JBA consulting

Kilkee Flood Relief Scheme

Environmental Impact Assessment Report

Volume 4: Appendices

Final Report

July 2024

www.jbaconsulting.ie

Tionscadal Éireann Project Ireland 2040

COMHAIRLE CONTAE AN CHLÁIR CLARE COUNTY COUNCIL

OPW Oifig na nOibreacha Poiblí Office of Public Works

JBA Project Manager

Michael O'Donoghue
24 Grove Island
Corbally
Limerick

Revision History

Revision Ref/Date	Amendments	Issued to
P01 – May 2024	Draft Report	Steering group
C01 – July 2024	Final Report	Steering group

Contract

This report relates to the Kilkee FRS commissioned by Clare County Council, on behalf of the Office of Public Works. Conor O'Neill, Christos Papachristou and Bernadette O'Connell of JBA Consulting carried out this work.

Prepared by	Conor O'Neill BA (Mod) MSc Adv Dip
.....	Project Environmental Scientist
.....	Christos Papachristou MSc MA CMLI MILI
.....	Principal Landscape Architect
Reviewed by	Bernadette O'Connell BA MSc CMLI
.....	Principal Environmental Consultant

Purpose

This document has been prepared as a Final Report for Clare County Council and the Office of Public Works. JBA Consulting accepts no responsibility or liability for any use that is made of this document other than by the Client for the purposes for which it was originally commissioned and prepared.
JBA Consulting has no liability regarding the use of this report except to Clare County Council and the Office of Public Work.

Copyright

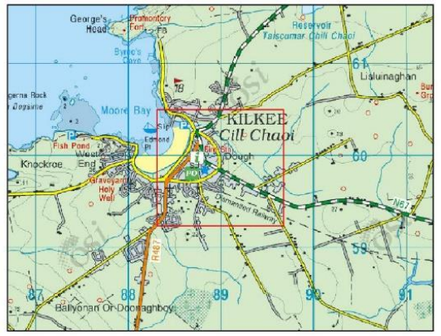
Carbon Footprint

A printed copy of the main text in this document will result in a carbon footprint of 536g if 100% post-consumer recycled paper is used and 682g if primary-source paper is used. These figures assume the report is printed in black and white on A4 paper and in duplex. As this document contains size A3 pages, this figure is closer to approximately 860g and 1020g ceteris paribus.

JBA is monitoring and reduces its per capita carbon emissions aiming to achieve a net zero.

Table of Contents

Appendix A Kilkee Flood Risk Extents



Atlantic Stream Baseline Flood Extents

Legend

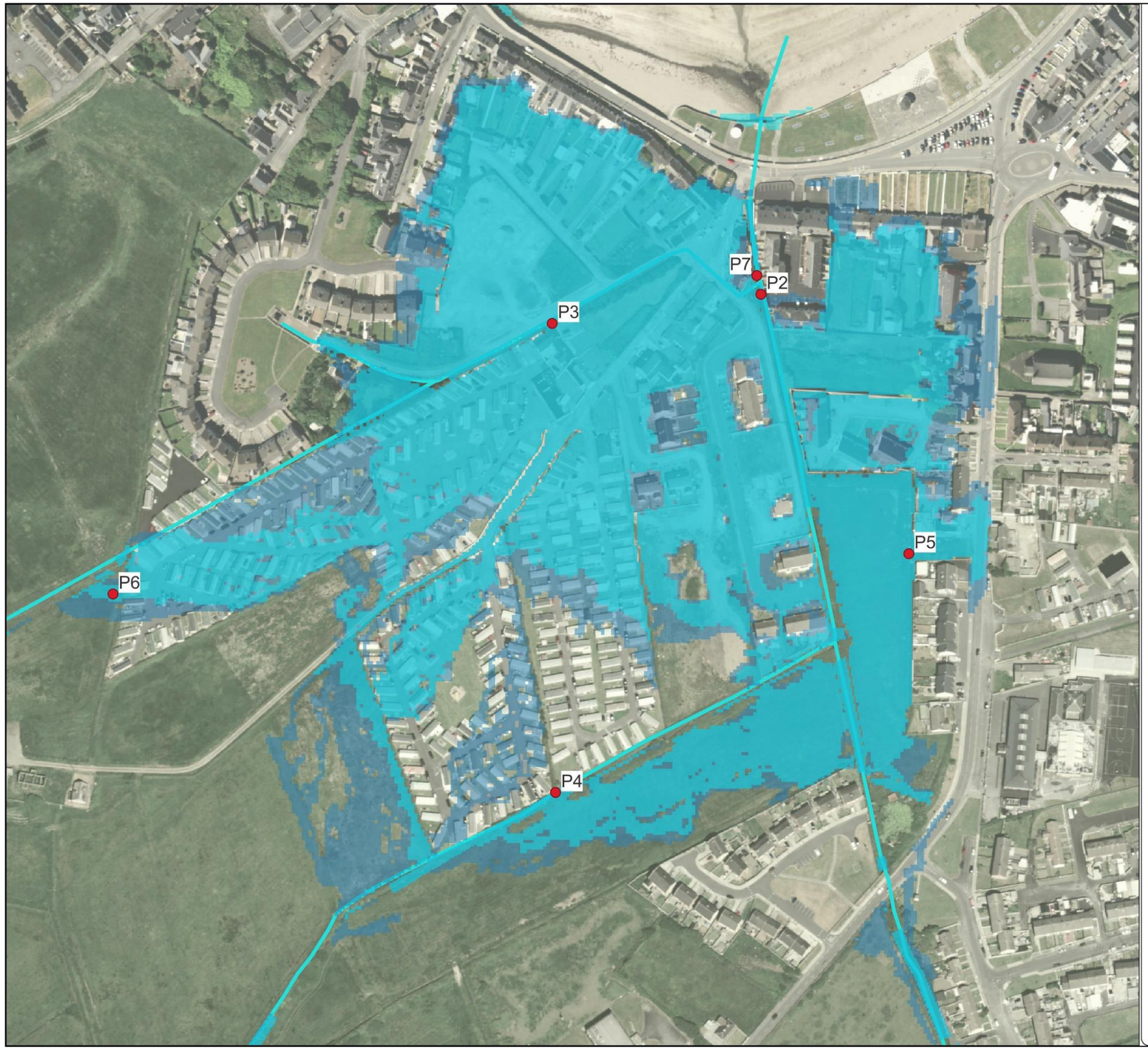
- Reporting Point Locations
- Q100/T2 Flood Extents (1% AEP Fluvial / 50% AEP Tidal)
- Existing Watercourse

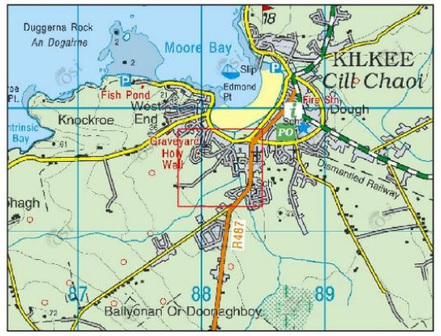
N

0 50 100 150 200 m

JBA consulting

www.jbaconsulting.com





Victoria Stream Baseline Flood Extents

Legend

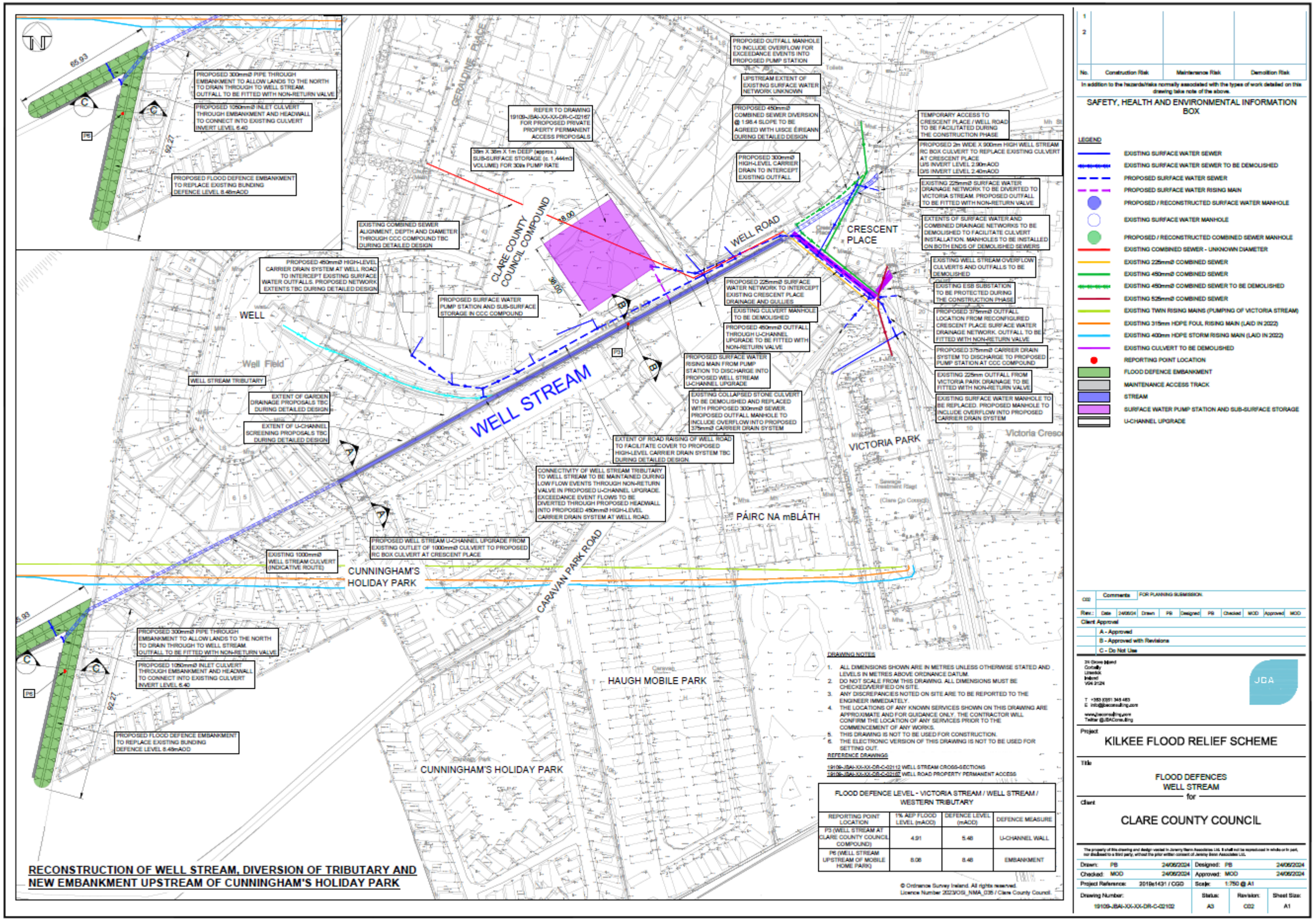
- Reporting Point Locations
- Q10/T200 Flood Extents (10% AEP Fluvial / 0.5% AEP Tidal)
- Q100/T2 Flood Extents (1% AEP Fluvial / 50% AEP Tidal)
- Existing Watercourse

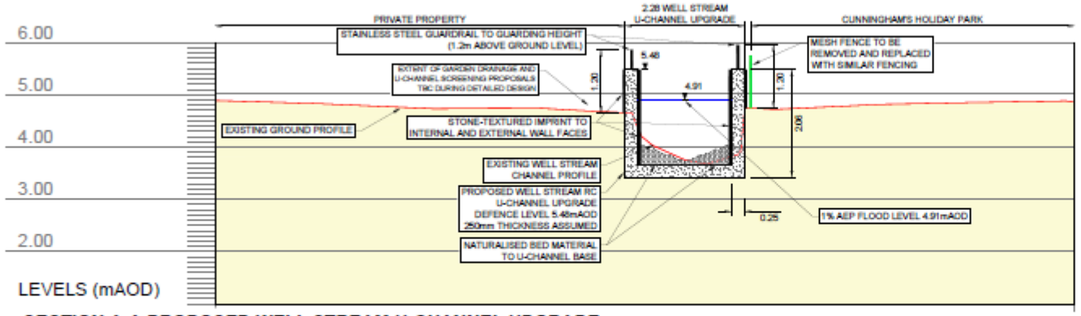
N

0 25 50 75 100 125 m

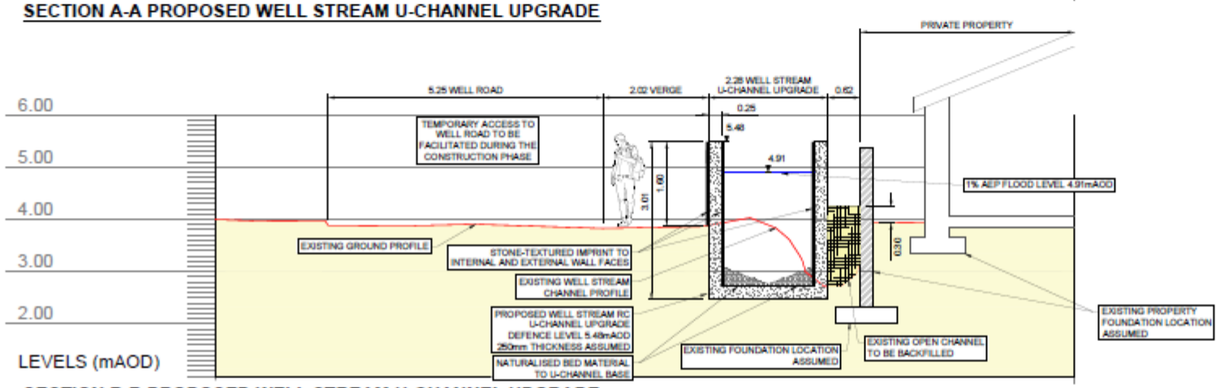
www.jbaconsulting.com

Appendix B Engineering and Landscape Drawings

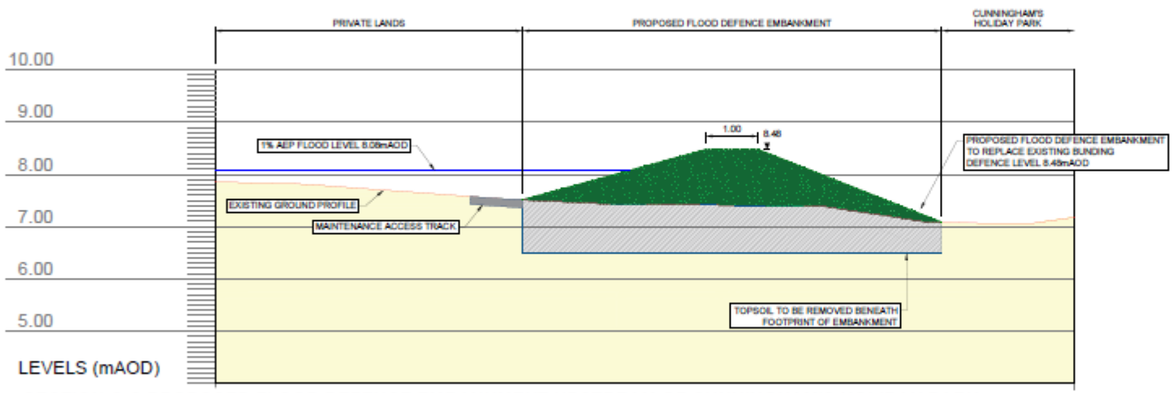

PROPOSED 300mmØ PIPE THROUGH EMBANKMENT TO ALLOW LANDS TO THE NORTH TO DRAIN THROUGH TO WELL STREAM. OUTFALL TO BE FITTED WITH NON-RETURN VALVE
PROPOSED 1050mmØ INLET CULVERT THROUGH EMBANKMENT AND HEADWALL TO CONNECT INTO EXISTING CULVERT INVERT LEVEL 6.40
PROPOSED FLOOD DEFENCE EMBANKMENT TO REPLACE EXISTING BUNDING DEFENCE LEVEL 8.48mAOD
65.93
92.27
GERALDINE PLACE
REFER TO DRAWING 19109-JBAI-XX-XX-DR-C-02167 FOR PROPOSED PRIVATE PROPERTY PERMANENT ACCESS PROPOSALS
38m X 38m X 1m DEEP (approx.) SUB-SURFACE STORAGE (c. 1,444m3 VOLUME) FOR 30l/s PUMP RATE
PROPOSED OUTFALL MANHOLE TO INCLUDE OVERFLOW FOR EXCEEDANCE EVENTS INTO PROPOSED PUMP STATION
UPSTREAM EXTENT OF EXISTING SURFACE WATER NETWORK UNKNOWN
PROPOSED 450mmØ COMBINED SEWER DIVERSION @ 1:98.4 SLOPE TO BE AGREED WITH UISCE ÉIREANN DURING DETAILED DESIGN
PROPOSED 300mmØ HIGH-LEVEL CARRIER DRAIN TO INTERCEPT EXISTING OUTFALL
TEMPORARY ACCESS TO CRESCENT PLACE / WELL ROAD TO BE FACILITATED DURING THE CONSTRUCTION PHASE
PROPOSED 2m WIDE X 900mm HIGH WELL STREAM RC BOX CULVERT TO REPLACE EXISTING CULVERT AT CRESCENT PLACE. U/S INVERT LEVEL 2.90mAOD D/S INVERT LEVEL 2.40mAOD
EXISTING 225mmØ SURFACE WATER DRAINAGE NETWORK TO BE DIVERTED TO VICTORIA STREAM. PROPOSED OUTFALL TO BE FITTED WITH NON-RETURN VALVE
EXTENTS OF SURFACE WATER AND COMBINED DRAINAGE NETWORKS TO BE DEMOLISHED TO FACILITATE CULVERT INSTALLATION. MANHOLES TO BE INSTALLED ON BOTH ENDS OF DEMOLISHED SEWERS
EXISTING WELL STREAM OVERFLOW CULVERTS AND OUTFALLS TO BE DEMOLISHED
EXISTING ESB SUBSTATION TO BE PROTECTED DURING THE CONSTRUCTION PHASE
PROPOSED 375mmØ OUTFALL LOCATION FROM RECONFIGURED CRESCENT PLACE SURFACE WATER DRAINAGE NETWORK. OUTFALL TO BE FITTED WITH NON-RETURN VALVE
PROPOSED 375mmØ CARRIER DRAIN SYSTEM TO DISCHARGE TO PROPOSED PUMP STATION AT CCC COMPOUND
EXISTING 225mm OUTFALL FROM VICTORIA PARK DRAINAGE TO BE FITTED WITH NON-RETURN VALVE
EXISTING SURFACE WATER MANHOLE TO BE REPLACED. PROPOSED MANHOLE TO INCLUDE OVERFLOW INTO PROPOSED CARRIER DRAIN SYSTEM
EXISTING COMBINED SEWER ALIGNMENT, DEPTH AND DIAMETER THROUGH CCC COMPOUND TBC DURING DETAILED DESIGN
CLARE COUNTY COUNCIL COMPOUND
38.00
38.00
WELL ROAD
CRESCENT PLACE
PROPOSED 450mmØ HIGH-LEVEL CARRIER DRAIN SYSTEM AT WELL ROAD TO INTERCEPT EXISTING SURFACE WATER OUTFALLS. PROPOSED NETWORK EXTENTS TBC DURING DETAILED DESIGN
PROPOSED SURFACE WATER PUMP STATION AND SUB-SURFACE STORAGE IN CCC COMPOUND
PROPOSED 225mmØ SURFACE WATER NETWORK TO INTERCEPT EXISTING CRESCENT PLACE DRAINAGE AND GULLIES
EXISTING CULVERT MANHOLE TO BE DEMOLISHED
PROPOSED 450mmØ OUTFALL THROUGH U-CHANNEL UPGRADE TO BE FITTED WITH NON-RETURN VALVE
WELL
Well Field
WELL STREAM TRIBUTARY
EXTENT OF GARDEN DRAINAGE PROPOSALS TBC DURING DETAILED DESIGN
EXTENT OF U-CHANNEL SCREENING PROPOSALS TBC DURING DETAILED DESIGN
WELL STREAM
PROPOSED SURFACE WATER RISING MAIN FROM PUMP STATION TO DISCHARGE INTO PROPOSED WELL STREAM U-CHANNEL UPGRADE
EXISTING COLLAPSED STONE CULVERT TO BE DEMOLISHED AND REPLACED WITH PROPOSED 300mmØ SEWER. PROPOSED OUTFALL MANHOLE TO INCLUDE OVERFLOW INTO PROPOSED 375mmØ CARRIER DRAIN SYSTEM
EXTENT OF ROAD RAISING OF WELL ROAD TO FACILITATE COVER TO PROPOSED HIGH-LEVEL CARRIER DRAIN SYSTEM TBC DURING DETAILED DESIGN.
CONNECTIVITY OF WELL STREAM TRIBUTARY TO WELL STREAM TO BE MAINTAINED DURING LOW FLOW EVENTS THROUGH NON-RETURN VALVE IN PROPOSED U-CHANNEL UPGRADE. EXCEEDANCE EVENT FLOWS TO BE DIVERTED THROUGH PROPOSED HEADWALL INTO PROPOSED 450mmØ HIGH-LEVEL CARRIER DRAIN SYSTEM AT WELL ROAD.
VICTORIA PARK
PÁIRC NA mBLÁTH
PROPOSED WELL STREAM U-CHANNEL UPGRADE FROM EXISTING OUTLET OF 1000mmØ CULVERT TO PROPOSED RC BOX CULVERT AT CRESCENT PLACE
EXISTING 1000mmØ WELL STREAM CULVERT (INDICATIVE ROUTE)
CUNNINGHAM'S HOLIDAY PARK
CARAVAN PARK ROAD
HAUGH MOBILE PARK
CUNNINGHAM'S HOLIDAY PARK
PROPOSED 300mmØ PIPE THROUGH EMBANKMENT TO ALLOW LANDS TO THE NORTH TO DRAIN THROUGH TO WELL STREAM. OUTFALL TO BE FITTED WITH NON-RETURN VALVE
PROPOSED 1050mmØ INLET CULVERT THROUGH EMBANKMENT AND HEADWALL TO CONNECT INTO EXISTING CULVERT INVERT LEVEL 6.40
PROPOSED FLOOD DEFENCE EMBANKMENT TO REPLACE EXISTING BUNDING DEFENCE LEVEL 8.48mAOD
92.27
RECONSTRUCTION OF WELL STREAM, DIVERSION OF TRIBUTARY AND NEW EMBANKMENT UPSTREAM OF CUNNINGHAM'S HOLIDAY PARK
DRAWING NOTES
1. ALL DIMENSIONS SHOWN ARE IN METRES UNLESS OTHERWISE STATED AND LEVELS IN METRES ABOVE ORDNANCE DATUM.
2. DO NOT SCALE FROM THIS DRAWING. ALL DIMENSIONS MUST BE CHECKED/VERIFIED ON SITE.
3. ANY DISCREPANCIES NOTED ON SITE ARE TO BE REPORTED TO THE ENGINEER IMMEDIATELY.
4. THE LOCATIONS OF ANY KNOWN SERVICES SHOWN ON THIS DRAWING ARE APPROXIMATE AND FOR GUIDANCE ONLY. THE CONTRACTOR WILL CONFIRM THE LOCATION OF ANY SERVICES PRIOR TO THE COMMENCEMENT OF ANY WORKS.
5. THIS DRAWING IS NOT TO BE USED FOR CONSTRUCTION.
6. THE ELECTRONIC VERSION OF THIS DRAWING IS NOT TO BE USED FOR SETTING OUT.
REFERENCE DRAWINGS
19109-JBAI-XX-XX-DR-C-02112 WELL STREAM CROSS-SECTIONS
19109-JBAI-XX-XX-DR-C-02167 WELL ROAD PROPERTY PERMANENT ACCESS
FLOOD DEFENCE LEVEL - VICTORIA STREAM / WELL STREAM / WESTERN TRIBUTARY
REPORTING POINT LOCATION | 1% AEP FLOOD LEVEL (mAOD) | DEFENCE LEVEL (mAOD) | DEFENCE MEASURE
P5 (WELL STREAM AT CLARE COUNTY COUNCIL COMPOUND) | 4.91 | 5.48 | U-CHANNEL WALL
P6 (WELL STREAM UPSTREAM OF MOBILE HOME PARK) | 5.08 | 5.48 | EMBANKMENT
© Ordnance Survey Ireland. All rights reserved. Licence Number 2023/OSI_NMA_035 / Clare County Council.
No. | Construction Risk | Maintenance Risk | Demolition Risk
In addition to the hazards/risks normally associated with the types of work detailed on this drawing take note of the above.
SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION BOX
LEGEND
EXISTING SURFACE WATER SEWER
EXISTING SURFACE WATER SEWER TO BE DEMOLISHED
PROPOSED SURFACE WATER SEWER
PROPOSED SURFACE WATER RISING MAIN
PROPOSED / RECONSTRUCTED SURFACE WATER MANHOLE
EXISTING SURFACE WATER MANHOLE
PROPOSED / RECONSTRUCTED COMBINED SEWER MANHOLE
EXISTING COMBINED SEWER - UNKNOWN DIAMETER
EXISTING 225mmØ COMBINED SEWER
EXISTING 450mmØ COMBINED SEWER
EXISTING 450mmØ COMBINED SEWER TO BE DEMOLISHED
EXISTING 525mmØ COMBINED SEWER
EXISTING TWIN RISING MAINS (PUMPING OF VICTORIA STREAM)
EXISTING 315mm HDPE FOUL RISING MAIN (LAID IN 2022)
EXISTING 400mm HDPE STORM RISING MAIN (LAID IN 2022)
EXISTING CULVERT TO BE DEMOLISHED
REPORTING POINT LOCATION
FLOOD DEFENCE EMBANKMENT
MAINTENANCE ACCESS TRACK
STREAM
SURFACE WATER PUMP STATION AND SUB-SURFACE STORAGE
U-CHANNEL UPGRADE
C02 Comments: FOR PLANNING SUBMISSION
Rev.: Date 24/06/24 Drawn: PB Designed: PB Checked: MOD Approved: MOD
Client Approved
A - Approved
B - Approved with Revisions
C - Do Not Use
JBA
Project: KILKEE FLOOD RELIEF SCHEME
Title: FLOOD DEFENCES WELL STREAM for
Client: CLARE COUNTY COUNCIL
Drawn: PB 24/06/2024 Designed: PB 24/06/2024
Checked: MOD 24/06/2024 Approved: MOD 24/06/2024
Project Reference: 2019s1431 / CGD Scale: 1:750 @ A1
Drawing Number: 19109-JBAI-XX-XX-DR-C-02102 Status: A3 Revision: C02 Sheet Size: A1



SECTION A-A PROPOSED WELL STREAM U-CHANNEL UPGRADE



SECTION B-B PROPOSED WELL STREAM U-CHANNEL UPGRADE



SECTION C-C PROPOSED FLOOD DEFENCE EMBANKMENT UPSTREAM OF CUNNINGHAM'S HOLIDAY PARK

FLOOD DEFENCE LEVEL - VICTORIA STREAM / WELL STREAM / WESTERN TRIBUTARY

REPORTING POINT LOCATION	1% AEP FLOOD LEVEL (mAOD)	DEFENCE LEVEL (mAOD)	DEFENCE MEASURE
P3 (WELL STREAM AT CLARE COUNTY COUNCIL COMPOUND)	4.91	5.48	U-CHANNEL WALL
P6 (WELL STREAM UPSTREAM OF MOBILE HOME PARK)	8.08	8.48	EMBANKMENT

No.	Construction Risk	Maintenance Risk	Demolition Risk
1			
2			

In addition to the hazards/risks normally associated with the types of work detailed on this drawing take note of the above.

SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION BOX

DRAWING NOTES

1. ALL DIMENSIONS SHOWN ARE IN METRES UNLESS OTHERWISE STATED AND LEVELS IN METRES ABOVE ORDNANCE DATUM.
2. DO NOT SCALE FROM THIS DRAWING. ALL DIMENSIONS MUST BE CHECKED/VERIFIED ON SITE.
3. ANY DISCREPANCIES NOTED ON SITE ARE TO BE REPORTED TO THE ENGINEER IMMEDIATELY.
4. THE LOCATIONS OF ANY KNOWN SERVICES SHOWN ON THIS DRAWING ARE APPROXIMATE AND FOR GUIDANCE ONLY. THE CONTRACTOR WILL CONFIRM THE LOCATION OF ANY SERVICES PRIOR TO THE COMMENCEMENT OF ANY WORKS.
5. THIS DRAWING IS NOT TO BE USED FOR CONSTRUCTION.
6. THE ELECTRONIC VERSION OF THIS DRAWING IS NOT TO BE USED FOR SETTING OUT.

REFERENCE DRAWINGS:

19109-JBAI-XX-XX-DR-C-02102 FLOOD DEFENCES WELL STREAM

C02	Comments	FOR PLANNING SUBMISSION							
Rev.:	Date	24/06/24	Drawn	PB	Designed	PB	Checked	MOD	Approved	MOD

Client Approved
A - Approved
B - Approved with Revisions
C - Do Not Use

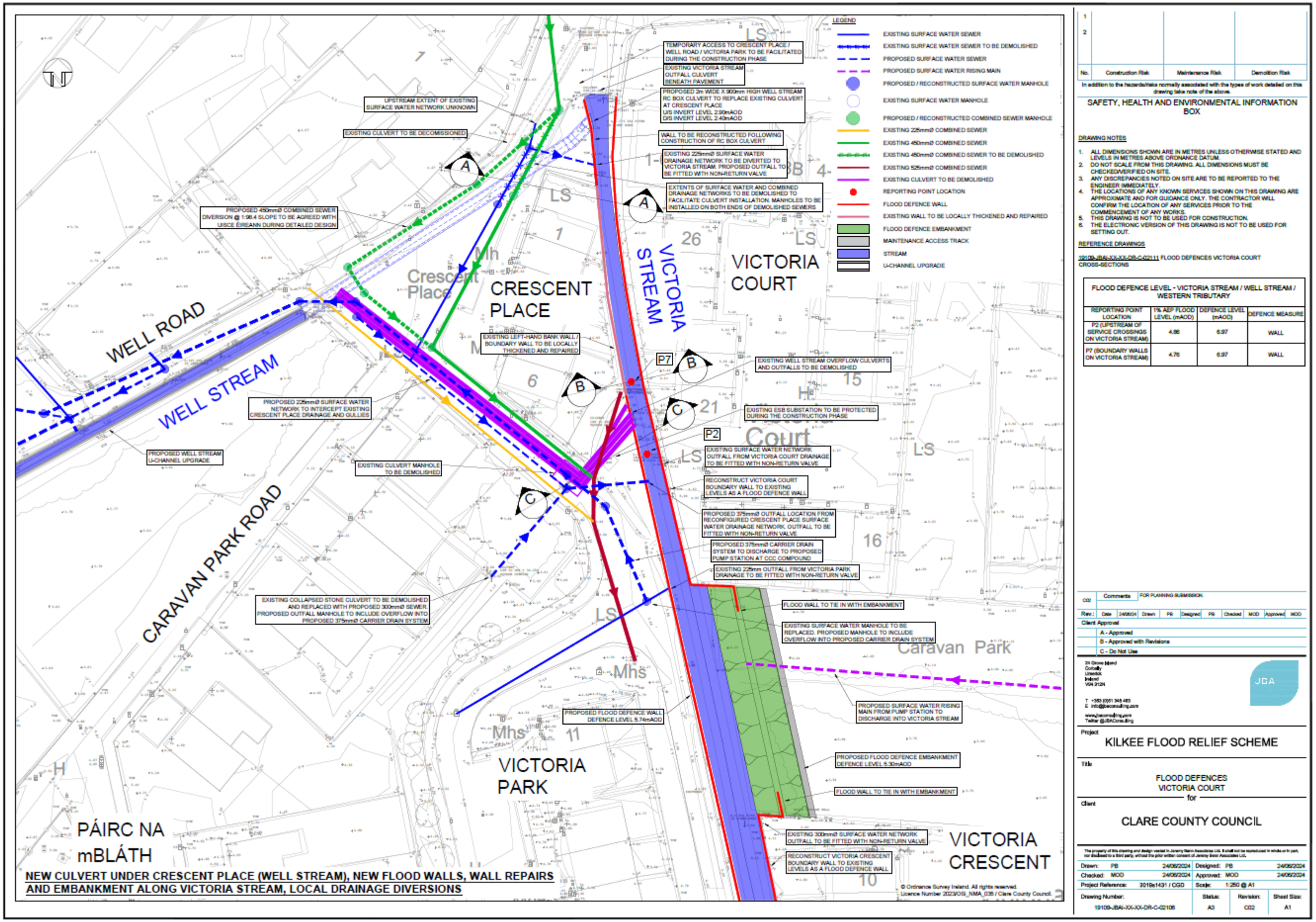
JBA
26 Grove Island
Corbally
Limerick
Ireland
V94 2124
T +353 (0)61 345 463
E info@jbaconsulting.com
www.jbaconsulting.com
Twitter @JBAConsulting

Project
KILKEE FLOOD RELIEF SCHEME

Title
FLOOD DEFENCES
WELL STREAM
CROSS-SECTIONS
for

Client
CLARE COUNTY COUNCIL

Drawn:	PB	24/06/2024	Designed:	PB	24/06/2024
Checked:	MOD	24/06/2024	Approved:	MOD	24/06/2024
Project Reference:	2019e1431 / CGD		Scale:	1:50 @ A1	
Drawing Number:			Status:	Revision:	Sheet Size:
19109-JBAI-XX-XX-DR-C-02112			A3	C02	A1



No.	Construction Risk	Maintenance Risk	Demolition Risk
1			
2			

In addition to the hazards/risks normally associated with the types of work detailed on this drawing take note of the above.

SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION BOX

DRAWING NOTES

1. ALL DIMENSIONS SHOWN ARE IN METRES UNLESS OTHERWISE STATED AND LEVELS IN METRES ABOVE ORDNANCE DATUM.
2. DO NOT SCALE FROM THIS DRAWING. ALL DIMENSIONS MUST BE CHECKED/VERIFIED ON SITE.
3. ANY DISCREPANCIES NOTED ON SITE ARE TO BE REPORTED TO THE ENGINEER IMMEDIATELY.
4. THE LOCATIONS OF ANY KNOWN SERVICES SHOWN ON THIS DRAWING ARE APPROXIMATE AND FOR GUIDANCE ONLY. THE CONTRACTOR WILL CONFIRM THE LOCATION OF ANY SERVICES PRIOR TO THE COMMENCEMENT OF ANY WORKS.
5. THIS DRAWING IS NOT TO BE USED FOR CONSTRUCTION.
6. THE ELECTRONIC VERSION OF THIS DRAWING IS NOT TO BE USED FOR SETTING OUT.

REFERENCE DRAWINGS

19109-JBAI-XX-XX-DR-C-02111 FLOOD DEFENCES VICTORIA COURT CROSS-SECTIONS

FLOOD DEFENCE LEVEL - VICTORIA STREAM / WELL STREAM / WESTERN TRIBUTARY

REPORTING POINT LOCATION	1% AEP FLOOD LEVEL (mAOD)	DEFENCE LEVEL (mAOD)	DEFENCE MEASURE
P2 (UPSTREAM OF SERVICE CROSSINGS ON VICTORIA STREAM)	4.86	6.97	WALL
P7 (BOUNDARY WALLS ON VICTORIA STREAM)	4.76	6.97	WALL

Rev.	Date	Comments
C02	24/05/24	FOR PLANNING SUBMISSION.

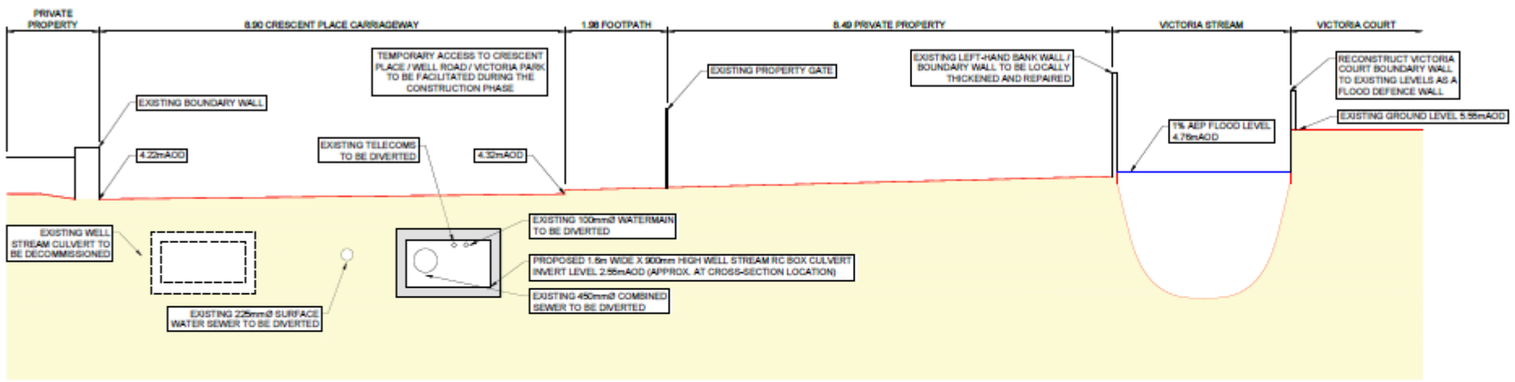
Client Approval
A - Approved
B - Approved with Revisions
C - Do Not Use

24 Grove Island
Corbally
Limerick
Ireland
V94 3124
T +353 (0)61 345 463
E info@jbaconsulting.com
www.jbaconsulting.com
Twitter @JBAConsulting

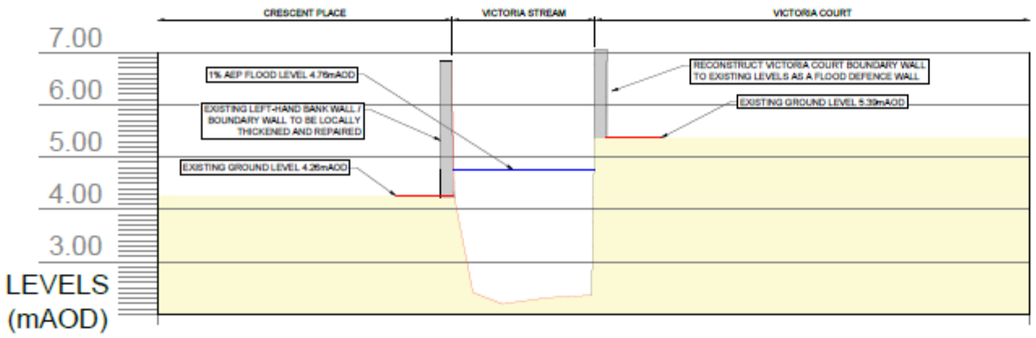
Project
KILKEE FLOOD RELIEF SCHEME

Title
FLOOD DEFENCES
VICTORIA COURT
for
Client
CLARE COUNTY COUNCIL

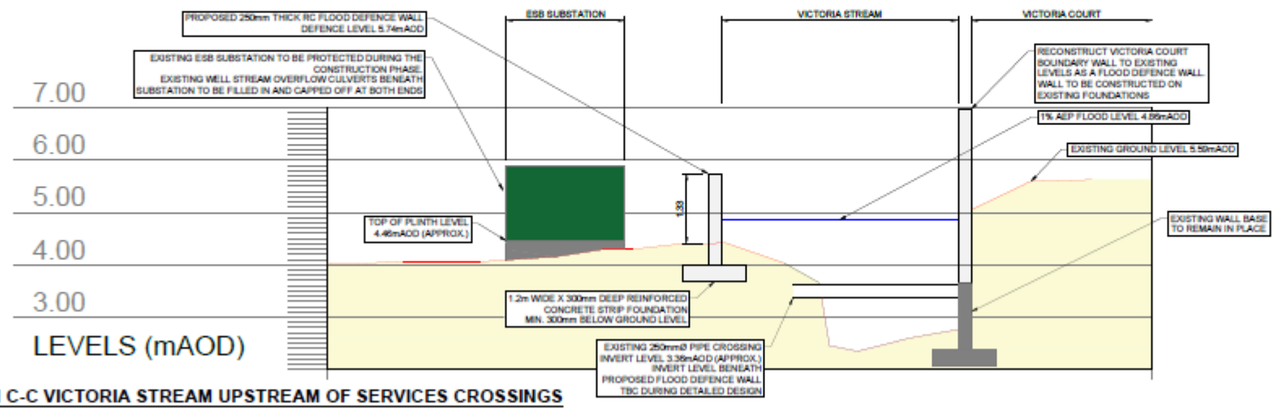
Drawn:	PB	24/05/2024	Designed: PB 24/05/2024
Checked:	MOD	24/05/2024	Approved: MOD 24/05/2024
Project Reference:	2019s1431 / CGD	Scale:	1:250 @ A1
Drawing Number:	19109-JBAI-XX-XX-DR-C-02106	Status: A3	Revision: C02 / Sheet Size: A1



SECTION A-A WELL STREAM CULVERT UPGRADE UNDER CRESCENT PLACE



SECTION B-B VICTORIA STREAM DOWNSTREAM OF SERVICES CROSSINGS



SECTION C-C VICTORIA STREAM UPSTREAM OF SERVICES CROSSINGS

No.	Construction Risk	Maintenance Risk	Demolition Risk
1			
2			

In addition to the hazards/risks normally associated with the types of work detailed on this drawing take note of the above.

SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION BOX

DRAWING NOTES

1. ALL DIMENSIONS SHOWN ARE IN METRES UNLESS OTHERWISE STATED AND LEVELS IN METRES ABOVE ORDNANCE DATUM.
2. DO NOT SCALE FROM THIS DRAWING. ALL DIMENSIONS MUST BE CHECKED/VERIFIED ON SITE.
3. ANY DISCREPANCIES NOTED ON SITE ARE TO BE REPORTED TO THE ENGINEER IMMEDIATELY.
4. THE LOCATIONS OF ANY KNOWN SERVICES SHOWN ON THIS DRAWING ARE APPROXIMATE AND FOR GUIDANCE ONLY. THE CONTRACTOR WILL CONFIRM THE LOCATION OF ANY SERVICES PRIOR TO THE COMMENCEMENT OF ANY WORKS.
5. THIS DRAWING IS NOT TO BE USED FOR CONSTRUCTION.
6. THE ELECTRONIC VERSION OF THIS DRAWING IS NOT TO BE USED FOR SETTING OUT.

REFERENCE DRAWINGS

19109-JBAI-XX-XX-DR-C-02106 FLOOD DEFENCES VICTORIA COURT

FLOOD DEFENCE LEVEL - VICTORIA STREAM / WELL STREAM / WESTERN TRIBUTARY

REPORTING POINT LOCATION	1% AEP FLOOD LEVEL (mAOD)	DEFENCE LEVEL (mAOD)	DEFENCE MEASURE
P2 (UPSTREAM OF SERVICE CROSSINGS ON VICTORIA STREAM)	4.86	6.97	WALL
P7 (BOUNDARY WALLS ON VICTORIA STREAM)	4.75	6.97	WALL

Rev.	Comments	
C02	FOR PLANNING SUBMISSION.	

