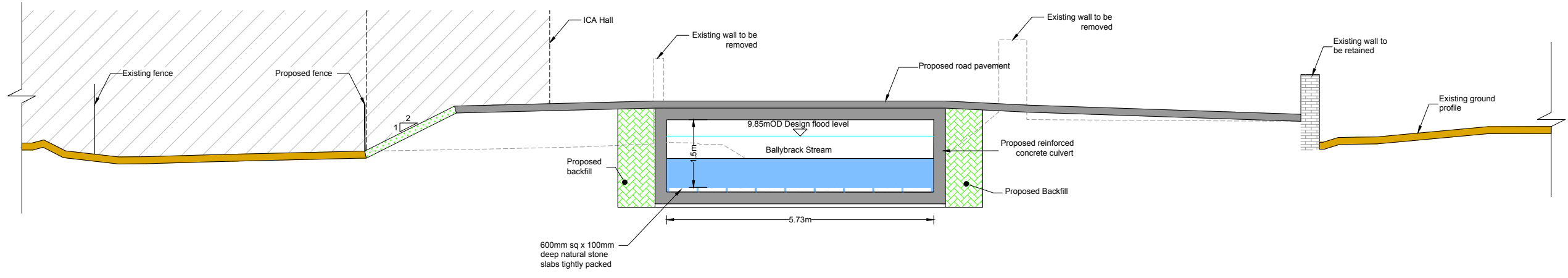
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Suitability	Planning		
Arup Job No	234335-00	Rev	PL1
Name	C-000-015		



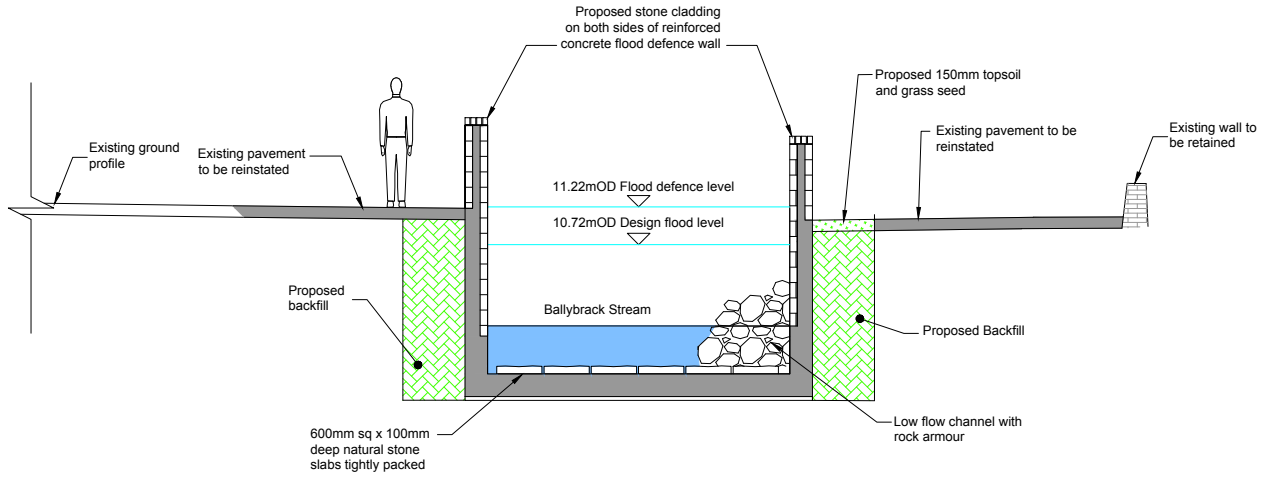
C07 Cross Section (Church Road)
Scale 1:50