Client Approval

A - Approved
B - Approved with Revisions
C - Do Not Use

24 Grove Island
Corbally
Limerick
Ireland
V94 2121

T +353 (0)61 345 463
E info@jbaconsulting.com
www.jbaconsulting.com
Twitter @JBAConsulting

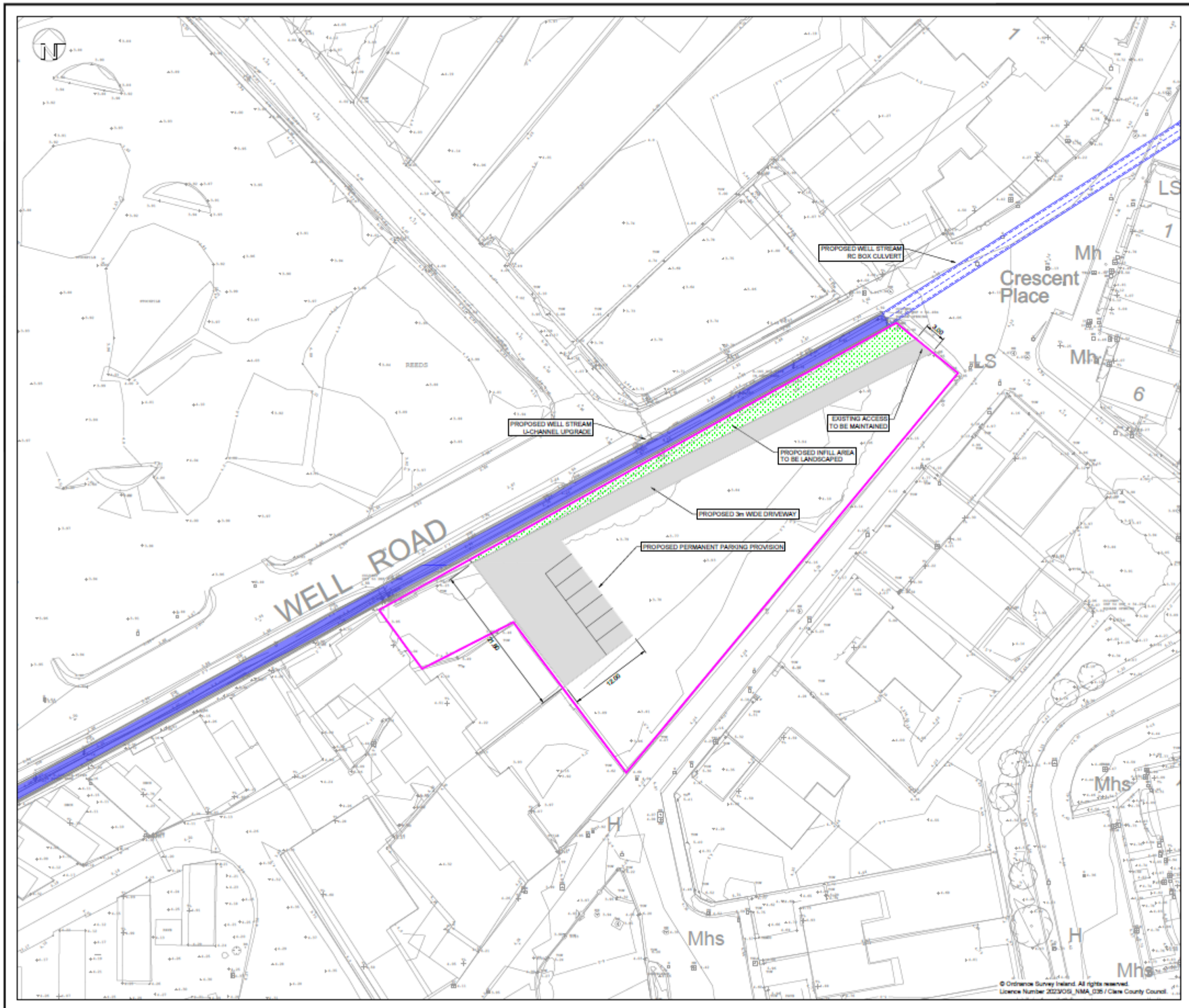
Project
KILKEE FLOOD RELIEF SCHEME

Title
FLOOD DEFENCES
VICTORIA COURT
CROSS-SECTIONS
for

Client
CLARE COUNTY COUNCIL

Drawn: PB	24/05/2024	Designed: PB	24/05/2024
Checked: MOD	24/05/2024	Approved: MOD	24/05/2024
Project Reference: 2019e1431 / CGD		Scale: 1:50 @ A1	

Drawing Number:	Status:	Revision:	Sheet Size:
19109-JBAI-XX-XX-DR-C-02111	A3	C02	A1



No.	Construction Risk	Maintenance Risk	Demolition Risk
1			
2			

In addition to the hazards/risks normally associated with the types of work detailed on this drawing take note of the above.

SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION BOX

DRAWING NOTES

1. ALL DIMENSIONS SHOWN ARE IN METRES UNLESS OTHERWISE STATED AND LEVELS IN METRES ABOVE ORDNANCE DATUM.
2. DO NOT SCALE FROM THIS DRAWING. ALL DIMENSIONS MUST BE CHECKED/VERIFIED ON SITE.
3. ANY DISCREPANCIES NOTED ON SITE ARE TO BE REPORTED TO THE ENGINEER IMMEDIATELY.
4. THE LOCATIONS OF ANY KNOWN SERVICES SHOWN ON THIS DRAWING ARE APPROXIMATE AND FOR GUIDANCE ONLY. THE CONTRACTOR WILL CONFIRM THE LOCATION OF ANY SERVICES PRIOR TO THE COMMENCEMENT OF ANY WORKS.
5. THIS DRAWING IS NOT TO BE USED FOR CONSTRUCTION.
6. THE ELECTRONIC VERSION OF THIS DRAWING IS NOT TO BE USED FOR SETTING OUT.

LEGEND

- PROPOSED WELL STREAM RC BOX CULVERT
- PROPERTY BOUNDARY
- PROPOSED DRIVEWAY
- PROPOSED INFILL AREA TO BE LANDSCAPED

Rev.	Comments	Date	Drawn	Designed	Checked	Approved
C02	FOR PLANNING SUBMISSION	24/05/24	PB	PB	PB	MOD	MOD

Client Approval

A - Approved
B - Approved with Revisions
C - Do Not Use

24 Grove Island
Corbally
Limerick
Ireland
V94 2124

T +353 (0)61 345 463
E info@jbaconsulting.com
www.jbaconsulting.com
Twitter @JBAConsulting

Project
KILKEE FLOOD RELIEF SCHEME

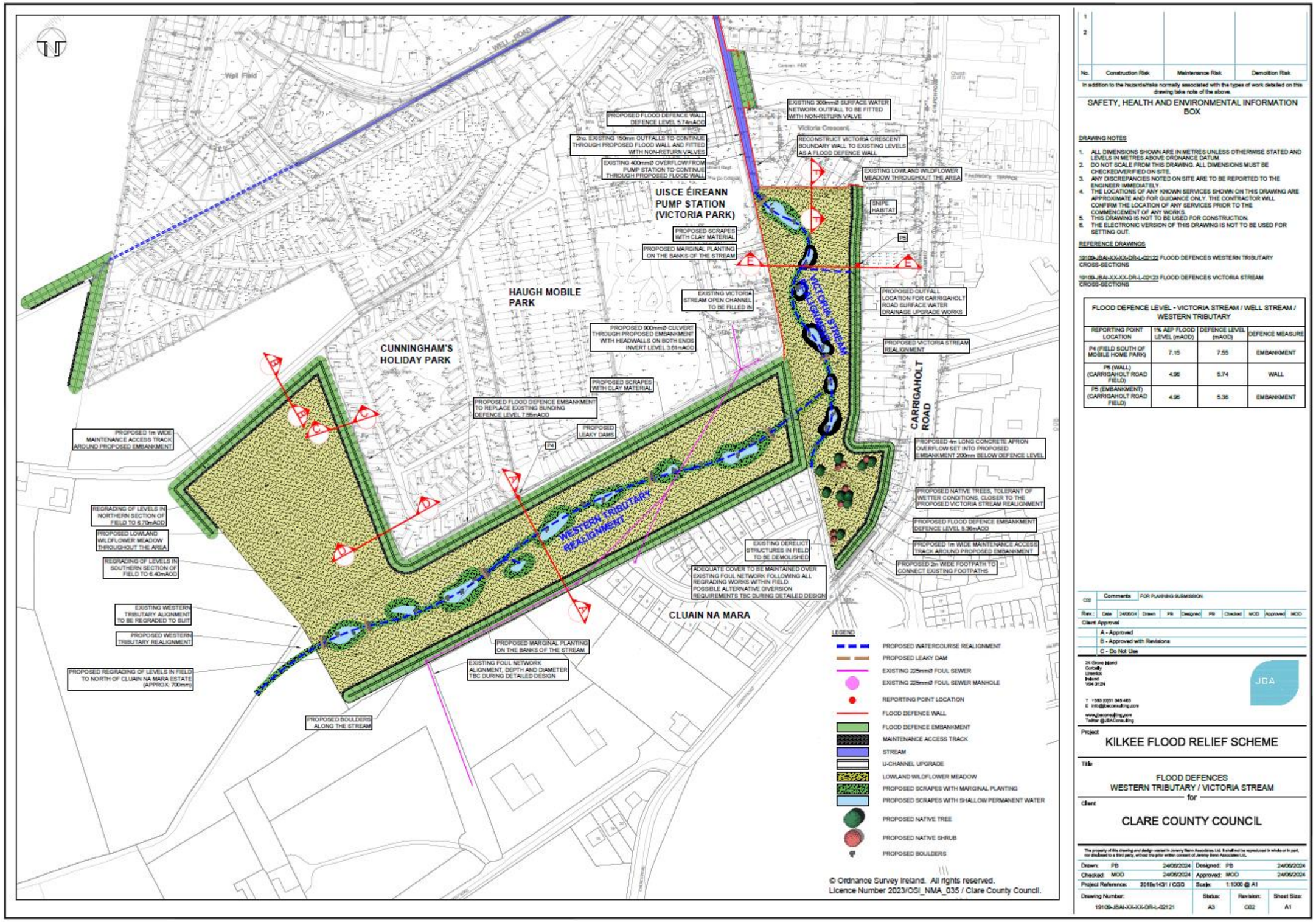
Title
WELL ROAD PROPERTY PERMANENT ACCESS

for

Client
CLARE COUNTY COUNCIL

Drawn: PB	24/05/2024	Designed: PB	24/05/2024
Checked: MOD	24/05/2024	Approved: MOD	24/05/2024
Project Reference: 2018s1431 / CGD		Scale: 1:250 @ A1	

Drawing Number:	Status:	Revision:	Sheet Size:
19109-JBAI-XX-XX-DR-C-02157	A3	C02	A1



No.	Construction Risk	Maintenance Risk	Demolition Risk
1			
2			

In addition to the hazards/risks normally associated with the types of work detailed on this drawing take note of the above.

SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION BOX

DRAWING NOTES

1. ALL DIMENSIONS SHOWN ARE IN METRES UNLESS OTHERWISE STATED AND LEVELS IN METRES ABOVE ORDNANCE DATUM.
2. DO NOT SCALE FROM THIS DRAWING. ALL DIMENSIONS MUST BE CHECKED/VERIFIED ON SITE.
3. ANY DISCREPANCIES NOTED ON SITE ARE TO BE REPORTED TO THE ENGINEER IMMEDIATELY.
4. THE LOCATIONS OF ANY KNOWN SERVICES SHOWN ON THIS DRAWING ARE APPROXIMATE AND FOR GUIDANCE ONLY. THE CONTRACTOR WILL CONFIRM THE LOCATION OF ANY SERVICES PRIOR TO THE COMMENCEMENT OF ANY WORKS.
5. THIS DRAWING IS NOT TO BE USED FOR CONSTRUCTION.
6. THE ELECTRONIC VERSION OF THIS DRAWING IS NOT TO BE USED FOR SETTING OUT.

REFERENCE DRAWINGS

19109-JBAI-XX-XX-DR-L-02122 FLOOD DEFENCES WESTERN TRIBUTARY CROSS-SECTIONS

19109-JBAI-XX-XX-DR-L-02123 FLOOD DEFENCES VICTORIA STREAM CROSS-SECTIONS

FLOOD DEFENCE LEVEL - VICTORIA STREAM / WELL STREAM / WESTERN TRIBUTARY

REPORTING POINT LOCATION	1% AEP FLOOD LEVEL (mAOD)	DEFENCE LEVEL (mAOD)	DEFENCE MEASURE
P4 (FIELD SOUTH OF MOBILE HOME PARK)	7.15	7.55	EMBANKMENT
P5 (WALL) (CARRIGAHOLT ROAD FIELD)	4.96	5.74	WALL
P5 (EMBANKMENT) (CARRIGAHOLT ROAD FIELD)	4.96	5.36	EMBANKMENT

CDD	Comments	FOR PLANNING SUBMISSION							
Rev:	Date	24/05/24	Drawn	PB	Designed	PB	Checked	MOD	Approved	MOD

Client Approval
A - Approved
B - Approved with Revisions
C - Do Not Use

JBA
24 Grove Island
Corbally
Limerick
Ireland
V94 3124
T +353 (0)61 345 463
E info@jbaconsulting.com
www.jbaconsulting.com
Twitter @JBACons_ltng

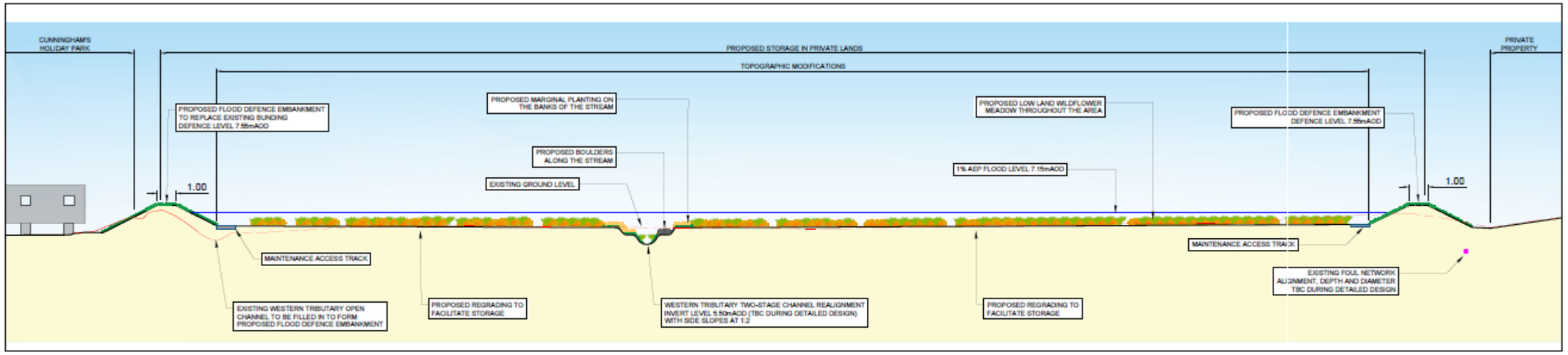
Project
KILKEE FLOOD RELIEF SCHEME

Title
FLOOD DEFENCES
WESTERN TRIBUTARY / VICTORIA STREAM
for
Client
CLARE COUNTY COUNCIL

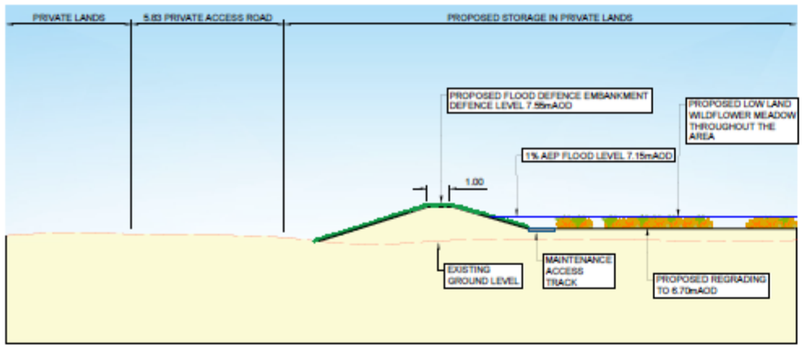
Drawn:	PB	24/05/2024	Designed:	PB	24/05/2024
Checked:	MOD	24/05/2024	Approved:	MOD	24/05/2024
Project Reference:	2019e1431 / CGD		Scale:	1:1000 @ A1	

Drawing Number:	Status:	Revision:	Sheet Size:
19109-JBAI-XX-XX-DR-L-02121	A3	C02	A1

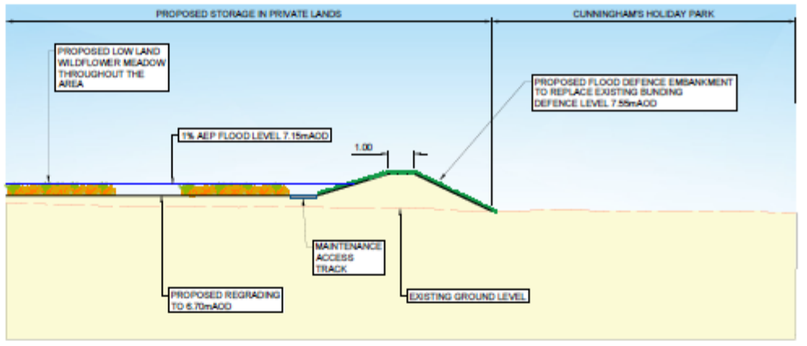
Section A-A scale1:100@A1



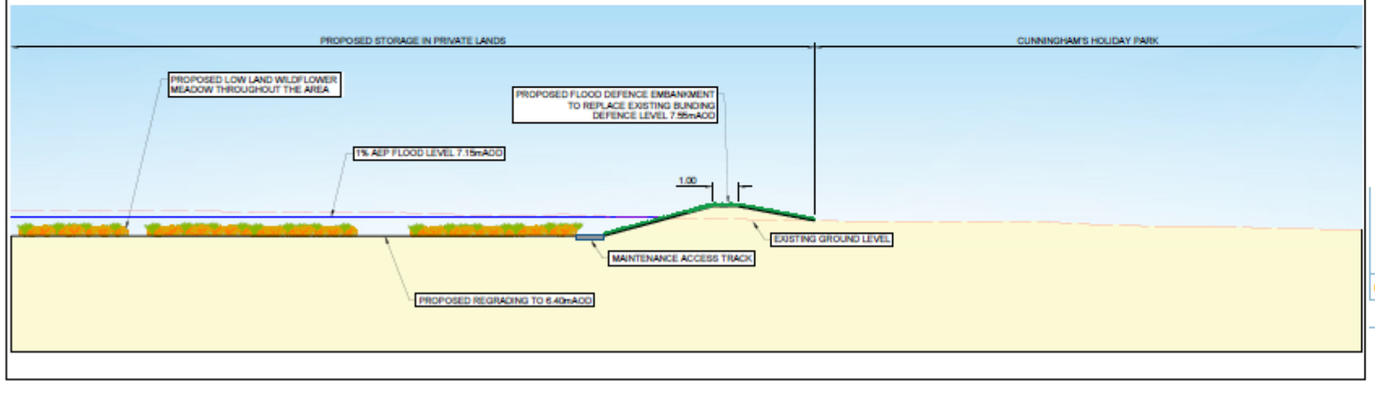
Section B-B scale1:100@A1



Section C-C scale1:100@A1



Section D-D scale1:100@A1



DRAWING NOTES

1. ALL DIMENSIONS SHOWN ARE IN METRES UNLESS OTHERWISE STATED AND LEVELS IN METRES ABOVE ORDNANCE DATUM.
2. DO NOT SCALE FROM THIS DRAWING. ALL DIMENSIONS MUST BE CHECKED/VERIFIED ON SITE.
3. ANY DISCREPANCIES NOTED ON SITE ARE TO BE REPORTED TO THE ENGINEER IMMEDIATELY.
4. THE LOCATIONS OF ANY KNOWN SERVICES SHOWN ON THIS DRAWING ARE APPROXIMATE AND FOR GUIDANCE ONLY. THE CONTRACTOR WILL CONFIRM THE LOCATION OF ANY SERVICES PRIOR TO THE COMMENCEMENT OF ANY WORKS.
5. THIS DRAWING IS NOT TO BE USED FOR CONSTRUCTION.
6. THE ELECTRONIC VERSION OF THIS DRAWING IS NOT TO BE USED FOR SETTING OUT.

REFERENCE DRAWINGS

19109-JBAI-XX-XX-DR-L-02121 FLOOD DEFENCES WESTERN TRIBUTARY / VICTORIA STREAM

FLOOD DEFENCE LEVEL - VICTORIA STREAM / WELL STREAM / WESTERN TRIBUTARY

REPORTING POINT LOCATION	1% AEP FLOOD LEVEL (mAOD)	DEFENCE LEVEL (mAOD)	DEFENCE MEASURE
P4 (FIELD SOUTH OF MOBILE HOME PARK)	7.15	7.55	EMBANKMENT

No.	Construction Risk	Maintenance Risk	Demolition Risk
1			
2			

In addition to the hazards/risks normally associated with the types of work detailed on this drawing take note of the above.

SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION BOX

C02	Comments	FOR PLANNING SUBMISSION							
Rev.:	Date	24/05/24	Drawn	PB	Designed	PB	Checked	MOD	Approved	MOD

Client Approval

A - Approved
B - Approved with Revisions
C - Do Not Use

JBA
T +353 (0)91 348 463
E info@jbaconsulting.com
www.jbaconsulting.com
Twitter @JBAConsulting

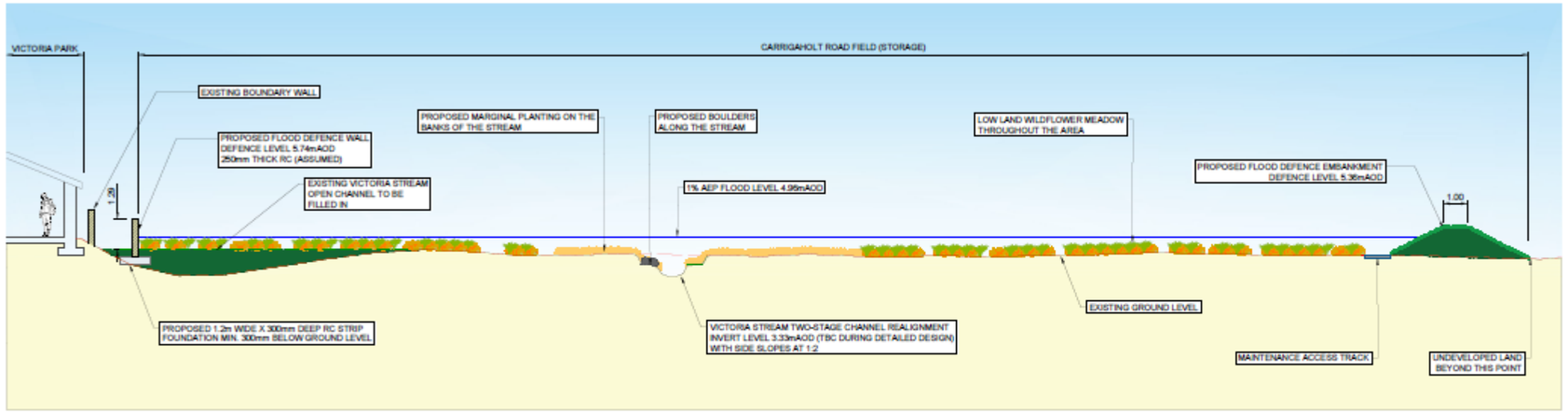
Project
KILKEE FLOOD RELIEF SCHEME

Title
FLOOD DEFENCES
WESTERN TRIBUTARY
CROSS-SECTIONS
for

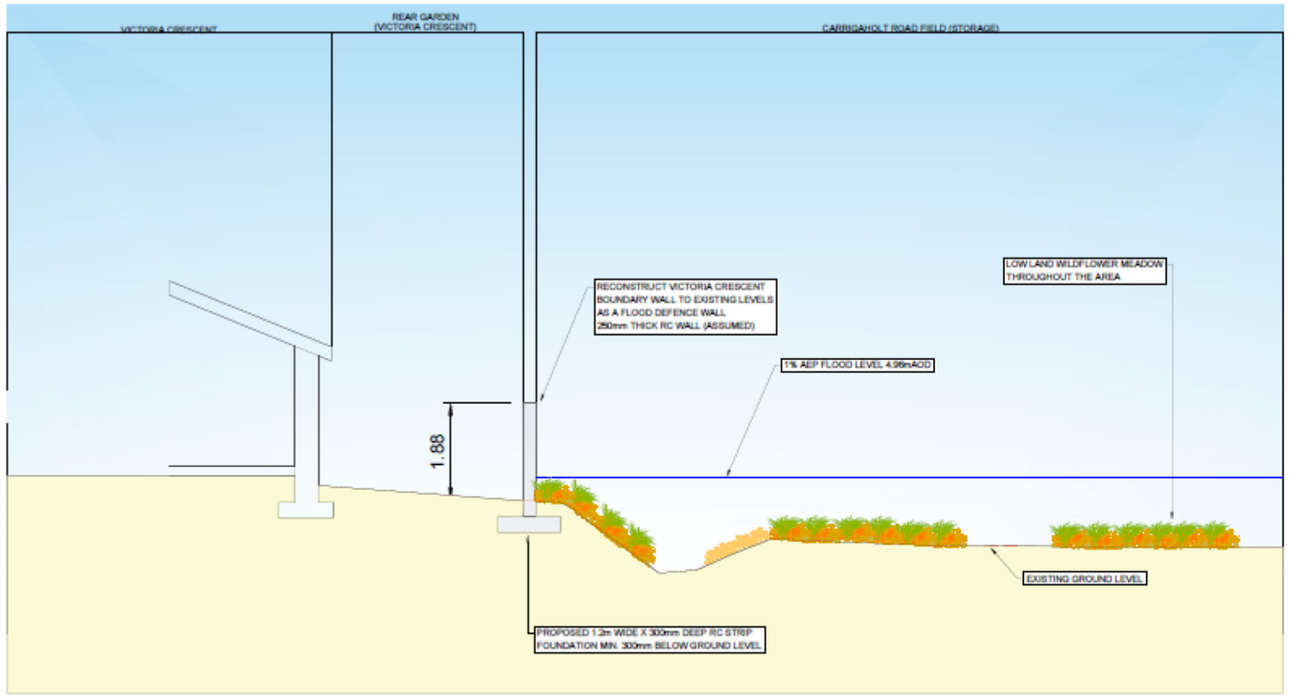
Client
CLARE COUNTY COUNCIL

Drawn:	PB	24/05/2024	Designed:	PB	24/05/2024
Checked:	MOD	24/05/2024	Approved:	MOD	24/05/2024
Project Reference:	2019e1431 / CGD		Scale:	AS SHOWN @ A1	
Drawing Number:			Status:	Revision:	Sheet Size:
19109-JBAI-XX-XX-DR-L-02122			A3	C02	A1

Section E-E scale1:100@A1



Section F-F scale1:50@A1



No.	Construction Risk	Maintenance Risk	Demolition Risk
1			
2			

In addition to the hazards/risks normally associated with the types of work detailed on this drawing take note of the above.

SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION BOX

DRAWING NOTES

1. ALL DIMENSIONS SHOWN ARE IN METRES UNLESS OTHERWISE STATED AND LEVELS IN METRES ABOVE ORDNANCE DATUM.
2. DO NOT SCALE FROM THIS DRAWING. ALL DIMENSIONS MUST BE CHECKED/VERIFIED ON SITE.
3. ANY DISCREPANCIES NOTED ON SITE ARE TO BE REPORTED TO THE ENGINEER IMMEDIATELY.
4. THE LOCATIONS OF ANY KNOWN SERVICES SHOWN ON THIS DRAWING ARE APPROXIMATE AND FOR GUIDANCE ONLY. THE CONTRACTOR WILL CONFIRM THE LOCATION OF ANY SERVICES PRIOR TO THE COMMENCEMENT OF ANY WORKS.
5. THIS DRAWING IS NOT TO BE USED FOR CONSTRUCTION.
6. THE ELECTRONIC VERSION OF THIS DRAWING IS NOT TO BE USED FOR SETTING OUT.

REFERENCE DRAWINGS

19109-JBAI-XX-XX-DR-I-02121 FLOOD DEFENCES WESTERN TRIBUTARY / VICTORIA STREAM

FLOOD DEFENCE LEVEL - VICTORIA STREAM / WELL STREAM / WESTERN TRIBUTARY			
REPORTING POINT LOCATION	1% AEP FLOOD LEVEL (mAOD)	DEFENCE LEVEL (mAOD)	DEFENCE MEASURE
P5 (WALL) (CARRIGAHOLT ROAD FIELD)	4.96	5.74	WALL
P5 (EMBANKMENT) (CARRIGAHOLT ROAD FIELD)	4.96	5.36	EMBANKMENT

C02	Comments	FOR PLANNING SUBMISSION							
Rev.:	Date	24/06/24	Drawn	PB	Designed	PB	Checked	MOD	Approved	MOD

Client Approval

A - Approved
B - Approved with Revisions
C - Do Not Use

24 Grove Island
Corbally
Limerick
Ireland
V94 3124

T +353 (0)61 345 463
E info@jbaconsulting.com

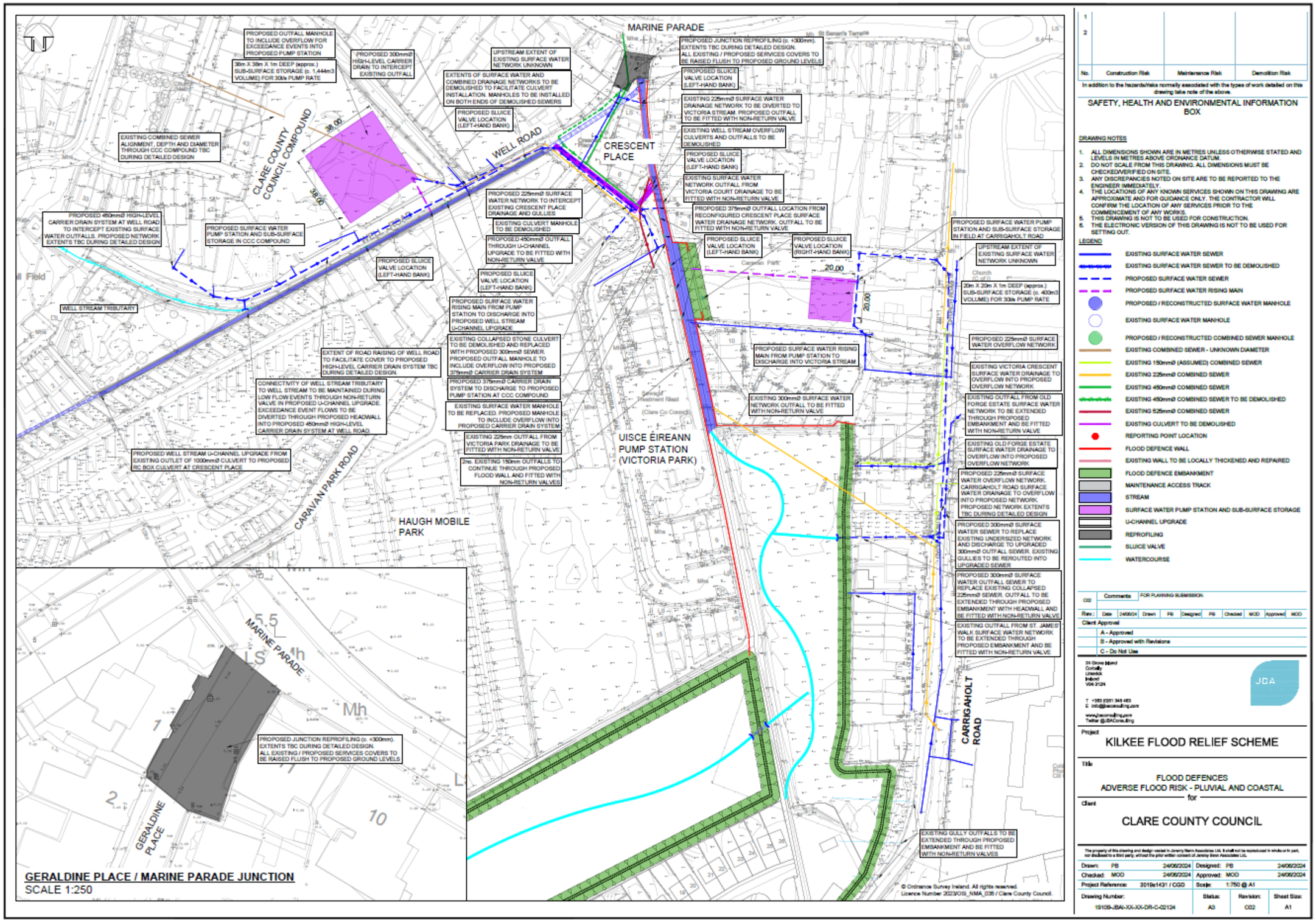
www.jbaconsulting.com
Twitter @JBAConsulting

Project
KILKEE FLOOD RELIEF SCHEME

Title
FLOOD DEFENCES
VICTORIA STREAM
CROSS-SECTIONS
for

Client
CLARE COUNTY COUNCIL

Drawn:	PB	24/06/2024	Designed:	PB	24/06/2024
Checked:	MOD	24/06/2024	Approved:	MOD	24/06/2024
Project Reference:	2018s1431 / CGD		Scale:	AS SHOWN @ A1	
Drawing Number:			Status:	Revision:	Sheet Size:
19109-JBAI-XX-XX-DR-I-02123			A3	C02	A1



No.	Construction Risk	Maintenance Risk	Demolition Risk
1			
2			

In addition to the hazards/risks normally associated with the types of work detailed on this drawing take note of the above.

SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION BOX

DRAWING NOTES

1. ALL DIMENSIONS SHOWN ARE IN METRES UNLESS OTHERWISE STATED AND LEVELS IN METRES ABOVE ORDNANCE DATUM.
2. DO NOT SCALE FROM THIS DRAWING. ALL DIMENSIONS MUST BE CHECKED/VERIFIED ON SITE.
3. ANY DISCREPANCIES NOTED ON SITE ARE TO BE REPORTED TO THE ENGINEER IMMEDIATELY.
4. THE LOCATIONS OF ANY KNOWN SERVICES SHOWN ON THIS DRAWING ARE APPROXIMATE AND FOR GUIDANCE ONLY. THE CONTRACTOR WILL CONFIRM THE LOCATION OF ANY SERVICES PRIOR TO THE COMMENCEMENT OF ANY WORKS.
5. THIS DRAWING IS NOT TO BE USED FOR CONSTRUCTION.
6. THE ELECTRONIC VERSION OF THIS DRAWING IS NOT TO BE USED FOR SETTING OUT.

LEGEND

- EXISTING SURFACE WATER SEWER
- EXISTING SURFACE WATER SEWER TO BE DEMOLISHED
- PROPOSED SURFACE WATER SEWER
- PROPOSED SURFACE WATER RISING MAIN
- PROPOSED / RECONSTRUCTED SURFACE WATER MANHOLE
- EXISTING SURFACE WATER MANHOLE
- PROPOSED / RECONSTRUCTED COMBINED SEWER MANHOLE
- EXISTING COMBINED SEWER - UNKNOWN DIAMETER
- EXISTING 150mmØ (ASSUMED) COMBINED SEWER
- EXISTING 225mmØ COMBINED SEWER
- EXISTING 450mmØ COMBINED SEWER
- EXISTING 450mmØ COMBINED SEWER TO BE DEMOLISHED
- EXISTING 525mmØ COMBINED SEWER
- EXISTING CULVERT TO BE DEMOLISHED
- REPORTING POINT LOCATION
- FLOOD DEFENCE WALL
- EXISTING WALL TO BE LOCALLY THICKENED AND REPAIRED
- FLOOD DEFENCE EMBANKMENT
- MAINTENANCE ACCESS TRACK
- STREAM
- SURFACE WATER PUMP STATION AND SUB-SURFACE STORAGE
- U-CHANNEL UPGRADE
- REPROFILING
- SLUICE VALVE
- WATERCOURSE

Rev.	Date	Comments
C02	24/05/24	FOR PLANNING SUBMISSION

Client Approval

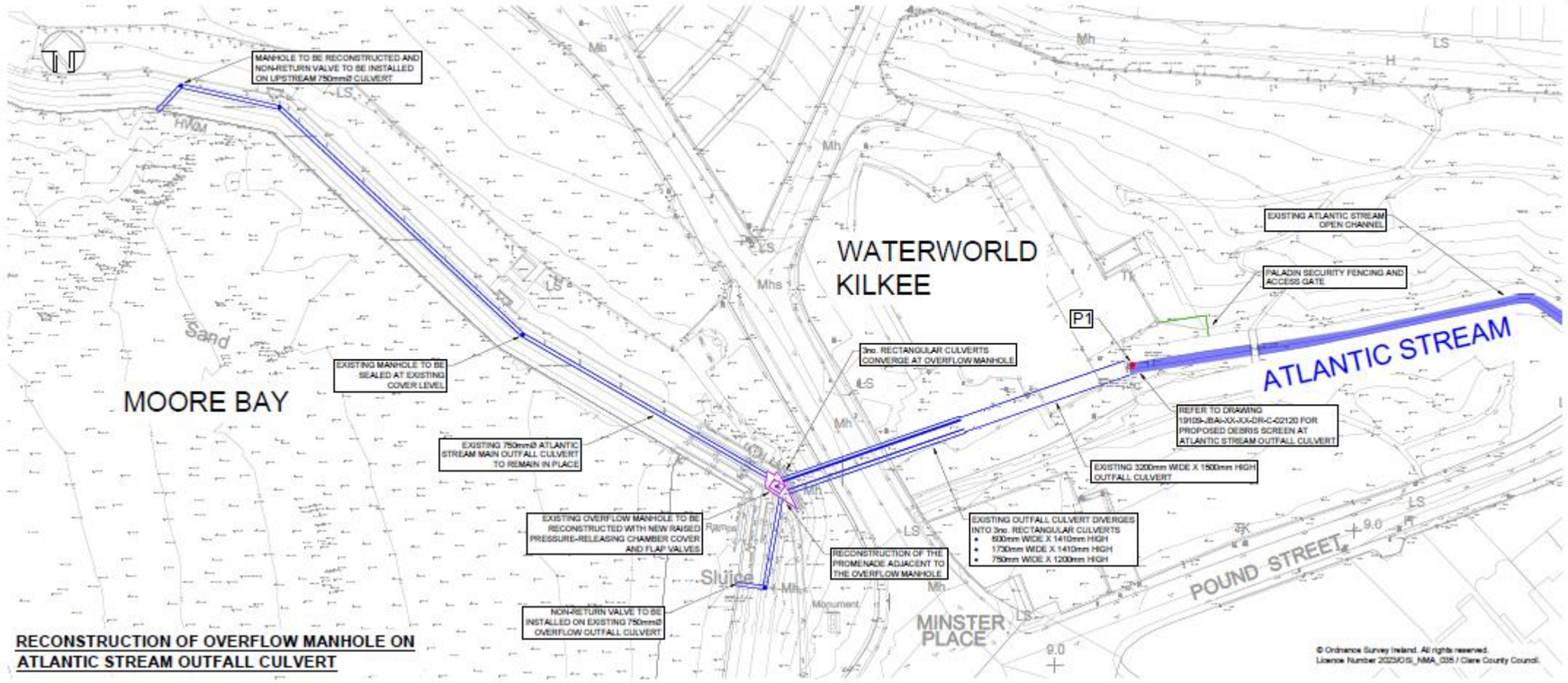
- A - Approved
- B - Approved with Revisions
- C - Do Not Use

JBA
31 Clare Island
Corbally
Limerick
Ireland
V94 2124
T +353 (0)61 345 463
E info@jbaconsulting.com
www.jbaconsulting.com
Twitter @JBAConsulting

Project
KILKEE FLOOD RELIEF SCHEME

Title
FLOOD DEFENCES
ADVERSE FLOOD RISK - PLUVIAL AND COASTAL
for
Client
CLARE COUNTY COUNCIL

Drawn: PB	24/05/2024	Designed: PB	24/05/2024
Checked: MOD	24/05/2024	Approved: MOD	24/05/2024
Project Reference: 2018e1431 / CGD		Scale: 1:750 @ A1	
Drawing Number: 19109-JBAI-XX-XX-DR-C-02124		Status: A3	Revision: C02
			Sheet Size: A1



No.	Construction Risk	Maintenance Risk	Demolition Risk
1			
2			

In addition to the hazards/risks normally associated with the types of work detailed on this drawing take note of the above.

SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION BOX

DRAWING NOTES

1. ALL DIMENSIONS SHOWN ARE IN METRES UNLESS OTHERWISE STATED AND LEVELS IN METRES ABOVE ORDNANCE DATUM.
2. DO NOT SCALE FROM THIS DRAWING. ALL DIMENSIONS MUST BE CHECKED/VERIFIED ON SITE.
3. ANY DISCREPANCIES NOTED ON SITE ARE TO BE REPORTED TO THE ENGINEER IMMEDIATELY.
4. THE LOCATIONS OF ANY KNOWN SERVICES SHOWN ON THIS DRAWING ARE APPROXIMATE AND FOR GUIDANCE ONLY. THE CONTRACTOR WILL CONFIRM THE LOCATION OF ANY SERVICES PRIOR TO THE COMMENCEMENT OF ANY WORKS.
5. THIS DRAWING IS NOT TO BE USED FOR CONSTRUCTION.
6. THE ELECTRONIC VERSION OF THIS DRAWING IS NOT TO BE USED FOR SETTING OUT.

REFERENCE DRAWINGS

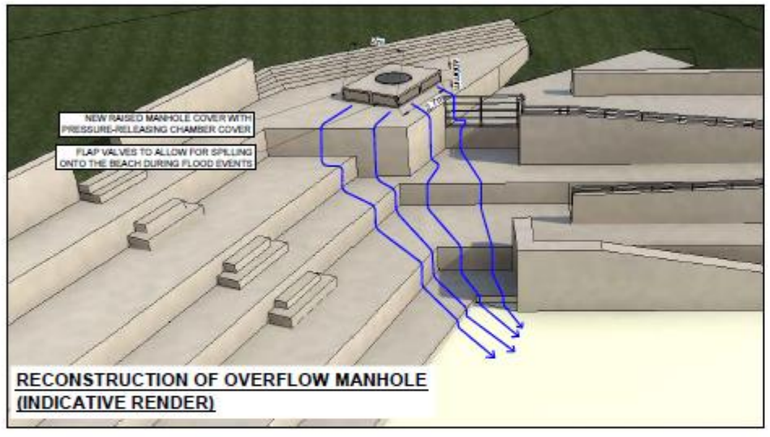
19109-JBAI-XX-XX-DR-C-02120 FLOOD DEFENCES ATLANTIC STREAM OUTFALL CULVERT SCREEN

FLOOD DEFENCE LEVEL - ATLANTIC STREAM

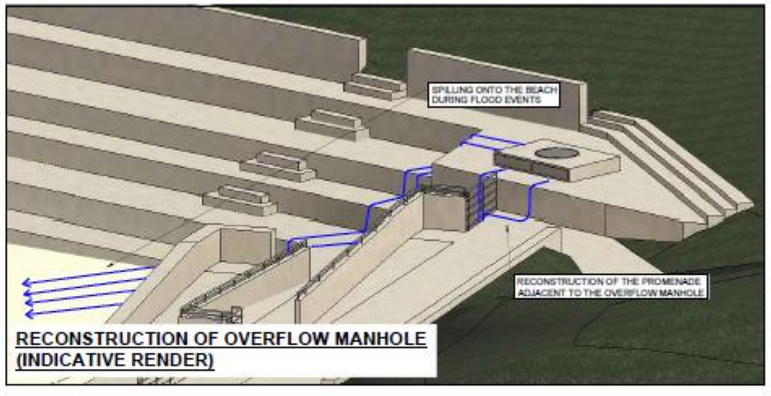
REPORTING POINT LOCATION	1% AEP FLOOD LEVEL (mAOD)	DEFENCE LEVEL (mAOD)	DEFENCE MEASURE
P1 (ENTRANCE TO ATLANTIC CULVERT AT WATERWORLD KILKEE)	6.64	N/A	CULVERT RELIEF

LEGEND

REPORTING POINT LOCATION
STREAM



RECONSTRUCTION OF OVERFLOW MANHOLE (INDICATIVE RENDER)



RECONSTRUCTION OF OVERFLOW MANHOLE (INDICATIVE RENDER)

Rev.	Date	Comments	Drawn	Designed	Checked	Approved
C02	24/06/24	FOR PLANNING SUBMISSION	PB	PB	MOD	MOD

Client Approval

A - Approved
B - Approved with Revisions
C - Do Not Use

24 Grove Island
Corbally
Limerick
Ireland
V94 2124

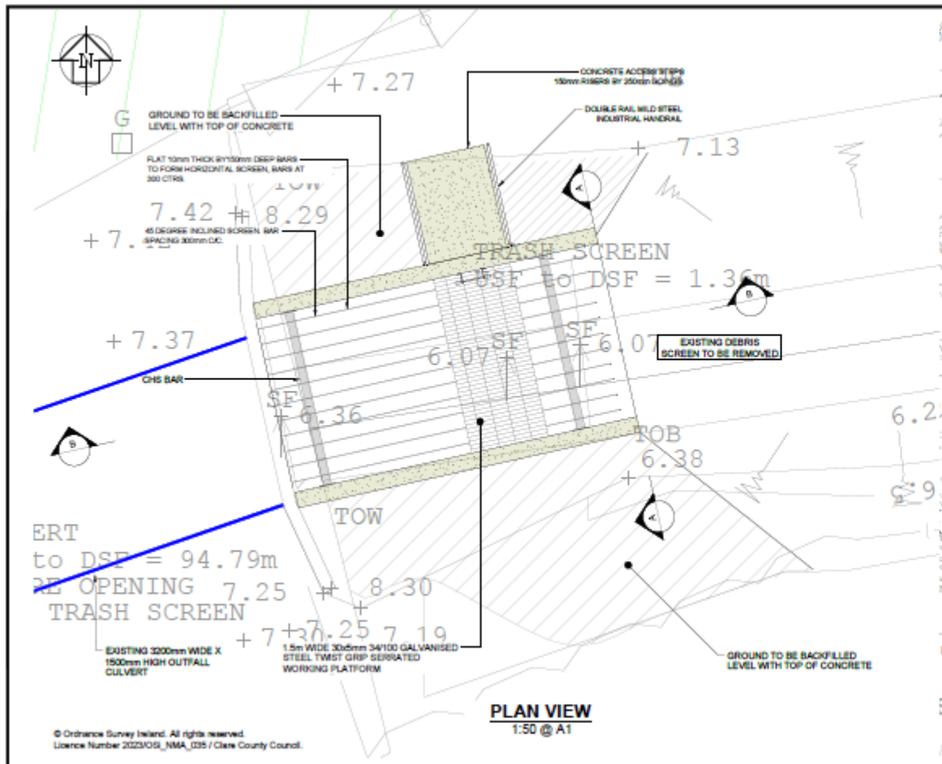
T +353 (0)61 345 463
E info@jbaconsulting.com

www.jbaconsulting.com
Twitter @JBAConsulting

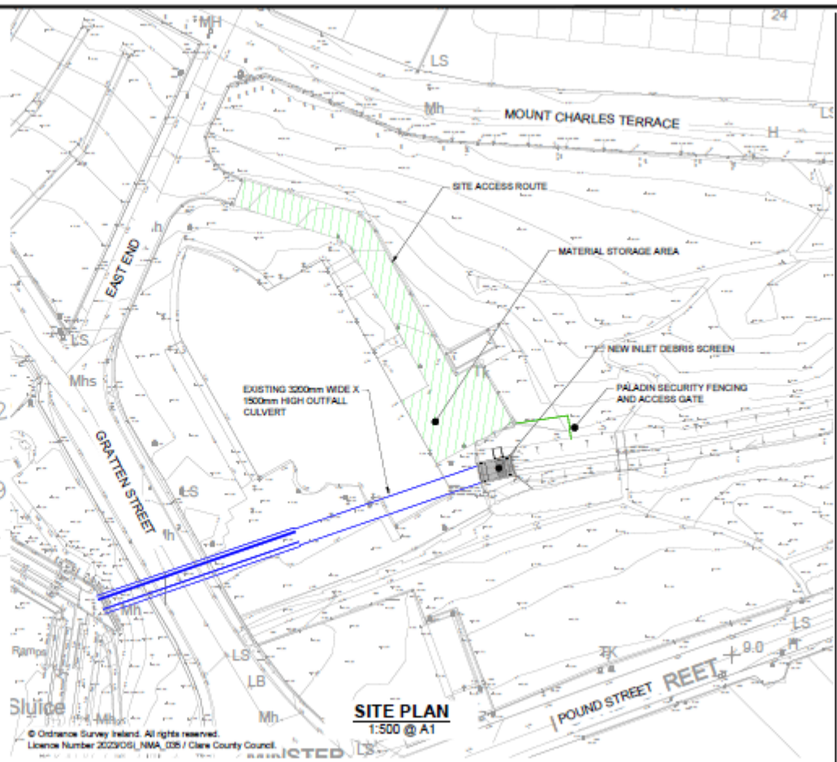
Project
KILKEE FLOOD RELIEF SCHEME

Title
FLOOD DEFENCES
ATLANTIC STREAM OUTFALL CULVERT
for
Client
CLARE COUNTY COUNCIL

Drawn:	PB	24/06/2024	Designed:	PB	24/06/2024
Checked:	MOD	24/06/2024	Approved:	MOD	24/06/2024
Project Reference:	2018s1431 / CGD		Scale:	1:500 @ A1	
Drawing Number:			Status:	Revision:	Sheet Size:
19109-JBAI-XX-XX-DR-C-02105			A3	C02	A1



PLAN VIEW
1:50 @ A1



SITE PLAN
1:500 @ A1

No.	Construction Risk	Maintenance Risk	Demolition Risk
1			
2			

In addition to the hazards/risks normally associated with the types of work detailed on this drawing take note of the above.

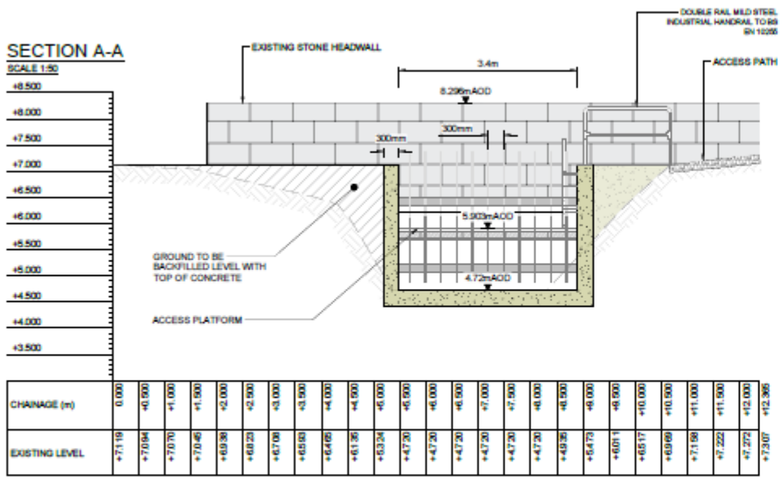
SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION BOX

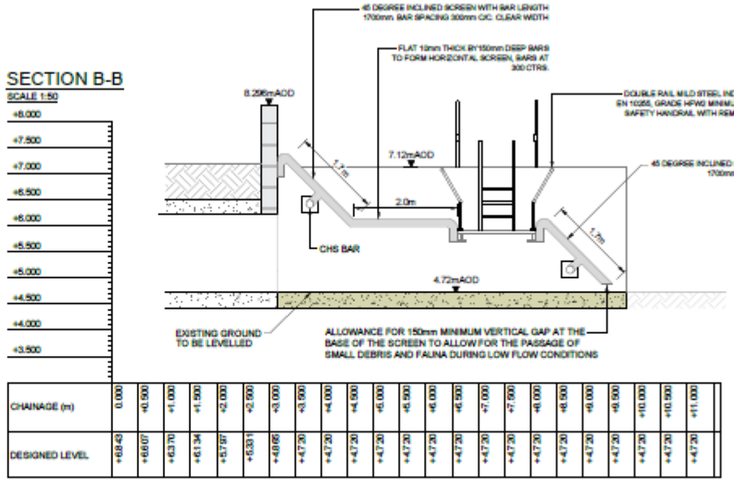
DRAWING NOTES

1. ALL DIMENSIONS SHOWN ARE IN METRES UNLESS OTHERWISE STATED AND LEVELS IN METRES ABOVE ORDNANCE DATUM.
2. DO NOT SCALE FROM THIS DRAWING. ALL DIMENSIONS MUST BE CHECKED/VERIFIED ON SITE.
3. ANY DISCREPANCIES NOTED ON SITE ARE TO BE REPORTED TO THE ENGINEER IMMEDIATELY.
4. THE LOCATIONS OF ANY KNOWN SERVICES SHOWN ON THIS DRAWING ARE APPROXIMATE AND FOR GUIDANCE ONLY. THE CONTRACTOR WILL CONFIRM THE LOCATION OF ANY SERVICES PRIOR TO THE COMMENCEMENT OF ANY WORKS.
5. THIS DRAWING IS NOT TO BE USED FOR CONSTRUCTION.
6. THE ELECTRONIC VERSION OF THIS DRAWING IS NOT TO BE USED FOR SETTING OUT.

FLOOD DEFENCE LEVEL - ATLANTIC STREAM

REPORTING POINT LOCATION	1% AEP FLOOD LEVEL (mAOD)	DEFENCE LEVEL (mAOD)	DEFENCE MEASURE
P1 (ENTRANCE TO ATLANTIC CULVERT AT WATERWORLD KILKEE)	6.64	N/A	CULVERT RELIEF





Rev.	Date	Comments	Drawn	Checked	Designed	Approved
C02		FOR PLANNING SUBMISSION				
C01	24/05/24		PB	PB	PB	MOD

Client Approval

A - Approved
B - Approved with Revisions
C - Do Not Use

JBA Consulting
24 Grove Island
Corbally
Limerick
Ireland
V94 3124

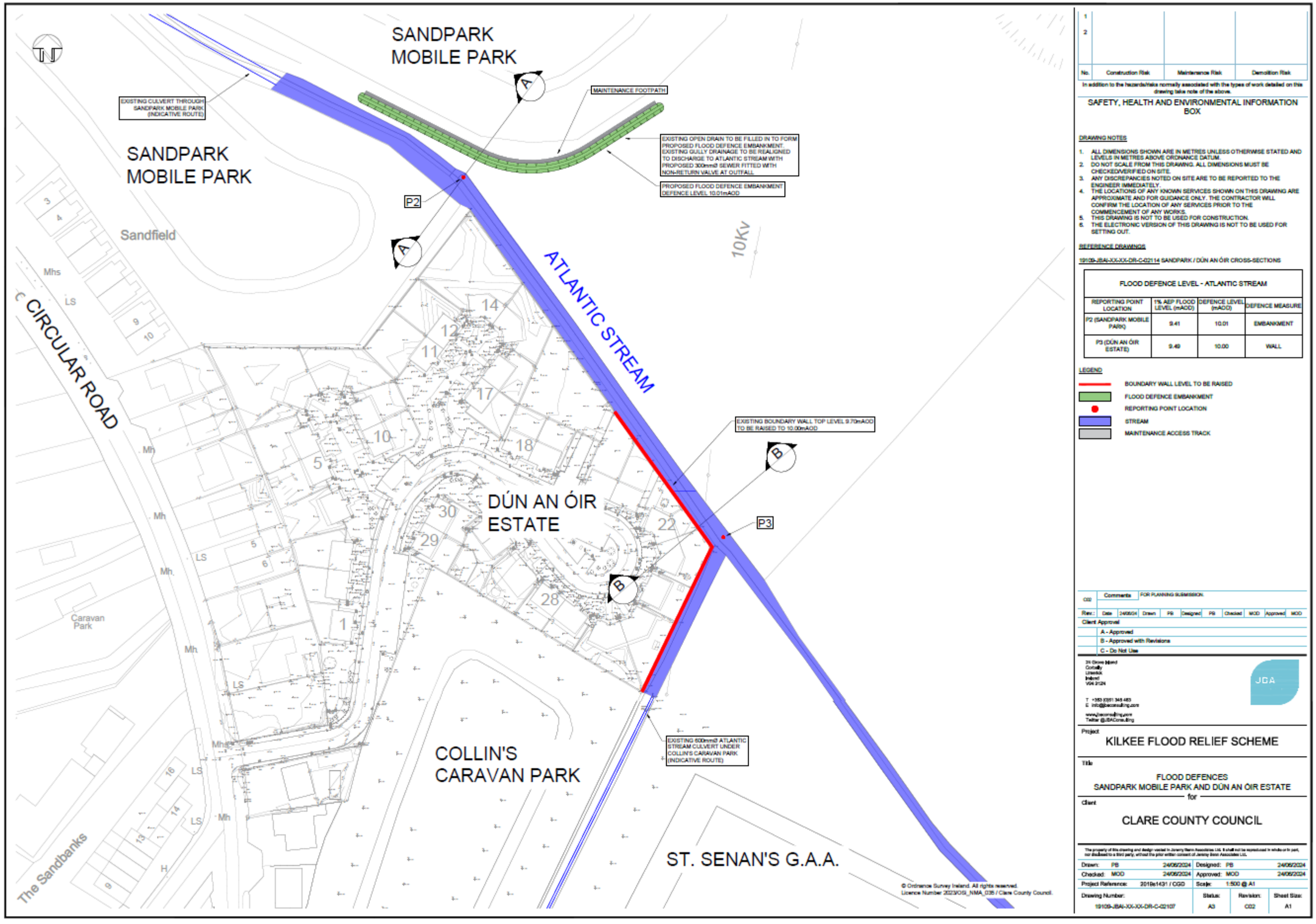
T +353 (0)61 345 463
E info@jbaconsulting.com

www.jbaconsulting.com
Twitter @JBAConsulting

Project
KILKEE FLOOD RELIEF SCHEME

Title
FLOOD DEFENCES
ATLANTIC STREAM OUTFALL CULVERT SCREEN
for
Client
CLARE COUNTY COUNCIL

Drawn:	PB 24/05/2024	Designed:	PB 24/05/2024
Checked:	MOD 24/05/2024	Approved:	MOD 24/05/2024
Project Reference:	2019s1431 / CGD	Scale:	AS STATED @ A1
Drawing Number:	19109-JBAI-XX-XX-DR-C-02120	Status: A3	Revision: C02 / Sheet Size: A1



No.	Construction Risk	Maintenance Risk	Demolition Risk
1			
2			

In addition to the hazards/risks normally associated with the types of work detailed on this drawing take note of the above.

SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION BOX

DRAWING NOTES

1. ALL DIMENSIONS SHOWN ARE IN METRES UNLESS OTHERWISE STATED AND LEVELS IN METRES ABOVE ORDNANCE DATUM.
2. DO NOT SCALE FROM THIS DRAWING. ALL DIMENSIONS MUST BE CHECKED/VERIFIED ON SITE.
3. ANY DISCREPANCIES NOTED ON SITE ARE TO BE REPORTED TO THE ENGINEER IMMEDIATELY.
4. THE LOCATIONS OF ANY KNOWN SERVICES SHOWN ON THIS DRAWING ARE APPROXIMATE AND FOR GUIDANCE ONLY. THE CONTRACTOR WILL CONFIRM THE LOCATION OF ANY SERVICES PRIOR TO THE COMMENCEMENT OF ANY WORKS.
5. THIS DRAWING IS NOT TO BE USED FOR CONSTRUCTION.
6. THE ELECTRONIC VERSION OF THIS DRAWING IS NOT TO BE USED FOR SETTING OUT.

REFERENCE DRAWINGS

19109-JBAI-XX-XX-DR-C-02114 SANDPARK / DÚN AN ÓIR CROSS-SECTIONS

FLOOD DEFENCE LEVEL - ATLANTIC STREAM

REPORTING POINT LOCATION	1% AEP FLOOD LEVEL (mAOD)	DEFENCE LEVEL (mAOD)	DEFENCE MEASURE
P2 (SANDPARK MOBILE PARK)	9.41	10.01	EMBANKMENT
P3 (DÚN AN ÓIR ESTATE)	9.49	10.00	WALL

LEGEND

- BOUNDARY WALL LEVEL TO BE RAISED
- FLOOD DEFENCE EMBANKMENT
- REPORTING POINT LOCATION
- STREAM
- MAINTENANCE ACCESS TRACK

Rev.	Date	Comments
C02	24/05/24	FOR PLANNING SUBMISSION

Client Approval

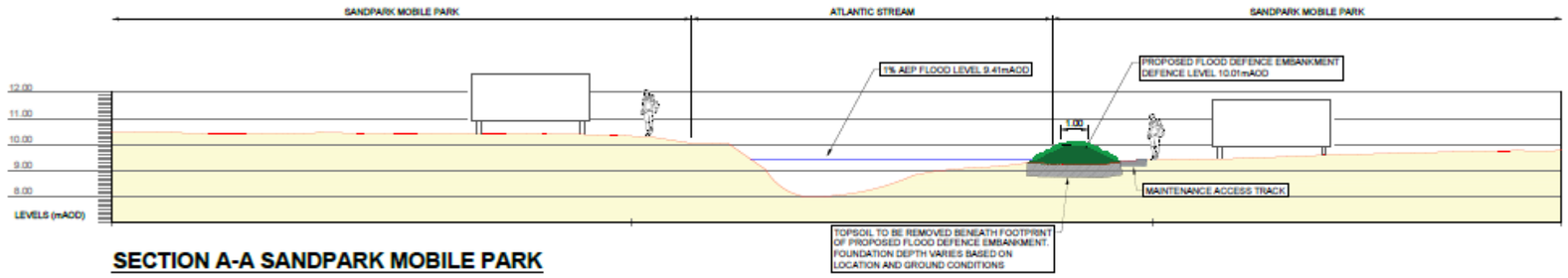
- A - Approved
- B - Approved with Revisions
- C - Do Not Use

JBA
T +353 (0)91 345 485
E info@jbaconsulting.com
www.jbaconsulting.com
Twitter @JBAConsulting

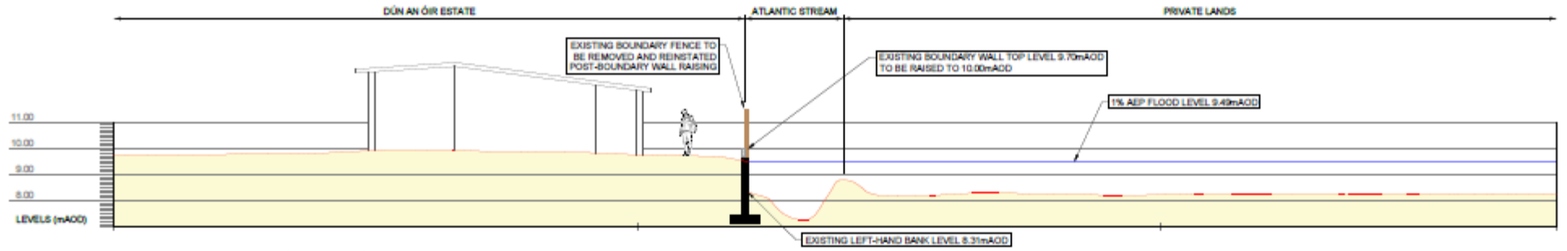
Project
KILKEE FLOOD RELIEF SCHEME

Title
FLOOD DEFENCES
SANDPARK MOBILE PARK AND DÚN AN ÓIR ESTATE
for
Client
CLARE COUNTY COUNCIL

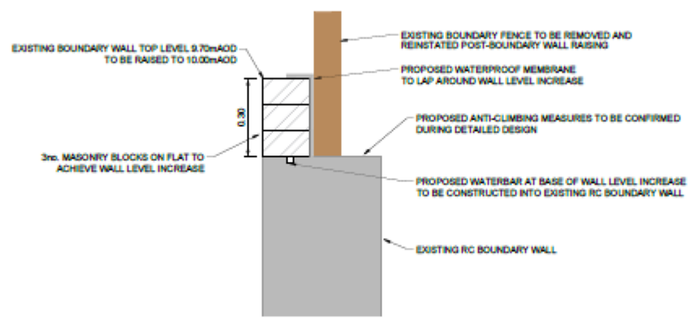
Drawn:	PB	24/05/2024	Designed:	PB	24/05/2024
Checked:	MOD	24/05/2024	Approved:	MOD	24/05/2024
Project Reference:	2019e1431 / CGD		Scale:	1:500 @ A1	
Drawing Number:			Status:	Revision:	Sheet Size:
19109-JBAI-XX-XX-DR-C-02107			A3	C02	A1



SECTION A-A SANDPARK MOBILE PARK



SECTION B-B DÚN AN ÓIR ESTATE



PROPOSED WALL RAISING DETAIL

SCALE 1:10

No.	Construction Risk	Maintenance Risk	Demolition Risk
1			
2			

In addition to the hazards/risks normally associated with the types of work detailed on this drawing take note of the above.

SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION BOX

DRAWING NOTES

1. ALL DIMENSIONS SHOWN ARE IN METRES UNLESS OTHERWISE STATED AND LEVELS IN METRES ABOVE ORDNANCE DATUM.
2. DO NOT SCALE FROM THIS DRAWING. ALL DIMENSIONS MUST BE CHECKED/VERIFIED ON SITE.
3. ANY DISCREPANCIES NOTED ON SITE ARE TO BE REPORTED TO THE ENGINEER IMMEDIATELY.
4. THE LOCATIONS OF ANY KNOWN SERVICES SHOWN ON THIS DRAWING ARE APPROXIMATE AND FOR GUIDANCE ONLY. THE CONTRACTOR WILL CONFIRM THE LOCATION OF ANY SERVICES PRIOR TO THE COMMENCEMENT OF ANY WORKS.
5. THIS DRAWING IS NOT TO BE USED FOR CONSTRUCTION.
6. THE ELECTRONIC VERSION OF THIS DRAWING IS NOT TO BE USED FOR SETTING OUT.

REFERENCE DRAWINGS:

19109-JBAI-XX-XX-DR-C-02107 FLOOD DEFENCES SANDPARK / DÚN AN ÓIR

FLOOD DEFENCE LEVEL - ATLANTIC STREAM			
REPORTING POINT LOCATION	1% AEP FLOOD LEVEL (mAOD)	DEFENCE LEVEL (mAOD)	DEFENCE MEASURE
P2 (SANDPARK MOBILE PARK)	9.41	10.01	EMBANKMENT
P3 (DÚN AN ÓIR ESTATE)	9.49	10.00	WALL

Rev.	Comments	Date
C02	FOR PLANNING SUBMISSION	

Client Approval

- A - Approved
- B - Approved with Revisions
- C - Do Not Use

25 Grove Island
Corbally
Limerick
Ireland
V94 9124

T +353 (0)61 345 463
E info@jbaconsulting.com

www.jbaconsulting.com
Twitter @JBAConsulting

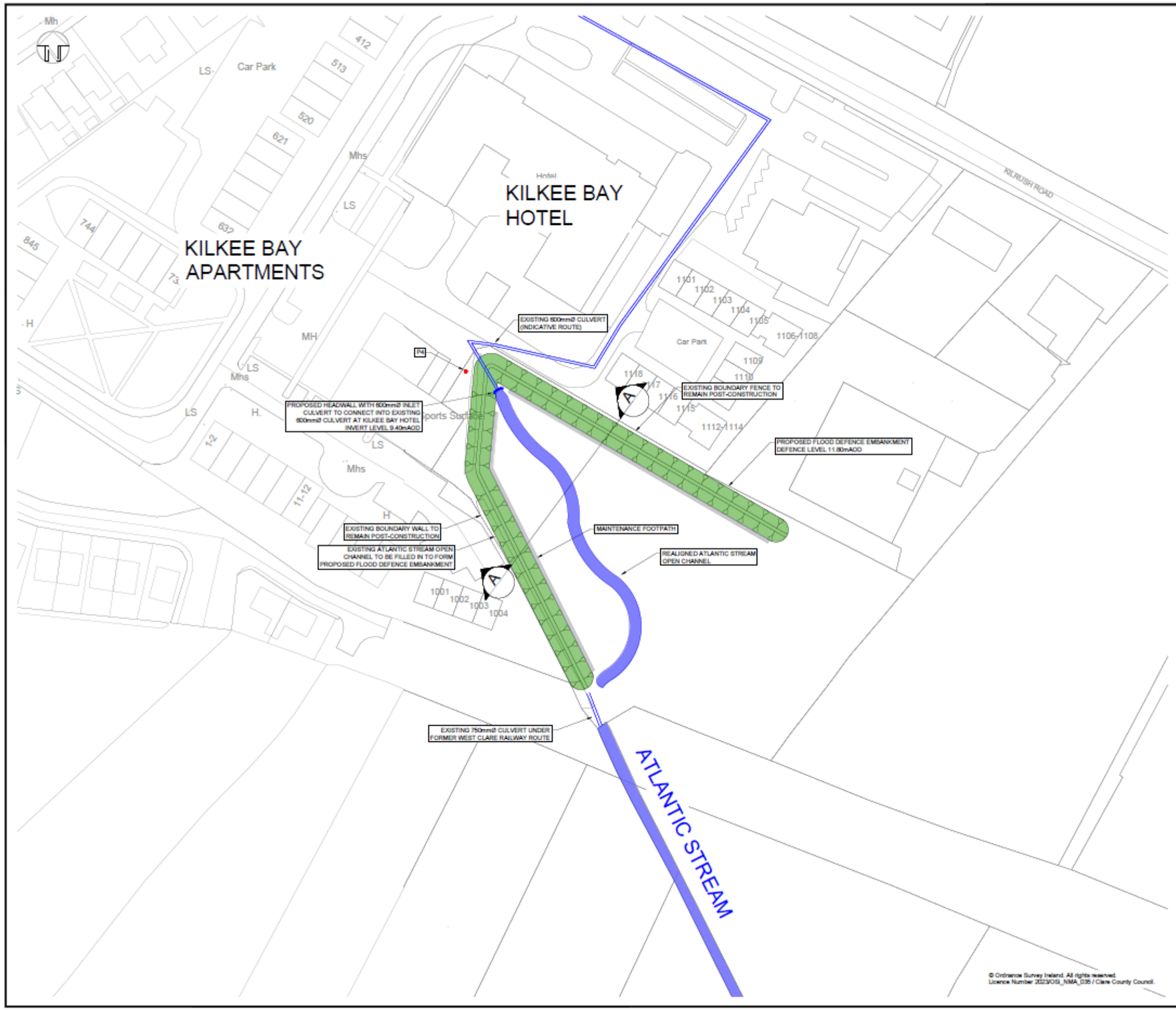
Project
KILKEE FLOOD RELIEF SCHEME

Title
FLOOD DEFENCES
SANDPARK / DÚN AN ÓIR
CROSS-SECTIONS
for

Client
CLARE COUNTY COUNCIL

Drawn:	PB	24/06/2024	Designed:	PB	24/06/2024
Checked:	MOD	24/06/2024	Approved:	MOD	24/06/2024
Project Reference:	2018e1431 / CGD		Scale:	1:100 @ A1	

Drawing Number:	Status:	Revision:	Sheet Size:
19109-JBAI-XX-XX-DR-C-02114	A3	C02	A1



No.	Construction Risk	Maintenance Risk	Demolition Risk
1			
2			

In addition to the hazards/risks normally associated with the types of work detailed on this drawing take note of the above.

SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION BOX

DRAWING NOTES

1. ALL DIMENSIONS SHOWN ARE IN METRES UNLESS OTHERWISE STATED AND LEVELS IN METRES ABOVE ORDNANCE DATUM.
2. DO NOT SCALE FROM THIS DRAWING. ALL DIMENSIONS MUST BE CHECKED/VERIFIED ON SITE.
3. ANY DISCREPANCIES NOTED ON SITE ARE TO BE REPORTED TO THE ENGINEER IMMEDIATELY.
4. THE LOCATIONS OF ANY KNOWN SERVICES SHOWN ON THIS DRAWING ARE APPROXIMATE AND FOR GUIDANCE ONLY. THE CONTRACTOR WILL CONFIRM THE LOCATION OF ANY SERVICES PRIOR TO THE COMMENCEMENT OF ANY WORKS.
5. THIS DRAWING IS NOT TO BE USED FOR CONSTRUCTION.
6. THE ELECTRONIC VERSION OF THIS DRAWING IS NOT TO BE USED FOR SETTING OUT.

REFERENCE DRAWINGS

19109-JBAI-XX-XX-DR-C-02115 KILKEE BAY HOTEL CROSS-SECTIONS

FLOOD DEFENCE LEVEL - ATLANTIC STREAM			
REPORTING POINT LOCATION	1% AEP FLOOD LEVEL (mAOD)	DEFENCE LEVEL (mAOD)	DEFENCE MEASURE
P4 (KILKEE BAY HOTEL)	11.23	11.80	EMBANKMENT

LEGEND

- FLOOD DEFENCE EMBANKMENT
- REPORTING POINT LOCATION
- STREAM
- MAINTENANCE ACCESS TRACK

Rev.	Comments	Date	Drawn	Designed	Checked	Approved
C02	FOR PLANNING SUBMISSION	24/05/24	PB	PB	MOD	MOD

Client Approved

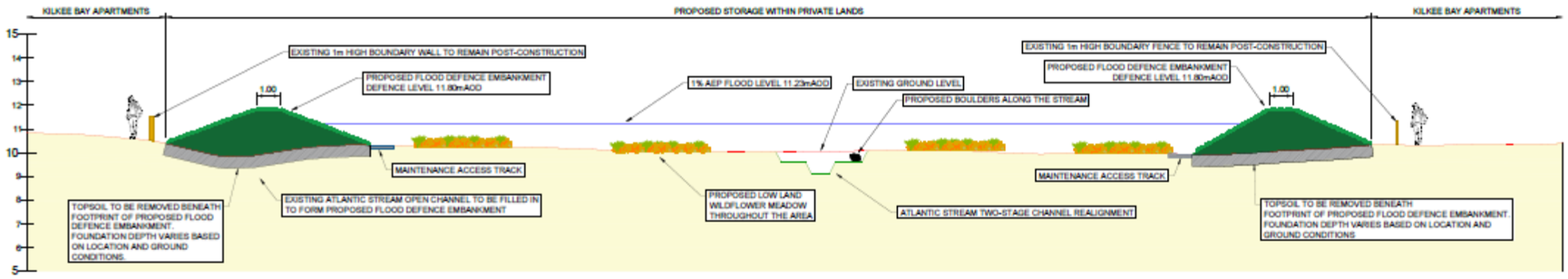
- A - Approved
- B - Approved with Revisions
- C - Do Not Use

JBA Consulting
24 Grove Island
Corbally
Limerick
Ireland
V94 3124
T +353 (0)61 345 463
E info@jbaconsulting.ie
www.jbaconsulting.ie
Twitter @JBAConsulting

Project
KILKEE FLOOD RELIEF SCHEME

Title
FLOOD DEFENCES
KILKEE BAY HOTEL
for
Client
CLARE COUNTY COUNCIL

Drawn:	PB	24/05/2024	Designed: PB 24/05/2024
Checked:	MOD	24/05/2024	Approved: MOD 24/05/2024
Project Reference:	2019s1431 / CGD	Scale:	1:500 @ A1
Drawing Number:	19109-JBAI-XX-XX-DR-C-02108	Status: A3	Revision: C02 / Sheet Size: A1



SECTION A-A BEHIND KILKEE BAY HOTEL

No.	Construction Risk	Maintenance Risk	Demolition Risk
1			
2			

In addition to the hazards/risks normally associated with the types of work detailed on this drawing take note of the above.

SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION BOX

DRAWING NOTES

1. ALL DIMENSIONS SHOWN ARE IN METRES UNLESS OTHERWISE STATED AND LEVELS IN METRES ABOVE ORDNANCE DATUM.
2. DO NOT SCALE FROM THIS DRAWING. ALL DIMENSIONS MUST BE CHECKED/VERIFIED ON SITE.
3. ANY DISCREPANCIES NOTED ON SITE ARE TO BE REPORTED TO THE ENGINEER IMMEDIATELY.
4. THE LOCATIONS OF ANY KNOWN SERVICES SHOWN ON THIS DRAWING ARE APPROXIMATE AND FOR GUIDANCE ONLY. THE CONTRACTOR WILL CONFIRM THE LOCATION OF ANY SERVICES PRIOR TO THE COMMENCEMENT OF ANY WORKS.
5. THIS DRAWING IS NOT TO BE USED FOR CONSTRUCTION.
6. THE ELECTRONIC VERSION OF THIS DRAWING IS NOT TO BE USED FOR SETTING OUT.

REFERENCE DRAWINGS:

19109-JBAI-XX-XX-DR-C-02106 FLOOD DEFENCES KILKEE BAY HOTEL

FLOOD DEFENCE LEVEL - ATLANTIC STREAM			
REPORTING POINT LOCATION	1% AEP FLOOD LEVEL (mAOD)	DEFENCE LEVEL (mAOD)	DEFENCE MEASURE
P4 (KILKEE BAY HOTEL)	11.23	11.80	EMBANKMENT

Rev.	Comments	Date
C02	FOR PLANNING SUBMISSION	24/06/24

Client Approval

A - Approved
B - Approved with Revisions
C - Do Not Use

24 Grove Island
Corbally
Limerick
Ireland
V94 3124

T +353 (0)61 345 463
E info@jbaconsulting.com

www.jbaconsulting.com
Twitter @JBAConsulting

Project
KILKEE FLOOD RELIEF SCHEME

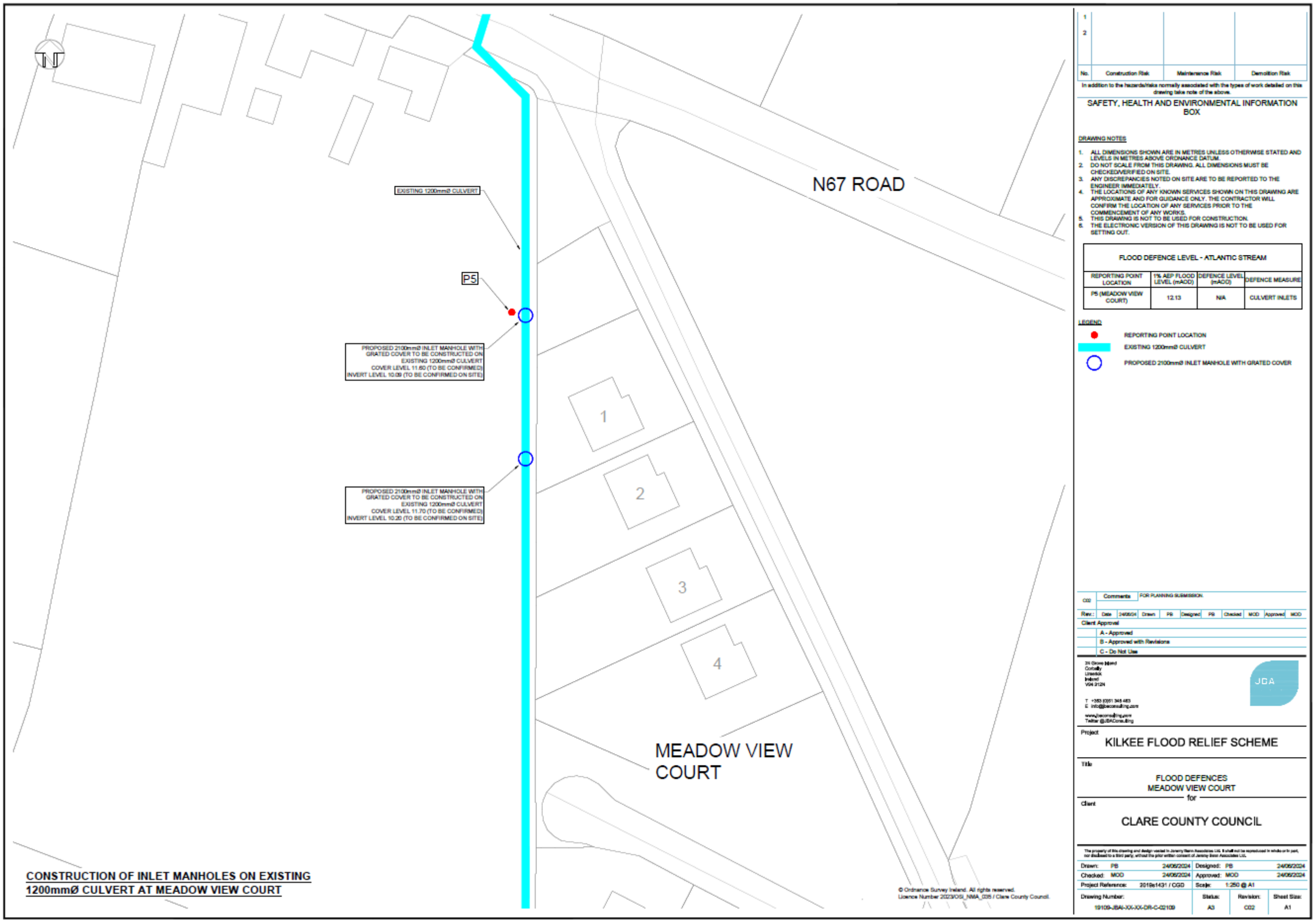
Title
FLOOD DEFENCES
KILKEE BAY HOTEL
CROSS-SECTIONS

for

Client
CLARE COUNTY COUNCIL

Drawn: PB	24/06/2024	Designed: PB	24/06/2024
Checked: MOD	24/06/2024	Approved: MOD	24/06/2024
Project Reference: 2018s1431 / CGD		Scale: 1:100 @ A1	

Drawing Number:	Status:	Revision:	Sheet Size:
19109-JBAI-XX-XX-DR-C-02115	A3	C02	A1



No.	Construction Risk	Maintenance Risk	Demolition Risk
1			
2			

In addition to the hazards/risks normally associated with the types of work detailed on this drawing take note of the above.

SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION BOX

DRAWING NOTES

1. ALL DIMENSIONS SHOWN ARE IN METRES UNLESS OTHERWISE STATED AND LEVELS IN METRES ABOVE ORDNANCE DATUM.
2. DO NOT SCALE FROM THIS DRAWING. ALL DIMENSIONS MUST BE CHECKED/VERIFIED ON SITE.
3. ANY DISCREPANCIES NOTED ON SITE ARE TO BE REPORTED TO THE ENGINEER IMMEDIATELY.
4. THE LOCATIONS OF ANY KNOWN SERVICES SHOWN ON THIS DRAWING ARE APPROXIMATE AND FOR GUIDANCE ONLY. THE CONTRACTOR WILL CONFIRM THE LOCATION OF ANY SERVICES PRIOR TO THE COMMENCEMENT OF ANY WORKS.
5. THIS DRAWING IS NOT TO BE USED FOR CONSTRUCTION.
6. THE ELECTRONIC VERSION OF THIS DRAWING IS NOT TO BE USED FOR SETTING OUT.

FLOOD DEFENCE LEVEL - ATLANTIC STREAM

REPORTING POINT LOCATION	1% AEP FLOOD LEVEL (mAOD)	DEFENCE LEVEL (mAOD)	DEFENCE MEASURE
P5 (MEADOW VIEW COURT)	12.13	N/A	CULVERT INLETS

LEGEND

- REPORTING POINT LOCATION
- EXISTING 1200mmØ CULVERT
- PROPOSED 2100mmØ INLET MANHOLE WITH GRATED COVER

Rev.	Comments	Date	Drawn	Designed	Checked	Approved
C02	FOR PLANNING SUBMISSION	24/06/24	PB	PB	MOD	MOD

Client Approval

- A - Approved
- B - Approved with Revisions
- C - Do Not Use

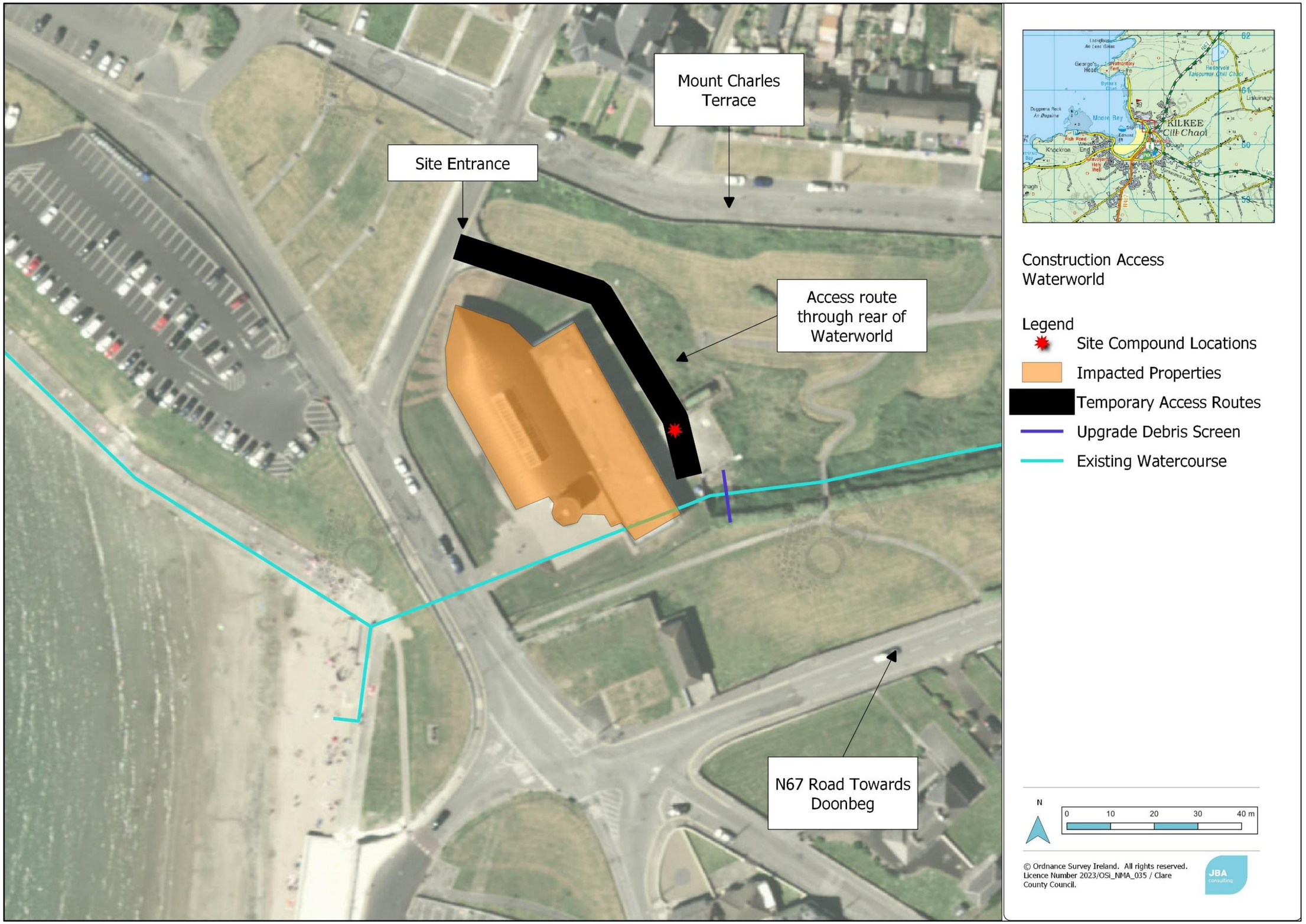
JBA
24 Grove Island
Corbally
Limerick
Ireland
V94 3124
T +353 (0)61 345 463
E info@jbaconsulting.com
www.jbaconsulting.com
Twitter @JBAConsulting

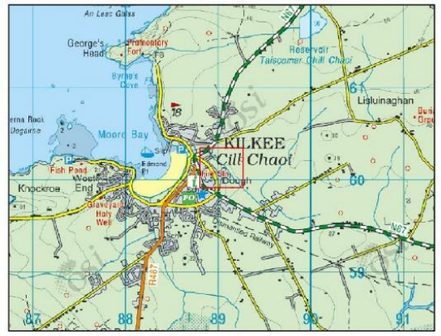
Project
KILKEE FLOOD RELIEF SCHEME

Title
FLOOD DEFENCES
MEADOW VIEW COURT
for
Client
CLARE COUNTY COUNCIL

Drawn:	PB	24/06/2024	Designed: PB 24/06/2024
Checked:	MOD	24/06/2024	Approved: MOD 24/06/2024
Project Reference:	2019s1431 / CGD	Scale:	1:250 @ A1

Drawing Number:	Status:	Revision:	Sheet Size:
19109-JBAI-XX-XX-DR-C-02109	A3	C02	A1


Mount Charles Terrace
Site Entrance
Access route through rear of Waterworld
N67 Road Towards Doonbeg
KILKEE
Cill Chaoi
Construction Access
Waterworld
Legend
Site Compound Locations
Impacted Properties
Temporary Access Routes
Upgrade Debris Screen
Existing Watercourse
N
0 10 20 30 40 m
© Ordnance Survey Ireland. All rights reserved.
Licence Number 2023/OSi_NMA_035 / Clare County Council.
JBA consulting