C8 Cross Section (Ravensdale)
Scale 1:50



C9 Cross Section (Lower Ravensdale Bridge)
Scale 1:50



C10 Cross Section (Ravensdale)
Scale 1:50

Notes:
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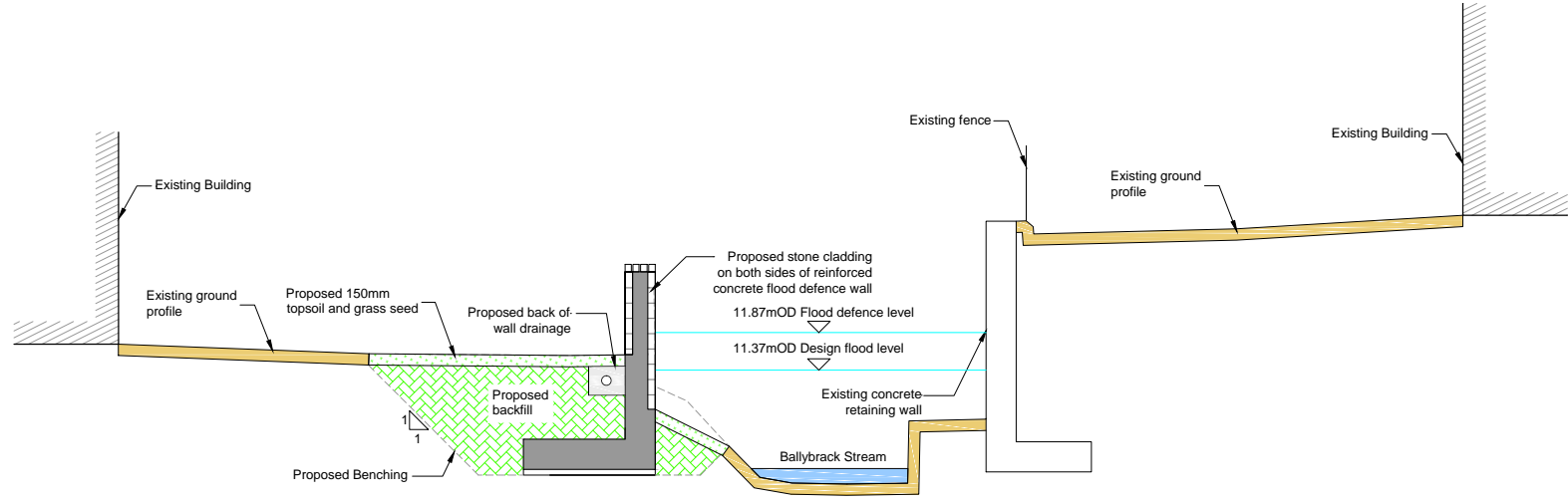
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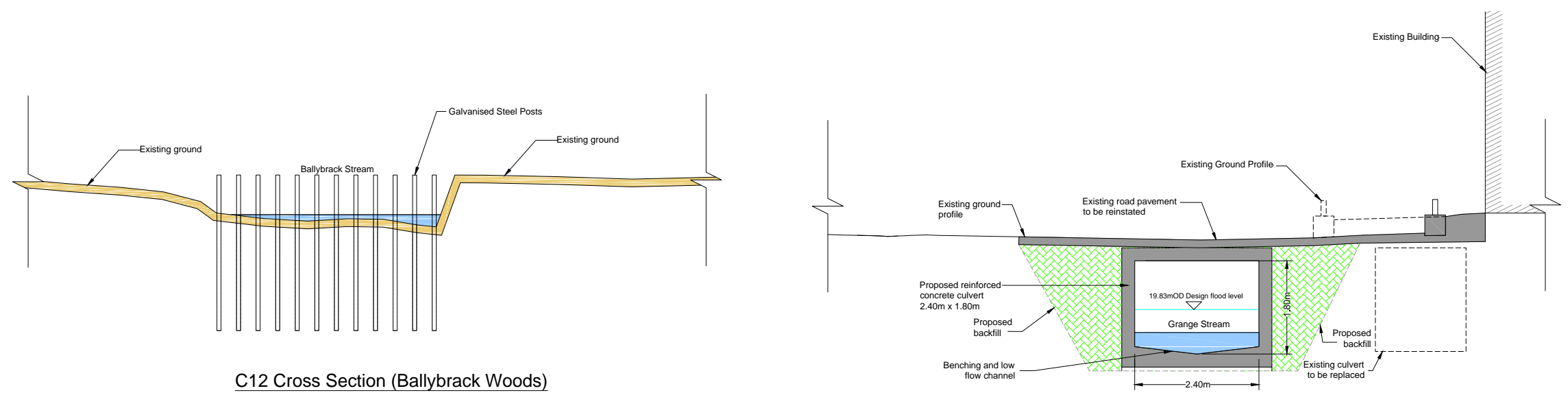
Project Title
Douglas Flood Relief Scheme (Including Togher Culvert)

Drawing Title
Proposed Flood Defences Sections Sheet 2 of 3

Scale at A1	1:50	Scale at A3	1:100
Role	Civil		
Suitability	Planning		
Arup Job No	234335-00	Rev	PL1
Name	C-000-016		