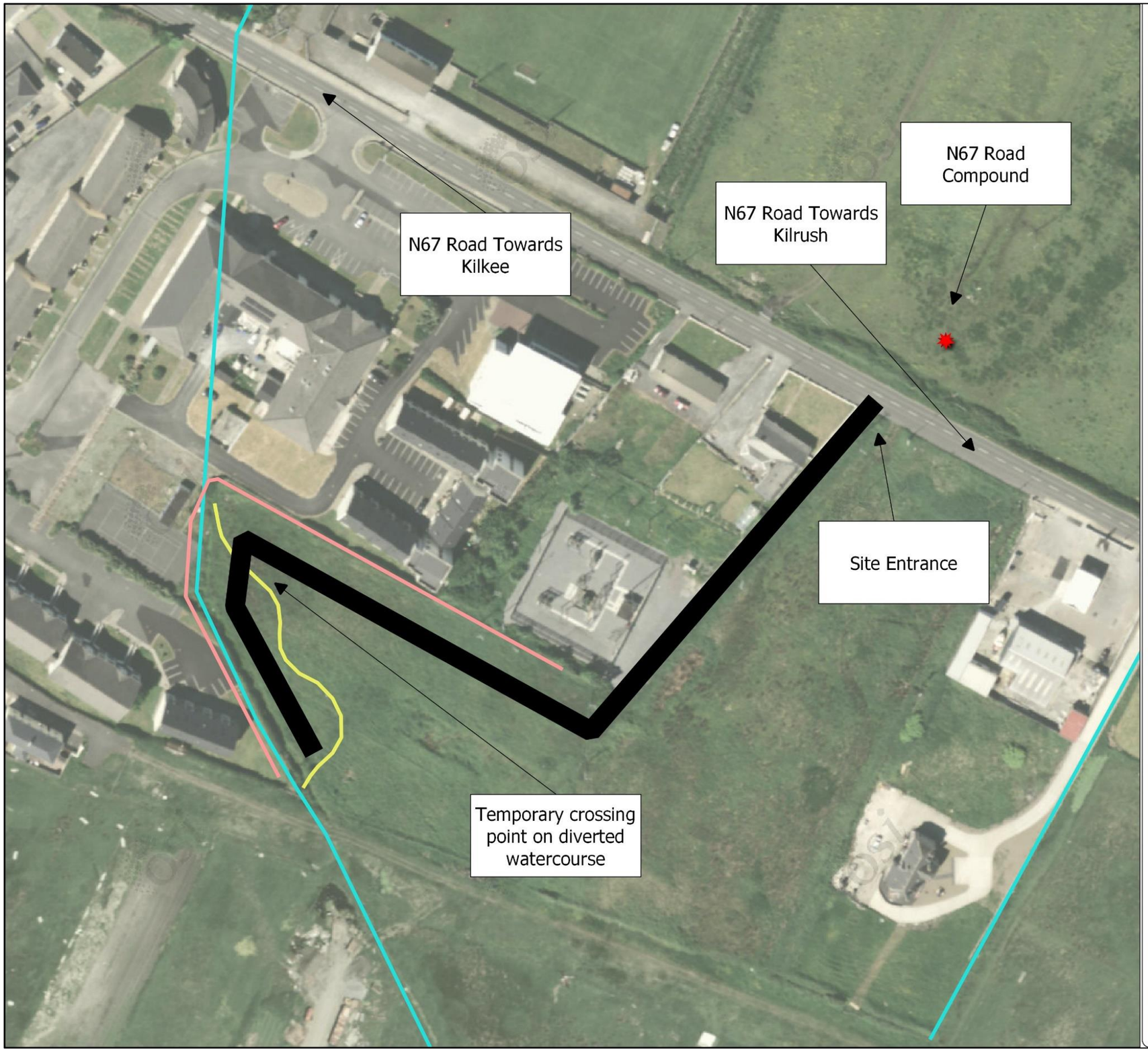


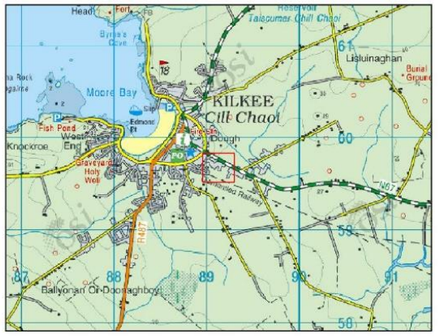
Construction Access
Dún an Óir / Sandpark

Legend
- Temporary Access Routes
- Site Compound Locations
- Impacted Properties
- Embankment
- Wall Height Increase
- Existing Watercourse

N
0 20 40 60 80 m

JBA consulting





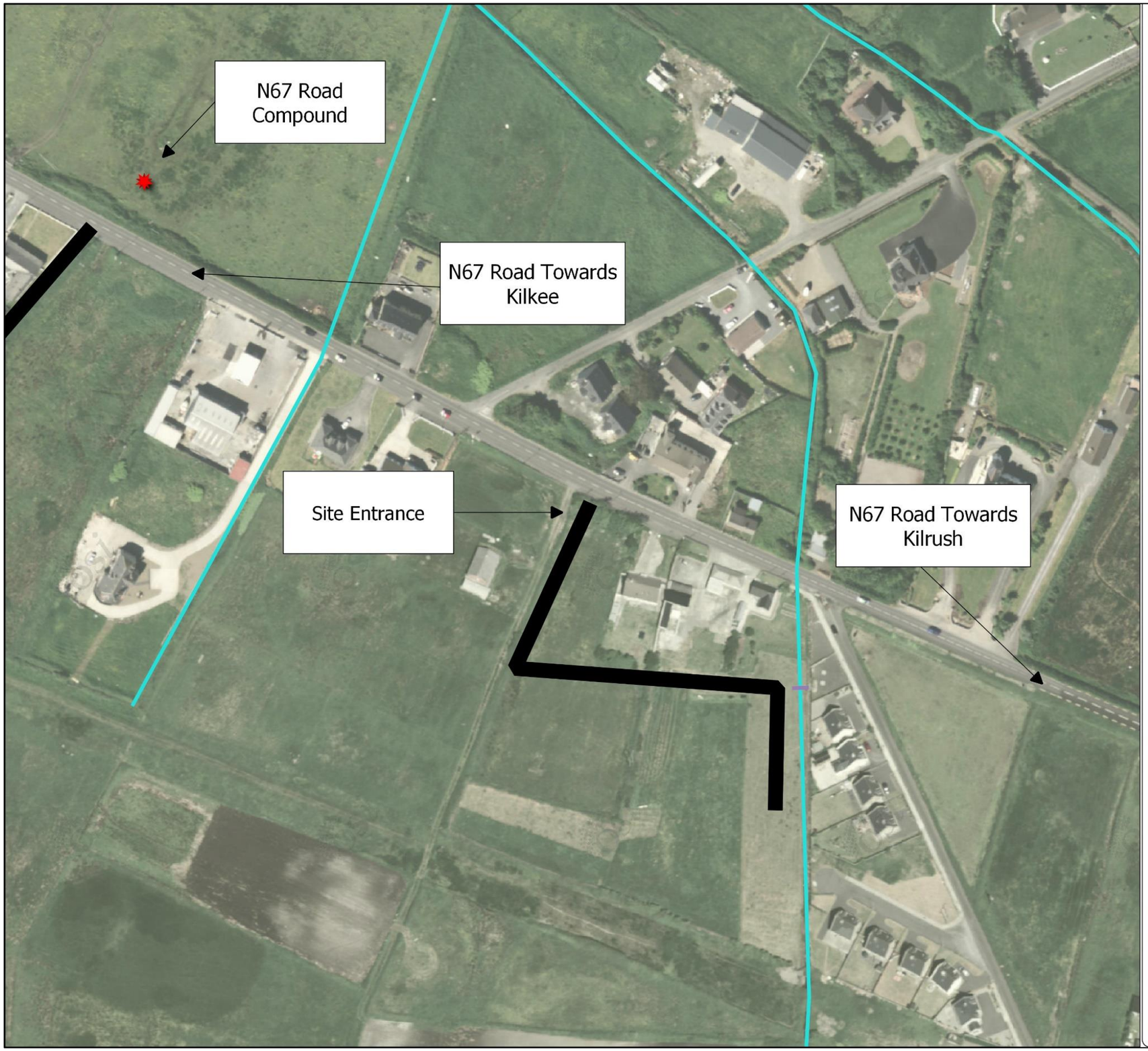
Construction Access
Kilkee Bay Hotel

Legend
- Site Compound Locations
- Temporary Access Routes
- Embankment
- Channel Realignment
- Existing Watercourse

N

0 10 20 30 40 m

JBA consulting



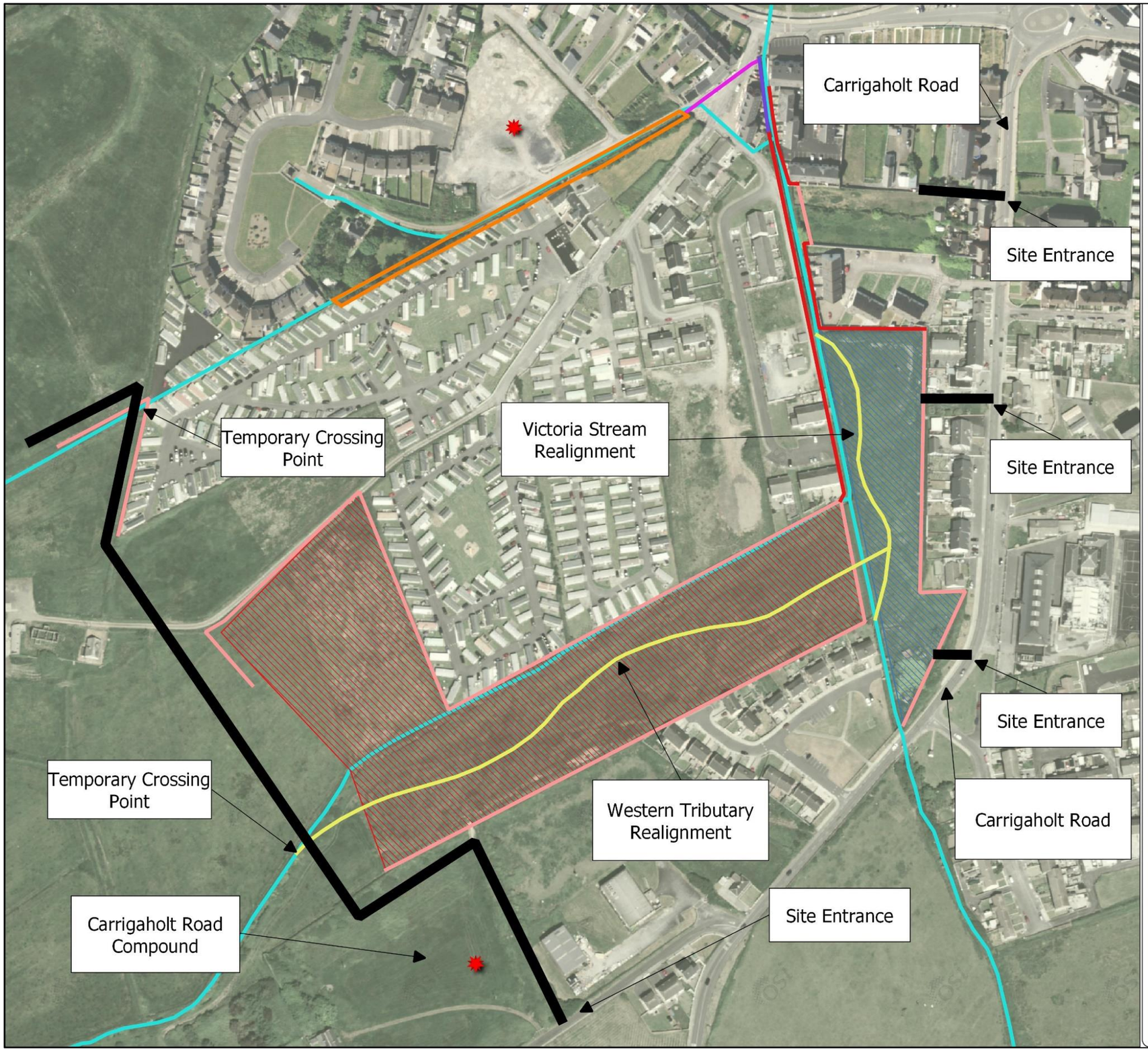
Construction Access
Meadow View Court

Legend
- Site Compound Locations
- Temporary Access Routes
- Culvert Inlet
- Existing Watercourse

N

0 10 20 30 40 m

JBA consulting



Construction Access
Western Tributary, Victoria Stream and Well Stream

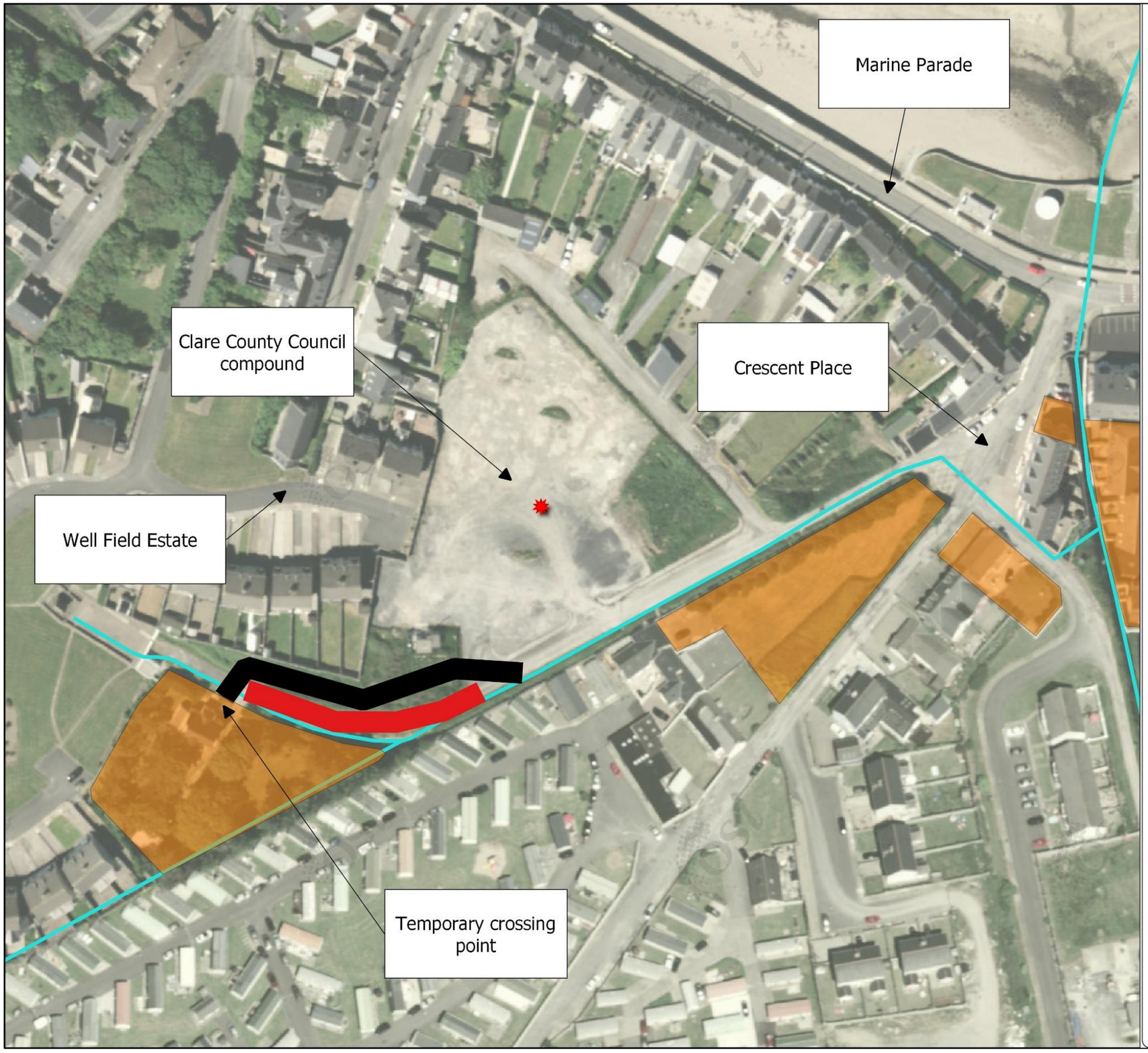
Legend

- Temporary Access Routes
- Site Compound Locations
- Channel Realignment
- Culvert
- Embankment
- Precast RC U-Channel
- Wall
- Wall Repairs
- Retained Floodplain
- Storage with Regrading
- Existing Watercourse

N

0 25 50 75 100 m

JBA consulting



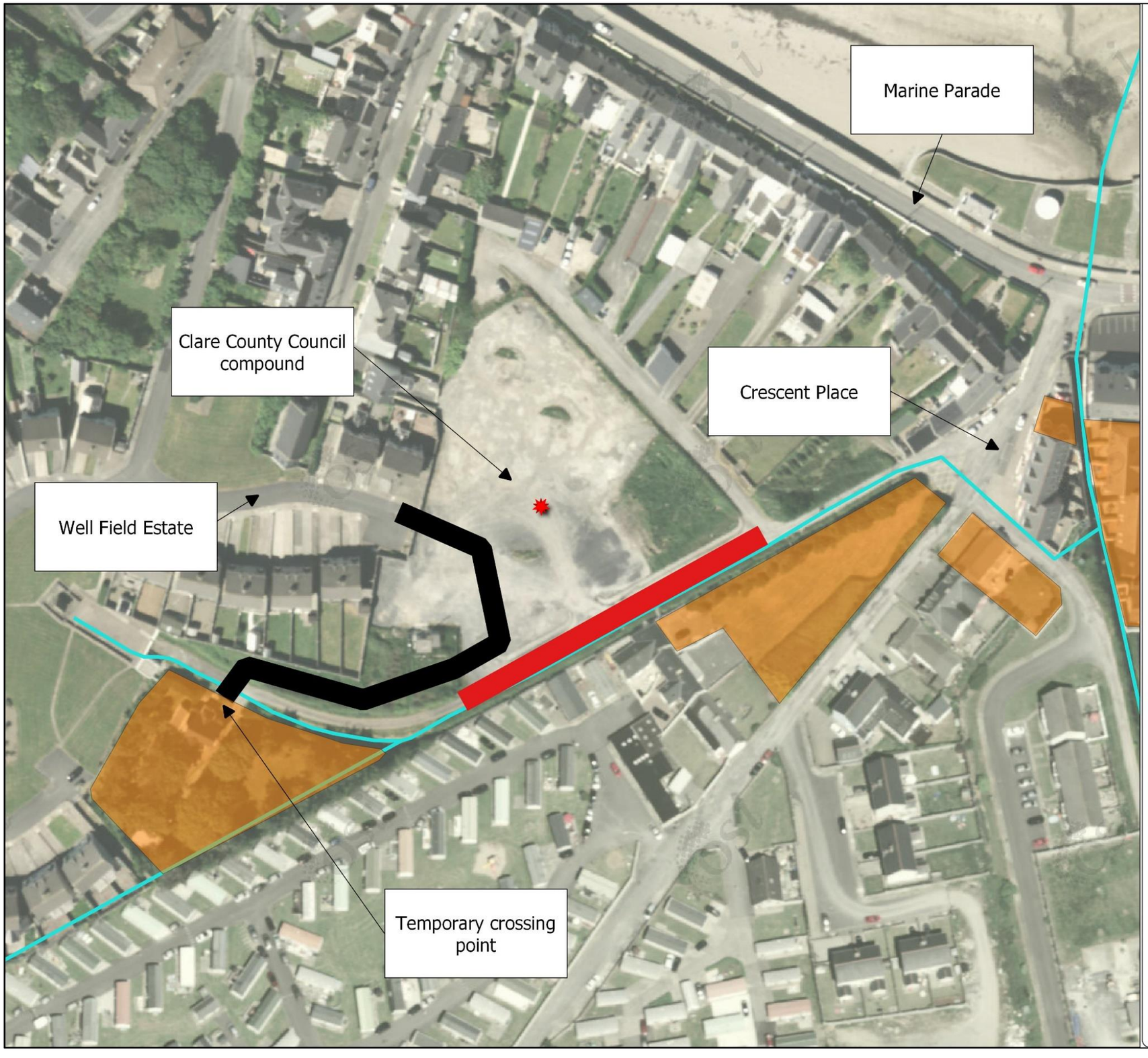
Construction Access
Well Road
Layout 1

Legend
- Site Compound Locations
- Impacted Properties
- Diversion Route
- Road Closure
- Existing Watercourse

N

0 10 20 30 40 m

JBA consulting



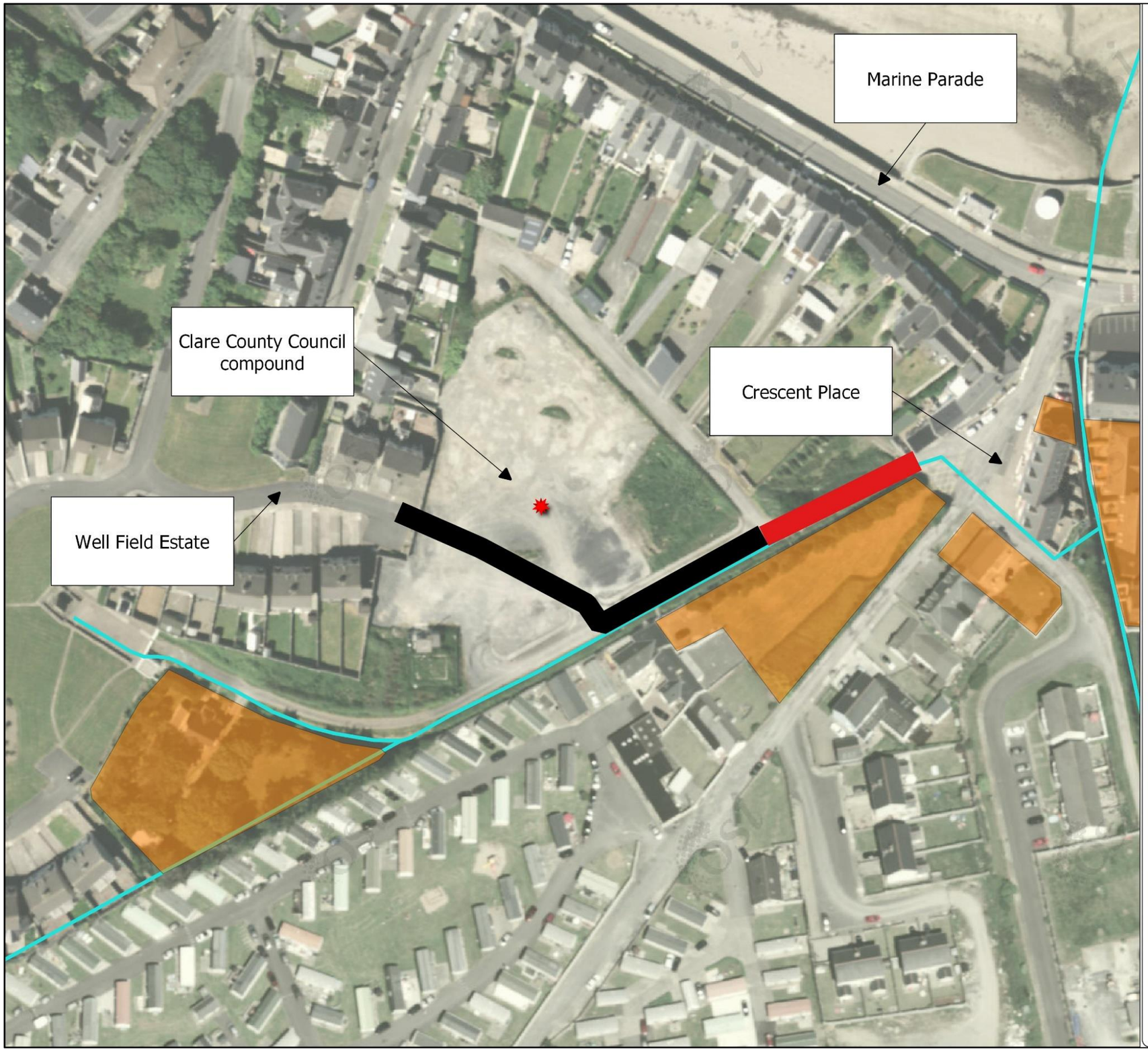
Construction Access
Well Road
Layout 2

Legend
- Site Compound Locations
- Impacted Properties
- Diversion Route
- Road Closure
- Existing Watercourse

N

0 10 20 30 40 m

JBA consulting



Construction Access
Well Road
Layout 3

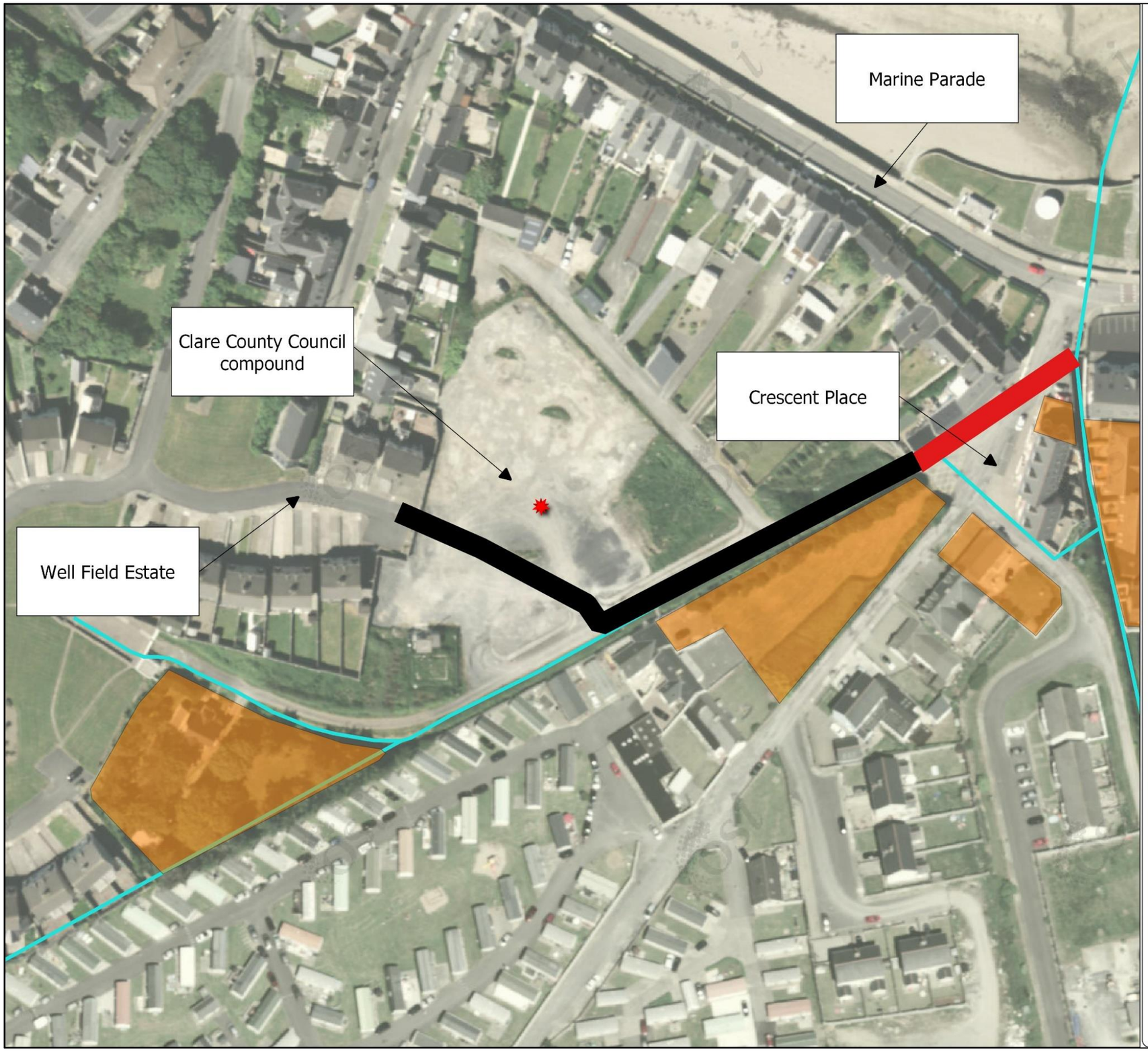
Legend

- Site Compound Locations
- Impacted Properties
- Diversion Route
- Road Closure
- Existing Watercourse

N

0 10 20 30 40 m

JBA consulting



Construction Access
Well Road
Layout 4

Legend

- Site Compound Locations
- Impacted Properties
- Diversion Route
- Road Closure
- Existing Watercourse

N

0 10 20 30 40 m

JBA consulting

Appendix C Consultation Responses

An Roinn Comhshaoil,
Aeráide agus Cumarsáide
Department of the Environment,
Climate and Communications

Geological Survey
Suirbhéireacht Gheolaíochta
Ireland | Éireann

[redacted]
JBA Consulting,
Greenogue Business Plaza
Greenogue Business Park
Rathcoole
Dublin, D24 CY64

31 July 2023

Re: EIAR Scoping Report for Kilkee Flood Relief Scheme, Co Clare

Your Ref: n/a
Our Ref: 23/172

Dear [redacted]

Geological Survey Ireland is the national earth science agency and is a division of the Department of the Environment, Climate and Communications. We provide independent geological information and gather various data for that purpose. Please see our website for data availability. We recommend using these various data sets, when conducting the EIAR, SEA, planning and scoping processes. Use of our data or maps should be attributed correctly to 'Geological Survey Ireland'.

The publicly available data referenced/presented here, should in no way be construed as Geological Survey Ireland support for or objection to the proposed development or plan. The data is made freely available to all and can be used as independent scientific data in assessments, plans or policies. It should be noted that in many cases this data is a baseline or starting point for further site-specific assessments.

With reference to your email received on the 11 July 2023, concerning the EIAR Scoping Report for Please find attached a list of our publicly available datasets that may be useful to the environmental assessment and planning process. We recommend that you review this list and refer to any datasets you consider relevant to your assessment. The remainder of this letter and following sections provide more detail on some of these datasets.

Geoheritage

Geological Survey Ireland is in partnership with the National Parks and Wildlife Service (NPWS, Department of Housing, Local Government and Heritage), to identify and select important geological and geomorphological sites throughout the country for designation as geological NHAs (Natural Heritage Areas). This is addressed by the Geoheritage Programme of Geological Survey Ireland, under 16 different geological themes, in which the minimum number of scientifically significant sites that best represent the theme are rigorously selected by a panel of theme experts.

County Geological Sites (CGSs), as adopted under the National Heritage Plan, include additional sites that may also be of national importance, but which were not selected as the very best examples for NHA designation. All geological heritage sites identified by Geological Survey Ireland are categorised as CGS pending any further NHA designation by NPWS. CGSs are now routinely included in County Development Plans and in the GIS of planning departments, to ensure the recognition and appropriate protection of geological heritage within the planning system. CGSs can be viewed online under the Geological Heritage tab on the online Map Viewer.

The audit for Co. Clare was completed in 2005. The full report details can be found here. **Our records show that there is a CGS on the margins of the proposed flood relief scheme.**

> **Foohagh Point**, Co. Clare (GR 86093, 159886), under IGH theme: IGH9 Upper Carboniferous and Permian . A spectacular growth fault can be seen in the cliff face at Foohagh Point. A growth fault is a fault that moves at the same time as sediment is being deposited causing the sediment to thicken towards the fault. The growth fault at Foohagh Point displaces sandstones, siltstones and mudstones within the fourth cyclothem sequence of the Upper Carboniferous (Namurian) Central Clare Group. **This site is of National Importance and may be proposed as an NHA under the IGH 9 Upper Carboniferous and Permian theme of the Geological Survey Ireland's IGH programme**. Link to Site Report: CE021.

Geological Survey Ireland, Block 1, Booterstown Hall, Booterstown, Blackrock, Co Dublin, A94 N2R6
Bloc 1, Halla Bhaile an Bhóthair, Baile an Bhóthair, An Charraig Dhubh, Baile Átha Cliath, A94 N2R6
T +353 (0)1 678 2000 www.gsi.ie *Fáiltítear roimh comhfhreagras i nGaeilge*

An Roinn Comhshaoil, Aeráide agus Cumarsáide
Department of the Environment, Climate and Communications

Geological Survey
Suirbhéireacht Gheolaíochta
Ireland | Éireann

With the current plan, there are no envisaged impacts on the integrity of current CGSs by the proposed development. However, if the proposed development plan is altered, please contact Clare Glanville (Clare.Glanville@gsi.ie) for further information and possible mitigation measures if applicable.

Groundwater
Geological Survey Ireland's Groundwater and Geothermal Unit, provides advice, data and maps relating to groundwater distribution, quality and use, which is especially relevant for safe and secure drinking water supplies and healthy ecosystems.

Proposed developments need to consider any potential impact on specific groundwater abstractions and on groundwater resources in general. We recommend using the groundwater maps on our Map viewer which should include: wells; drinking water source protection areas; the national map suite - aquifer, groundwater vulnerability, groundwater recharge and subsoil permeability maps. For areas underlain by limestone, please refer to the karst specific data layers (karst features, tracer test database; turlough water levels (gwlevel.ie). Background information is also provided in the Groundwater Body Descriptions. Please read all disclaimers carefully when using Geological Survey Ireland data.

The Groundwater Data Viewer indicates an aquifer classed as a 'Locally Important Aquifer - Bedrock which is Moderately Productive only in Local Zones' underlies the proposed flood relief scheme development.

The Groundwater Vulnerability map indicates the range of groundwater vulnerabilities within the area covered is variable. We would therefore recommend use of the Groundwater Viewer to identify areas of High to Extreme Vulnerability and 'Rock at or near surface' in your assessments, as any groundwater-surface water interactions that might occur would be greatest in these areas.

GWClimate is a groundwater monitoring and modelling project that aims to investigate the impact of climate change on groundwater in Ireland. This is a follow on from a previous project (GWFlood) and the data may be useful in relation to Flood Risk Assessment (FRA) and management plans. Maps and data are available on the Map viewer.

Geological Survey Ireland has completed Groundwater Protection Schemes (GWPSs) in partnership with Local Authorities, and there is now national coverage of GWPS mapping. A Groundwater Protection Scheme provides guidelines for the planning and licensing authorities in carrying out their functions, and a framework to assist in decision-making on the location, nature and control of developments and activities in order to protect groundwater. **The Groundwater Protection Response overview and link to the main reports is here: https://www.gsi.ie/en-ie/programmes-and-projects/groundwater/projects/protecting-drinking-water/what-is-drinking-water-protection/county-groundwater-protection-schemes/Pages/default.aspx**

Geological Mapping
Geological Survey Ireland maintains online datasets of bedrock and subsoils geological mapping that are reliable and accessible. We would encourage you to use these data which can be found here, in your future assessments.

Please note we have recently launched QGIS compatible bedrock (100K) and Quaternary geology map data, with instructional manuals and videos. This makes our data more accessible to general public and external stakeholders. QGIS compatible data can be found in our downloadable bedrock 100k .zip file on the Data & Maps section of our website.

Geohazards
Geohazards can cause widespread damage to landscapes, wildlife, human property and human life. In Ireland, landslides, flooding and coastal erosion are the most prevalent of these hazards. We recommend that geohazards be taken into consideration, especially when developing areas where these risks are prevalent, and we encourage the use of our data when doing so.

Landslides are common in areas of peat, rock near surface and in fine to coarse range materials (such as glacial tills), areas which are found within the proposed flood relief scheme area. Geological Survey Ireland has information available on landslides in Ireland via the National Landslide Database and Landslide Susceptibility Map both of which are available for viewing on our dedicated Map Viewer. Associated guidance documentation relating to the National Landslide Susceptibility Map is also available.

Geological Survey Ireland, Block 1, Booterstown Hall, Booterstown, Blackrock, Co Dublin, A94 N2R6
Bloc 1, Halla Bhaile an Bhóthair, Baile an Bhóthair, An Charraig Dhubh, Baile Átha Cliath, A94 N2R6
T +353 (0)1 678 2000 www.gsi.ie *Fáiltítear roimh comhfhreagras i nGaeilge*

An Roinn Comhshaoil, Aeráide agus Cumarsáide
Department of the Environment, Climate and Communications

Geological Survey
Suirbhéireacht Gheolaíochta
Ireland | Éireann

Geological Survey Ireland also engaged in a national project on Groundwater Flooding. The data from this project may be useful in relation to Flood Risk Assessment (FRA) and management plans, and is described in more detail under 'Groundwater' above.

Natural Resources (Minerals/Aggregates)
Geological Survey Ireland provides data, maps, interpretations and advice on matters related to minerals, their use and their development in our Minerals section of the website. The Active Quarries, Mineral Localities and the Aggregate Potential maps are available on our Map Viewer.

We would recommend use of the Aggregate Potential Mapping viewer to identify areas of High to Very High source aggregate potential within the area. In keeping with a sustainable approach we would recommend use of our data and mapping viewers to identify and ensure that natural resources used in the flood relief scheme are sustainably sourced from properly recognised and licensed facilities, and that consideration of future resource sterilization is considered.

Marine and Coastal Unit
Our marine environment is hugely important to our bio-economy, transport, tourism and recreational sectors. It is also an important indicator of the health of our planet. Geological Survey Ireland's Marine and Coastal Unit in partnership with the Marine Institute, jointly manages INFOMAR, Ireland's national marine mapping programme; providing key baseline data for Ireland's marine sector. The programme delivers a wide range of benefits to multi-sectoral end-users across the national blue economy with an emphasis on enabling our stakeholders. Demonstrated applications for the use of INFOMAR's suite of mapping products include Shipping & Navigation, Fisheries Management, Aquaculture, Off-shore Renewable Energies, Marine Leisure & Tourism and Coastal Behaviour.

INFOMAR also produces a wide variety of seabed mapping products that enable public and stakeholders to visualize Ireland's seafloor environment https://www.infomar.ie/maps/downloadable-maps/maps. Story maps have also been developed providing a different perspective of some of the bays and harbors of the Irish coastline. We would therefore recommend use of our Marine and Coastal Unit datasets available on our website and Map Viewer.

The Marine and Coastal Unit also participate in coastal change projects such as CHERISH (Climate, Heritage and Environments of Reefs, Islands, and Headlands) and are undertaking mapping in areas such as coastal vulnerability and coastal erosion. Further information on these projects can be found here.

Guidelines
The following guidelines may also be of assistance:

- Institute of Geologists of Ireland, 2013. Guidelines for the Preparation of the Soils, Geology and Hydrogeology Chapters of Geology in Environmental Impact Statements.
- EPA, 2022. Guidelines on the information to be contained in Environmental Impact Assessment Reports (EIAR)

Other Comments
Should development go ahead, all other factors considered, Geological Survey Ireland would much appreciate a copy of reports detailing any site investigations carried out. The data would be added to Geological Survey Ireland's national database of site investigation boreholes, implemented to provide a better service to the civil engineering sector. Data can be sent to the Geological Mapping Unit, at mailto:GeologicalMappingInfo@gsi.ie, 01-678 2795.

I hope that these comments are of assistance, and if we can be of any further help, please do not hesitate to the Geological Survey Ireland Planning Team at GSIPlanning@gsi.ie.

Yours sincerely,

Geoheritage and Planning Programme

Geological Survey Ireland, Block 1, Booterstown Hall, Booterstown, Blackrock, Co Dublin, A94 N2R6
Bloc 1, Halla Bhaile an Bhóthair, Baile an Bhóthair, An Charraig Dhubh, Baile Átha Cliath, A94 N2R6
T +353 (0)1 678 2000 www.gsi.ie *Fáiltítear roimh comhfhreagras i nGaeilge*

An Roinn Comhshaoil,
Aeráide agus Cumarsáide
Department of the Environment,
Climate and Communications

Geological Survey
Suirbhéireacht Gheolaíochta
Ireland | Éireann

Enc: Table - Geological Survey Ireland's Publicly Available Datasets Relevant to Planning, EIA and SEA processes.

Geological Survey Ireland, Block 1, Booterstown Hall, Booterstown, Blackrock, Co Dublin, A94 N2R6
Bloc 1, Halla Bhaile an Bhóthair, Baile an Bhóthair, An Charraig Dhubh, Baile Átha Cliath, A94 N2R6
T +353 (0)1 678 2000 www.gsi.ie *Fáiltítear roimh comhfhreagras i nGaeilge*

An Roinn Comhshaoil, Aeráide agus Cumarsáide
Department of the Environment, Climate and Communications

Geological Survey
Suirbhéireacht Gheolaíochta
Ireland | Éireann

Geological Survey Ireland's Publicly Available Datasets Relevant to Planning, EIA and SEA processes

following European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018
(S.I. No. 296 of 2018)

Geological Survey Ireland Programme	Dataset	Relevant EIA Topic	Coverage	Description / Notes / Limitations	Link to Geological Survey Ireland map viewer
Geohazards	Landslide: National landslide database and landslide susceptibility map	Land & Soil/Climate/Landscape	National	Associated guidance documentation relating to the National Landslide Susceptibility Map is also available.	https://dcenr.maps.arcgis.com/apps/webappviewer/index.html?id=b68cf1e4a9044a5981f650e9b8c5625c
Geohazards	Groundwater Flooding (Historic)	Water	Regional	Provide information of historic flooding, both surface water and groundwater. [A lack of flooding presented in any specific location of the map only indicates that a flood has not been detected. It does not indicate that a flood cannot occur in that location at present or in the future]	https://dcenr.maps.arcgis.com/apps/webappviewer/index.html?id=848f83c85799436b838653f9c735b6cc
Geohazards	Groundwater Flooding (Predictive)	Water	Regional	Provides information on the probability of future karst groundwater flooding (where available). [The maps do not, and are not intended to, constitute advice. Professional or specialist advice should be sought before taking, or refraining from, any action on the basis of the flood maps]	https://dcenr.maps.arcgis.com/apps/webappviewer/index.html?id=848f83c85799436b838653f9c735b6cc
Geohazards	Radon Map	Land & Soils/Air	National		http://www.epa.ie/radiation/radonmap/
Geoheritage	County Geological Sites as adopted by National Heritage Plan and listed in County Development Pla	Land & Soils/Landscape	Regional	All geological heritage sites identified by Geological Survey Ireland are categorised as CGS pending any further NHA designation by NPWS.	https://dcenr.maps.arcgis.com/apps/MapSeries/index.html?appid=a30af518e87a4c8ab2fbde2aaac3c228
Geological Mapping	Bedrock geology:	Land & Soils	National	1:100,000 scale and associated memoirs.	https://dcenr.maps.arcgis.com/apps/webappviewer/index.html?id=de7012a99d2748ea9106e7ee1b6ab8d5&scale=0
Geological Mapping	Bedrock geology:	Land & Soils	Regional	1:50,000 scale	https://dcenr.maps.arcgis.com/apps/webappviewer/index.html?id=de7012a99d2748ea9106e7ee1b6ab8d5&scale=0
Geological Mapping	Quaternary geology: Sediments	Land & Soils	National	1:50,000 scale	https://dcenr.maps.arcgis.com/apps/webappviewer/index.html?id=de7012a99d2748ea9106e7ee1b6ab8d5&scale=0
Geological Mapping	Quaternary geology: Geomorphology	Land & Soils	National	1:50,000 scale	https://dcenr.maps.arcgis.com/apps/webappviewer/index.html?id=de7012a99d2748ea9106e7ee1b6ab8d5&scale=0
Geological Mapping	Physiographic units:	Land & Soils	National	Broad-scale physical landscape units mapped at 1:100,000 scale in order to be represented as a cartographic digital map at 1:250,000 scale	https://dcenr.maps.arcgis.com/apps/webappviewer/index.html?id=afa76a420fc54877843aca1bd975d62b
Geological Mapping	GeoUrban: Spatial geological data for the greater Dublin and Cork areas	Land & Soils	Regional	Includes 3D models	https://dcenr.maps.arcgis.com/apps/webappviewer/index.html?id=9768f4818b74416093b6b2212a850ce6&scale=0
Geological Mapping	Geotechnical database	Land & Soils	National	Digitised geotechnical and Site Investigation Reports and boreholes which can be accessed through online downloads	https://dcenr.maps.arcgis.com/apps/webappviewer/index.html?id=a2718be1873d47a585a8f0415b4a724c
Goldmine	Historical data sets including geological memoirs and 6" to 1 mile geological mapping records	land & Soils/Water	National	available online	https://secure.dccae.gov.ie/goldmine/index.html
Groundwater & Geothermal	Groundwater resources (aquifers)	Water	National	Data limited to 1:100,000 scale; sites should be investigated at local scale	https://dcenr.maps.arcgis.com/apps/webappviewer/index.html?id=7e8a202301594687ab14629a10b748ef
Groundwater & Geothermal	Groundwater recharge.	Water	National	Data limited to 1:40,000 scale; sites should be investigated at local scale; long term annual average recharge	https://dcenr.maps.arcgis.com/apps/webappviewer/index.html?id=7e8a202301594687ab14629a10b748ef
Groundwater & Geothermal	Groundwater vulnerability.	Water	National	Data limited to 1:40,000 scale; sites should be investigated at local scale	https://dcenr.maps.arcgis.com/apps/webappviewer/index.html?id=7e8a202301594687ab14629a10b748ef
Groundwater & Geothermal	Group scheme and public supply source protection areas.	Water	National	Not all PWS / GWS have SPZ / ZOC. Check with IW / coco / NFGWS for private supplies.	https://dcenr.maps.arcgis.com/apps/webappviewer/index.html?id=7e8a202301594687ab14629a10b748ef
Groundwater & Geothermal	Groundwater Protection Schemes	Water	National	Data is limited to scale of 1:40,000. Data does not include all of the source protections areas	https://dcenr.maps.arcgis.com/apps/webappviewer/index.html?id=7e8a202301594687ab14629a10b748ef
Groundwater & Geothermal	Catchment and WFD management units.	Water	National		https://dcenr.maps.arcgis.com/apps/webappviewer/index.html?id=7e8a202301594687ab14629a10b748ef
Groundwater & Geothermal	karst specific data layers	water	National	For areas underlain by limestone, includes karst features, tracer test database; turlough water levels (gwlevel.ie).	https://dcenr.maps.arcgis.com/apps/webappviewer/index.html?id=7e8a202301594687ab14629a10b748ef
Groundwater & Geothermal	Wells and Springs	Water	National	Not comprehensive, there may be unrecorded wells and springs	https://dcenr.maps.arcgis.com/apps/webappviewer/index.html?id=7e8a202301594687ab14629a10b748ef
Groundwater & Geothermal	Groundwater body Descriptions	Water	National	Not exhaustive; only those in designated SACs; could be other GWDTEs; for more information contact NPWS / EPA / site investigations	https://www.gsi.ie/en-ie/programmes-and-projects/groundwater-and-geothermal-unit/activities/understanding-ireland-groundwater/Pages/Groundwater-bodies.aspx
Groundwater & Geothermal	Geothermal Suitability maps	land & Soils/Water	National	Also, Roadmap for a Policy and Regulatory Framework for Geothermal Energy, November 2020	https://dcenr.maps.arcgis.com/apps/webappviewer/index.html?id=8ee46bee08de41278b90a991d50c0b9e
Marine & Coastal Unit	INFOMAR - Ireland's national marine mapping programme; providing key baseline data for Ireland's	Water	National		https://secure.dccae.gov.ie/GSI/INFOMAR_VIEWER/
Marine & Coastal Unit	CHERISH - Coastal change project (Climate, Heritage and Environments of Reefs, Islands, and Headla	Water	Regional		http://www.cherishproject.eu/en/
Marine & Coastal Unit	Coastal Vulnerability Index (CVI).	water /Land & Soils	Regional	Currently the project is being carried out on the east coast and will be rolled out nationally	https://www.gsi.ie/en-ie/programmes-and-projects/marine-and-coastal-unit/projects/Pages/Coastal-Vulnerability-Index.aspx
Minerals	Aggregate potential	Land & Soils/Material Assets	National	Consideration of mineral resources and potential resources as a material asset which should be explicitly recognised within the environmental assessment process	https://dcenr.maps.arcgis.com/apps/webappviewer/index.html?id=ee8c4c285a49413aa6f1344416dc6956
Minerals	Active quarries	Land & Soils	National		https://dcenr.maps.arcgis.com/apps/webappviewer/index.html?id=ee8c4c285a49413aa6f1344416dc6956
Minerals	Historic mines	Land & Soils/Cultural Heritage	National	Inventory and Risk Classification 2009. Environmental Protection Agency, Economic Minerals Division and Geological Survey Ireland (DECC).	https://gis.epa.ie/EPAMaps/default?easting=?&northing=?&lid=EPA:LEMA_Facilities_Extractive_Facilities https://www.epa.ie/enforcement/mines/
Tellus	Geochemical data: multi-element data for shallow soil, stream sediment and stream water	Land & Soils	Regional	A national mapping programme	https://dcenr.maps.arcgis.com/apps/MapSeries/index.html?appid=6304e122b733488b996427079f73f754
Tellus	Airborne geophysical data including radiometrics, electromagnetics and magnetics	Land & Soils	Regional	A national mapping programme	https://dcenr.maps.arcgis.com/apps/MapSeries/index.html?appid=6304e122b733488b996427079f73f754
Tellus	urban geochemistry mapping (Dublin SURGE project).	Land & Soils	Regional		https://dcenr.maps.arcgis.com/apps/MapSeries/index.html?appid=6304e122b733488b996427079f73f754

Notes:

1. The maps and data listed above are available on the Geological Survey Ireland map viewer https://www.gsi.ie/en-ie/data-and-maps/Pages/default.aspx
2. Please read all disclaimers carefully when using Geological Survey Ireland data
3. Geological Survey Ireland and Irish Concrete Federation published guidelines for the treatment of geological heritage in the extractive industry in 2008.

Geological Survey Ireland

Version No. 1
April 2021

From: Planning Notifications
To: [redacted]
Subject: Auto-Reply
Date: Tuesday 11 July 2023 09:59:59

We acknowledge receipt of your email.

The Planning Advisory Division acts on behalf of the Department of the Environment, Climate and Communications with respect to its function as a statutory consultee within the planning system.

The Department provides observations in relation to County Development Plans, Local Area Plans and Strategic Environmental Assessments.

The Department does not provide observations for individual projects and developments.

As such, the Department will not provide observations on individual planning applications, Environmental Impact Assessments or any notification relating to an individual development.

Fáilte Ireland | Turasóireacht Náisúnta An tÚdara Eorbartha National Tourism Development Authority

EIAR Guidelines for the Consideration of Tourism and Tourism Related Projects

July 2023

An tÚdarás Náisiúnta Forbartha Turasóireachta
Áras Fáilte, 88–95 Sráid Amiens
Baile Átha Cliath 1
D01 WR86
Éire

National Tourism Development Authority
Áras Fáilte, 88 - 95 Amiens Street
Dublin 1
D01 WR86
Ireland

Phone 1890 525 525
or +353 1 884 7700
Email info@failteireland.ie
www.failteireland.ie

Contents

1. Introduction

Tourism is a growing sector and substantial part of the Irish Economy. It contributes to both urban and rural economies in every part of the country. The impact and interaction of tourism with the environment is complex and the assessment of environmental impacts is of utmost importance to creating a sustainable tourism economy and protecting the natural resources that are so often a tourism attraction.

The purpose of this report is to provide guidance for those conducting Environmental Impact Assessment and compiling an Environmental Impact Assessment Reports (EIAR), or those assessing EIARs, where the project involves tourism or may have an impact upon tourism. These guidelines are non-statutory and act as supplementary advice to the EPA EIAR Guidelines outlined in section 2.

This guidance document has been prepared by Fáilte Ireland to update their EIA guidelines in line with changes in legislative and guidance requirements.

2. Background to this Document

Tourism is one of the largest and most important sectors of the economy, providing employment for approximately **260,000 people**, an economic contribution of **€9.5 billion**, and exchequer revenue of **€1.8 billion** in 2019, which helps fund other key public services.

In 2019 Ireland welcomed **9.7 million overseas visitors.**

Fáilte Ireland is the National Tourism Development Authority established by the Irish Government in May 2003. Fáilte Irelands role is to support the tourism industry and work to sustain Ireland as a high-quality and competitive tourism destination. They provide a range of practical business supports to help tourism businesses better manage and market their products and services.

Fáilte Ireland also work with other state agencies and representative bodies, at local and national levels, to implement and champion positive and practical strategies that will benefit Irish tourism and the Irish economy.

Fáilte Ireland promotes Ireland as a holiday destination through a domestic marketing campaign (DiscoverIreland.ie) and manage a network of nationwide tourist information centres that provide help and advice for visitors to Ireland.

Tourism related projects cover a broad range of plans, programmes and developments, from the Wild Atlantic Way to a single hotel conversion. These guidelines apply to projects involving or impacting upon tourism. A tourism plan, strategy or programme where it is part of the statutory plan making process under the Planning and Development Acts (as amended), may be more appropriately assessed by a Strategic Environmental Assessment (SEA) as discussed in the next section.

It should be borne in mind that EIA is required where there is anticipated to be a significant impact on the environment, where tourism projects are of a prescribed type or meet thresholds identified below.

Where Natura 2000 Designated Sites are potentially affected by tourism development Appropriate Assessment must be carried out by the appropriate authority in accordance with Article 6(3) of the EU Habitats Directive.

3. Legislation and Statutory Guidance

Environmental Impact Assessment is a procedure that ensures that the environmental implications of decisions are taken into account before planning based decisions are made. The assessment results in a report, called an Environmental Impact Assessment Report (EIAR).

Legislation

These guidelines are produced under current EIAR legislative requirements, having regard to Directive 2011/92/EU (known as 'Environmental Impact Assessment' – EIA Directive), as amended by Directive EU 2014/52 which came into effect in May of 2017. These requirements were transposed into Irish Law on 1 September 2018 as most of the provisions of the European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018 (S.I. No. 296 of 2018) came into effect. The principle of both Directives is to ensure that plans, programmes and projects likely to have significant effects on the environment are made subject to an environmental assessment, prior to their approval or authorisation.

Statutory Guidance

In response to the changes to the EIAR requirements under Directive EU 2014/52, the Environmental Protection Agency (EPA) developed Guidelines on the information to be contained in Environmental Impact Assessment Reports in May 2022. The Guidelines are a statutory document to be regarded by those preparing EIARs and the decision makers considering the EIARs.

Some of the key changes to the EIA Directive introduced by Directive 2014/52/EU are as follows:

- Additional information to be provided in the project description to describe the location of the project, the technologies and substances used, the construction of the project and required demolition;
- The requirement for consideration of alternatives has changed from a requirement to provide 'An outline of the main alternatives studied by the developer and an indication of the main reasons for this choice, taking into account the environmental effects' to 'a description of the reasonable alternatives studied by the developer, which are relevant to the project and its specific characteristics, and an indication of the main reasons for the option chosen, taking into account the effects of the project on the environment';
- A refinement of the environmental factors to be considered in the assessment with an increased focus on resource efficiency, climate change, biodiversity and disaster prevention;
- Changes to Prescribed Environmental Factors with 'Land' being added, 'Human Beings' replaced by 'Population & Human Health' and 'Flora & Fauna' replaced by 'Biodiversity';

- The developer is required to have competent experts to prepare the EIAR and the Board is required to have access to sufficient expertise to assess the EIAR;
- Requirement for the incorporation of mitigation and monitoring measures in consents and ensuring that developers deliver these measures;
- The requirements for the assessment of cumulative effects with existing and/or approved projects, taking into account existing environmental issues to be considered; and
- Reasoned decisions made with regard to the EIA outcomes must be provided.

In addition to the EPA statutory guidance, the Department of Housing has produced Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment in August 2018.

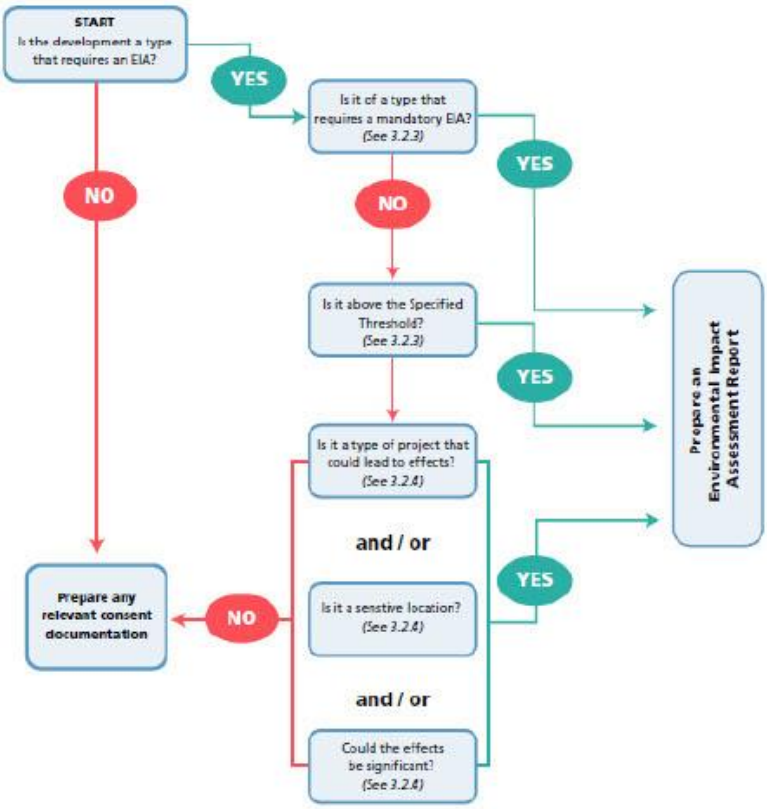
The process of EIA is set out in the EPA EIAR Guidelines, this document should be read in conjunction with and used as supplementary guidance to the EPA EIAR Guidelines. The process for ascertaining whether an EIAR is required is known as 'screening' and the process to determine the breath and scope of an EIAR is known as 'scoping'. Guidance on this can be found in Section 3.2 of the EPA Guidelines.

Screening

Through EIA Screening, developments are either considered as requiring an EIAR due to the project type or because they exceed a threshold level. The screening process begins by establishing whether the proposal is a 'project' as understood by the Directive (as amended).

The prescribed development types and thresholds are set out in Annex I and II of the EIA Directive as transposed into Schedule 5 of the Planning and Development Regulations 2010-2018 (as amended). Development which does not exceed these thresholds but may require an EIAR are called sub threshold. Sub-Threshold considerations are outlined in Schedule 7 of European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018 (S.I. No. 296 of 2018) as transposed from Annex III of the Directive. The Guidelines on Environmental Impact Assessment Reports note that projects at first glance may not appear to come under the Schedule but on closer examination when the process is further examined, they may do so because of the sensitivity or significance of the receiving environment etc. Sub threshold developments require an EIAR if they are likely to have significant environmental impacts and must undergo assessment for likely significant impacts through an EIAR screening report. The contents of a screening report for subthreshold development are contained in Annex III of the EIA Directive.

Figure 1: EIAR Screening Process



(Taken from Fig 3.2 of the EPA Guidelines)

Tourism locations should be identified as sensitive receptors in screening assessments for particular impacts, depending on scale and sensitivity, as they would in a full EIAR. Section 6 below can act as guidance for Screening Reports as well as for full EIAR.

The screening process for considering where an EIAR is necessary, is summarised above in Figure 1 (excerpted from Figure 3.2 of the EPA Guidelines).

Strategic Environmental Assessment (SEA) is a more strategic level of environmental assessment that examines plans, policies, objectives and programmes specifically rather than projects. For some tourism developments it may be more appropriate that they be examined through SEA, while individual projects or specific proposals are likely to be more assessed through EIAR. If a project is part of a plan, programme or policy/objective assessed by SEA there may still be a requirement for an EIAR for that development (subject to EIA Screening assessment).

EIAR Scoping

Scoping an EIAR is an opportunity to look at the breadth of issues and ensure that any areas of possible significant impact are assessed. Identifying sensitivities and stakeholders should take account of tourism facilities and consider Fáilte Ireland in scoping requests where necessary.

4. Assessing Tourism

There is no legal definition of 'tourism' in Irish legislation. The UNWTO definition of sustainable tourism is *"Tourism that takes full account of its current and future economic, social and environmental impacts, addressing the needs of visitors, the industry, the environment and host communities"*. This is widely accepted as a key definition of tourism as we move to a more sustainable future.

Tourism assessments are frequently carried out by economic consultants and by specific tourism consultants. It is always advisable, particular for tourism projects, that suitably qualified and experienced personnel are used to determine the impact of tourism related projects or to assess the impact of more general proposals on a tourism asset identified in a particular location. There is a requirement for EIAR under current legislation to contain a statement of competency within all EIAR documents, including screening and scoping reports.

Projects which involve a tourism element

Tourism projects are wide ranging and diverse. While there are some projects which cater to tourism and are easily identified as such - Hotels, Museums, etc. there are other projects where tourism is a key service or element, but which may not be immediately obvious – walking/cycling/forest trails, greenways, blueways, community facilities and others. EIAR conducted for developments containing tourist elements should be completed in accordance with the current guidance from the EPA.

Projects which include a tourism element can have potential for particular environmental effects which differ from a non-tourism development. These impacts can be intermittent, event related, inconsistent, dependent on weather, temporal, temporary or seasonal. This is considered within the prescribed environmental topics for EIAR outlined in Section 7 below.

Projects which may have an impact upon tourism

While tourism projects may be diverse, the projects which can impact tourism are considerably more wide ranging, from large infrastructural developments to local energy developments. Disruption to or suppression of a tourist resource or amenity can have very local or more strategic impacts, directly or indirectly- for example energy projects in a rural area can have both a negative and positive impact in different regards. There can be temporary, periodic or even seasonal impacts occurring during construction or operational periods.

According to the Fáilte Ireland Tourism Facts 2019 Report, the most important factors in determining the attractiveness of tourism destinations for visitors to Ireland are;

- Beautiful Scenery and Unspoiled Environment
- Hospitality
- Safety
- Nature, Wildlife and Natural Attractions
- History and Culture

- Pace of Life

These factors used for the promotion of tourism in Ireland are also barometers of sensitivity to change in tourism sensitive or dominant locations where development may have an impact upon the tourism asset. The potential for development to impact these sensitivities, and the environmental criteria under which they can be considered, are identified in section 7 of the guidelines.

5. Guiding Principles of EIAR

As outlined in the EPA EIAR Guidelines, the fundamental principles to be followed when preparing an EIAR, including screening and scoping, are:

- Anticipating, avoiding and reducing significant effects
- Assessing and mitigating effects
- Maintaining objectivity
- Ensuring clarity and quality
- Providing relevant information to decision makers
- Facilitating better consultation.

Environmental assessment should be undertaken in accordance with the European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018.

6. Consideration of Competency and Qualifications

As per Section 2.5 of the EPA Guidelines, EIAR is required to be completed by '*competent experts*'.

Contributors to the preparation of environmental impact assessment reports, including screening and scoping assessments, should be qualified and competent. Sufficient expertise, in the relevant field of the project concerned, is required for the purpose of its examination by the competent authorities in order to ensure that the information provided by the developer is complete and of a high level of quality so that a full and proper assessment can be undertaken.

For tourism related projects, or projects likely to affect tourism assets, competent experts in the area of tourism should be utilised in the environmental assessment.

The competency of all involved in the production of an EIAR or any related report (e.g. Screening and scoping) is required to be stated at the beginning of the EIAR report with further details as necessary in each following chapter.

Where tourism projects involve for example heritage or cultural components, input from heritage consultants, conservation architects, or historians may be required.

7. EIAR Requirements

The following are the key requirements for an EIAR under the current guidance. This is not a definitive list and should be read in conjunction with regulations.

- project description;
- assessment of alternatives considered;
- baseline assessment;
- assessment of effects;
- cumulative impact;
- interaction of impacts;
- mitigation & monitoring; and
- residual impacts

Project Description

Project descriptions are required to describe the whole project including site, scale, design and key factors. It is important that the EIAR and design team have a consistent understanding of the development description in full. The key requirements are outlined in section 3.5 of the EPA Guidelines however they identify the following;

- the location of the project
- the physical characteristics of the whole project
- the main characteristics of the operational phase of the project
- an estimate, by type and quantity, of the expected residues and emissions

The location of the project should include identifying key sensitive receptors (including tourism receptors). In the operational phase of the project any tourism based, or potentially tourism related activity, should be identified.

Assessment of Alternatives

The assessment of the various reasonable alternatives is an important requirement of the EIA process.

Where tourism projects are location dependent the assessment of reasonable alternatives should consider alternative methods, layouts, technologies and mitigations, detail the key considerations culminating in the selection of the option/design, the reasoning for these and the environmental effect of these decisions. This is particularly important for tourism projects which are often location tied. The EPA EIAR Guidelines indicate that it is generally sufficient to provide a broad description of each main alternatives and the key issues associated with each, showing how environmental considerations were taken into account in deciding on the selected option.

Baseline Assessment

Baseline descriptions are evidence based, current descriptions of environmental characteristics with consideration of likely changes to the baseline environment evidenced in planning histories, unimplemented permissions, and applications pending determination. Baseline assessments should identify any tourism sensitivities in the zone of influence of a development. This zone of influence of a development is highly dependent on its **Context, Character, Significance,** and **Sensitivity**, as outlined in the EPA EIAR Guidelines. These characteristics apply to both the development and the environment.

For example, in a tourism context;

The location of sensitive tourism resources that are likely to be directly affected should be highlighted, and other premises which although located elsewhere, may be the subject of in combination impacts such as alteration of traffic flows or increased urban development.

The character of an area from a tourism perspective should be described and the principal types of tourism in the area. Where relevant, the specific environmental resources or attributes in the existing environment which each group uses or values should be stated and where relevant, indicate the time, duration or seasonality of any of those activities.

The significance of the tourism assets or activities likely to be affected should be highlighted. Reference to any existing formal or published designation or recognition of such significance should be included. Where possible the value of the contribution of such tourism assets and activities to the local economy should also be provided.

If there are any significant concerns or opposition to the development known to exist among tourism stakeholders and interest groups, this should be highlighted. Identify, where possible, the particular aspect of the development which is of concern, together with the part of the existing tourism resource which may be threatened or impacted.

In addition, the baseline should include any methodologies employed in the study to obtain information, if particular databases are used to locate sensitive receptors they should be acknowledged. In relation to tourism information, the suggested information sources at the end of this document are a non-exhaustive list which may be of assistance in identifying tourism receptors.

Impact Assessment

The topics for consideration of impact are prescribed in the EIA Directive and transcribed into Irish law by the European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018 (S.I. No. 296 of 2018). Impact assessment should contain the likely significant effects of a development arising from both construction and operation of a development. Advice on describing the effects is contained within the EPA EIAR Guidelines and includes the **quality, significance, extent, probability, type** and **duration** of the effect, with particular descriptors for each. In describing effects upon tourism receptors these descriptors should take account of the particular aspects and sensitivities of tourism, for example a temporary annual effect from a development may have different impacts upon tourism if it falls at peak season rather than off-peak.

Impact assessment should be carried out as per EPA guidelines and the best practice for that prescribed topic. It may be considered appropriate to consider impact on tourism under the 'Population and Human Health' and / or 'Landscape' topics as suggested below.

Population and Human Health

The consideration of tourism projects within the Population and Human Health is extensive, with impacts ranging from rural employment population impacts of seasonal tourism, to the health impact of air pollution from increased traffic in urban areas.

The impact upon tourism can be considered within this section through the sensitivities of Hospitality, Safety and Pace of Life. Changes in population can impact the perception of pace of life or safety in a particular location. Impacts upon these issues in areas which rely heavily on tourism or have a particular sensitive tourism generator should be considered in this section. The EPA guidelines makes reference to amenity *"..which may be relevant under 'Population and Human Health' and 'Landscape'"*.

Biodiversity

Particular tourist activities can have a significant impact upon biodiversity. Landscapes which are 'unspoiled' can be attractors of tourism. However, the disturbance to ecology must be managed to minimise impacts.

Biodiversity is also a tourism asset and should be protected as such from other development and should be provided for in proposals where possible.

The assessment should also consider current Government policy on nature conservation as outlined in the National Biodiversity Action Plan 2017-2021 (NBAP) (and subsequent iterations (Including draft NBAP recently open for public consultation, to cover 2023 to 2027) which also includes Ireland's vision for biodiversity below.

'That biodiversity and ecosystems in Ireland are conserved and restored, delivering benefits essential for all sectors of society and that Ireland contributes to efforts to halt the loss of biodiversity and the degradation of ecosystems in the EU and globally.'

Land, Soils and Geology

A link between tourism and this prescribed environmental factor, beyond the normal development impacts, is rare, however particular activities or facilities which use geological features may have an impact upon soils and geology, such as mountain biking trails, recreational uses of old quarries etc.

The impact upon Geotourism related to geoheritage within the natural environment, e.g., any impacts on UNESCO Global Geoparks, of which we currently have three on the island of Ireland; Copper Coast in Co. Waterford, Burren and Cliffs of Moher in Co. Clare, and Cuilcagh Lakelands in Cavan and Fermanagh should be considered (where applicable) in this section.

Indirect impacts such as material use for extensive landscaping and public realm should also be considered.

Water

Tourism uses can be water intense, depending on development type. Recreational use of a surface water feature, water-based leisure centres etc have different impacts to standard development.

Air Quality and Climate

Tourism impact upon air quality is dependent on the activity proposed and sensitivity of the location. If the tourism project includes a large increase in transportation services, collection of baseline air emission data is advised. Transportation emissions affect not only air quality, but also greenhouse gases. Changing climatic patterns due to climate change should be factored into this analysis.

Noise and Vibration

A link between tourism and this prescribed environmental factor, beyond the normal development impacts, is rare, however the impact upon tourism of issues of noise and vibration can be significant. Construction adjoining hotels for example should consider the sensitivity of the development and ensure mitigation is in place.

Material Assets; Traffic and Transport

The different transport patterns associated with tourism activities is a key impact of tourism and should be considered especially for tourism projects. These produce temporal and seasonal changes on the norm and specialist consideration and interpretation should be given. Tourism proposals should, where possible, be well served by public transport and should be accessible by modes other than the car. The impact of traffic on tourism assets can be substantial and can vary in severity according to season, the weather, etc. The impact of construction traffic can be a particular concern in tourism sensitive areas in terms of noise pollution and visual impact. The construction programme of developments should work to

avoid peak tourism periods in tourism areas and should consider planned or anticipated tourism events and festivals.

Cultural Heritage

Cultural heritage can be a key component of tourism projects and the impact of tourism on the maintenance of cultural heritage should be given the utmost consideration, whether positive or negative. As a tourism attraction, cultural heritage should be strongly considered in non-tourism developments and the impact upon tourism considered as a potential impact.

Archaeology

Archaeology can be of tourism interest and can be an attractive or key component of tourism projects. Archaeology can be a tourism attractor and given that national policy emphasis on the non-renewable nature of the archaeology and archaeological heritage, focus should be a presumption in favour of its preservation in-situ or where preservation in-situ is not the option chosen, there must be preservation by record (i.e. archaeological excavation and recording must take place) in line with statutory requirements.

Material Assets; Waste Management

Tourism is a resource heavy activity and can impact waste streams and waste segregation. Impacts here should be considered strongly and with knowledge of the variation that arises from the particular tourist activity. Waste and Waste disposal issues can also impact the perception of an unspoiled environment, effecting tourism, which should be considered.

Material Assets

Material assets outside of the material assets already referenced that should be considered are built services (utilities) and infrastructure. Tourism development should include impact assessment on built services (utilities) and infrastructure while non tourism related development should consider the effect on tourism, which should be considered.

Landscape

The visual impact of a tourism development, especially in locations which are visually sensitive or renowned for their scenic or landscape beauty, should be considered carefully. A development intended to utilise or enjoy a particular vista or environment should minimise impact upon that environment.

Major Accident and Natural Disaster

There is a requirement for tourist developments to describe expected significant effects on the environment of the proposed development's vulnerability to major accidents and/or natural disasters relevant to it. Where appropriate measures should be identified to prevent or mitigate the significant adverse effects of such accidents or disasters, including resulting from climate change, on the environment and detail the preparedness for the proposed response.

Interaction of Impacts

Where two or more environmental impacts combine or interact they should be considered under the prescribed topics. It is best practice to provide a table of interactions within an EIAR or EIA Screening Report.

Cumulative Impact

The cumulative impact is that of the project combined with any known likely project which will interact or compound an environmental impact.

Transboundary Impact

Transboundary impacts should be included in EIAR. In the case of tourism, especially international travel, the transboundary impacts may not be proximate to the EIAR site.

Mitigation & Monitoring

Mitigation should follow the hierarchy of minimisation in descending order of preference- Avoid, Reduce, Remedy.

Avoid sensitive tourism resources- such as views, access and amenity areas including habitats as well as historical or cultural sites and structures.

Reduce the exposure of sensitive resources to excessive environmental impact.

Reduce the adverse effects to tourism land uses and patterns of activities, especially through interactions arising from significant changes in the intensity of use or contrasts of character or appearance.

Remedy any unavoidable significant residual adverse effects on tourism resources or activities.

Mitigation measures must be measurable and achievable within the bounds of the project.

With regard to Monitoring, Article 8a of the EIA Directive requires that:

1. 'The decision to grant development consent shall incorporate at least the following information …
(b) any environmental conditions attached to the decision, a description of any features of the project and/or measures envisaged to avoid, prevent or reduce and, if possible, offset significant adverse effects on the environment as well as, where appropriate, monitoring measures. … 4 Member States shall ensure that the features of the project and/or measures envisaged to avoid, prevent or reduce and, if possible, offset significant adverse effects on the environment are implemented by the developer, and shall determine the procedures regarding the monitoring of significant adverse effects on the environment. The type of parameters to be monitored and the duration of the monitoring shall be proportionate to the nature, location and size of the project and the significance of its effects on the environment. Existing monitoring arrangements resulting from Union legislation other than this Directive and from national legislation may be used if appropriate, with a view to avoiding duplication of monitoring.'

Residual Impacts

The residual impacts are the final predicted or intended impacts which occur after the proposed mitigation measures have been implemented.

8. Sources of information on Tourism

Information available online

Fáilte Ireland

Fáilte Ireland offers detailed research analysis and insights into the Irish Tourism Industry. The National Tourism Development Authority has a portfolio of research across a number of areas including facts and figures, Environmental Surveying and Monitoring, briefing papers and reports and visitor feedback. The Fáilte Ireland website has a dedicated research library which can be accessed here

Fáilte Ireland also manages an environmental surveying and monitoring database as part of the Wild Atlantic Way Operational Programme which can be accessed here. The purpose of this is to work with and demonstrate to our stakeholders and partners that we are committed to the sustainable development of the Wild Atlantic Way, and to be able to pre-empt and avoid environmental effects in the future should they occur.

Discover Ireland:

Operated by Fáilte Ireland, the Discover Ireland website includes comprehensive information on tourist attractions in destinations all around Ireland, including listings for activities, accommodation, events and experiences for every county, major town and region in Ireland. The website features elements from the four destination brands – Wild Atlantic Way, Ireland's Ancient East, Ireland's Hidden Heartlands and Visit Dublin and can be accessed here.

Tourism Ireland

Tourism Ireland is responsible for marketing the island of Ireland overseas as a holiday and business tourism destination. Tourism Ireland publishes a range of research documents including; visitor facts and figures, seasonal updates and industry insights which are accessible here

Local Authorities

Local Authorities are an invaluable source of information. They produce tourism strategies and audits of tourism assets within their jurisdiction. Local authorities will also produce landscape and seascape studies. Protected views and prospects as well as the record of protected structures and other designated protected buildings are contained within the Statutory Development Plans.

Regional Assemblies

Regional Assemblies can also be consulted on high level strategic tourism and potential Regional Spatial and Economic Strategies (RSESs) should be consulted.

Central Statistics Office

The Central Statistics Office (CSO) is Ireland's national statistical office and their purpose is to impartially collect, analyse and make available statistics about Ireland's people, society and economy. The Tourism and Travel Section of the Central Statistics Office is the major source for tourism statistics in Ireland and is updated regularly.

An Roinn Tithíochta,
Rialtais Áitiúil agus Oidhreachta
Department of Housing,
Local Government and Heritage

Your Ref: **19109-JBAI-XX-XX-RP-B-06022**
Our Ref: **G Pre00157/2023** (Please quote in all related correspondence)

9 August 2023

JBA Consulting
Unit 8, Block 660
Greenogue Business Plaza
Greenogue Business Park
Rathcoole
Dublin
D24 YN81

Via email: [redacted]

Proposed Pre Planning Development: Clare County Council: EIAR Scoping Report for a proposed Flood Relief Scheme in Kilkee, Co. Clare, in accordance with the EIA Directive (85/337/EEC) as amended in 2011 (Directive 2011/92/EU) and 2014 (Directive 2014/52/EU), under Article 6 and the Aarhus Convention: Kilkee, Co. Clare.

A chara

I refer to correspondence received in connection with the above. Outlined below are heritage-related observations/recommendations co-ordinated by the Development Applications Unit under the stated headings.

Archaeology – Underwater Unit

The Underwater Archaeology Unit of the Department is tasked, on behalf of the Minister for Housing, Local Government and Heritage, with the protection and preservation of Ireland's underwater cultural heritage. As a Prescribed Body or Statutory Consultee in the planning process under the Planning and Development Act 2000 (as amended), the Department makes recommendations to the relevant planning authorities, other regulatory bodies and consultees, on developments which have the potential to impact on underwater archaeology. Within the Department the Underwater Archaeology Unit has specific responsibility for making observations and recommendations to relevant authorities and consultees on flood relief scheme projects.

These observations are intended to assist Clare County Council in meeting their obligations in relation to National and EU legislation and policies for archaeological heritage. Please note this submission does not infer approval of the scheme by this Department but rather it provides general recommendations relating to the integration of the assessment of cultural

Aonad na nIarratas ar Fhorbairt, Oifigí an Rialtais, Bóthair an Bhaile Nua, Loch Garman, Y35 AP90
Development Applications Unit, Government Offices, Newtown Road, Wexford, Y35 AP90
manager.dau@housing.gov.ie
www.gov.ie/housing

heritage (both terrestrial and underwater) within the design development process for the stated project.

As set out in Chapter 5.8 of the submitted EIAR scoping document Kilkee, including the proposed development area, is rich in cultural heritage, represented, in the main, by archaeological monuments and architectural heritage. However, Kilkee also has a rich underwater cultural heritage, including wrecks, archaeological objects underwater, riverine and marine built heritage structures and features. Notwithstanding previous campaigns of dredging, reclamation and other flood alleviation works within and in the environs of the proposed flood relief area, both the river channel and the banks of the rivers and the foreshore area can therefore be regarded as being of high archaeological potential and this requires careful consideration in the assessment and design process for the Kilkee Flood Relief Scheme. Archaeological monuments are afforded statutory protection in the Record of Monuments and Places (RMP) established under section 12 (Recorded Monuments) of the National Monuments (Amendment) Act 1930-2014.

It should be noted, also, that the RMP is not an exhaustive list of all archaeological and cultural heritage in existence, and it is the published policy of the DEPARTMENT (Framework and Principles for the Protection of the Archaeological Heritage (Government of Ireland 1999) and is stated in Section 3.3.6 of the Environmental Protection Agency's *Guidelines on the Information to be Contained in Environmental Impact Assessment Reports* (EPA 2022, 32), that archaeological assessment must include a broad range of cultural heritage assets, beyond those that are subject to statutory protection(s):

Cultural Heritage

Archaeology

Known archaeological monuments

Areas of archaeological potential (including unknown archaeology)

Underwater archaeology

Architectural heritage

Designated architectural heritage

Other significant architectural heritage

Folklore and history

Designations or sensitivities

.....
2

The Landscape

Landscape Appearance and Character

Landscape Context

Views & Prospects

Historical Landscapes'.

Furthermore, Section 3.6.4 of *Frameworks and Principles for the Protection of the Archaeological Heritage* (Government of Ireland 1999) document states in relation to the scope of archaeological assessments that they:

'may, as appropriate, include documentary research, field-walking, examination of upstanding or visible features or structures, examination of existing or new aerial photographs or satellite or other remote sensing imagery, geophysical survey, topographical assessment, general consideration of the archaeological potential of the area or areas effected by a development based on their environmental characteristics, or archaeological testing.'

It should be noted that the exclusion of post-1700/post-medieval archaeological heritage (including archaeological monuments, areas of archaeological potential, underwater archaeology, and built heritage) from assessment in FRS projects is not acceptable and contrary to the EPA *Guidelines on the Information to be Contained in Environmental Impact Assessment Reports* (Environmental Protection Agency 2022) and the *Frameworks and Principles for the Protection of the Archaeological Heritage* (Government of Ireland 1999).

Section 3 of the National Monuments (Amendment) Act 1987 is the primary piece of legislation for the protection of wrecks over 100 years old and archaeological objects underwater, irrespective of age. Wrecks that are less than 100 years old and archaeological objects or the potential location of such a wreck or archaeological object can also be protected under Section 3 of the 1987 (Amendment) Act. Underwater cultural heritage also encompasses, for example, weirs, historic bridges, fording points, revetment walls, historic flood defences and other riverine structures and features, many of which are present within the proposed development area and/or are marked on historic maps. The Wreck Inventory of Ireland Database (WIID) is the official register of historic shipwrecks protected under the National Monuments Acts. All wrecks over 100-years old are protected under the 1987 and 1994 (Amendment) Acts of the National Monuments Acts. Over 18,000 wrecks have been recorded to date ranging from small fishing boats, dugout canoes and coastal traders to steamships and ocean going ships. Though earlier sources have been included where obtainable, the Inventory is largely based on documentary sources available from after AD 1700. As such, previously unrecorded wreck sites, including those dating to earlier periods, may await discovery in the rivers and coastal waters of the area under consideration here. It is noted that the Wreck Inventory of Ireland Database lists a number of wrecks from Kilkee, which are subject to statutory protection under section 3 of the 1987 National Monuments (Amendment) Act.

.....
3

Therefore, the cultural heritage section of the EIAR needs to include all elements of archaeological, built heritage and cultural heritage, including post-c. 1700 receptors, to be sufficiently accurate to provide a reliable reference against which effects of a project can be assessed. This should include a detailed underwater cultural heritage assessment that seeks to assess all watercourses, not just the main river channels but all streams and the foreshore that may be within the flood relief works area and its environs. It is vital that the maximum amount of archaeological mitigation possible should be carried out in advance, ideally at design stage (Stage I), of the commencement of the main works at Stage IV, thus reducing the risk of adverse effects on archaeological heritage and, potentially, attendant delays to the construction programme.

Accordingly, it is the recommendation of this Department that the Cultural Heritage chapter of the EIAR should include an Underwater Archaeological Impact Assessment (UAIA) and an Archaeological Impact Assessment (AIA) that include a programme of pre-development underwater archaeological assessment of all in-stream works, archaeological testing (licensed under the National Monuments Acts 1930-2014) in the areas of proposed groundworks and other investigations as set out below. The UAIA and AIA should be completed well in advance of any construction contract to ensure the identification of any surviving underwater and terrestrial archaeological structures, features, deposits and human skeletal remains within the proposed development area. This should be carried out at the earliest possible stage to facilitate the embedding of mitigation within the detailed design (Stage I) for the project, as necessary, in order to ensure the preservation in-situ of cultural heritage and to develop an informed archaeological strategy to be implemented in agreement with the Department.

Underwater Archaeological Impact Assessment

1. The developer shall commission an Underwater Archaeological Impact Assessment (UAIA) report which shall include the following:

   a. A desktop assessment that addresses the underwater cultural heritage (including archaeological, built, vernacular, marine, riverine and industrial heritage) of the proposed development area. The assessment shall include a full inventory, mapping and survey (photographic, descriptive, photogrammetric, as appropriate) of underwater cultural heritage features and structures identified by fieldwork, cartographic analysis, historical research (primary and secondary sources) and prior archaeological investigations.

   b. The UAIA shall include a licenced/divewade assessment, accompanied by a hand-held metal detection survey, centred on (but not confined to) the area(s) where in-stream works are proposed. The wade assessment and metal detection survey shall be undertaken by a suitably licenced and experienced underwater archaeologist. All identified underwater cultural heritage shall be surveyed (photographic, descriptive, photogrammetric) in detail as part of the assessment. A Dive/Survey licence (Section 3 1987 National Monuments Act) and Detection Device consent (Section 2 1987 National Monuments Act) will be required for the

.....
4

wade survey and metal detection, respectively. Licenses should be applied for to the Department and should be accompanied by a detailed method statement. Note a period of 3-4 weeks should be allowed to facilitate processing and approval of the licence applications and method statement. All archaeological wading/diving should comply with the Health and Safety Authority's Safety, Health and Welfare at Work (Diving) Regulations 2018/2019.

c. Having completed the above works, the archaeologist may undertake targeted underwater pre-development archaeologist test-excavations within specific areas of the proposed development area, to be agreed with the Department, in order to adequately assess the nature, depth, extent and artefact-bearing potential of the riverine stratigraphy, to assess the potential for the remains of bridges, fording points and other riverine structures and features, and to facilitate further characterisation of underwater cultural heritage features and structures that have been identified in the wade survey and by prior research. The archaeological test-excavation shall be carried out under a Section 26 (National Monuments Act 1930) licence from the Department and in accordance with an approved method statement. Licensed metal detection shall be undertaken in tandem with the test excavations. A Dive/Survey Licence (Section 3 1987 National Monuments Act) and Detection Device consent (Section 2 1987 National Monuments Act) will be required for the wade survey and metal detection, respectively. Licenses should be applied for to the Department and should be accompanied by a detailed method statement. Note a period of 3-4 weeks should be allowed to facilitate processing and approval of the licence application and method statement. All archaeological wading/diving should comply with the Health and Safety Authority's Safety, Health and Welfare at Work (Diving) Regulations 2018/2019.

d. Having completed the above-described works, the archaeologist shall submit a written report to the Department describing the results of the UAIA, including archaeological underwater test-excavations (if undertaken). The report shall include a comprehensive Archaeological Impact Statement (AIS) that comments on the degree to which the extent, location and levels of all proposed works (flood relief structures, ground disturbances, foundations, service trenches and other sub-surface works including Site Investigation works) required for the development will impact upon any underwater cultural heritage, archaeological materials, objects and/or areas of archaeological potential that have been identified. The AIS shall describe the potential impact(s) of all proposed in-stream development, access and ingress routes to the rivers, and shall also assess any proposed additional Site Investigation/Geotechnical impacts and potential secondary/indirect impacts such as scouring resulting from changes in hydrology. The AIS should be illustrated with appropriate plans, sections and photographs that clearly describe any adverse effect(s) of the development on

.....
5

the underwater cultural heritage and proposals for their mitigation. Mitigation may include recommendations for redesign to allow for full or partial preservation in situ, the institution of archaeological exclusion zones, further wade/dive surveys, test-excavations, excavations ('preservation by record') and/or monitoring, as deemed appropriate. The Departmen will advise with regard to these matters. No construction works shall commence until after the UAIA has been submitted and reviewed. All recommendations will require the agreement of the Department.

Archaeological Impact Assessment

2. The developer shall commission an Archaeological Impact Assessment (AIA), as follows:

a. A desktop assessment shall be compiled that addresses the cultural heritage (archaeological, built, vernacular, riverine, marine and industrial heritage) of the proposed development area, to include a full inventory, mapping and surveys (photographic, descriptive, photogrammetric, as appropriate) of cultural heritage features and structures identified by fieldwork, cartographic analysis, historical research and prior archaeological investigations.

b. The AIA may include licenced archaeological geophysical surveys of proposed construction works areas. The geophysical surveys shall be licenced under the National Monuments Acts 1930-2014. Licence applications, accompanied by Method Statements, shall be sent for vetting to the Department.

c. The AIA may include licenced test-excavations, accompanied by a hand-held metal detection survey, at areas of the development area where ground disturbances are proposed, including (but not limited to) proposed locations of all proposed flood embankments, flood walls, site compound and other works. The archaeological test-excavation shall be carried out under a Section 26 (National Monuments Act 1930) licence from the Department and in accordance with an approved method statement. Licensed metal detection shall be undertaken in tandem with the test excavations. All test-excavations that have the potential to uncover human skeletal remains shall be undertaken in conjunction with a suitably qualified osteoarchaeologist. A Detection Device consent (Section 2 1987 National Monuments Act) will be required for the metal detection survey. Licenses should be applied for to the Department and should be accompanied by a detailed method statement. Note a period of 3-4 weeks should be allowed to facilitate processing and approval of the licence application and method statement.

d. The AIA shall include a comprehensive historical and architectural analysis and analytical assessment and record of all historic structures (including but not limited to, bridges, weirs, revetments, buildings, former mills) that will potentially be impacted upon by the proposed development. The assessment shall comprise of archaeological recording (annotated plans, elevations, sections, details of features and interpretative drawings derived from measured surveys, photographic surveys,

.....
6

digital surveys, opening-up works) that secures an understanding of the development and phasing of all impacted architectural structures and features (including any reused architectural carved stones) and their condition and vulnerabilities.

e. The outcome of the assessment shall inform recommendations, to be agreed with the Department, that prioritise the preservation in situ of identified structures and features and shall also inform the preparation, as required, of specifications (prepared in liaison with a conservation specialist and structural engineer as appropriate) that provide for their stabilisation, conservation and repair. Where identified historic features and structures are proposed for removal or part removal as part of the proposed development, the rationale and justification for this shall be described and mitigation measures shall be recommended and agreed with the Department. These may include, as appropriate, further archaeological investigations (including test-excavations aimed at securing a greater understanding of a feature or structure), surveys, conservation and engineering interventions, monitoring, preservation by record, and interpretation. Any associated groundworks shall also be assessed and mitigatory measures outlined accordingly.

f. The AIA shall include an assessment of the effects of the proposed development, if any, on the setting of archaeological monuments and cultural heritage, as appropriate. Assessment shall include a description, illustrated with photomontages, photographs and drawings, that describe the significance of the setting of the monuments and how it will be affected by the proposed development. Where adverse effects on its setting are identified, mitigation measures (e.g. design modifications, public realm works, archaeological interpretation panels) that enhance the setting of the monuments shall be proposed and agreed with the Department.

g. A final AIA report that details the results of the assessment shall be furnished to the Department for review and comment. The report shall include a comprehensive Archaeological Impact Statement (AIS) that comments on the degree to which the extent, location and levels of all proposed works (flood relief structures, ground disturbances, foundations, service trenches and other sub-surface works including Site Investigation works) required for the development will impact upon any cultural heritage, archaeological materials, objects, the setting of monuments, and/or areas of archaeological potential that have been identified. The AIS should be illustrated with appropriate plans, sections and photographs that clearly describe any adverse effect(s) of the development on cultural heritage and proposals for their mitigation. Mitigation may include recommendations for redesign to allow for full or partial preservation in situ, the institution of archaeological exclusion zones, design modifications to enhance setting, test-excavations, excavations ('preservation by record') and/or monitoring, as deemed appropriate. No construction works should commence until after the AIA has been submitted and reviewed. All recommendations will require the agreement of the Department.