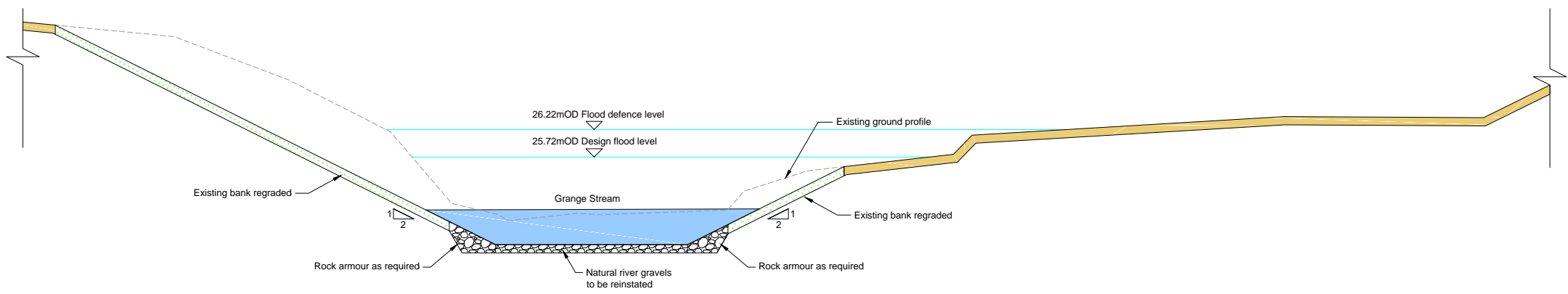


C11 Cross Section (Ravensdale)
Scale 1:50



C12 Cross Section (Ballybrack Woods)
Scale 1:50

C13 Cross Section (Grange Stream Culvert)
Scale 1:50



C14 Cross Section (Donnybrook CC)
Scale 1:50

Notes:
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Client

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Project Title
**Douglas Flood Relief Scheme
(Including Togher Culvert)**

Drawing Title

**Proposed Flood Defences Sections
Sheet 3 of 3**

Scale at A1
As Shown

Role
Civil

Suitability
Planning

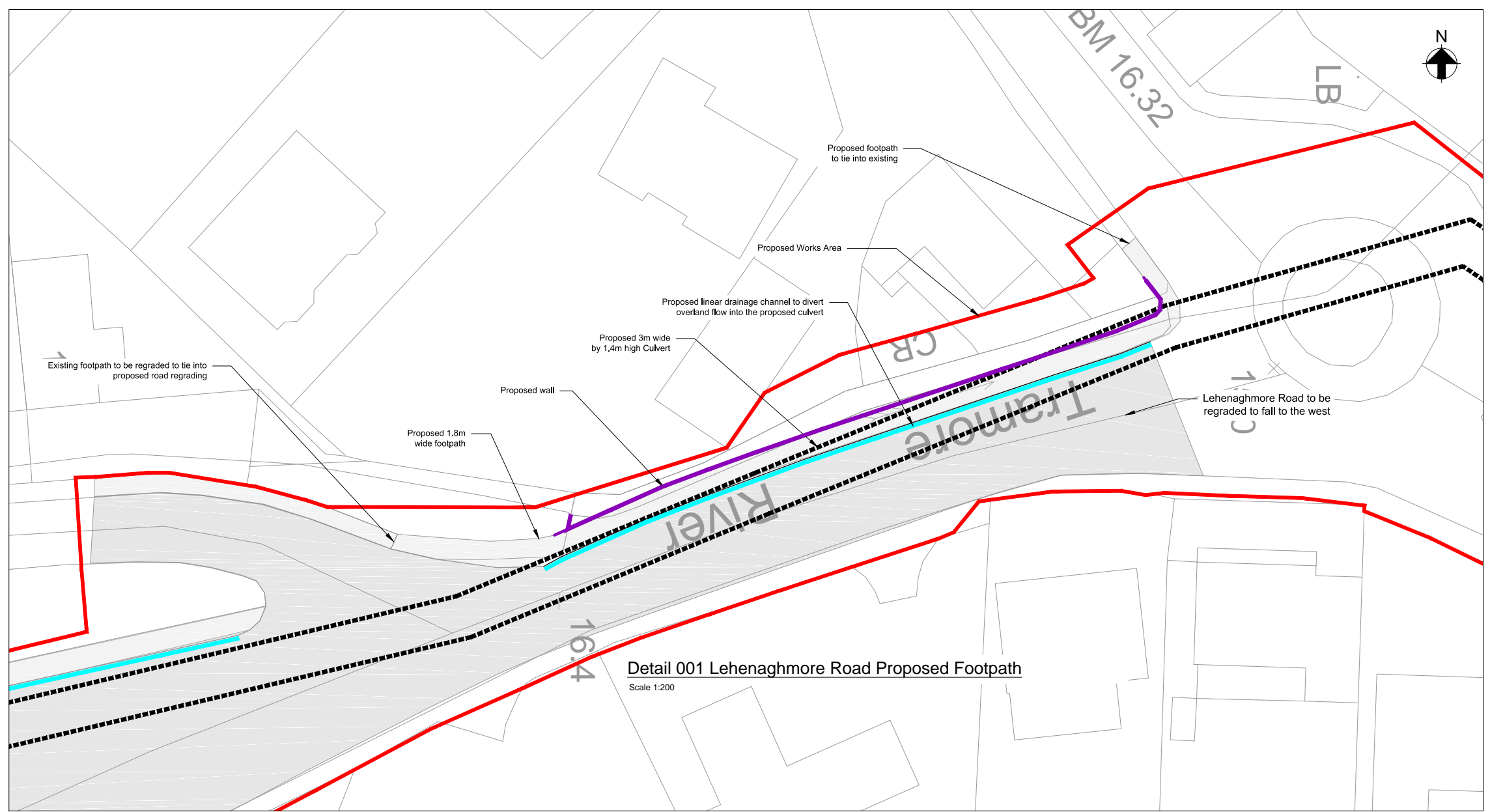
Arup Job No
234335-00

Name
C-000-017

Rev
PL1

Notes:

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Detail 001 Lehenaghmore Road Proposed Footpath
Scale 1:200



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**Douglas Flood Relief Scheme
(Including Togher Culvert)**