.....
7

3. The Construction Environment Management Plan (CEMP) shall include the location of any and all archaeological or cultural heritage constraints relevant to the proposed development as set out in the EIAR and by any archaeological investigations associated with the project. The CEMP shall clearly describe all identified likely archaeological impacts, both direct and indirect, and all mitigation measures to be employed to protect the archaeological or cultural heritage environment during all phases of site preparation and construction activity.
4. A Project Archaeologist shall be appointed to oversee and advise on all aspects of the scheme from design, through inception to completion.

Nature Conservation

These observations are intended to assist you in relation to identifying potential impacts on European sites, other nature conservation sites, and biodiversity and environmental protection in general, in the context of the current proposal. The observations here are not exhaustive, and are made without prejudice to any recommendation that may be made by this Department in the future. Data collected and surveys carried out in connection with this proposed development may raise other issues that have not been considered here.

The Department has reviewed the scoping document provided by JBA consulting relating to the Kilkee Flood Relief Scheme commissioned by Clare County Council, on behalf of the Office of Public Works and recommends the following for consideration:

- The receiving environment should be described in terms of terrestrial and aquatic habitats including map, and flora and fauna, as appropriate. There should be an evaluation of the conservation interests of all aspects of the ecology of the receiving environment. Surveys should include all areas that are likely to be impacted, directly or indirectly, as a result of the proposal. Correspondence with, or the presence of, priority or non-priority Annex I habitats should be indicated.
- It should be clear what habitats will be impacted and to what extent. Habitat loss should be quantified, where possible. Any losses of biodiversity habitat such as woodland, scrub, hedgerows and other habitats should be mitigated for. If any buildings are likely to be demolished or altered, or if any large trees are likely to be felled as part of this scheme, bat surveys should be carried out by an expert, at an appropriate time of year. If any bat roosts are located, mitigation measures should be included, as appropriate.
- Riverbanks and riverine wetlands are important areas for biodiversity and ground and surface water quality should be protected during construction and operation. Any watercourse or wetland impacted on should be surveyed for the presence of protected species and species listed on Annexes II and IV of the Habitats Directive. These species could include but not limited to; Otters (*Lutra lutra*) which are protected under the Wildlife Acts and listed on Annexes II and IV of the Habitats Directive,

.....
8

Frogs (*Rana temporaria*) and Newts (*Trituris vulgaris*) protected under the Wildlife Acts and Kingfishers (*Alcedo atthis*) protected under the Wildlife Acts and listed on Annex I of the Birds Directive (Council Directive 79/409 EEC).

- It should be considered whether the proposal will give rise to some or all of the impacts and effects listed below (this is not an exhaustive list) :
    - Permanent and/or temporary habitat loss
    - Permanent and/or temporary habitat fragmentation
    - Habitat deterioration
    - Vegetation or community changes
    - Changes to physical structure of habitats
    - Disturbance or damage to breeding, roosting, feeding areas
    - Changes to distribution of species
    - Introduction or expansion of barriers to movement, dispersal, migration
    - Impacts that may affect productivity and breeding success of protected species
    - Changes to water quality
    - Changes to natural processes of sedimentation and erosion
    - Changes to drainage, hydrology, hydromorphology, sub-surface flows, flooding regimes etc.
    - Changes to ecosystem services and functions, such as pollination, water attenuation and flood mitigation, climate change mitigation and adaption (such as carbon storage and sinks etc.)
    - Introduction or spread of invasive species.
- The proposed project must be assessed in combination and cumulatively with other such schemes, existing developments and water management projects.
- An Invasive Species Survey and Management Plan should be completed.
- Nature-based solutions (NBS) should be considered with regard to surface water in the catchment /sub-catchment and upstream management of flow and water retention which may reduce the need for hard engineering solutions. Dispersal of impacts over a wide landscape area can reduce the need for and contribute to better flood management at pinch points.
- The EIA Directive requires an EIAR to contain 'A description of the reasonable alternatives (for example in terms of project design, technology, location, size and scale) studied by the developer, which are relevant to the proposed project and its specific characteristics, and an indication of the main reasons for selecting the chosen option, including a comparison of the environmental effects.' The potential

.....
g

role for non-structural measures, including NBS, should also be included in the consideration of alternatives.

- Details of proposed maintenance and after care of the embankments and flood relief measures should be set out clearly and assessed. This should include details of any envisaged future use of the embankments (e.g. for recreation), particularly noting that artificial lighting can have direct impact on species within the associated European sites. If lighting is proposed then a Lighting Impact Assessment will be required.
- Biodiversity enhancement measures should be considered which could include enhancement of ecological corridors (such as wet woodland, wetland creation and hedgerows where appropriate).
- Complete project details including Construction Management Plans (CMPs) need to be provided in order to allow an adequate EIAR and appropriate assessment to be undertaken. CMPS should contain sufficient detail to avoid any post construction doubt with regard to the implementation of mitigation measures, timings and roles and responsibilities for same. Any mitigation needs to be included in detail and if being relied upon to reach conclusions must be proved to be achievable and likely to be effective in any given scenario it is needed. Proof of effectiveness will be required with examples of where similar techniques have been employed previously.
- The scoping document states "These designated sites *(most notably Kilkee Reefs SAC)* along with other valued local ecological receptors may be subject to significant adverse impacts via surface water, groundwater, or air source-receptor pathways. These impacts could extend downstream, impacting aquatic habitats and the aquatic and semi-aquatic species which inhabit them. There is potential for the spread of non-native invasive species during the construction phase. This could lead to significant negative impacts, particularly within the Kilkee Reefs SAC." The document then states "An Appropriate Assessment (AA) Screening Report and Ecological Impact Assessment (EcIA) have been prepared by JBA Consulting and have identified any potential for impacts to Natura 2000 sites and other ecological receptors, respectively. This EIA Screening document, along with the AA Screening and EcIA, will be submitted as part of the planning application". As there is potential for significant effects on a Natura 2000 site, a stage 2 Appropriate Assessment will be required. The Department recommends a Natura Impact Statement (NIS) be submitted as part of the planning application. The NIS should present a robust and reasoned scientific assessment and analysis of the implications of the proposals for the relevant conservation objectives of relevant European sites. Best scientific knowledge in the field should be applied to the understanding of the likely effects, and to the assessment and analysis of the implications of the proposals for the conservation objectives and integrity of the sites. When carried out by the competent authority, the appropriate assessment cannot have lacunae and must contain complete, precise and definitive findings and conclusions capable of removing all reasonable scientific doubt as to the effects of the project on European sites.

.....
10

- The scoping document states "JBA ecologists have undertaken a Fossitt habitat survey of the scheme area and defined the habitats in the areas to be affected. The survey results (detailed further in Section 4.2.2) note that approximately 0.94 hectares of wetland are within the scheme area, but are unlikely to be impacted by the FRS". The Department notes that the survey results are not included in this document.

Finally, the Department takes this opportunity to remind Clare County Council of their obligations under Article 6 of the Habitats Directive (92/43/EEC). Competent national authorities, are to authorise activity only if they have made certain that it will not adversely affect the integrity of a European site and, consequently, not likely to give rise to deterioration or significant disturbances within the meaning of Article 6(2).

The above observations/recommendations are based on the papers submitted to this Department on a pre-planning basis and are made without prejudice to any observations that the Minister may make in the context of any consultation arising on foot of any development application referred to the Minister, by the planning authority/ies, in the role as statutory consultee under the Planning and Development Act, 2000, as amended.

You are requested to send further communications to the Development Applications Unit (DAU) at **manager.dau@housing.gov.ie**.

Is mise le meas,

[redacted]

Diarmuid Buttimer
Development Applications Unit
Administration

.....
11

An tSeirbhís Sláinte Comhshaoil
Feidhmeannacht na Seirbhíse Sláinte,
Ionad 6, Páirc Ghnó Bothar Chuinche,
Inis, Co. An Chlár.

Environmental Health Service,
Health Service Executive,
Unit 6, Quin Road Business Park,
Ennis, Co. Clare.

☎ **(065) 6706660**

JBA Consulting,
Unit 8, Greenogue Business Plaza,
Greenogue Business Park,
Rathcoole,
Dublin,
D24 CY64

Date:	08th August 2023
Name:	[redacted]
Re:	EIA Scoping Report
Proposed development:	Kilkee Flood Relief Scheme
Applicant:	Clare County Council
EHIS Reference:	3296

Dear Sir/Madam,

Please find enclosed the HSE Consultation Report in relation to the above proposal.
The following HSE departments were made aware of the consultation request for the proposed development on 12th July 2023.

- Emergency Planning – Kay Kennington
- Estates – Helen Maher/Stephen Murphy
- Director of National Health Protection – Eamonn O' Moore
- CHO – Maria Bridgeman

If you have any queries regarding this report, please contact Mr. Gerard Leen, Principal EHO, undersigned in the first instance.

Yours faithfully,

[redacted]
Principal Environmental Health Officer.

HSE EIA Scoping
Environmental Health Service Submission Report

Date: 8th August 2023
Our reference: EHIS 3296
Report to: **JBA Consulting, Unit 8, Greenogue Business Plaza, Greenogue Business Park, Rathcoole, Dublin, D24 CY64**

Type of Consultation: EIA Scoping
Proposed development: Kilkee Flood Relief Scheme
Applicant: Clare County Council
Proposed Development: Clare County Council wishes to develop and implement a flood relief scheme (FRS) for the Kilkee Flood Relief Scheme project.

The overriding purpose of the proposed scheme as described in the scoping report, is the development of a flood relief scheme to minimise the risks currently posed to people, the community, social amenity, environment, and landscape. The proposed planning permission relates only to the construction of fluvial flood defence assets. A separate coastal scheme is proposed for Kilkee, but the works do not form part of this planning permission.

The development is broadly divided into two phases, a construction phase and an operational phase

The following HSE stakeholders were made aware of the development on the 12th July 2023.

- Emergency Planning – Kay Kennington
- Estates – Helen Maher/Stephen Murphy
- Director of National Health Protection – Eamonn O' Moore
- CHO – Maria Bridgeman

General Introduction
The following documents should be taken into consideration when preparing the Environmental Impact Assessment Report (EIAR):

- Guidelines on the information to be contained in Environmental Impact Assessment Reports (2022), EPA.
- Advice Notes on Current Practice in the preparation of EIS (2003), 435kb
- Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment

https://www.housing.gov.ie/sites/default/files/publications/files/guidelines_for_planning_authorities_and_an_bord_pleanála_on_carrying_out_eia_-_august_2018.pdf
EU publication: Environmental Impact Assessment of Projects Guidance on the preparation of the Environmental Impact Assessment Report, EU, 2017
http://ec.europa.eu/environment/eia/pdf/EIA_guidance_EIA_report_final.pdf
Adoption of the Directive (2014/52/EU) in April 2014 initiated a review of the above guidelines. The draft new guidelines can be seen at:
http://www.epa.ie/pubs/consultation/reviewofdrafteisguidelinesadvicenotes
Generally the Environmental Impact Assessment should examine all likely significant impacts and provide the following information for each:

a) Description of the receiving environment;
b) The nature and scale of the impact;
c) An assessment of the significance of the impact;
d) Proposed mitigation measures;
e) Residual impacts.

Directive 2014/52/EU has an enhanced requirement to assess likely significant impacts on Population and Human Health. It is the experience of the Environmental Health Service (EHS) that impacts on human health are often inadequately assessed in EIAs in Ireland. It is recommended that the wider determinants of health and wellbeing are considered in a proportionate manner when considering the EIA.

In addition to any likely significant negative impacts from the proposed development, any positive likely significant impacts should also be assessed.
The HSE will consider the final EIAR accompanying the planning application and will make comments to An Bord Pleanála/Local Planning Authority on the methodology used for assessing the likely significant impacts and the evaluation criteria used in assessing the significance of the impact.
This report only comments on Environmental Health Impacts of the proposed development. It is based on an assessment of the correspondence submitted to this office dated 11th July 2023.

The Environmental Health Service (EHS) recommends that the following matters are included and assessed in the EIAR

- Public Consultation
- Population and Human Health
- Noise & Vibration
- Air Quality
- Surface and Groundwater Quality
- Climate and Material Assets (including waste)
- Ancillary facilities
- Cumulative impacts

Public Consultation
Strong reference is made in the scoping report to Consultation and Stakeholder Engagement with a Public Information Event.
Sensitive receptors and other stakeholders should be identified to ensure all necessary and appropriate mitigation measures are put in place to avoid any complaints about the proposed scheme primarily during construction.
The Environmental Impact Assessment Report (EIAR) should clearly demonstrate the link between public consultations and how those consultations have influenced the decision-making process in the EIA. To assist with the consultation and planning process it is recommended that the applicant develops a dedicated website for the proposed development. All correspondence, maps, project updates and documentation including the EIAR should be uploaded to the website. The EIAR should state the period of planning permission sought, the length of time construction is estimated to take, and if it is anticipated that the renewable energy development will be decommissioned and removed or will continue to operate (following any further planning consent) at the end of this period of planning permission (should permission be granted).

The Environmental Health Service recommends that the public are consulted specifically on the public health aspects of the scheme by asking questions for example, such as 'what are the potential health benefits/challenges from the scheme' and 'what opportunities can the scheme deliver for health gain'
Assessment of Consideration of Alternatives

The EIAR should consider an assessment of alternatives. The EHS recommends that alternative measures should be assessed as part of the EIAR.

Population and Human Health
The report indicates that if the proposed Scheme does not proceed, parts of Kilkee will continue to experience flooding which affects property, land use and access to roads and recreational land for the local residential population. This could have further impacts on the tourist trade in the town, or have implications for Kilkee's Blue Flag beach.

The report notes that during construction there is a risk to the health and safety of workers on the development, as with any construction project. There is also potential for negative impacts and disturbance to the community from construction.

The report further confirms that once operational, the proposed development will not result in significant negative impacts for population and human health. Long-term positive impacts will result from the operation of the scheme.

The Environmental Health Service (EHS) wishes to highlight the potential negative impact on the recreational quality of the area, so vital to health and well-being, during the construction phase. The EHS advises that measures are put in place to minimise this impact and minimise the period of impact.

The EHS recommends that opportunities are identified to enhance potential health gain by perhaps enhancing the recreational value of the area. Suggestions include adding to those listed in the scoping report by including cycling for example or enhancing those activities such as cliff walks etc.

Material Assets (Built Services, Roads/Traffic/Transportation and Waste)

The section on material assets covers a number of aspects relevant to public health. The aspects listed in the scoping report to highlight are wastewater infrastructure, water supply infrastructure and waste management.
Most of the potential impact is likely during the construction phase of the proposed development.

The EHS recommends that the full EIAR assess the potential effect of the proposed development which may be disruptive to recreation and active travel, the wastewater infrastructure, the water supply infrastructure and waste management.

The EHS recommends the inclusion of a Construction Environmental Management Plan (CEMP) in the EIAR to protect the local environment from potential contamination due to the waste generated during construction.

Hydrology – Surface Water

The scoping report acknowledges that there are potential impacts on surface water from the proposed development and as stated previously the construction phase has the potential to impact for a number of reasons such as fuel spills for example.

The EHS recommends the inclusion of a Construction Environmental Management Plan (CEMP) to spell out measures that will be adopted to mitigate the risk of impact during the construction phase. The EHS also recommends that the full EIAR assess the potential impacts including positive impacts associated with additional quantities of water in surface water bodies at times of heavy precipitation.

Land, Soils, Geology and Hydrogeology

The scoping report indicates that the potential impact in this area, is mostly confined to the construction phase due to excavations for wall foundations and culverts. During construction, accidental spillage or release of pollution, or mobilisation of sediments, could result in contaminated water entering the groundwater body in the area.

Any pollution or contamination which is released into the surface or groundwater bodies could result in a reduction in water quality or impacts on Kilkee Reefs SAC. Impacts on water quality could have further knock-on effects on recreation and tourism in Kilkee.

The EHS recommends that the risks to groundwater as assessed and measures to mitigate that risk are included in the CEMP. Furthermore, the Environmental Health Service recommends that a walk-over survey of the site is undertaken in addition to a desktop analysis of Geological Survey of Ireland data in order to identify the location of private wells used for drinking water purposes. Any potential significant impacts to drinking water or bathing water sources should be assessed. Details of bedrock, overburden, vulnerability, groundwater flows, aquifers and catchment areas should be considered when assessing potential impacts and any proposed mitigation measures. Any impacts on surface water as a result of the construction should be identified and addressed in the EIAR.

Air Quality including Dust

As with other environmental health issues, the potential impact in the area of air quality is anticipated to occur during the construction phase and be short-term in duration. The scoping report highlights that air quality during construction relates to an increase in emission pollutants caused by construction traffic and arising from dust from excavation and stockpiling activities.

The EHS recommends that the potential for dust generation in the movement of vehicles to and from the site be included in the assessment of air quality impact. The CEMP should be included in the EIAR which details emissions and dust control measures, including the potential emissions reduced from zero emission or low emission vehicles and machinery. Dust control measures to include are:

- Sweeping of hard road surfaces
- Provision of a water bowser on site, regular spraying of haul roads
- Wheel washing facilities at site exit
- Restrict speed on site
- Provide covers to all delivery trucks to minimise dust generation
- Inspect and clean public roads in the vicinity if necessary
- Material stockpiling provided with adequate protection from the wind
- Dust monitoring at the site boundary
- Truck inspection and maintenance plan

- Details of a road maintenance agreement between the developer/contractor and the Local Roads Authority to clarify responsibility for the upkeep and repair of access roads during the construction phase of the project.

Climate

The climate section examines the contribution of the scheme to climate change and the vulnerability of the scheme to climate change effects. The scoping report makes a general statement about the fact that climate change is likely to have a significant effect upon flood risk in Ireland due to rising sea levels and more intense rainfall events and storms.

The scoping indicates that the full EIAR will assess the potential impacts in both the construction and operational phases of the proposed development.

The EHS recommends that the issue of climate change/breakdown in the full EIAR is taken into consideration. For example, attenuation of flood waters could be used to combat dry spells or the provision of trees could be used to provide shade in heatwave events, as well as sequester carbon.

Noise and Vibration

The scoping report indicates that Noise and Vibration are almost entirely an issue for the construction phase. Baseline surveys have already been conducted, and it is indicated that noise and vibration levels will be predicted at the facades of noise and vibration sensitive locations.

The EHS recommends the inclusion of noise and vibration in the CEMP and that mitigation measures are employed to minimise nuisance and health effects on people in noise and vibration sensitive locations. Particular attention should be paid to limiting the hours in which construction activities can take place.

Ancillary Facilities

The EIAR should include details of the location of all site office, construction compound, fuel storage depot, sanitary accommodation and canteen, First Aid facilities, disposal of wastewater and the provision of a potable water supply to the site canteen.

Cumulative Impacts

The EIAR should include a detailed assessment of any likely significant cumulative impacts of the proposed development.

Waste

A detailed Resource and Waste Plan should be prepared and submitted in the EIAR for assessment. Emissions from material flows can be minimised by using a waste hierarchy approach consistent with the Waste Framework Directive 2008/98/EC; establishing where there is scope for equipment and material re-use and recycling, with disposal only taking place where no feasible alternative is available.

Kind regards,

Arlene Ward
Environmental Health Officer

Carmel Taylor
Environmental Health Officer

From: INFO
To: [redacted]
Subject: TII23-124625 - EIAR Scoping - Kilkee Flood Relief Scheme Clare
Date: Friday 3 November 2023 12:21:39
Attachments: ~WRD0001.jpg
19109-JBAI-XX-XX-RP-B-06022_EIAR_Scoping_P02.pdf

Dear [redacted]

Thank you for your correspondence of 29 September 2023 regarding the above. Transport Infrastructure Ireland's (TII's) position in relation to your enquiry is as follows.

TII wishes to advise that it is not in a position to engage directly with planning applicants in respect to proposed developments. TII will endeavour to consider and respond to planning applications referred to it, given its status and duties as a statutory consultee under the Planning Acts. The approach to be adopted by TII in making such submissions or comments will seek to uphold official policy and guidelines, as outlined in the Section 28 Ministerial Guidelines 'Spatial Planning and National Roads Guidelines for Planning Authorities' (DoECLG, 2012). Regard should also be had to other relevant guidance available at www.TII.ie.

The issuing of this correspondence is provided as best practice guidance only and does not prejudice TII's statutory right to make any observations, requests for further information, objections or appeals, following the examination of any valid planning application referred. With respect to EIAR/Environmental Constraints Scoping issues, the recommendations indicated below provide only general guidance for the preparation of an EIAR, which may affect the national road network.

The developer should have regard, inter alia, to the following:

- Consultations should be had with the relevant Local Authority/National Roads Design Office, with regard to the locations of existing and future national road schemes in the area.
- TII would be specifically concerned as to potential significant impacts the development would have on the national road network (and junctions with national roads) in the proximity of the proposed development, N67 national road.
- The developer should assess visual impacts from existing national roads.
- The developer should have regard to any Environmental Impact Assessment Report/Statement and all conditions and/or modifications imposed by An Bord Pleanála regarding road schemes in the area. The developer should, in particular, have regard to any potential cumulative impacts.
- The developer, in conducting Environmental Impact Assessment, should have regard to TII Publications (formerly DMRB and the Manual of Contract Documents for Road Works).
- The developer, in conducting Environmental Impact Assessment, should have regard to TII's Environmental Assessment and Construction Guidelines, including the 'Guidelines for the Treatment of Air Quality During the Planning and Construction of National Road Schemes' (National Road Authority (NRA), 2006).
- The EIAR should consider the 'Environmental Noise Regulations 2006 (SI 140 of 2006)'

and, in particular, how the development will affect future action plans by the relevant competent authority. The developer may need to consider the incorporation of noise barriers to reduce noise impacts (see 'Guidelines for the Treatment of Noise and Vibration in National Road Schemes' (1st Rev., NRA, 2004)).

- Where new structures may be proposed on national roads, the developer is reminded of the requirements of TII Standard: 'Technical Acceptance of Road Structures on Motorways and Other National Roads'. This Standard specifies the procedures to be followed in order to obtain Technical Acceptance for structures on motorway and other national road schemes and for the submission of as built records. The procedures cover the design of all road structures, including bridges, tunnels, subways, culverts, buried corrugated steel structures, retaining walls, reinforced earth structures, gantries, environmental noise barriers and temporary structures under or over motorways or other roads carrying public traffic.
- The developer should also be aware that there are Technical Acceptance requirements relating to the assessment, alteration, modification, strengthening and repair of all existing road structures (national roads) and same shall be agreed with the Bridge Management Section of TII. In that regard, TII has identified the following national road structures on the N67, national secondary road, within the Flood Relief AFA. Structure ID: CL-N67-008.00 (Kilkee Bridge).
- A hydraulic analysis should be undertaken to identify the impact of proposed flood alleviation works on the hydraulic capacity of any TII Structures impacted and the potential for scour at the structure.
- An assessment of scour and other hydraulic actions on national road structures in accordance with UK BD 97/12 should be undertaken where necessary. Scour prevention measures will be required if the assessment illustrates the potential for scour beneath the foundations.
- It would be important that, where appropriate, subject to meeting the appropriate thresholds and criteria and having regard to best practice, a Traffic and Transport Assessment (TTA) be carried out in accordance with relevant guidelines, noting traffic volumes attending the site and traffic routes to/from the site, with reference to impacts on the national road network and junctions of lower category roads with national roads. TII's 'Traffic and Transport Assessment Guidelines' (2014) should be referred to in relation to proposed development with potential impacts on the national road network. The scheme promoter is also advised to have regard to Section 2.2 of TII's TTA Guidelines, which addresses requirements for sub-threshold TTA.
- The designers are asked to consult TII Publications to determine whether a Road Safety Audit is required.
- In the interests of maintaining the safety and standard of the national road network, the EIAR should identify the methods/techniques proposed for any works traversing/in proximity to the national road network.
- In relation to haul route identification, the applicant/developer should clearly identify haul routes proposed and fully assess the network to be traversed. Where abnormal loads are a feature of the proposed development, separate structure approvals/permits and other licences may be required in connection with the proposed haul route and all structures on the haul route should be checked by the applicant/developer to confirm their capacity to accommodate any abnormal load.

Notwithstanding any of the above, the developer should be aware that this list is non-exhaustive, thus site and development specific issues should be addressed in accordance with best practice.

I hope that this information is of assistance to you.

Yours sincerely,

_____

[redacted]

Senior Regulatory & Administration Executive

RECORD OF MEETING

JBA Project Code	2019s1431
Contract	Kilkee Flood Relief Scheme
Client	Clare County Council
Day, Date and Time	15/01/2024 14:00
Meeting	DAU Biodiversity Consultation No.1
Venue	Online
Version / Date	P02 - 23/01/2024

ATTENDING		
DAU Department of Housing, Local Government and Heritage/NPWS	Laura Connolly - Divisional Ecologist (Mid- West Division) Helen Carty - Regional Manager (Clare Region)	LC HC
JBA	Anne Mullen - Senior Ecologist Dominic Tilley - Ecologist Paul Browne - Civil Engineer Christos Papachristou - EIAR Co-ordinator Bernadette O'Connell - Project Director	AM DT PB CP BOC
	Notes/Minutes to be taken by JBA	

Revisions:

- *P02: Amended text in section 4, third paragraph - Questions - Monitoring programme.*

ACTION

1 Introduction to Project

JBA introduced the project, the history of flooding in Kilkee and that the Catchment Flood Risk Assessment and Management (CFRAM) study concluded a Flood Relief Scheme for Kilkee was viable. Kilkee is susceptible to both fluvial (river) and coastal flooding. Note the fluvial flooding is the most significant risk to Kilkee and is being progressed as Phase 1. Phase 2 will be the coastal elements and will have its own planning application and a separate EIAR. It is anticipated that the preferred fluvial scheme will be submitted for planning by the end of Q1 / beginning of Q2, 2024.

1.1 Affected Watercourses

The water courses of the scheme are Atlantic Stream and Victoria Streams (affecting also Well Stream and Western Tributary).

RECORD OF MEETING

JBA Project Code	2019s1431
Contract	Kilkee Flood Relief Scheme
Client	Clare County Council
Day, Date and Time	15/01/2024 14:00
Meeting	DAU Biodiversity Consultation No.1
Venue	Online
Version / Date	P02 - 23/01/2024

1.2 Flood Defences and Measures

The proposed flood defences and measure were outlined by JBA. They comprise embankments, channel realignment, U-channel, culvert replacement, flood defence walls, reconstruction of boundary walls as flood walls, repairs to exiting walls, height increases to existing walls, regrading of land for flood storage, new pumping stations, a new debris screen, a raised cover slab on an existing overflow manhole with pressure-releasing flap valve, sealing a existing manhole and retro fitting non return valves to existing outfall pipes.

The work would comprise limited working within the watercourses only replacement of the culvert at the Well Stream would be instream works with a coffer dame used to divert water.

2 Biodiversity Surveys and Key Issues

2.1 Habitat mapping

JBA presented the habitat mapping:

-the majority of the site is wet grassland (GS4), improved grassland (GA1) and amenity grassland (GA2).

- There is one Annex 1 quality grassland including seedbed and turfs which will be preserved.

- Instream habitats are FW2 (lowland depositing) but highly channelised and artificial.

2.2 Kilkee Reefs SAC 002264

Scheme is not within the SAC, some works are on the boundary i.e. streams discharge into SAC through closed culverts to maintain the blue flag status. SAC QI's are:

- Large shallow inlets and bays [1160]

- Reefs [1170]

- Submerged or partially submerged sea caves [8330]

SAC mitigation strategy is avoidance, with no operational change, avoiding working instream. At Atlantic Stream there will be a diversion in place to allow working in dry conditions, and mitigation includes measures for control of sediment and monitoring for both microbiology and sediment.

2.3 Fisheries

Fisheries surveys (electro-fishing) were carried out at 5 locations, the finding were that:

- Eel is present in Well Stream and eel nursery in lower reaches of Victoria Stream, (plus Flounder and three-spined stickleback). No eel in Atlantic Stream;

- No trout or salmon present in either Victoria Stream or Atlantic Stream.

RECORD OF MEETING

JBA Project Code	2019s1431
Contract	Kilkee Flood Relief Scheme
Client	Clare County Council
Day, Date and Time	15/01/2024 14:00
Meeting	DAU Biodiversity Consultation No.1
Venue	Online
Version / Date	P02 - 23/01/2024

Key issues:

- Passability at the stop-log. Constraints from Blue-Flag. Eel brushes to be provided.

- Diversion of Victoria provides some opportunities for enhancement.

- IFI consultation on going, further meeting necessary. IFI presence during stream diversion would be recommended plus EcCoW monitoring of water quality.

- Culverts designed using OPW best practice guidance and with future passability in mind.

2.4 **Birds**

Winter Bird Surveys were carried out 2021 and 2022, findings include:

- Limited number of QI birds from nearby SPAs using scheme area (see NIS for SPA's).

- Wintering birds on the reefs in the bay (150+ meters from nearest works area).

Breeding Bird Surveys carried out 2022, findings include:

- Breeding Snipe Surveys.

- No QI birds of nearby SPAs breeding.

- Breeding Sedge Warbler to be maintained.

2.5 **Mammals**

Otters: Currently none within footprint. Worst case scenario provided for. If later otter were found to be present, then a preconstruction survey would be caried out with holt relocation /creation artificial holt (Licence required and EcCoW presence).

Mammal ledge provided for U-Channel streams and Culverts. Not anticipated for culvert under field where Snipe recorded.

Badgers: Currently none within footprint of scheme. Worst case scenario. If present preconstruction survey to be carried out. Soft exclusion measures, sett relocation and creation artificial sett (Licence required and EcCoW presence).

2.6 **Habitat enhancement opportunities at Victoria Stream**

JBA discussed the opportunities which include:

- Wetland / scrape /pond creation.

- Foraging opportunity for bats.

- Potential increase fish and amphibian habitat.

- Grazing scheme (July - October) / Hay meadow mowing regime.

- Aim for structure to be, open tussocky sward with cover for snipe to feed, roost and breed.

RECORD OF MEETING

JBA Project Code	2019s1431
Contract	Kilkee Flood Relief Scheme
Client	Clare County Council
Day, Date and Time	15/01/2024 14:00
Meeting	DAU Biodiversity Consultation No.1
Venue	Online
Version / Date	P02 - 23/01/2024

3 Summary

JBA summarised the scheme biodiversity assumptions and results of assessment:

- Operation impact is negligible. None of the preferred options were predicted to have significant impact on the Natura 2000 sites.

- Cumulative impact to consider the WWTP and the new recreational area in near Kilkee Waterworld.

- Minimal need for licensing – restricted to EcCoW translocation of fish during work on work on the walls in the Victoria Stream (foundations).

- Mitigation includes control of sediments during works, general best practice. U channel in place on well stream with translocated natural bed, and coir riparian buffer initially.

- Biosecurity will be put in place. Clare Co. Co. have an eradication plan in place for JKW Kilkee.

- IFI consultation is partially complete, and IFI commit to presence during stream diversion.

- All water courses are heavily modified. Some enhancement of Victoria to provide in sinuosity and more naturalness. Water quality will improve and allow for continuation of Blue Flag status.

4 Questions

General - DAU confirmed that the work for the FRS was comprehensive, the SAC was the main concern, but good protection has been provided against sediment release. DAU overall feedback was good, and it was clear that the scheme would be an improvement for biodiversity .	JBA
Wildflower areas - DAU asked if wildflower seed would be sown in enhancement areas and to make this clear in the work. JBA explained that Annex 1 grassland where orchid was located will be avoided - as it is a Marsh Orchid this should tolerate any change in wetness. Some areas in the rest of the field will be reprofiled for flood retention and certain areas will be lost however turf would be stored and replaced in the same general area and areas lacking species richness will be targeted. The grassland regime will maintain the meadow and will retain 60:40 grass:herb ratio, driven in by some stands of Meadowsweet. Hay meadow will be maintained by management. No trees will be planted. The snipe field will be maintained and not reprofiled.	JBA
Monitoring programme - DAU asked if there will be a monitoring program proposed. JBA confirmed that a monitoring programme will be proposed pre-application and implemented post-construction and monitored by an EcCoW. The scheme aims to promote Net Gain, but no formal analysis has been done.	JBA

RECORD OF MEETING

JBA Project Code	2019s1431
Contract	Kilkee Flood Relief Scheme
Client	Clare County Council
Day, Date and Time	15/01/2024 14:00
Meeting	DAU Biodiversity Consultation No.1
Venue	Online
Version / Date	P02 - 23/01/2024

	Nature Restoration Law - DAU note the recent Nature Restoration Law (which is still under legal scrutiny, will be adopted possibly in 2024) may require Annex 1 habitat outside the designated area to have stricter mitigation.	JBA
	Ownership on land for mitigation - DAU asked that ownership of any area outlined for mitigation be confirmed in the EcIA due to problems for implementing mitigation if left in private ownership. ABP would require this clarification.	JBA
	Invasive species- DAU asked for clarification on Japanese Knotweed and to specify that a full 5-year maintenance be carried out with a 7m buffer zone around any visible stands of the species during construction of the defences.	JBA
	CEMP-DAU requested that all mitigation measures be mapped in the CEMP and to show clear storage areas that would not be affected by flooding.	JBA

Appendix D Noise at Receptor Points

Predicted Noise at receivers in proximity to works at Atlantic Stream - Kilkee Bay Hotel.

PREDICTION OF NOISE FROM QUASI STATIONARY PLANT [ACTIVITY LAEQ METHOD]

PLANT TYPE / NOISE SOURCE	BS 5228 Ref	$L_{Aeq,r}$ @ 10m, dB	DISTANCE, m	ADJUSTMENTS (dB)				RESULTANT $L_{Aeq, dB}$	FRACTION ON TIME	CORRECTIONS TO $L_{Aeq, 1 HR}$		ACTIVITY $L_{Aeq, 1 HR}$
				DISTANCE		SCREENING	REFLECTION					
Noise sources			*Distance to receptor, m*	$K_h = 20log_{10}(R/10)$	$K_s = (25log_{10}(R/10) - 2$	*0, 5, 10, calculate*	*0, 3*	L_{WA} - *adjustments*	*(Activity duration / working period)*	$t_c = T_t \times F$	$(t_c)(10^{0.1Li})$	$L_{Aeq,1hr} = 10log_{10}[1/1S(t_c)(10^{0.1Li})$
30T Excavator	C.2.16	75	50		15.5	5	0	54.5	0.75	0.75	212635.7	
40T Dumper Truck	C.6.26	79	50		15.5	5	0	58.5	0.5	0.5	356077.9	
Dozer (Spreading fill)	C.3.63	84	50		15.5	0	0	68.5	0.75	0.5	3560778.8	
Concrete Mixer Truck	C4.20	80	50		15.5	0	0	64.5	0.5	0.5	1417571.6	
Wall Building (Worst-case estimate)		65	50		15.5	0	0	49.5	0.75	1	89655.1	
											SIGMA $(t_c)(10^{0.1Li})$	$L_{Aeq,1hr} = 10log_{10}[1/1S(t_c)(10^{0.1Li})$
											5636719.1	**68**

Predicted Noise at receivers in proximity to works at Atlantic Stream - Dún an Óir estate.

PREDICTION OF NOISE FROM QUASI STATIONARY PLANT [ACTIVITY LAEQ METHOD]

PLANT TYPE / NOISE SOURCE	BS 5228 Ref	$L_{Aeq,r}$ @ 10m, dB	DISTANCE, m	ADJUSTMENTS (dB)				RESULTANT $L_{Aeq, dB}$	FRACTION ON TIME	CORRECTIONS TO $L_{Aeq, 1 HR}$		ACTIVITY $L_{Aeq, 1 HR}$
				DISTANCE		SCREENING	REFLECTION					
Noise sources			*Distance to receptor, m*	$K_h = 20log_{10}(R/10)$	$K_s = (25log_{10}(R/10) - 2$	*0, 5, 10, calculate*	*0, 3*	L_{WA} - *adjustments*	*(Activity duration / working period)*	$t_c = T_t \times F$	$(t_c)(10^{0.1Li})$	$L_{Aeq,1hr} = 10log_{10}[1/1S(t_c)(10^{0.1Li})$
30T Excavator	C.2.16	75	50		15.5	5	0	54.5	0.75	0.75	212635.7	
40T Dumper Truck	C.6.26	79	50		15.5	5	0	58.5	0.5	0.5	356077.9	
Wall Building (Worst-case estimate)		65	50		15.5	0	0	49.5	1	1	89655.1	
Cement mixer truck (dischar	C.4.18	75	50		15.5	0	0	59.5	0.25	0.25	224137.7	
											SIGMA $(t_c)(10^{0.1Li})$	$L_{Aeq,1hr} = 10log_{10}[1/1S(t_c)(10^{0.1Li})$
											882506.5	**59**

Predicted Noise at receivers in proximity to works at Atlantic Stream - Sandpark mobile park.

PREDICTION OF NOISE FROM QUASI STATIONARY PLANT [ACTIVITY LAEQ METHOD]

PLANT TYPE / NOISE SOURCE	BS 5228 Ref	$L_{Aeq,r}$ @ 10m, dB	DISTANCE, m	ADJUSTMENTS (dB)				RESULTANT $L_{Aeq, dB}$	FRACTION ON TIME	CORRECTIONS TO $L_{Aeq, 1 HR}$		ACTIVITY $L_{Aeq, 1 HR}$
				DISTANCE		SCREENING	REFLECTION					
Noise sources			*Distance to receptor, m*	$K_h = 20\log_{10}(R/10)$	$K_s = (25\log_{10}(R/10) - 2$	*0, 5, 10, calculate*	*0, 3*	L_{WA} - *adjustments*	*(Activity duration / working period)*	$t_c = T_t \times F$	$(t_c)(10^{0.1Li})$	$L_{Aeq,1hr} = 10\log_{10}[1/1S(t_c)(10^{0.1Li})$
30T Excavator	C.2.16	75	50		15.5	5	0	54.5	0.75	0.75	212635.7	
40T Dumper Truck	C.6.26	79	50		15.5	5	0	58.5	0.5	0.5	356077.9	
Dozer (Spreading fill)	C.3.63	84	50		15.5	0	0	68.5	0.75	0.5	3560778.8	
											SIGMA $(t_c)(10^{0.1Li})$	$L_{Aeq,1hr} = 10\log_{10}[1/1S(t_c)(10^{0.1Li})$
											4129492.4	**66**

Predicted Noise at receivers in proximity to works at Atlantic Stream - Waterworld.

PREDICTION OF NOISE FROM QUASI STATIONARY PLANT [ACTIVITY LAEQ METHOD]

PLANT TYPE / NOISE SOURCE	BS 5228 Ref	$L_{Aeq,r}$ @ 10m, dB	DISTANCE, m	ADJUSTMENTS (dB)				RESULTANT $L_{Aeq, dB}$	FRACTION ON TIME	CORRECTIONS TO $L_{Aeq, 1 HR}$		ACTIVITY $L_{Aeq, 1 HR}$
				DISTANCE		SCREENING	REFLECTION					
Noise sources			*Distance to receptor, m*	$K_h = 20\log_{10}(R/10)$	$K_s = (25\log_{10}(R/10) - 2$	*0, 5, 10, calculate*	*0, 3*	L_{WA} - *adjustments*	*(Activity duration / working period)*	$t_c = T_t \times F$	$(t_c)(10^{0.1Li})$	$L_{Aeq,1hr} = 10\log_{10}[1/1S(t_c)(10^{0.1Li})$
30T Excavator	C.2.16	75	50		15.5	5	0	54.5	0.75	0.75	212635.7	
40T Dumper Truck	C.6.26	79	50		15.5	5	0	58.5	0.5	0.5	356077.9	
Wall Building (Worst-case estimate)		65	50		15.5	0	0	49.5	1	0.5	44827.5	
Cement mixer truck (dischar	C.4.18	75	50		15.5	0	0	59.5	0.25	1	896551.0	
											SIGMA $(t_c)(10^{0.1Li})$	$L_{Aeq,1hr} = 10\log_{10}[1/1S(t_c)(10^{0.1Li})$
											1510092.1	**62**

Predicted Noise at receivers in proximity to works at Victoria Stream - Well Stream Culvert and embankment.

PREDICTION OF NOISE FROM QUASI STATIONARY PLANT [ACTIVITY LAEQ METHOD]

PLANT TYPE / NOISE SOURCE	BS 5228 Ref	L_{Aeq}, @ 10m, dB	DISTANCE, m	ADJUSTMENTS (dB)				RESULTANT $L_{Aeq, dB}$	FRACTION ON TIME	CORRECTIONS TO $L_{Aeq, 1 HR}$		ACTIVITY $L_{Aeq, 1 HR}$
				DISTANCE		SCREENING	REFLECTION					
Noise sources			*Distance to receptor, m*	$K_h = 20log_{10}(R/10)$	$K_s = (25log_{10}(R/10) - 2$	*0, 5, 10, calculate*	*0, 3*	L_{WA} - *adjustments*	*(Activity duration / working period)*	$t_c = T_t \times F$	$(t_c)(10^{0.1Li})$	$L_{Aeq,1hr} = 10log_{10}[1/1S(t_c)(10^{0.1Li})$
30T Excavator	C.2.16	75	50		15.5	5	0	54.5	0.75	0.75	212635.7	
40T Dumper Truck	C.6.26	79	50		15.5	5	0	58.5	0.5	0.5	356077.9	
Wall Building (Worst-case estimate)		65	50		15.5	0	0	49.5	1	1	89655.1	
Cement mixer truck (dischar	C.4.18	75	50		15.5	0	0	59.5	0.25	0.25	224137.7	
											SIGMA $(t_c)(10^{0.1Li})$	$L_{Aeq,1hr} = 10log_{10}[1/1S(t_c)(10^{0.1Li})$
											882506.5	**59**

Predicted Noise at receivers in proximity to works at Victoria Stream - Well Stream Upgrade.

PREDICTION OF NOISE FROM QUASI STATIONARY PLANT [ACTIVITY LAEQ METHOD]

PLANT TYPE / NOISE SOURCE	BS 5228 Ref	L_{Aeq}, @ 10m, dB	DISTANCE, m	ADJUSTMENTS (dB)				RESULTANT $L_{Aeq, dB}$	FRACTION ON TIME	CORRECTIONS TO $L_{Aeq, 1 HR}$		ACTIVITY $L_{Aeq, 1 HR}$
				DISTANCE		SCREENING	REFLECTION					
Noise sources			*Distance to receptor, m*	$K_h = 20log_{10}(R/10)$	$K_s = (25log_{10}(R/10) - 2$	*0, 5, 10, calculate*	*0, 3*	L_{WA} - *adjustments*	*(Activity duration / working period)*	$t_c = T_t \times F$	$(t_c)(10^{0.1Li})$	$L_{Aeq,1hr} = 10log_{10}[1/1S(t_c)(10^{0.1Li})$
30T Excavator	C.2.16	75	50		15.5	5	0	54.5	0.75	0.75	212635.7	
40T Dumper Truck	C.6.26	79	50		15.5	5	0	58.5	0.5	0.5	356077.9	
Dozer (Spreading fill)	C.3.63	84	50		15.5	0	0	68.5	0.75	0.5	3560778.8	
Concrete Mixer Truck	C4.20	80	50		15.5	0	0	64.5	0.5	0.5	1417571.6	
Wall Building (Worst-case estimate)		65	50		15.5	0	0	49.5	0.75	1	89655.1	
											SIGMA $(t_c)(10^{0.1Li})$	$L_{Aeq,1hr} = 10log_{10}[1/1S(t_c)(10^{0.1Li})$
											5636719.1	**68**

Predicted Noise at receivers in proximity to works at Victoria Stream - Crescent Place Culvert.