Drawing Title
**Proposed Flood Defences
Togher Details
Sheet 1 of 2**

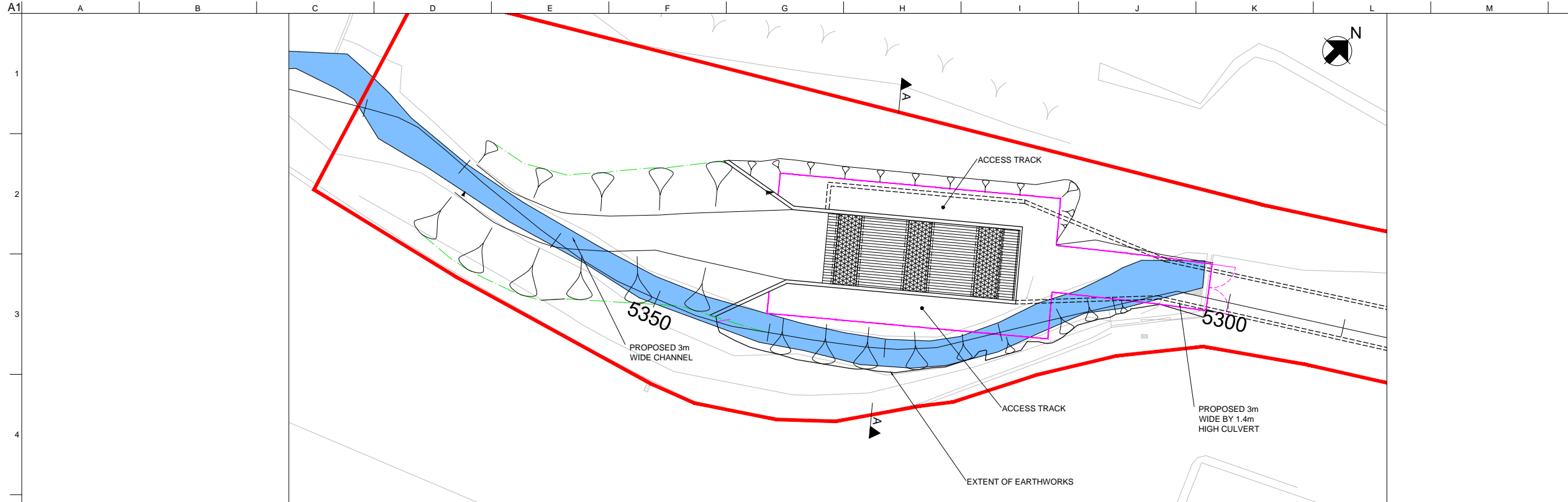
Scale at A1 1:200 Scale at A3 1:400

Role Civil

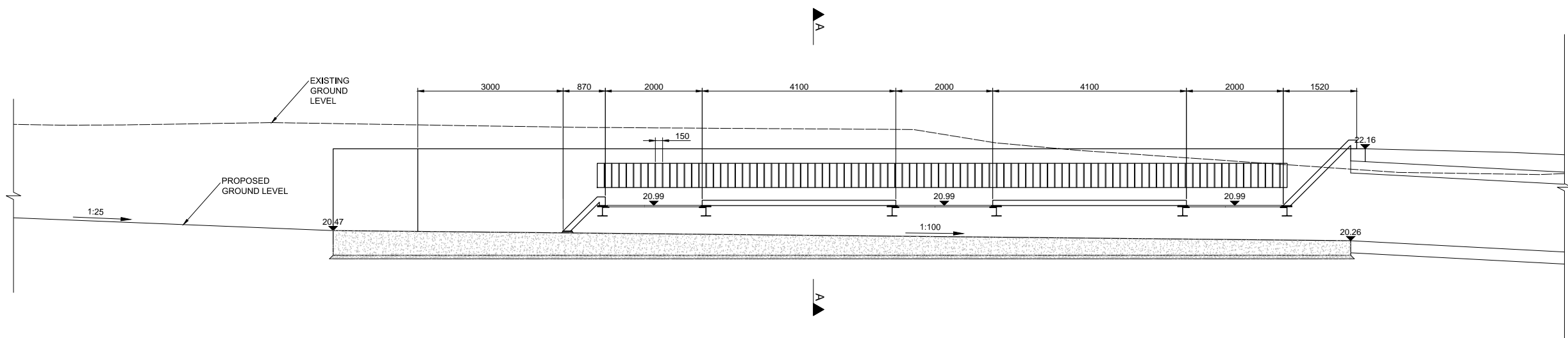
Suitability Planning

Arup Job No **234335-00** Rev **PL1**

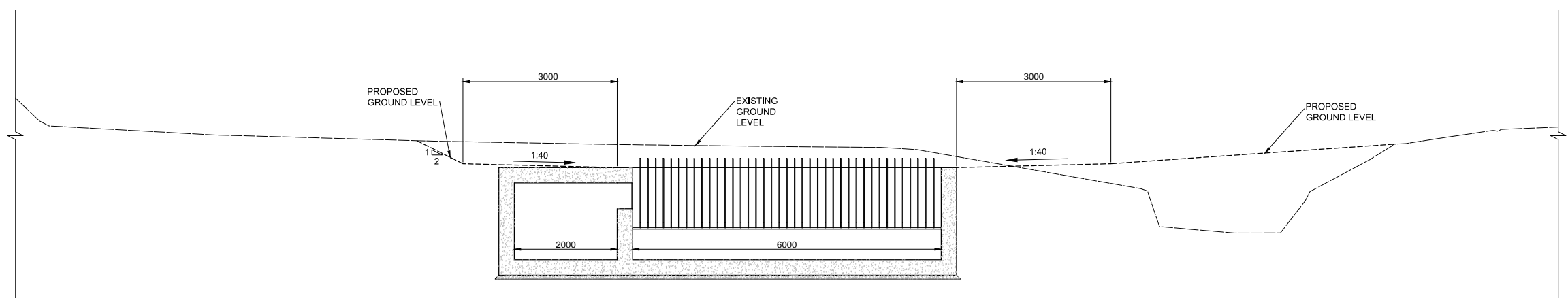
Name **C-000-018**



Plan of Trash Screen & Access Track
SCALE 1:200



Elevation
SCALE 1:50



Section A-A
SCALE 1:50

- Legend**
- Proposed Works Area
 - Existing Watercourse
 - 2.4m High Palisade Fence

Notes:

1. All levels are in Metres Ordnance Datum Malin Head (mOD) unless otherwise noted.



Rev	Date	By	Chkd	Appd
PL1	11.05.17	SB	DT	KL

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Cork, Ireland
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www.arup.com

Client
Cork County Council

Project Title
**Douglas Flood Relief Scheme
(Including Toger Culvert)**

Drawing Title
**Proposed Flood Defences
Toger Details
Sheet 2 of 2**

Scale at A1: **As Shown**

Role: **Civil**

Suitability: **Planning**

Arup Job No 234335-00	Rev PL1
Name C-000-019	



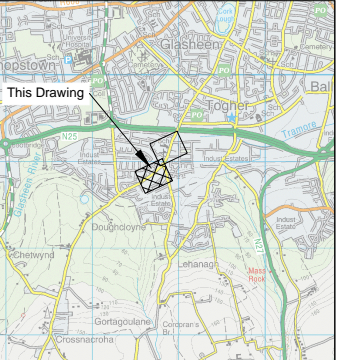
Legend

- Proposed Works Area
- Watercourse
- Proposed Semi Mature Tree Planting

Notes:

- All levels are in Metres Ordnance Datum Mean Head (mOD) unless otherwise noted.

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Rev	Date	By	Chkd	Appd

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www.arup.com

Client:
Cork County Council

Project Title:
Douglas Flood Relief Scheme (Including Togher Culvert)

Drawing Title:
Proposed Tree Replanting Togher - Sheet 1 of 2

Scale at A1	1:1000	Scale at A3	1:2000
Role	Civil		
Suitability	Planning		
Arup Job No	234335-00	Rev	PL1
Name	C-000-020		



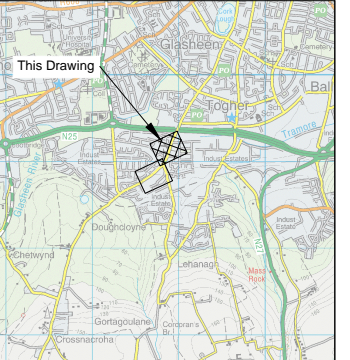
Legend

- Proposed Works Area
- Watercourse
- Proposed Semi Mature Tree Planting

Notes:

- All levels are in Metres Ordnance Datum Mean Head (mOD) unless otherwise noted.

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KEYPLAN

PL1	11.05.17	SB	DT	KL
Rev	Date	By	Chkd	Appd

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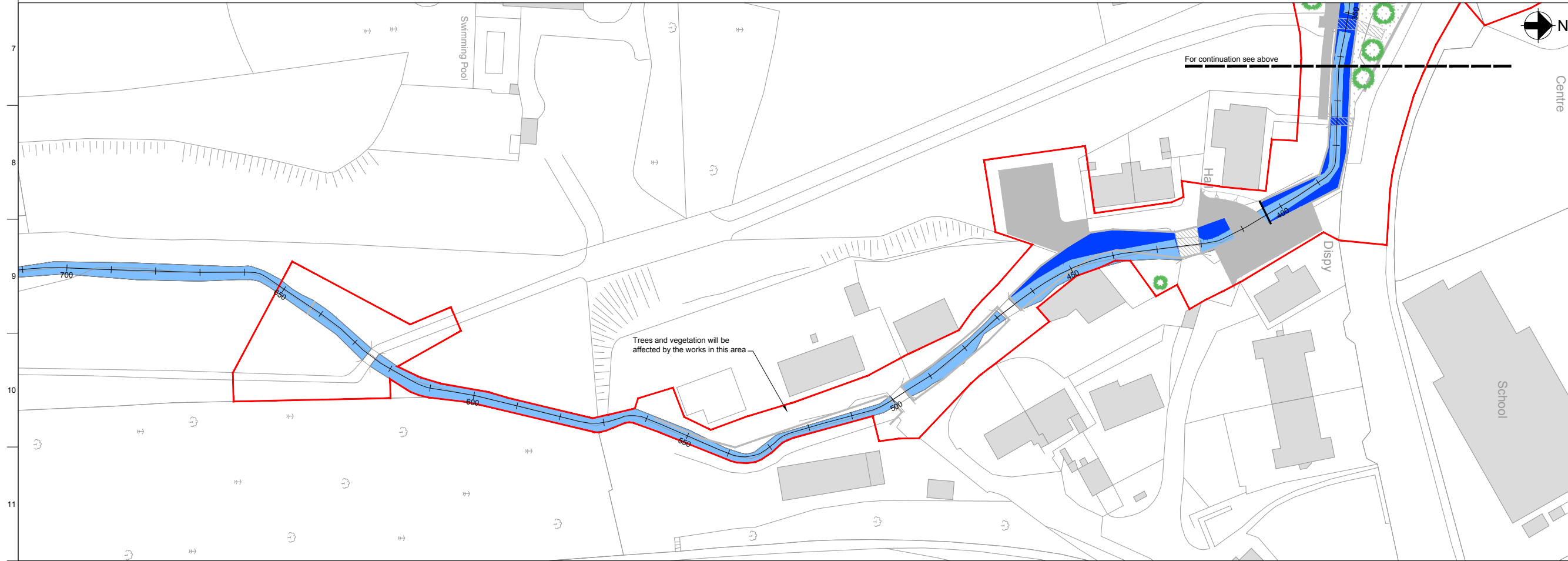
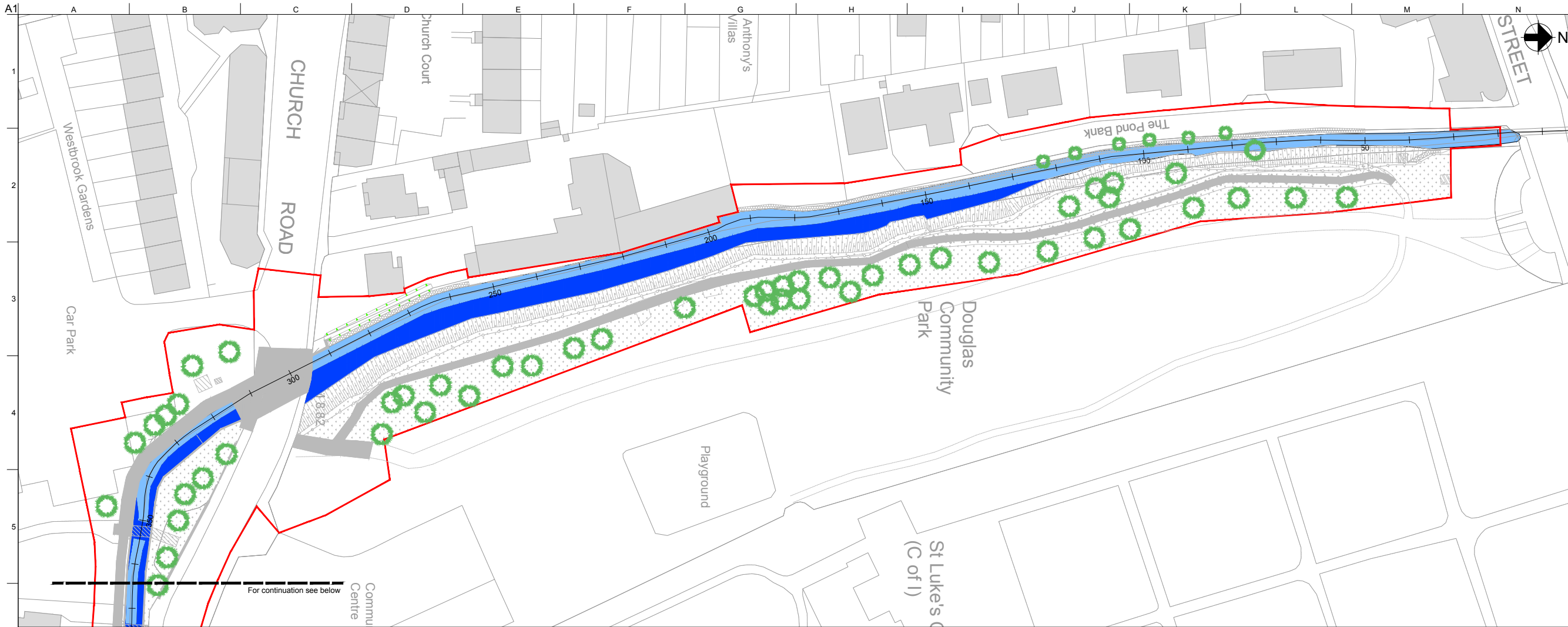
One Albert Quay
Cork, Ireland
Tel +353 (0)21 427 7670 Fax +353 (0)21 427 2345
www.arup.com