PREDICTION OF NOISE FROM QUASI STATIONARY PLANT [ACTIVITY LAEQ METHOD]

PLANT TYPE / NOISE SOURCE	BS 5228 Ref	$L_{Aeq,r}$ @ 10m, dB	DISTANCE, m	ADJUSTMENTS (dB)				RESULTANT $L_{Aeq, dB}$	FRACTION ON TIME	CORRECTIONS TO $L_{Aeq, 1 HR}$		ACTIVITY $L_{Aeq, 1 HR}$
				DISTANCE		SCREENING	REFLECTION					
Noise sources			*Distance to receptor, m*	$K_h = 20log_{10}(R/10)$	$K_s = (25log_{10}(R/10) - 2$	*0, 5, 10, calculate*	*0, 3*	L_{WA} - *adjustments*	*(Activity duration / working period)*	$t_c = T_t \times F$	$(t_c)(10^{0.1Li})$	$L_{Aeq,1hr} = 10log_{10}[1/1S(t_c)(10^{0.1Li})$
30T Excavator	C.2.16	75	100		23.0	5	0	47.0	0.75	0.75	37589.0	
40T Dumper Truck	C.6.26	79	100		23.0	5	0	51.0	0.5	0.5	62946.3	
Dozer (Spreading fill)	C.3.63	84	100		23.0	0	0	61.0	0.75	0.5	629462.7	
Concrete Mixer Truck	C4.20	80	100		23.0	0	0	57.0	0.5	0.5	250593.6	
Wall Building (Worst-case estimate)		65	100		23.0	0	0	42.0	0.75	1	15848.9	
											SIGMA $(t_c)(10^{0.1Li})$	$L_{Aeq,1hr} = 10log_{10}[1/1S(t_c)(10^{0.1Li})$
											996440.6	**60**

Predicted Noise at receivers in proximity to works at Victoria Stream - Victoria Court Wall re-build

PREDICTION OF NOISE FROM QUASI STATIONARY PLANT [ACTIVITY LAEQ METHOD]

PLANT TYPE / NOISE SOURCE	BS 5228 Ref	$L_{Aeq,r}$ @ 10m, dB	DISTANCE, m	ADJUSTMENTS (dB)				RESULTANT $L_{Aeq, dB}$	FRACTION ON TIME	CORRECTIONS TO $L_{Aeq, 1 HR}$		ACTIVITY $L_{Aeq, 1 HR}$
				DISTANCE		SCREENING	REFLECTION					
Noise sources			*Distance to receptor, m*	$K_h = 20log_{10}(R/10)$	$K_s = (25log_{10}(R/10) - 2$	*0, 5, 10, calculate*	*0, 3*	L_{WA} - *adjustments*	*(Activity duration / working period)*	$t_c = T_t \times F$	$(t_c)(10^{0.1Li})$	$L_{Aeq,1hr} = 10log_{10}[1/1S(t_c)(10^{0.1Li})$
30T Excavator	C.2.16	75	50		15.5	5	0	54.5	0.75	0.75	212635.7	
40T Dumper Truck	C.6.26	79	50		15.5	5	0	58.5	0.5	0.5	356077.9	
Wall Building (Worst-case estimate)		65	50		15.5	0	0	49.5	1	0.5	44827.5	
Cement mixer truck (dischar	C.4.18	75	50		15.5	0	0	59.5	0.25	1	896551.0	
											SIGMA $(t_c)(10^{0.1Li})$	$L_{Aeq,1hr} = 10log_{10}[1/1S(t_c)(10^{0.1Li})$
											1510092.1	**62**

Predicted Noise at receivers in proximity to works at Victoria Stream - Victoria Court embankment

PREDICTION OF NOISE FROM QUASI STATIONARY PLANT [ACTIVITY LAEQ METHOD]

PLANT TYPE / NOISE SOURCE	BS 5228 Ref	L_{Aeq}, @ 10m, dB	DISTANCE, m	ADJUSTMENTS (dB)				RESULTANT $L_{Aeq, dB}$	FRACTION ON TIME	CORRECTIONS TO $L_{Aeq, 1 HR}$		ACTIVITY $L_{Aeq, 1 HR}$
				DISTANCE		SCREENING	REFLECTION					
Noise sources			*Distance to receptor, m*	$K_h = 20log_{10}(R/10)$	$K_s = (25log_{10}(R/10) - 2$	*0, 5, 10, calculate*	*0, 3*	L_{WA} - *adjustments*	*(Activity duration / working period)*	$t_c = T_t \times F$	$(t_c)(10^{0.1Li})$	$L_{Aeq,1hr} = 10log_{10}[1/1S(t_c)(10^{0.1Li})$
30T Excavator	C.2.16	75	100		23.0	5	0	47.0	0.75	0.75	37589.0	
40T Dumper Truck	C.6.26	79	100		23.0	5	0	51.0	0.5	0.5	62946.3	
Wall Building (Worst-case estimate)		65	100		23.0	0	0	42.0	1	0.5	7924.5	
Cement mixer truck (dischar	C.4.18	75	100		23.0	0	0	52.0	0.25	1	158489.3	
											SIGMA $(t_c)(10^{0.1Li})$	$L_{Aeq,1hr} = 10log_{10}[1/1S(t_c)(10^{0.1Li})$
											266949.1	**54**

Predicted Noise at receivers in proximity to works at Victoria Stream - Victoria Stream Walls

PREDICTION OF NOISE FROM QUASI STATIONARY PLANT [ACTIVITY LAEQ METHOD]

PLANT TYPE / NOISE SOURCE	BS 5228 Ref	L_{Aeq}, @ 10m, dB	DISTANCE, m	ADJUSTMENTS (dB)				RESULTANT $L_{Aeq, dB}$	FRACTION ON TIME	CORRECTIONS TO $L_{Aeq, 1 HR}$		ACTIVITY $L_{Aeq, 1 HR}$
				DISTANCE		SCREENING	REFLECTION					
Noise sources			*Distance to receptor, m*	$K_h = 20log_{10}(R/10)$	$K_s = (25log_{10}(R/10) - 2$	*0, 5, 10, calculate*	*0, 3*	L_{WA} - *adjustments*	*(Activity duration / working period)*	$t_c = T_t \times F$	$(t_c)(10^{0.1Li})$	$L_{Aeq,1hr} = 10log_{10}[1/1S(t_c)(10^{0.1Li})$
30T Excavator	C.2.16	75	100		23.0	5	0	47.0	0.75	0.75	37589.0	
40T Dumper Truck	C.6.26	79	100		23.0	5	0	51.0	0.5	0.5	62946.3	
Wall Building (Worst-case estimate)		65	100		23.0	0	0	42.0	1	0.5	7924.5	
Cement mixer truck (dischar	C.4.18	75	100		23.0	0	0	52.0	0.25	1	158489.3	
											SIGMA $(t_c)(10^{0.1Li})$	$L_{Aeq,1hr} = 10log_{10}[1/1S(t_c)(10^{0.1Li})$
											266949.1	**54**

Predicted Noise at receivers in proximity to works at Victoria Stream - Church Road field

PREDICTION OF NOISE FROM QUASI STATIONARY PLANT [ACTIVITY LAEQ METHOD]

PLANT TYPE / NOISE SOURCE	BS 5228 Ref	L_{Aeq}, @ 10m, dB	DISTANCE, m	ADJUSTMENTS (dB)				RESULTANT $L_{Aeq, dB}$	FRACTION ON TIME	CORRECTIONS TO $L_{Aeq, 1 HR}$		ACTIVITY $L_{Aeq, 1 HR}$
				DISTANCE		SCREENING	REFLECTION					
Noise sources			*Distance to receptor, m*	$K_h = 20\log_{10}(R/10)$	$K_s = (25\log_{10}(R/10) - 2$	*0, 5, 10, calculate*	*0, 3*	L_{WA} - *adjustments*	*(Activity duration / working period)*	$t_c = T_t \times F$	$(t_c)(10^{0.1Li})$	$L_{Aeq,1hr} = 10\log_{10}[1/1S(t_c)(10^{0.1Li})$
30T Excavator	C.2.16	75	100		23.0	5	0	47.0	0.75	0.75	37589.0	
40T Dumper Truck	C.6.26	79	100		23.0	5	0	51.0	0.5	0.5	62946.3	
Dozer (Spreading fill)	C.3.63	84	100		23.0	0	0	61.0	0.75	0.5	629462.7	
Concrete Mixer Truck	C4.20	80	100		23.0	0	0	57.0	0.5	0.5	250593.6	
Wall Building (Worst-case estimate)		65	100		23.0	0	0	42.0	0.75	1	15848.9	
											SIGMA $(t_c)(10^{0.1Li})$	$L_{Aeq,1hr} = 10\log_{10}[1/1S(t_c)(10^{0.1Li})$
											996440.6	**60**

Predicted Noise at receivers in proximity to works at Victoria Stream - Tributary Field Storage

PREDICTION OF NOISE FROM QUASI STATIONARY PLANT [ACTIVITY LAEQ METHOD]

PLANT TYPE / NOISE SOURCE	BS 5228 Ref	L_{Aeq}, @ 10m, dB	DISTANCE, m	ADJUSTMENTS (dB)				RESULTANT $L_{Aeq, dB}$	FRACTION ON TIME	CORRECTIONS TO $L_{Aeq, 1 HR}$		ACTIVITY $L_{Aeq, 1 HR}$
				DISTANCE		SCREENING	REFLECTION					
Noise sources			*Distance to receptor, m*	$K_h = 20\log_{10}(R/10)$	$K_s = (25\log_{10}(R/10) - 2$	*0, 5, 10, calculate*	*0, 3*	L_{WA} - *adjustments*	*(Activity duration / working period)*	$t_c = T_t \times F$	$(t_c)(10^{0.1Li})$	$L_{Aeq,1hr} = 10\log_{10}[1/1S(t_c)(10^{0.1Li})$
30T Excavator	C.2.16	75	100		23.0	5	0	47.0	0.75	0.75	37589.0	
40T Dumper Truck	C.6.26	79	100		23.0	5	0	51.0	0.5	0.5	62946.3	
Dozer (Spreading fill)	C.3.63	84	100		23.0	0	0	61.0	0.75	0.5	629462.7	
Concrete Mixer Truck	C4.20	80	100		23.0	0	0	57.0	0.5	0.5	250593.6	
Wall Building (Worst-case estimate)		65	100		23.0	0	0	42.0	0.75	1	15848.9	
											SIGMA $(t_c)(10^{0.1Li})$	$L_{Aeq,1hr} = 10\log_{10}[1/1S(t_c)(10^{0.1Li})$
											996440.6	**60**

Appendix E Biodiversity (Fish Report)

Fisheries assessment for Kilkee Flood Relief Scheme, Co. Clare

Prepared by Triturus Environmental Ltd. for JBA Consulting

October 2022

Please cite as:

Triturus (2022). Fisheries assessment for Kilkee Flood Relief Scheme, Co. Clare. Report prepared by Triturus Environmental Ltd. for JBA Consulting. October 2022.

Triturus

Table of contents

1. Introduction

1.1 Background

Triturus Environmental Ltd. were commissioned by JBA Consulting to undertake a baseline fisheries assessment of three watercourses in the vicinity of the proposed Kilkee Flood Relief Scheme (FRS), located in Kilkee, Co. Clare (**Figure 2.1**).

The survey was undertaken to establish baseline fisheries data used in the preparation of the impact assessment for the proposed Kilkee Flood Relief Scheme (FRS). To gain an understanding of the fisheries value of the riverine watercourses within the vicinity of the proposed FRS, an electro-fishing survey across *n*=5 riverine sites. These included survey sites on the Kilkee Upper and Lower River ('Victoria Stream'), Kilkee Upper Stream and an unnamed stream ('Atlantic Stream') (**Table 2.1; Figure 2.1**). Targeted electro-fishing helped to identify the importance of the watercourses as nurseries and habitats for salmonids, lamprey and European eel (*Anguilla anguilla*), as well as other species, and helped to further inform impact assessment and any subsequent mitigation for the scheme.

Triturus Environmental Ltd. made an application under Section 14 of the Fisheries (Consolidation) Act, 1959 as substituted by Section 4 of the Fisheries (Amendment) Act, 1962, to undertake an electro-fishing survey in the vicinity of the proposed Kilkee FRS. Permission was granted on Tuesday 16th August 2022 and the survey was undertaken on Thursday 15th September 2022.

1.2 Fisheries asset of the survey area

Fisheries survey sites were present on the Kilkee Lower River (EPA code: 27K65), Kilkee Upper Stream (27K64) and an unnamed stream (no EPA code, known locally as Atlantic Stream) (**Table 2.1**), within the Doonah_SC_010 sub-catchment. The survey sites were not located within a European site although all 3 no. watercourses shared downstream hydrological connectivity with Kilkee Reefs SAC (002264), a site designated for a number of marine habitats (NPWS, 2014).

Fisheries data for these watercourses within the survey area was not available following a desktop review. The Kilkee Lower River, Kilkee Upper Stream and an unnamed stream were all short, small, shallow and heavily modified channels with known connectivity issues to the sea (i.e., Moore Bay in Kilkee).

2. Methodology

2.1 Fish stock assessment (electro-fishing)

A single anode Smith-Root LR24 backpack (12V DC input; 300V, 100W DC output) was used to electro-fish sites on watercourses in the vicinity of the proposed Kilkee FRS on the 15th September 2022 following notification to Inland Fisheries Ireland and under the conditions of a Department of the Environment, Climate and Communications (DECC) licence. Both river and holding tank water temperature was monitored continually throughout the survey to ensure temperatures of 20°C were not exceeded, thus minimising stress to the captured fish due to low dissolved oxygen levels. A portable battery-powered aerator was also used to further reduce stress to any captured fish contained in the holding tank.

Salmonids, European eel and other captured fish species were transferred to a holding container with oxygenated fresh river water following capture. To reduce fish stress levels, anaesthesia was not applied to captured fish. All fish were measured to the nearest millimetre and released in-situ following a suitable recovery period.

As three primary species groups were targeted during the survey, i.e., salmonids, lamprey, and eel, the electro-fishing settings were tailored for each species. By undertaking electro-fishing using the rapid electro-fishing technique (see methodology below), the broad characterisation of the fish community at each sampling reach could be determined as a longer representative length of channel can be surveyed. The electro-fishing methodology followed accepted European standards (CEN, 2003) and adhered to best practice (e.g., CFB, 2008).

The electro-fishing survey was undertaken across *n*=5 sites on the Kilkee Upper River ('Victoria Stream'), Kilkee Lower Stream and an unnamed stream ('Atlantic Stream') (see **Table 2.1, Figure 2.1**).

Table 2.1 Location of *n*=5 electro-fishing survey sites in the vicinity of Kilkee FRS, Co. Clare

Site no.	Watercourse	EPA code	Location	X (ITM)	Y (ITM)
1	Kilkee Lower River (Victoria Stream)	27K65	Marion Estate	488367	659211
2	Kilkee Upper Stream	27K64	Upstream of Haugh Mobile Park	487985	659323
3	Kilkee Upper Stream	27K64	Victoria Park	488250	659467
4	Kilkee Upper Stream (also Victoria Stream)	27K64	Victoria Park	488243	659698
5	Unnamed stream (Atlantic Stream)	n/a	Sandpark Kilkee	489022	660217

2.1.1 Salmonids and European eel

For salmonid species and European eel, as well as all other incidental species, electro-fishing was carried out in an upstream direction for a 10-minute CPUE, an increasingly common standard approach for wadable streams (Matson et al., 2018). A total of approx. 30-60m channel length was surveyed at each site, where feasible, in order to gain a better representation of fish stock

assemblages. At certain, more minor watercourse sites or sites with limited access, it was more feasible to undertake electro-fishing for a 5-minute CPUE. Discrepancies in fishing effort (CPUE) between sites are accounted for in the subsequent results section (**Table 3.1**).

Relative conductivity of the water at each site was checked in-situ with a conductivity meter and the electro-fishing backpack was energised with the appropriate voltage and frequency to provide enough draw to attract salmonids and European eel to the anode without harm. For the moderate conductivity waters of the sites (draining shale & sandstone geologies), a voltage of 200-230v, frequency of 35-45Hz and pulse duration of 3.5-4ms was utilised to draw fish to the anode without causing physical damage.

2.1.2 Lamprey

Electro-fishing for lamprey ammocoetes was conducted using targeted box quadrat-based electro-fishing (as per Harvey & Cowx, 2003) in objectively suitable areas of sand/silt, where encountered. As lamprey take longer to emerge from silts and require a more persistent approach, they were targeted at a lower frequency (30Hz) burst DC pulse setting which also allowed detection of European eel in sediment, if present. Settings for lamprey followed those recommended and used by Harvey & Cowx (2003), APEM (2004) and Niven & McAuley (2013). Using this approach, the anode was placed under the water's surface, approx. 10-15cm above the sediment, to prevent immobilising lamprey ammocoetes within the sediment. The anode was energised with 100V of pulsed DC for 15-20 seconds and then turned off for approximately five seconds to allow ammocoetes to emerge from their burrows. The anode was switched on and off in this way for approximately two minutes. Immobilised ammocoetes were collected by a second operator using a fine-mesh hand net as they emerged.

Lamprey species were identified to species level, where possible, with the assistance of a hand lens, through external pigmentation patterns and trunk myomere counts as described by Potter & Osborne (1975) and Gardiner (2003).

2.2 Fisheries habitat

A broad appraisal / overview of the upstream and downstream habitat at each site was also undertaken to evaluate the wider contribution to salmonid and lamprey spawning and general fisheries habitat. River habitat surveys and fisheries assessments were also carried out utilising elements of the approaches in the River Habitat Survey Methodology (Environment Agency, 2003) and Fishery Assessment Methodology (O'Grady, 2006) to broadly characterise the riverine sites (i.e., channel profiles, substrata etc.).

2.3 Fish processing

All captured fish were transferred to a holding container with oxygenated fresh river water following capture. To reduce fish stress, anaesthetic was not applied during processing. Both river and holding tank water temperature were checked throughout the survey to ensure temperatures of 20°C were not exceeded, thus minimising stress to the captured fish due to low dissolved oxygen levels. A portable battery-powered aerator was also be used to further reduce stress to any captured fish contained in the holding tank. All fish were speciated, measured to the nearest millimetre and released in-situ following a suitable recovery period.

2.4 Biosecurity

A strict biosecurity protocol following IFI (2010) and the Check-Clean-Dry approach was adhered to during surveys for all equipment and PPE used. Disinfection of all equipment and PPE before and after use with Virkon™ was conducted to prevent the transfer of pathogens or invasive propagules between survey sites. Surveys were undertaken at sites in a downstream order to minimise the risk of upstream propagule mobilisation. Where feasible, equipment was also thoroughly dried (through UV exposure) between survey areas. Any aquatic invasive species or pathogens recorded within or adjoining the survey areas were geo-referenced. All Triturus staff are certified in 'Good fieldwork practice: slowing the spread of invasive non-native species' by the University of Leeds.

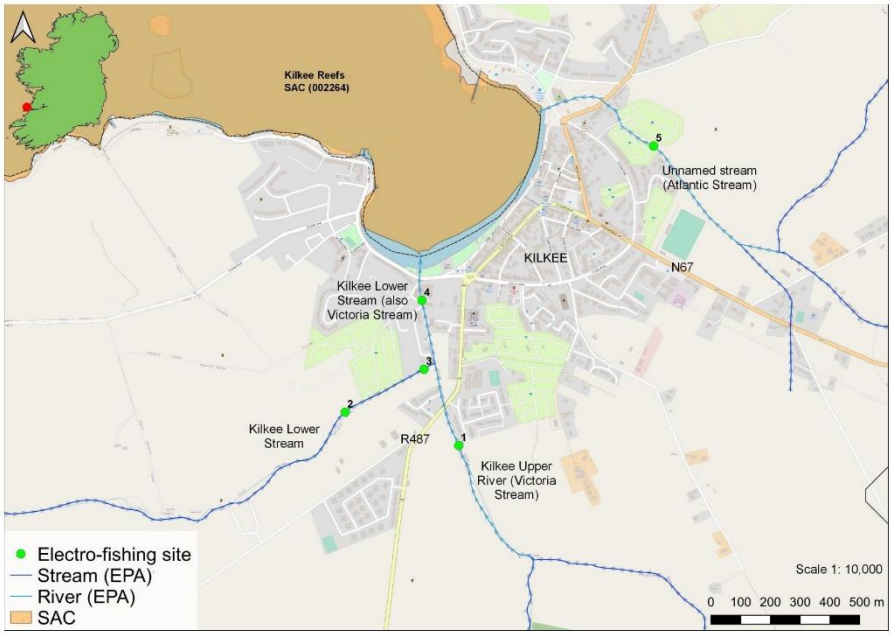


Figure 2.1 Overview of the *n*=5 electro-fishing survey site locations in the vicinity of Kilkee FRS, Co. Clare

3. Results

An electro-fishing survey of *n*=5 riverine sites in the vicinity of the proposed Kilkee FRS was conducted on Thursday 15th September 2022 following notification to Inland Fisheries Ireland. The results of the survey are discussed below in terms of fish population structure, population size and the suitability and value of the surveyed areas as nursery and spawning habitat for salmonids, European eel and lamprey species. Scientific names are provided at first mention only.

3.1 Aquatic habitat and fish stock assessment (electro-fishing)

3.1.1 Site 1 – Kilkee Lower River, Marion Estate

Site 1 was located on the Kilkee Lower River (EPA code: 27K65) (also known as the Victoria Stream **Plate 3.1**) adjacent to Marion Estate, approx. 0.1km upstream of the R487 road crossing. The upland eroding watercourse (FW1) had been extensively straightened and deepened historically, with a steep (near vertical) trapezoidal channel and bankfull heights of up to 1.8m. The river suffered from low seasonal water levels at the time of survey, with only slight flows present. The channel averaged 1.5m wide and 0.1-0.2m deep with a profile comprising very slow-flowing glide and pool. The substrata were dominated by heavily compacted cobble and boulder with only localised interstitial gravels. These were heavily silted (exacerbated by low seasonal flows). Soft sediment accumulations were flocculent, where present. The site was heavily shaded and vegetated with abundant fool's watercress (*Apium nodiflorum*) (>75% cover) and occasional brooklime (*Veronica beccabunga*). Common reed (*Phragmites australis*) was also abundant along the channel margins and banksides. Aquatic bryophytes were limited to very occasional *Leptodictyum riparium* (an enrichment indicator) and *Pellia* sp. liverwort on larger substrata. Filamentous algae (*Cladophora* sp.) were also present (<1% cover), further indicating enrichment. The river at this location was heavily shaded (often tunnelled) with abundant common reed and bramble (*Rubus fruticosus* agg.), herbaceous vegetation and scattered hawthorn (*Crataegus monogyna*). The site was bordered by a residential area (Marion Estate; BL3) and low-intensity pasture (GA1).

Three-spined stickleback (*Gasterosteus aculeatus*) and flounder (*Platichthys flesus*) were the only fish species recorded via electro-fishing at site 1 (**Figure 3.1**). The site supported moderate densities of three-spined stickleback (*n*=19) with a single juvenile flounder also recorded. Site 1 was not of value to salmonids given low seasonal flows, historical modifications, poor hydromorphology and poor connectivity with downstream habitats, e.g., the outfall to Kilkee Bay, approx. 0.55km downstream, was poorly fish passable (**Plate 3.9**).

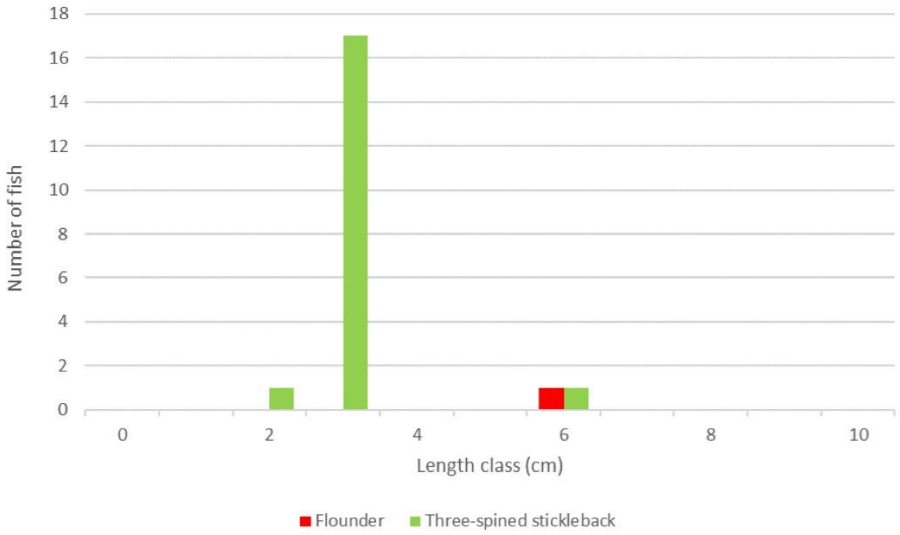


Figure 3.1 Fish length frequency distribution recorded via electro-fishing at site 1 on the Kilkee Lower River, September 2022

Plate 3.1 Representative image of site 1 on the Kilkee Lower River, September 2022

Plate 3.2 Juvenile flounder and mixed-cohort three-spined stickleback recorded via electro-fishing at site 1 on the Kilkee Lower River, September 2022

3.1.2 Site 2 – Kilkee Upper Stream, upstream of Haugh Mobile Park

Site 2 was located on the Kilkee Upper Stream (27K64) approx. 0.3km upstream of the Kilkee Lower River confluence (**Plate 3.3**). The lowland depositing watercourse (FW2) had been extensively straightened and deepened historically, with a steep (near vertical) trapezoidal channel and bankfull heights of up to 2m. The stream suffered from low seasonal water levels at the time of survey, with only slight flows present. Frequent bank slumping and infilling caused instream flow blockages. The stream averaged <1m wide and 0.1-0.2m deep with a profile comprising very slow-flowing glide and pool with highly localised riffle. The substrata were dominated by heavily compacted cobble with very localised mixed gravels and small boulder. These were heavily silted (exacerbated by low seasonal flows). Soft sediment accumulations were present locally. The site was heavily shaded (near 100% tunnelling) with common reed the only macrophyte present (growing along margins and on the steep banks). Aquatic bryophytes recorded included the liverwort species *Conocephalum conicum* and *Pellia* sp. on muddy areas of the bank. The stream at this location was heavily tunnelled with abundant common reed and bramble with meadowsweet (*Filipendula ulmaria*), horsetail (*Equisetum* sp.), field bindweed (*Convolvulus arvensis*), nettle (*Urtica dioica*) and rank grasses with scattered gorse (*Ulex europaeus*). The site was bordered by scrub and wet, low-intensity pasture (GA1).

Three-spined stickleback was the only fish species recorded via electro-fishing at site 2 (**Figure 3.2**). With the exception of three-spined stickleback (recorded in low densities, *n*=3), the was not of fisheries value. This was given the diminutive nature of the channel, poor flows, poor hydromorphology, siltation pressures and poor connectivity with downstream habitats.

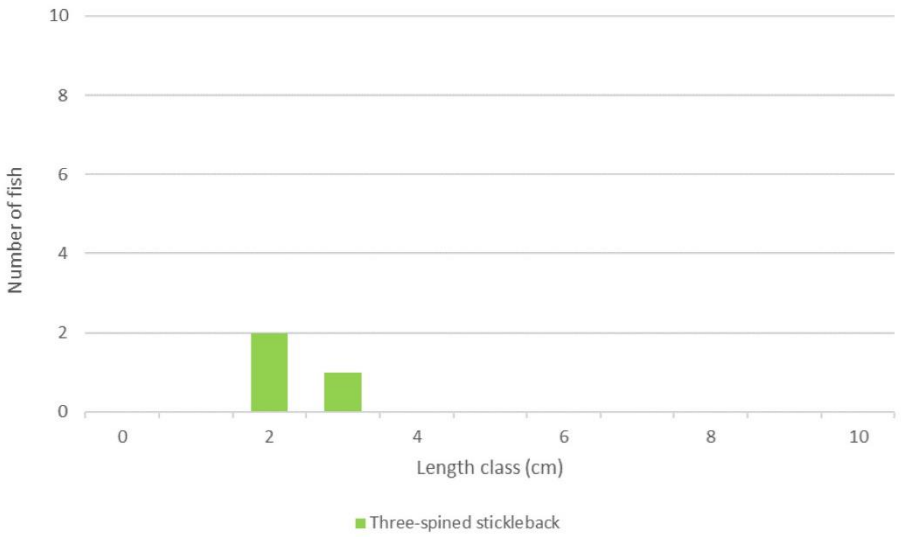


Figure 3.2 Fish length frequency distribution recorded via electro-fishing at site 2 on the Kilkee Upper Stream, September 2022

Plate 3.3 Representative image of site 2 on the Kilkee Upper Stream, September 2022 (heavily scrubbed/tunnelled channel with poor flows)

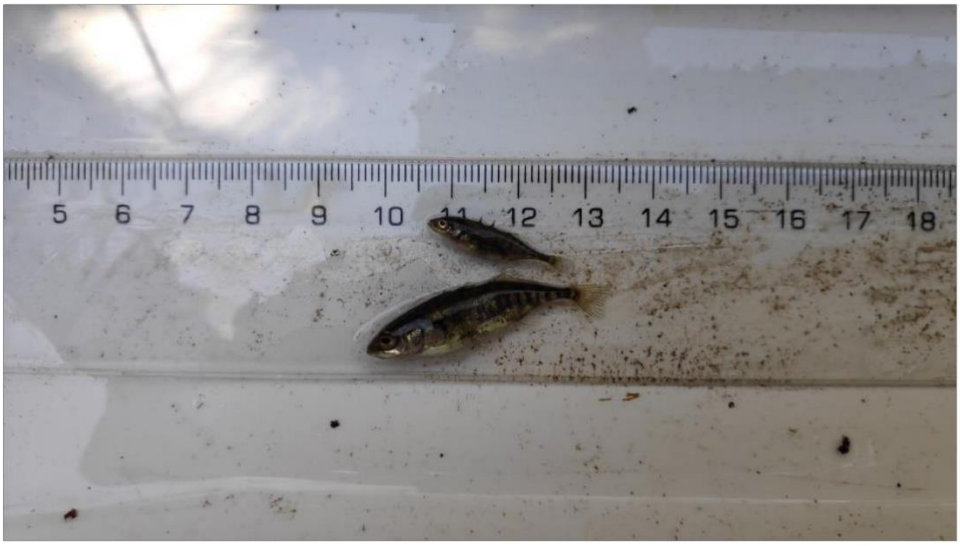


Plate 3.4 Mixed-cohort three-spined stickleback recorded via electro-fishing at site 2 on the Kilkee Upper Stream, September 2022

3.1.3 Site 3 - Kilkee Upper Stream, Victoria Park

Site 3 was located on the Kilkee Upper Stream (27K64) approx. 0.3km downstream of site 2 and 30m upstream of the Kilkee Lower River confluence (**Plate 3.5**). The lowland depositing watercourse (FW2) had been extensively straightened and deepened historically, with a steep (near vertical) trapezoidal channel and bankfull heights of 1.5-2m. The stream suffered from low seasonal water levels at the time of survey, with only slight flows present. Frequent bank slumping and infilling caused instream flow blockages. The stream averaged <0.5m wide (1.5m channel) and <0.1m deep with a profile comprising slow-flowing glide and riffle over instream vegetation and debris. The substrata were dominated by heavily compacted cobble with occasional fine gravels and sands. However, these were heavily silted (exacerbated by low seasonal flows). Soft sediment accumulations were frequent between sites 2 and 3. The site was heavily tunnelled with abundant common reed, water starwort (*Callitriche* sp.) and rare fool's watercress. Aquatic bryophytes were not recorded. The stream at this location was heavily tunnelled with abundant common reed and bramble with meadowsweet, field horsetail, field bindweed, nettle and rank grasses with scattered willow (*Salix* sp.) and hawthorn. The site was bordered by low-intensity, often wet, improved grassland (GA1) and residential areas (Victoria Park, BL3).

Three-spined stickleback was the only fish species recorded via electro-fishing at site 3 (**Figure 3.3**). With the exception of three-spined stickleback (recorded in low densities, *n*=5), the site was not of fisheries value. This was given the diminutive nature of the channel, poor flows, poor hydromorphology, siltation pressures and poor connectivity with downstream habitats.

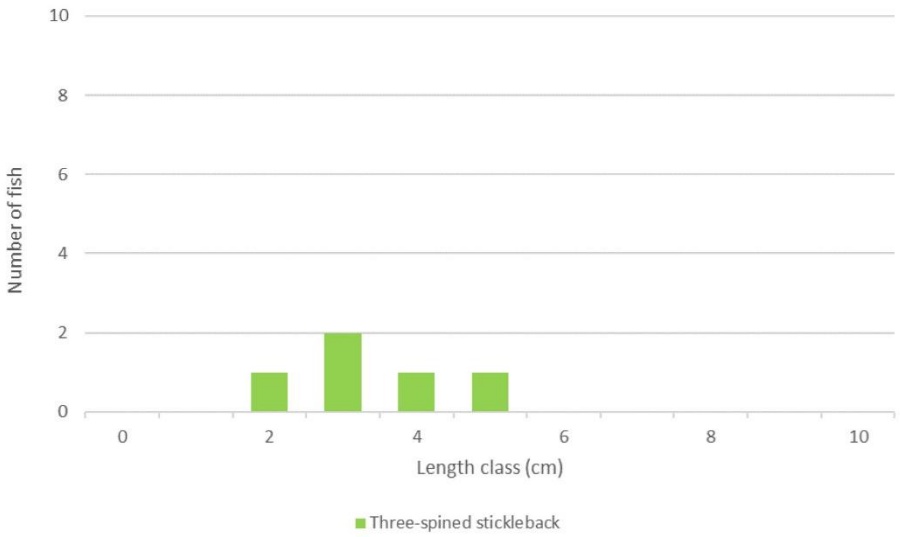


Figure 3.3 Fish length frequency distribution recorded via electro-fishing at site 3 on the Kilkee Upper Stream, September 2022

Plate 3.5 Representative image of site 3 on the lower reaches of the Kilkee Upper Stream, September 2022 (heavily scrubbed/tunnelled channel with poor flows)

3.1.4 Site 4 – Kilkee Upper Stream, Victoria Park

Site 4 was located on the lowermost (tidal) reaches of the Kilkee Upper Stream (27K64) immediately upstream of the sea confluence (**Plate 3.6**). The lower reaches of the stream had been historically modified with high retaining walls along both banks. Upstream, along Victoria Park, the river had been extensively straightened and deepened, with a near vertical trapezoidal channel and bankfull heights of up to 2m. The lower reaches comprised tidal glide habitat that was stagnant at the time of survey given the closure of tidal gates on the beach side of the box culvert under Marine Parade Road (**Plate 3.9**). The tidal gate was installed to protect the blue flag status of the beach due to poor water quality (i.e. faecal coliforms) (JBA, pers. comm.). The substrata comprised heavily compacted and silted cobble and boulder along Victoria Park, with cobble and boulder bedded in extensive sand beds predominating further downstream. Siltation was naturally high given the tidal and depositional nature of the channel. Common reed was abundant along the steep banks, with occasional fool's watercress and water starwort (*Callitriche* sp.) along channel margins. Filamentous algae were frequent on instream structures. Extensive bacterial films were present on silt at the tidal gates, indicating a level of organic pollution. Numerous point sources and culverts adjoined the channel near the survey site and were evidently contributing to water quality declines.

Flounder, three-spined stickleback and Red-listed European eel (*Anguilla anguilla*) were recorded via electro-fishing at site 4 (**Figure 3.4**). Whilst not of value for salmonids given poor connectivity with the sea and poor-quality tidal habitat, site 4 was of high value as a European eel nursery, supporting a high density of elvers (*n*=21) (**Plate 3.8**). A single adult eel was also recorded. The site provided excellent eel habitat given an abundance of instream refugia, namely under existing (scoured) retaining walls and cobble/boulder substrata. Tidal mud accumulations in the lowermost reaches near the road crossing also provided evidently suitable elver habitat. The site was also of high value as a flounder nursery, with a high density recorded (*n*=43) (**Plate 3.7**).

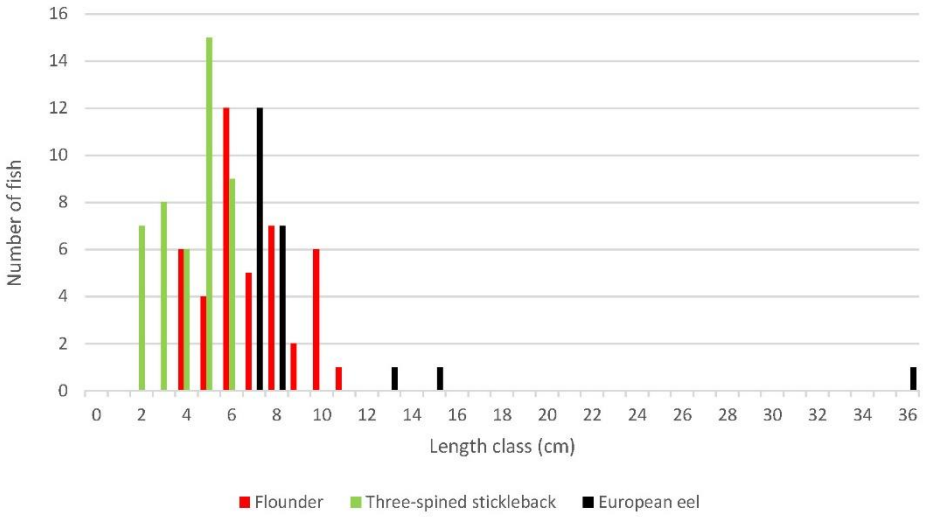


Figure 3.4 Fish length frequency distribution recorded via electro-fishing at site 4 on the Kilkee Upper Stream, September 2022

Plate 3.6 Representative image of site 4 on the lowermost reaches of the Kilkee Upper Stream, September 2022

Plate 3.7 Juvenile flounder and three-spined stickleback recorded via electro-fishing at site 4 on the Kilkee Upper Stream, September 2022

Plate 3.8 Juvenile and adult European eel recorded via electro-fishing at site 4 on the Kilkee Upper Stream, September 2022

Plate 3.9 The tidal gate at the sea outfall of the Kilkee Upper Stream (under the Marine Parade Road) is a barrier to eel passage during summer. The barrier is opened after the bathing season (4th June to 31st August)

3.1.5 Site 5 – unnamed stream, Sandpark Kilkee

Site 5 was located on an unnamed stream (no EPA code; known locally as the Atlantic Stream) at Sandpark Kilkee, approx. 0.3km upstream of the N67 road crossing. The lowland depositing watercourse (FW2) had been extensively straightened and deepened historically, resulting in a steep trapezoidal channel with poor hydromorphology and drainage channel-like characteristics. Bankfull heights were 2-4m. The site had also been excavated in the recent past with spoil evident on the banks. The stream was a homogenous 2.5m wide and 0.2-0.3m deep, comprising slow-flowing glide and occasional pool with no riffle areas. Whilst some exposed mixed gravels and cobbles were present locally, the substrata were dominated by soft silt with a high-clay fraction (further indication of recent excavation). Macrophyte coverage was very high (>75%) with abundant fool's watercress, branched bur-reed (*Sparganium erectum*) and common duckweed (*Lemna minor*) with frequent lesser water parsnip (*Berula erecta*). Water starwort (*Callitriche* sp.), watercress (*Nasturtium officinale*) and stonewort (*Chara* sp.) were occasional. Filamentous algae cover was also very high (>50%), indicating significant enrichment. The steep sloping banks supported abundant reed canary grass (*Phalaris arundinacea*), water horsetail (*Equisetum fluviatile*), meadowsweet and rank grasses with scattered alder (*Alnus glutinosa*), sycamore (*Acer psuedoplatanus*) and dense bramble scrub. The site was bordered by Sandpark Kilkee holiday homes (BL3) and recolonising bare ground (ED3).

No fish species were recorded via electro-fishing at site 5, although juvenile (<10mm) three-spined stickleback were visually observed. With the exception of three-spined stickleback, site 5 was not of fisheries value given heavy siltation, high level of modifications, poor flows, poor hydromorphology and very poor connectivity with downstream tidal habitats. The sea outfall was poorly passable for fish (with the exception of European eel, see **Plate 3.12**). Despite some suitability, no European eel or *Lampetra* sp. were recorded via electro-fishing. Soft sediment accumulations were clay-dominated, which provided sub-optimal conditions for lamprey ammocoetes.

Plate 3.10 Representative image of site 5 on an unnamed stream, September 2022

Plate 3.11 Representative image of site 5 on an unnamed stream, September 2022

Plate 3.12 Outfall of the unnamed stream ('Atlantic Stream') to the sea near Kilkee Pier, 0.4km downstream of site 5 (significant fish passage barrier)

Table 3.1 Fish species densities per m^2 recorded at sites in the vicinity of the proposed Kilkee FRS via electro-fishing in September 2022 (values in bold represent the highest densities recorded for each species, respectively)

Site	Watercourse	CPUE (Elapsed time)	Approx. area fished (m^2)	Fish density (number fish per m^2)		
				European eel	Flounder	Three-spined stickleback
1	Kilkee Lower River (Victoria Stream)	5	45	0.000	0.022	**0.556**
2	Kilkee Upper Stream	5	50	0.000	0.000	0.060
3	Kilkee Upper Stream	5	30	0.000	0.000	0.167
4	Kilkee Upper River	10	150	**0.147**	**0.287**	0.300
5	Unnamed stream (Atlantic Stream)	5	75	0.000	0.000	0.000

Table 3.2 Summary of fish species recorded via electro-fishing per survey site in the vicinity of the proposed Kilkee FRS, September 2022

Site	Watercourse	Atlantic salmon	Brown trout	European eel	Other species
1	Kilkee Lower River (Victoria Stream)	None recorded	None recorded	None recorded	Flounder, three-spined stickleback
2	Kilkee Upper Stream	None recorded	None recorded	None recorded	Three-spined stickleback
3	Kilkee Upper Stream	None recorded	None recorded	None recorded	Three-spined stickleback
4	Kilkee Upper River	None recorded	None recorded	✓	Flounder, three-spined stickleback
5	Unnamed stream (Atlantic Stream)	No fish recorded (juvenile three-spined stickleback observed)			

*** Conservation value:** European eel are 'critically endangered' according to most recent ICUN red list (Pike et al., 2020) and listed as 'critically engendered' in Ireland (King et al., 2011). Flounder and three-spined stickleback have no legal protection in Ireland.

Triturus

4. Discussion

The watercourses in the vicinity of the proposed Kilkee FRS, namely the Kilkee Upper River ('Victoria Stream'), Kilkee Lower River and an unnamed stream ('Atlantic Stream') were all short in length (≤2.5km), narrow, shallow, heavily silted and heavily modified channels with low seasonal flows and known connectivity issues to the sea. With the exception of site 4 (see below), the surveyed watercourses were of low fisheries value and supported poor quality fisheries habitats. Electro-fishing surveys undertaken across *n*=5 sites in September 2022 revealed a low diversity of species and typically low fish abundances. There was no suitability for salmonids or lamprey in the survey area and none were recorded.

Site 1 on the Kilkee Upper River supported a low density of three-spined stickleback and a single juvenile flounder, whilst sites 2 & 3 on the Kilkee Lower Stream supported three-spined stickleback only. Site 5 on an unnamed stream ('Atlantic Stream') also supported (juvenile) three-spined stickleback only. This is a ubiquitous species tolerant of poor water quality and capable of persisting in heavily modified and or degraded freshwater habitats unsuitable for other fish species (Ostlund-Nilsson, 2006).

Whilst poor quality fisheries habitats were present upstream, site 4 on the lowermost (transitional) reaches of the Kilkee Lower Stream were of high value for Red-listed (King et al., 2011) and critically endangered (Pike et al., 2020) European eel. The site was highly suitable as an eel nursery given an abundance of diurnal refugia, including boulder, cobble, retaining wall crevices and soft sediment beds, which elvers evidently used as burial refugia (as has been observed elsewhere; Steendam et al., 2020). The brackish site also supported a low number of adult eel, in addition to three-spined stickleback and juvenile flounder.

Catadromous species such as European eel and flounder primarily rely on 'flood tide transport' to colonise catchments (Trancart et al., 2012). In light of the tidal barrier (gate) to fish passage at the Marine Parade Road culvert (**Plate 3.9**), it can be surmised that the occasional coinciding of high spring tides and flood gate openings are sufficient to facilitate low-level colonisation of the Kilkee Lower Stream by such species, but not others such as salmonids which would likely require improved fluvial connectivity. The barrier is closed between June and August during the bathing season and may overlap with late migration of elvers into river systems which has been noted more frequently in recent years (pers. obs.). Furthermore, juvenile European eel are able to navigate even vertical surfaces (such as a tidal gate) provided they are wet, provide traction and are of low height (Tamario et al., 2019; Watz et al., 2019; Podgorniak et al., 2016). The poor quality of upstream riverine habitats in the vicinity of Kilkee may be encouraging residency of European eel to the lower/transitional reaches of these catchments, as is often noted in the species (Degerman et al., 2019; Arai et al., 2006).