Client:
Cork County Council

Project Title:
Douglas Flood Relief Scheme (Including Togher Culvert)

Drawing Title:
Proposed Tree Replanting Togher - Sheet 2 of 2

Scale at A1	1:1000	Scale at A3	1:2000
Role	Civil		
Suitability	Planning		
Arup Job No	234335-00	Rev	PL1
Name	C-000-021		



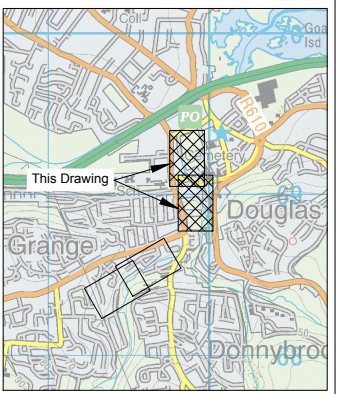
Legend

- Proposed Works Area
- Watercourse
- Proposed Semi Mature Tree Planting

Notes:

- All levels are in Metres Ordnance Datum Main Head (mOD) unless otherwise noted.

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KEYPLAN

P1	25.04.17	SB	DT	KL
Rev	Date	By	Chkd	Appd

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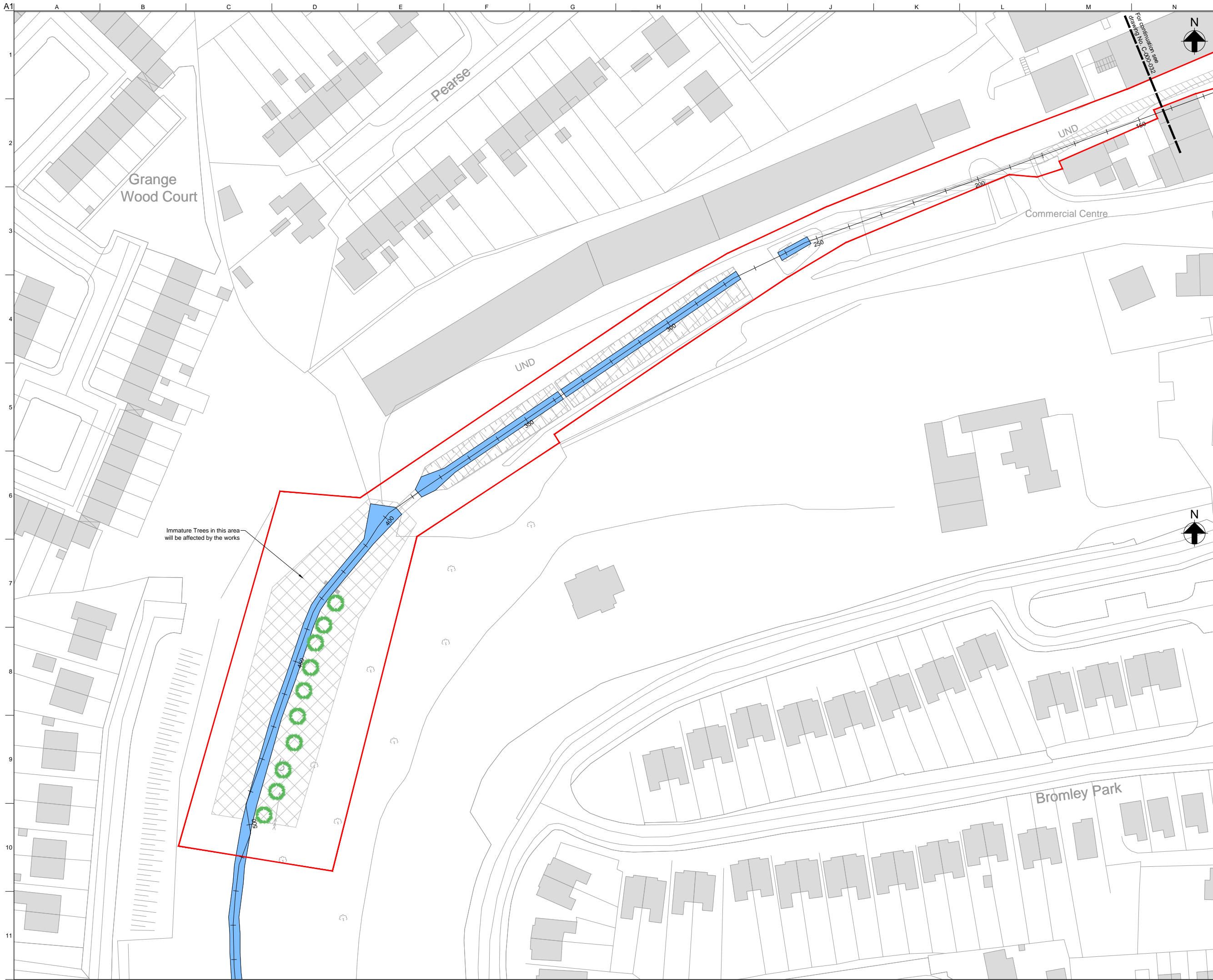
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www.arup.com

Client
Cork County Council

Project Title
Douglas Flood Relief Scheme (Including Toghur Culvert)

Drawing Title
Proposed Tree Replanting Douglas - Sheet 1 of 2

Scale at A1	1:500	Scale at A3	1:1000
Role	Civil		
Suitability	Planning		
Arup Job No	234335-00	Rev	PL1
Name	C-000-022		



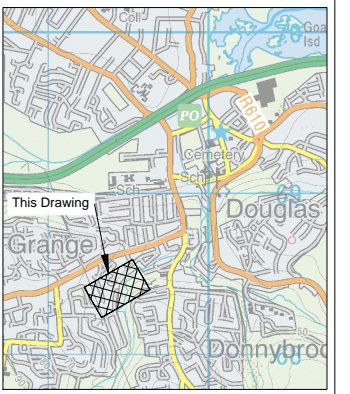
Legend

- Proposed Works Area
- Watercourse
- Proposed Semi Mature Tree Planting

Notes:

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KEYPLAN

PL1	11.05.17	SB	DT	KL
Rev	Date	By	Chkd	Appd

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Client:
Cork County Council

Project Title:
Douglas Flood Relief Scheme (Including Togher Culvert)

Drawing Title:
Proposed Tree Replanting Douglas - Sheet 2 of 2

Scale at A1	1:500	Scale at A3	1:1000
Role	Civil		
Suitability	Planning		
Arup Job No	234335-00	Rev	PL1
Name	C-000-023		