The modification of the tidal gate to facilitate upstream eel passage would be beneficial to the fisheries value of the Victoria Stream. This could be achieved through the installation of studded panels, eel brushes, eel ladder or eel ropes with a small flow escapement to encourage eel during annual migration.

5. References

APEM (2004). Assessment of sea lamprey distribution and abundance in the River Spey: Phase II. Scottish Natural Heritage Commissioned Report No. 027 (ROAME No. F01AC608).

Arai, T., Kotake, A., & McCarthy, T. K. (2006). Habitat use by the European eel *Anguilla anguilla* in Irish waters. Estuarine, Coastal and Shelf Science, 67(4), 569-578.

CEN (2003). Water Quality - Sampling of Fish with Electricity. Document CEN EN 14011:2000.

CFB (2008). Methods for the Water Framework Directive. Electric Fishing in Wadeable Reaches. Central Fisheries Board. Unpublished report.

Degerman, E., Tamario, C., Watz, J., Nilsson, P. A., & Calles, O. (2019). Occurrence and habitat use of European eel (*Anguilla anguilla*) in running waters: lessons for improved monitoring, habitat restoration and stocking. Aquatic ecology, 53(4), 639-650.

Environment Agency (2003). River Habitat Survey in Britain and Ireland: Field Survey Guidance Manual: 2003 Version. Forest Research. Environment Agency, UK.

Gardiner, R. (2003). Identifying lamprey. A field key for sea, river and brook lamprey. Conserving Natura 2000 Rivers, Conservation techniques No. 4. Peterborough. English Nature.

Harvey, J. & Cowx, I. (2003). Monitoring the River, Sea and Brook Lamprey, *Lampetra fluviatilis*, *L. planeri* and *Petromyzon marinus*. Conserving Natura 2000 Rivers Monitoring Series No. 5, English Nature, Peterborough.

IFI (2010). Biosecurity Protocol for Field Survey Work. Available at http://www.fisheriesireland.ie/Invasive-Species/biosecurity-protocol-for-field-survey-work.html

King, J.L., Marnell, F., Kingston, N., Rosell, R., Boylan, P., Caffrey, J.M., FitzPatrick, Ú., Gargan, P.G., Kelly, F.L., O'Grady, M.F., Poole, R., Roche, W.K. & Cassidy, D. (2011). Ireland Red List No. 5: Amphibians, Reptiles & Freshwater Fish. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht, Dublin, Ireland.

Matson, R., Delanty, K., Shephard, S., Coghlan, B., & Kelly, F. (2018). Moving from multiple pass depletion to single pass timed electrofishing for fish community assessment in wadeable streams. Fisheries Research, 198, 99-108.

Niven, A.J. & McCauley, M. (2013). Lamprey Baseline Survey No2: River Faughan and Tributaries SAC. Loughs Agency, 22, Victoria Road, Derry.

NPWS (2014). Conservation Objectives: Kilkee Reefs SAC 002264. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

O'Grady, M.F. (2006). Channels and challenges: enhancing Salmonid rivers. Irish Fresh- water Fisheries Ecology and Management Series: Number 4. Central Fisheries Board, Dublin.

Ostlund-Nilsson, S., Mayer, I., & Huntingford, F. A. (2006). Biology of the three-spined stickleback. CRC Press. 408pp.

Pike, C., Crook, V. & Gollock, M. (2020). *Anguilla anguilla*. The IUCN Red List of Threatened Species 2020: e.T60344A152845178. https://dx.doi.org/10.2305/IUCN.UK.2020-2.RLTS.T60344A152845178.en.

Podgorniak, T., Blanchet, S., De Oliveira, E., Daverat, F., & Pierron, F. (2016). To boldly climb: behavioural and cognitive differences in migrating European glass eels. Royal Society open science, 3(1), 150665.

Potter, I. C., & Osborne, T.S. (1975). The systematics of British larval lampreys. Journal of Zoology, 176(3), 311-329.

Steendam, C., Verhelst, P., Van Wassenbergh, S., & De Meyer, J. (2020). Burrowing behaviour of the European eel (Anguilla anguilla): Effects of life stage. Journal of Fish Biology, 97(5), 1332-1342.

Tamario, C., Calles, O., Watz, J., Nilsson, P. A., & Degerman, E. (2019). Coastal river connectivity and the distribution of ascending juvenile European eel (*Anguilla anguilla* L.): Implications for conservation strategies regarding fish-passage solutions. Aquatic Conservation: Marine and Freshwater Ecosystems, 29(4), 612-622.

Trancart, T., Lambert, P., Rochard, E., Daverat, F., Coustillas, J., & Roqueplo, C. (2012). Alternative flood tide transport tactics in catadromous species: *Anguilla anguilla*, *Liza ramada* and *Platichthys flesus*. Estuarine, Coastal and Shelf Science, 99, 191-198.

Watz, J., Nilsson, P. A., Degerman, E., Tamario, C., & Calles, O. (2019). Climbing the ladder: an evaluation of three different anguillid eel climbing substrata and placement of upstream passage solutions at migration barriers. Animal Conservation, 22(5), 452-462.

Triturus Environmental Ltd.

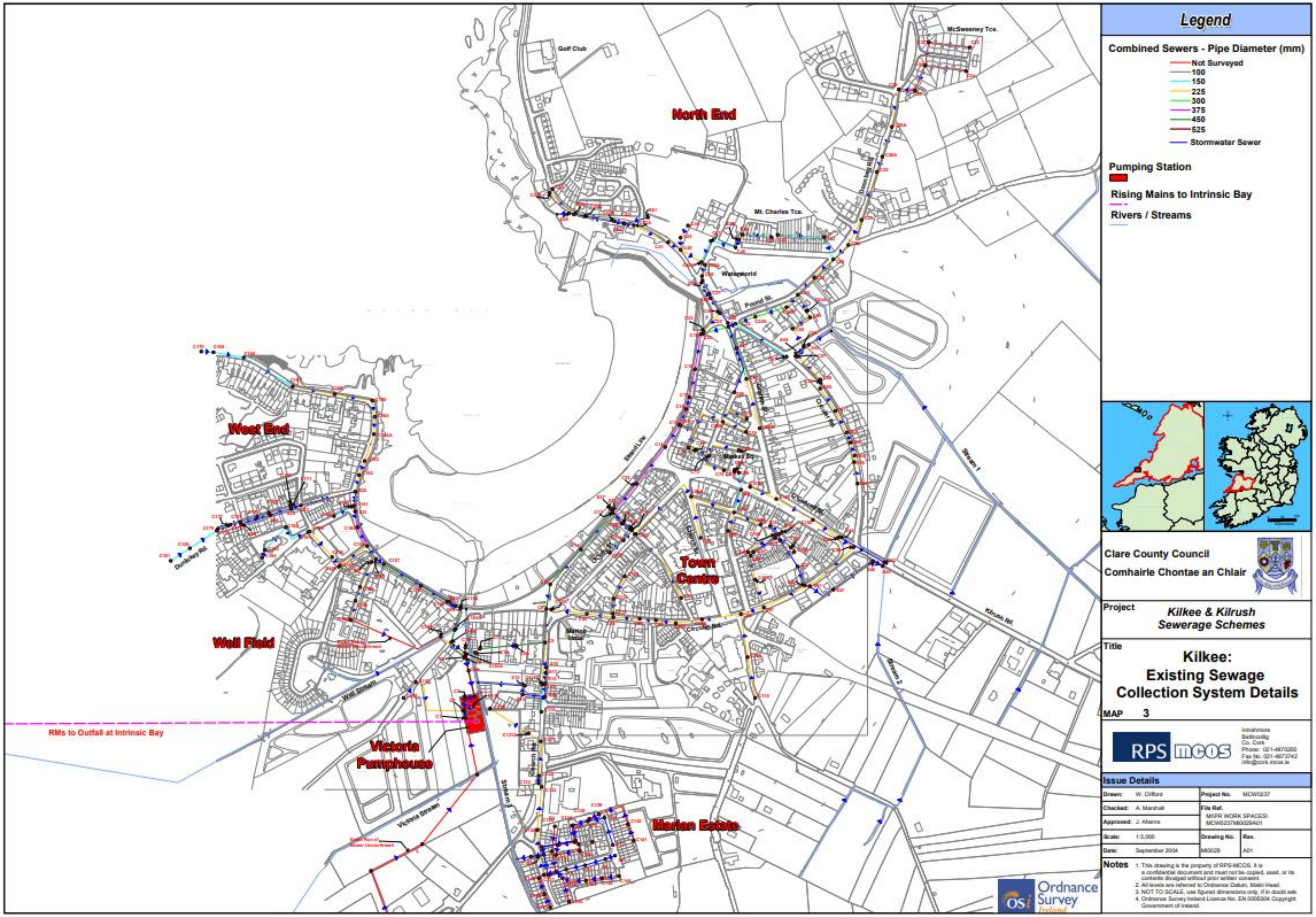
42 Norwood Court,

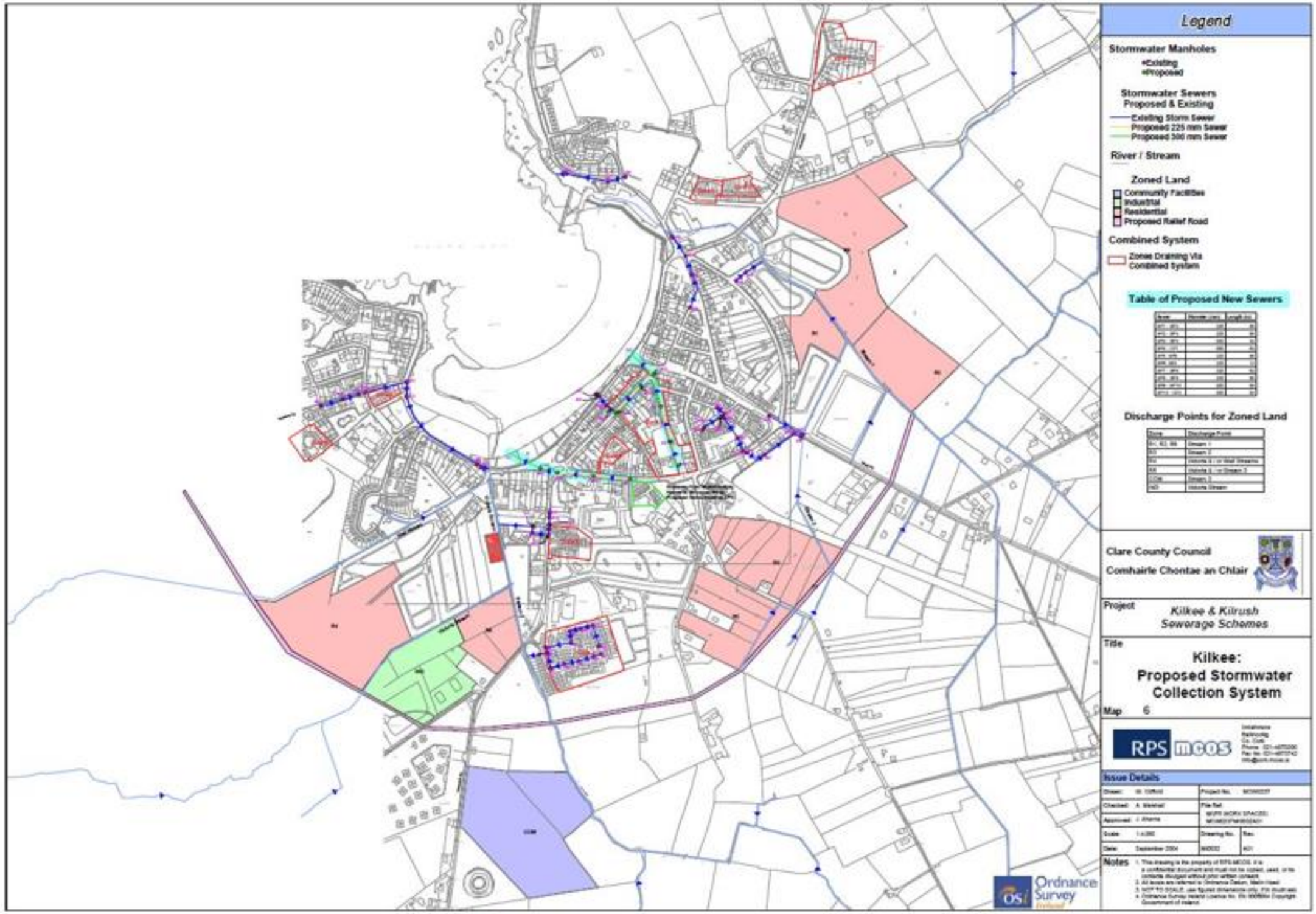
Rochestown,

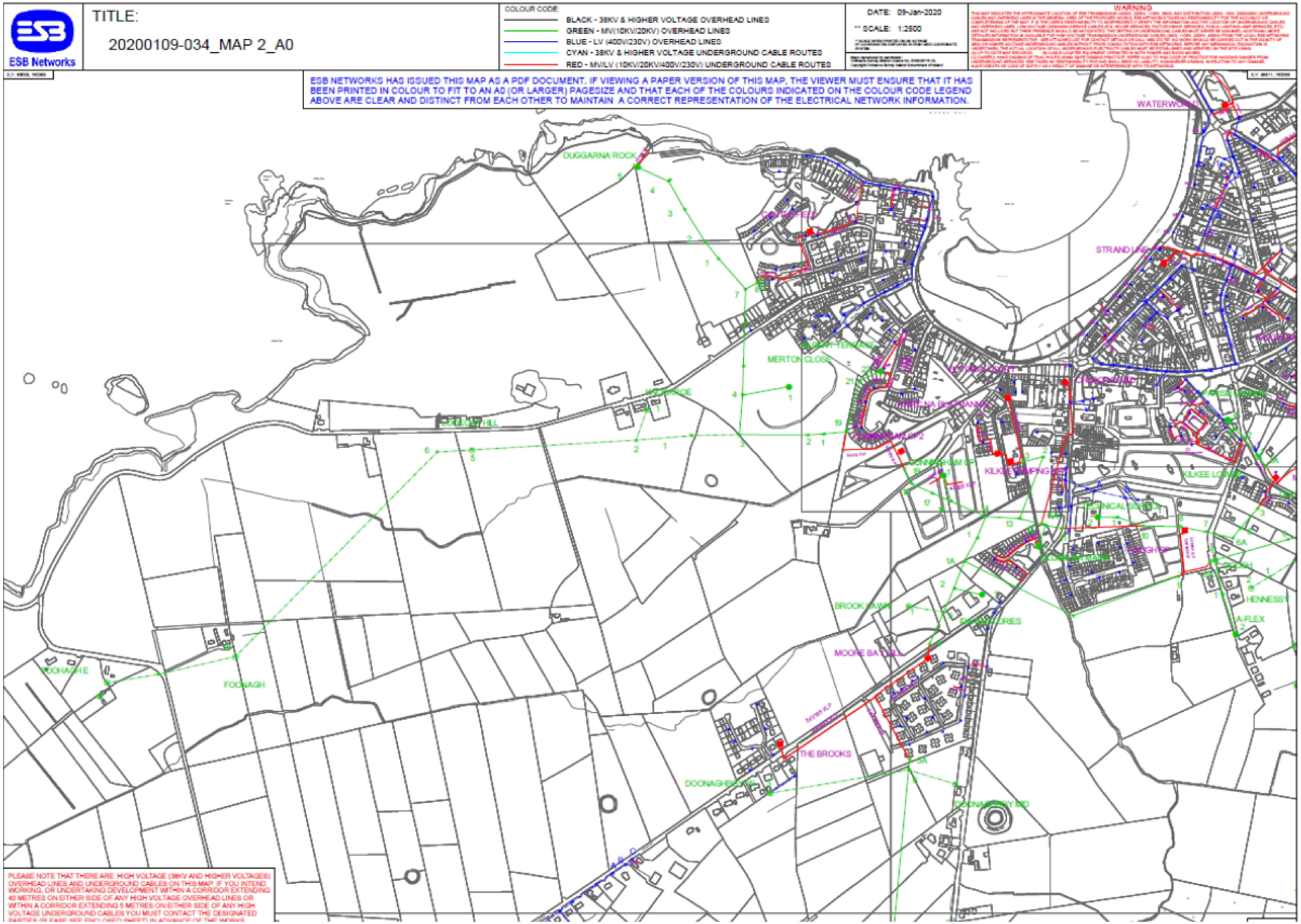
Co. Cork,

T12 ECF3.

Appendix F Material Assets (Utilities)


North End
West End
Well Field
Town Centre
Victoria Pumphouse
Marian Estate
RMs to Outfall at Intrinsic Bay
Golf Club
McSweeney Tce.
Mt. Charles Tce.
Waterworld
Pound St.
Strand Line
Circular Rd.
Kilrush Rd.
Dunlicky Rd.
Well Stream
Victoria Stream
Stream 1
Stream 2
Stream 3
Legend
Combined Sewers - Pipe Diameter (mm)
Not Surveyed
100
150
225
300
375
450
525
Stormwater Sewer
Pumping Station
Rising Mains to Intrinsic Bay
Rivers / Streams
Clare County Council
Comhairle Chontae an Chlair
Project
Kilkee & Kilrush Sewerage Schemes
Title
Kilkee: Existing Sewage Collection System Details
MAP 3
RPS mcos
Inishmore
Ballincollig
Co. Cork
Phone: 021-4870200
Fax No. 021-4873742
info@cork.mcos.ie
Issue Details
Drawn: W. Clifford
Project No. MCW0237
Checked: A. Marshall
Approved: J. Aherne
File Ref. M:\PR WORK SPACES\MCW0237\M0029A01
Scale: 1:3,000
Date: September 2004
Drawing No. M0029
Rev. A01
Notes
1. This drawing is the property of RPS-MCOS. It is a confidential document and must not be copied, used, or its contents divulged without prior written consent.
2. All levels are referred to Ordnance Datum, Malin Head.
3. NOT TO SCALE, use figured dimensions only, if in doubt ask.
4. Ordnance Survey Ireland Licence No. EN 0005004 Copyright Government of Ireland.
OSi Ordnance Survey Ireland


Legend
Stormwater Manholes
Existing
Proposed
Stormwater Sewers
Proposed & Existing
Existing Storm Sewer
Proposed 225 mm Sewer
Proposed 300 mm Sewer
River / Stream
Zoned Land
Community Facilities
Industrial
Residential
Proposed Relief Road
Combined System
Zones Draining Via Combined System
Table of Proposed New Sewers
Discharge Points for Zoned Land
Clare County Council
Comhairle Chontae an Chlair
Project
Kilkee & Kilrush
Sewerage Schemes
Title
Kilkee:
Proposed Stormwater
Collection System
Map 6
RPS mcos
Issue Details
Notes
Ordnance Survey


ESB Networks
TITLE:
20200109-034_MAP 2_A0
COLOUR CODE:
BLACK - 38KV & HIGHER VOLTAGE OVERHEAD LINES
GREEN - MV(10KV/20KV) OVERHEAD LINES
BLUE - LV (400V/230V) OVERHEAD LINES
CYAN - 38KV & HIGHER VOLTAGE UNDERGROUND CABLE ROUTES
RED - MV/LV (10KV/20KV/400V/230V) UNDERGROUND CABLE ROUTES
DATE: 09-Jan-2020
SCALE: 1:2500
WARNING
ESB NETWORKS HAS ISSUED THIS MAP AS A PDF DOCUMENT. IF VIEWING A PAPER VERSION OF THIS MAP, THE VIEWER MUST ENSURE THAT IT HAS BEEN PRINTED IN COLOUR TO FIT TO AN A0 (OR LARGER) PAGESIZE AND THAT EACH OF THE COLOURS INDICATED ON THE COLOUR CODE LEGEND ABOVE ARE CLEAR AND DISTINCT FROM EACH OTHER TO MAINTAIN A CORRECT REPRESENTATION OF THE ELECTRICAL NETWORK INFORMATION.
DUGGARNA ROCK
WATERWORLD
STRAND LINE
MERTON CLOSE
FOOHAGH
DOONAGHBEG
THE BROOKS
MOORE BAY
BROOK LAWN
HENNESSY
A-FLEX
KILKEE LODGE
PLEASE NOTE THAT THERE ARE HIGH VOLTAGE (38KV AND HIGHER VOLTAGES) OVERHEAD LINES AND UNDERGROUND CABLES ON THIS MAP. IF YOU INTEND WORKING, OR UNDERTAKING DEVELOPMENT WITHIN A CORRIDOR EXTENDING 40 METRES ON EITHER SIDE OF ANY HIGH VOLTAGE OVERHEAD LINES OR WITHIN A CORRIDOR EXTENDING 5 METRES ON EITHER SIDE OF ANY HIGH VOLTAGE UNDERGROUND CABLES YOU MUST CONTACT THE DESIGNATED

ESB Networks

TITLE: 20210304-024_A3

COLOUR CODE:
- BLACK - 38KV & HIGHER VOLTAGE OVERHEAD LINES
- GREEN - MV(10KV/20KV) OVERHEAD LINES
- BLUE - LV (400V/230V) OVERHEAD LINES
- CYAN - 38KV & HIGHER VOLTAGE UNDERGROUND CABLE ROUTES
- RED - MV/LV (10KV/20KV/400V/230V) UNDERGROUND CABLE ROUTES

DATE: 04-Mar-2021

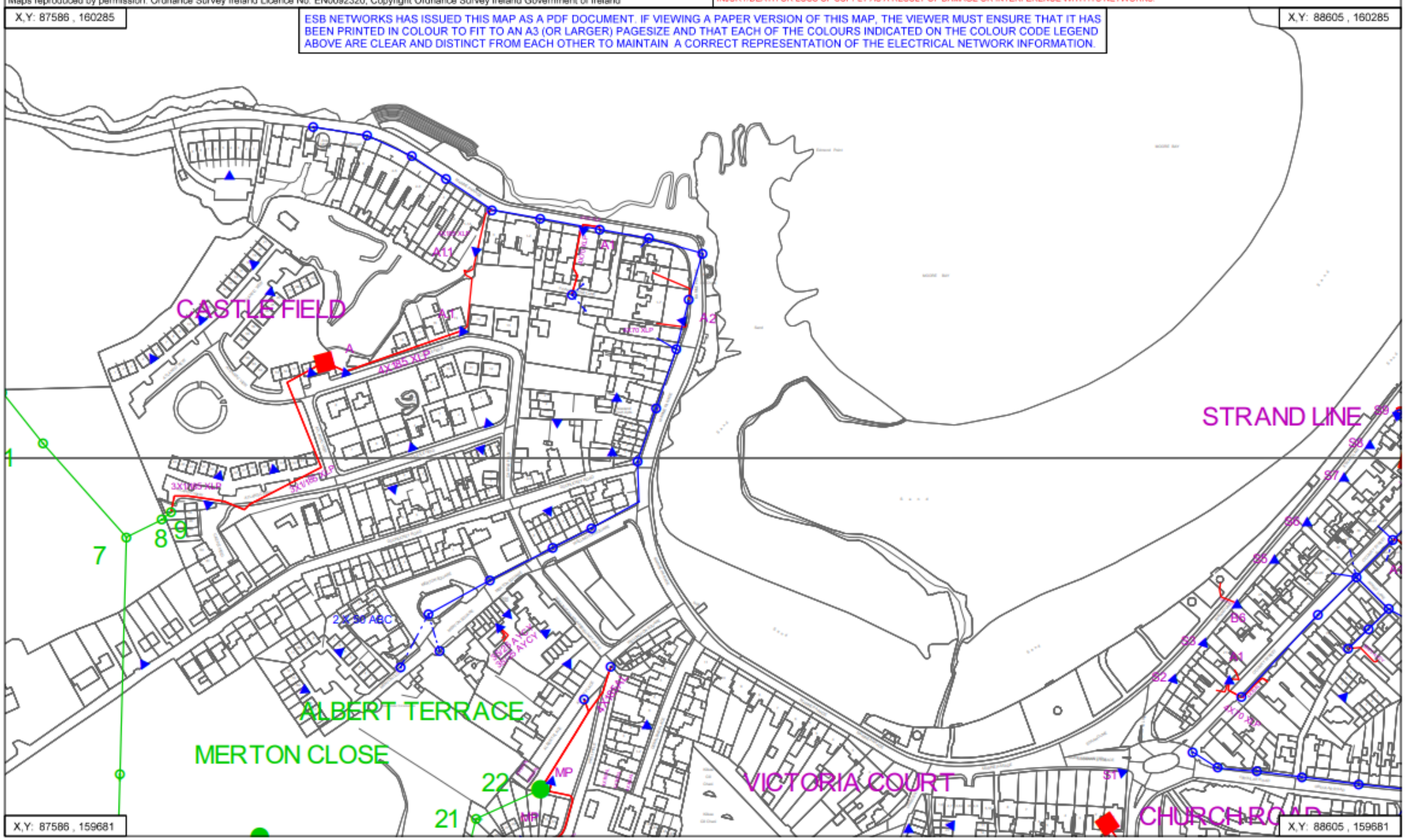
** SCALE: 1:2500

** SCALE WHEN PRINTED ON AN A3 PAGE
XY COORDINATES DISPLAYED IN IRISH GRID COORDINATE SYSTEM

WARNING

THIS MAP INDICATES THE APPROXIMATE LOCATION OF ESB TRANSMISSION (400KV, 220KV, 110KV, 38KV) AND DISTRIBUTION (20KV, 10KV, 230V/400V) UNDERGROUND CABLES AND OVERHEAD LINES IN THE GENERAL AREA OF THE PROPOSED WORKS. ESB NETWORKS TAKES NO RESPONSIBILITY FOR THE ACCURACY OR COMPLETENESS OF THE MAP. IT IS THE USER'S RESPONSIBILITY TO INDEPENDENTLY VERIFY THE INFORMATION AND THE LOCATION OF UNDERGROUND CABLES AND OVERHEAD LINES. LOW VOLTAGE (230V/400V) SERVICE CABLES (E.G. HOUSE SERVICES, FACTORY/SHOP SERVICES, PUBLIC LIGHTING LAMP SERVICES, ETC) ARE NOT INCLUDED BUT THEIR PRESENCE SHOULD BE ANTICIPATED. THE DEPTHS OF UNDERGROUND CABLES MUST NEVER BE ASSUMED. ADDITIONAL MORE DETAILED INFORMATION IS AVAILABLE FOR HIGH VOLTAGE TRANSMISSION UNDERGROUND CABLES (38KV, 110KV, 220KV, 400KV) FROM THE LOCAL ESB NETWORKS TRANSMISSION REPRESENTATIVE - SEE ATTACHED LIST FOR CONTACT DETAILS OR CALL 1850 372 757. NO WORK SHOULD BE CARRIED OUT IN THE VICINITY OF 38KV OR HIGHER VOLTAGE UNDERGROUND CABLES WITHOUT PRIOR CONSULTATION WITH ESB NETWORKS. BEFORE ANY MECHANICAL EXCAVATION IS UNDERTAKEN, THE ACTUAL LOCATION OF ALL UNDERGROUND ELECTRICITY CABLES MUST BE ESTABLISHED AND VERIFIED ON THE SITE USING: (A) UP-TO-DATE MAP RECORDS; (B) CABLE LOCATER EQUIPMENT OPERATED IN BOTH POWER AND RADIO MODES; (C) CAREFUL HAND DIGGING OF TRIAL HOLES USING 'SAFE DIGGING PRACTICE'. REFER ALSO TO 'HSA CODE OF PRACTICE FOR AVOIDING DANGER FROM UNDERGROUND SERVICES'. ESB TAKES NO RESPONSIBILITY FOR AND SHALL BEAR NO LIABILITY, HOWSOEVER ARISING, IN RELATION TO ANY DAMAGE, INJURY/DEATH OR LOSS OF SUPPLY AS A RESULT OF DAMAGE OR INTERFERENCE WITH ITS NETWORKS.

ESB NETWORKS HAS ISSUED THIS MAP AS A PDF DOCUMENT. IF VIEWING A PAPER VERSION OF THIS MAP, THE VIEWER MUST ENSURE THAT IT HAS BEEN PRINTED IN COLOUR TO FIT TO AN A3 (OR LARGER) PAGESIZE AND THAT EACH OF THE COLOURS INDICATED ON THE COLOUR CODE LEGEND ABOVE ARE CLEAR AND DISTINCT FROM EACH OTHER TO MAINTAIN A CORRECT REPRESENTATION OF THE ELECTRICAL NETWORK INFORMATION.



TITLE: 20210304-024-001_A3

COLOUR CODE:
- BLACK - 38KV & HIGHER VOLTAGE OVERHEAD LINES
- GREEN - MV(10KV/20KV) OVERHEAD LINES
- BLUE - LV (400V/230V) OVERHEAD LINES
- CYAN - 38KV & HIGHER VOLTAGE UNDERGROUND CABLE ROUTES
- RED - MV/LV (10KV/20KV/400V/230V) UNDERGROUND CABLE ROUTES

DATE: 04-Mar-2021

** SCALE: 1:2500

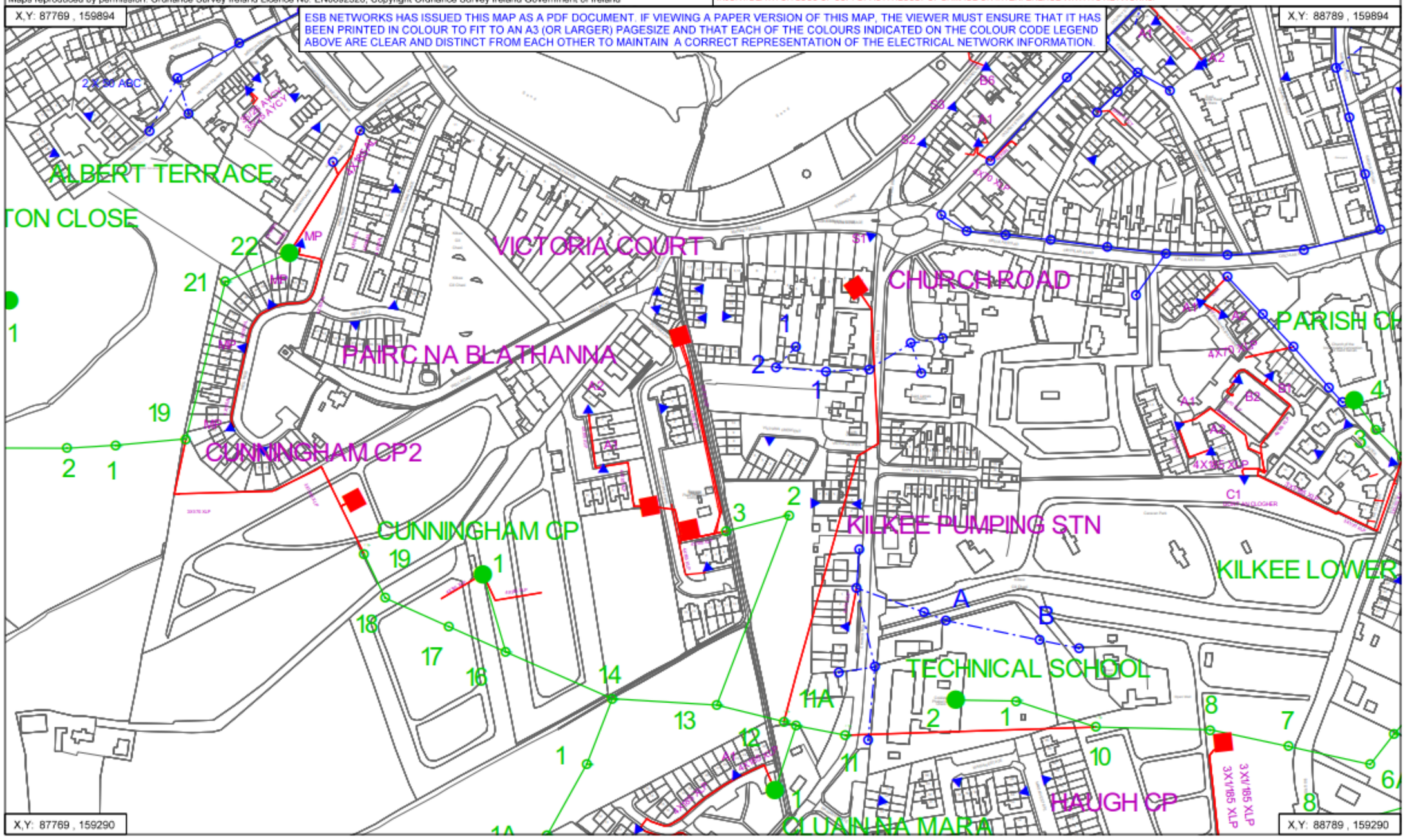
** SCALE WHEN PRINTED ON AN A3 PAGE
XY COORDINATES DISPLAYED IN IRISH GRID COORDINATE SYSTEM

WARNING

THIS MAP INDICATES THE APPROXIMATE LOCATION OF ESB TRANSMISSION (400KV, 220KV, 110KV, 38KV) AND DISTRIBUTION (20KV, 10KV, 230V/400V) UNDERGROUND CABLES AND OVERHEAD LINES IN THE GENERAL AREA OF THE PROPOSED WORKS. ESB NETWORKS TAKES NO RESPONSIBILITY FOR THE ACCURACY OR COMPLETENESS OF THE MAP. IT IS THE USER'S RESPONSIBILITY TO INDEPENDENTLY VERIFY THE INFORMATION AND THE LOCATION OF UNDERGROUND CABLES AND OVERHEAD LINES. LOW VOLTAGE (230V/400V) SERVICE CABLES (E.G. HOUSE SERVICES, FACTORY/SHOP SERVICES, PUBLIC LIGHTING LAMP SERVICES, ETC) ARE NOT INCLUDED BUT THEIR PRESENCE SHOULD BE ANTICIPATED. THE DEPTHS OF UNDERGROUND CABLES MUST NEVER BE ASSUMED. ADDITIONAL MORE DETAILED INFORMATION IS AVAILABLE FOR HIGH VOLTAGE TRANSMISSION UNDERGROUND CABLES (38KV, 110KV, 220KV, 400KV) FROM THE LOCAL ESB NETWORKS TRANSMISSION REPRESENTATIVE - SEE ATTACHED LIST FOR CONTACT DETAILS OR CALL 1850 372 757. NO WORK SHOULD BE CARRIED OUT IN THE VICINITY OF 38KV OR HIGHER VOLTAGE UNDERGROUND CABLES WITHOUT PRIOR CONSULTATION WITH ESB NETWORKS. BEFORE ANY MECHANICAL EXCAVATION IS UNDERTAKEN, THE ACTUAL LOCATION OF ALL UNDERGROUND ELECTRICITY CABLES MUST BE ESTABLISHED AND VERIFIED ON THE SITE USING: (A) UP-TO-DATE MAP RECORDS, (B) CABLE LOCATER EQUIPMENT OPERATED IN BOTH POWER AND RADIO MODES. (C) CAREFUL HAND DIGGING OF TRIAL HOLES USING 'SAFE DIGGING PRACTICE'. REFER ALSO TO 'HSA CODE OF PRACTICE FOR AVOIDING DANGER FROM UNDERGROUND SERVICES'. ESB TAKES NO RESPONSIBILITY FOR AND SHALL BEAR NO LIABILITY, HOWSOEVER ARISING, IN RELATION TO ANY DAMAGE, INJURY/DEATH OR LOSS OF SUPPLY AS A RESULT OF DAMAGE OR INTERFERENCE WITH ITS NETWORKS.

ESB NETWORKS HAS ISSUED THIS MAP AS A PDF DOCUMENT. IF VIEWING A PAPER VERSION OF THIS MAP, THE VIEWER MUST ENSURE THAT IT HAS BEEN PRINTED IN COLOUR TO FIT TO AN A3 (OR LARGER) PAGESIZE AND THAT EACH OF THE COLOURS INDICATED ON THE COLOUR CODE LEGEND ABOVE ARE CLEAR AND DISTINCT FROM EACH OTHER TO MAINTAIN A CORRECT REPRESENTATION OF THE ELECTRICAL NETWORK INFORMATION.

X,Y: 87769 , 159894
X,Y: 88789 , 159894
X,Y: 87769 , 159290
X,Y: 88789 , 159290



TITLE: 20210304-024-002_A3

COLOUR CODE:
- BLACK - 38KV & HIGHER VOLTAGE OVERHEAD LINES
- GREEN - MV(10KV/20KV) OVERHEAD LINES
- BLUE - LV (400V/230V) OVERHEAD LINES
- CYAN - 38KV & HIGHER VOLTAGE UNDERGROUND CABLE ROUTES
- RED - MV/LV (10KV/20KV/400V/230V) UNDERGROUND CABLE ROUTES

DATE: 04-Mar-2021

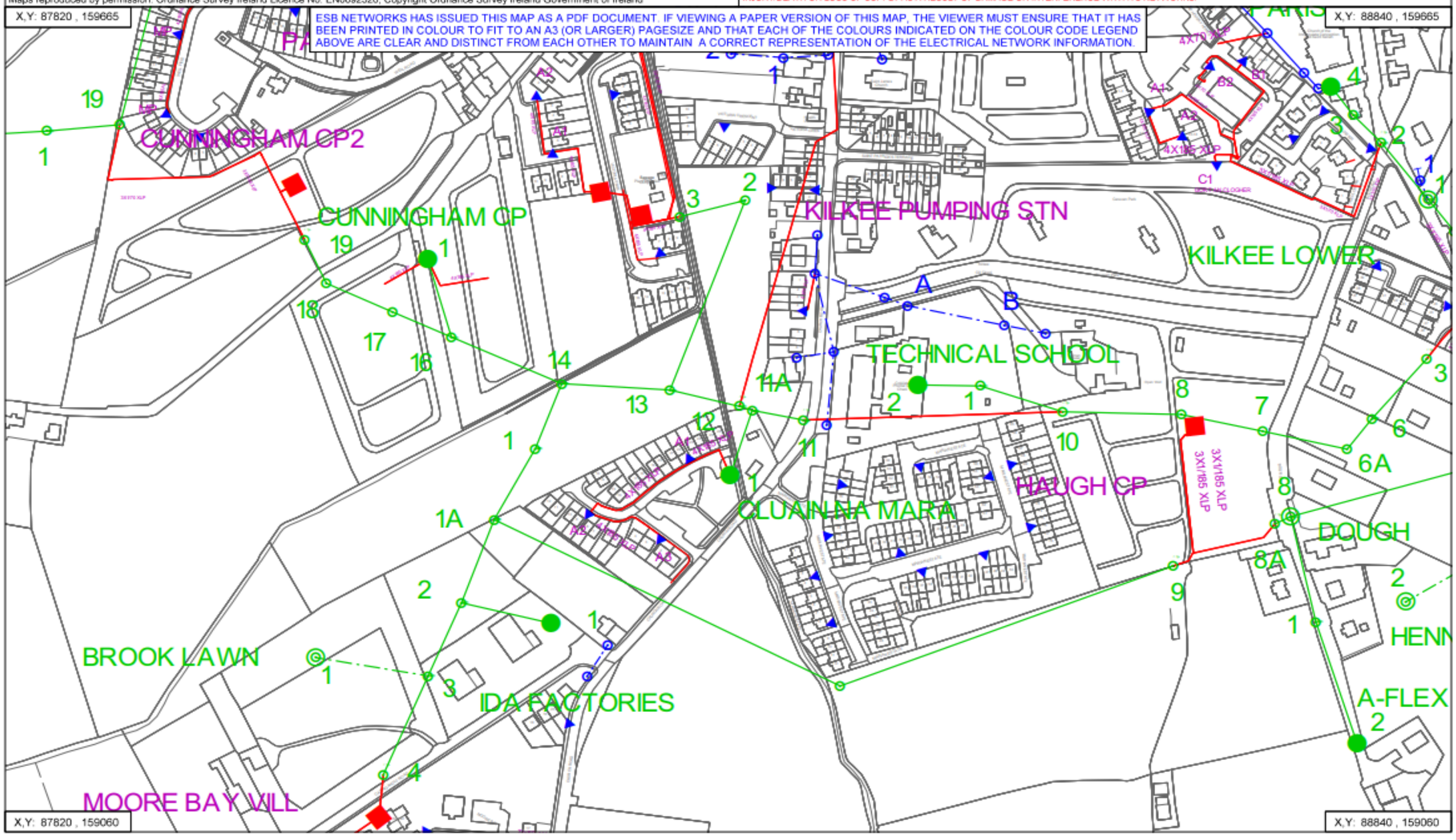
** SCALE: 1:2500

** SCALE WHEN PRINTED ON AN A3 PAGE
XY COORDINATES DISPLAYED IN IRISH GRID COORDINATE SYSTEM

WARNING

THIS MAP INDICATES THE APPROXIMATE LOCATION OF ESB TRANSMISSION (400KV, 220KV, 110KV, 38KV) AND DISTRIBUTION (20KV, 10KV, 230V/400V) UNDERGROUND CABLES AND OVERHEAD LINES IN THE GENERAL AREA OF THE PROPOSED WORKS. ESB NETWORKS TAKES NO RESPONSIBILITY FOR THE ACCURACY OR COMPLETENESS OF THE MAP. IT IS THE USER'S RESPONSIBILITY TO INDEPENDENTLY VERIFY THE INFORMATION AND THE LOCATION OF UNDERGROUND CABLES AND OVERHEAD LINES. LOW VOLTAGE (230V/400V) SERVICE CABLES (E.G. HOUSE SERVICES, FACTORY/SHOP SERVICES, PUBLIC LIGHTING LAMP SERVICES, ETC) ARE NOT INCLUDED BUT THEIR PRESENCE SHOULD BE ANTICIPATED. THE DEPTHS OF UNDERGROUND CABLES MUST NEVER BE ASSUMED. ADDITIONAL MORE DETAILED INFORMATION IS AVAILABLE FOR HIGH VOLTAGE TRANSMISSION UNDERGROUND CABLES (38KV, 110KV, 220KV, 400KV) FROM THE LOCAL ESB NETWORKS TRANSMISSION REPRESENTATIVE - SEE ATTACHED LIST FOR CONTACT DETAILS OR CALL 1850 372 757. NO WORK SHOULD BE CARRIED OUT IN THE VICINITY OF 38KV OR HIGHER VOLTAGE UNDERGROUND CABLES WITHOUT PRIOR CONSULTATION WITH ESB NETWORKS. BEFORE ANY MECHANICAL EXCAVATION IS UNDERTAKEN, THE ACTUAL LOCATION OF ALL UNDERGROUND ELECTRICITY CABLES MUST BE ESTABLISHED AND VERIFIED ON THE SITE USING: (A) UP-TO-DATE MAP RECORDS; (B) CABLE LOCATER EQUIPMENT OPERATED IN BOTH POWER AND RADIO MODES; (C) CAREFUL HAND DIGGING OF TRIAL HOLES USING 'SAFE DIGGING PRACTICE'. REFER ALSO TO 'HSA CODE OF PRACTICE FOR AVOIDING DANGER FROM UNDERGROUND SERVICES'. ESB TAKES NO RESPONSIBILITY FOR AND SHALL BEAR NO LIABILITY, HOWSOEVER ARISING, IN RELATION TO ANY DAMAGE, INJURY/DEATH OR LOSS OF SUPPLY AS A RESULT OF DAMAGE OR INTERFERENCE WITH ITS NETWORKS.

ESB NETWORKS HAS ISSUED THIS MAP AS A PDF DOCUMENT. IF VIEWING A PAPER VERSION OF THIS MAP, THE VIEWER MUST ENSURE THAT IT HAS BEEN PRINTED IN COLOUR TO FIT TO AN A3 (OR LARGER) PAGESIZE AND THAT EACH OF THE COLOURS INDICATED ON THE COLOUR CODE LEGEND ABOVE ARE CLEAR AND DISTINCT FROM EACH OTHER TO MAINTAIN A CORRECT REPRESENTATION OF THE ELECTRICAL NETWORK INFORMATION.



ESB Networks

TITLE: 20210304-024-003_A3

COLOUR CODE:
- BLACK - 38KV & HIGHER VOLTAGE OVERHEAD LINES
- GREEN - MV(10KV/20KV) OVERHEAD LINES
- BLUE - LV (400V/230V) OVERHEAD LINES
- CYAN - 38KV & HIGHER VOLTAGE UNDERGROUND CABLE ROUTES
- RED - MV/LV (10KV/20KV/400V/230V) UNDERGROUND CABLE ROUTES

DATE: 04-Mar-2021

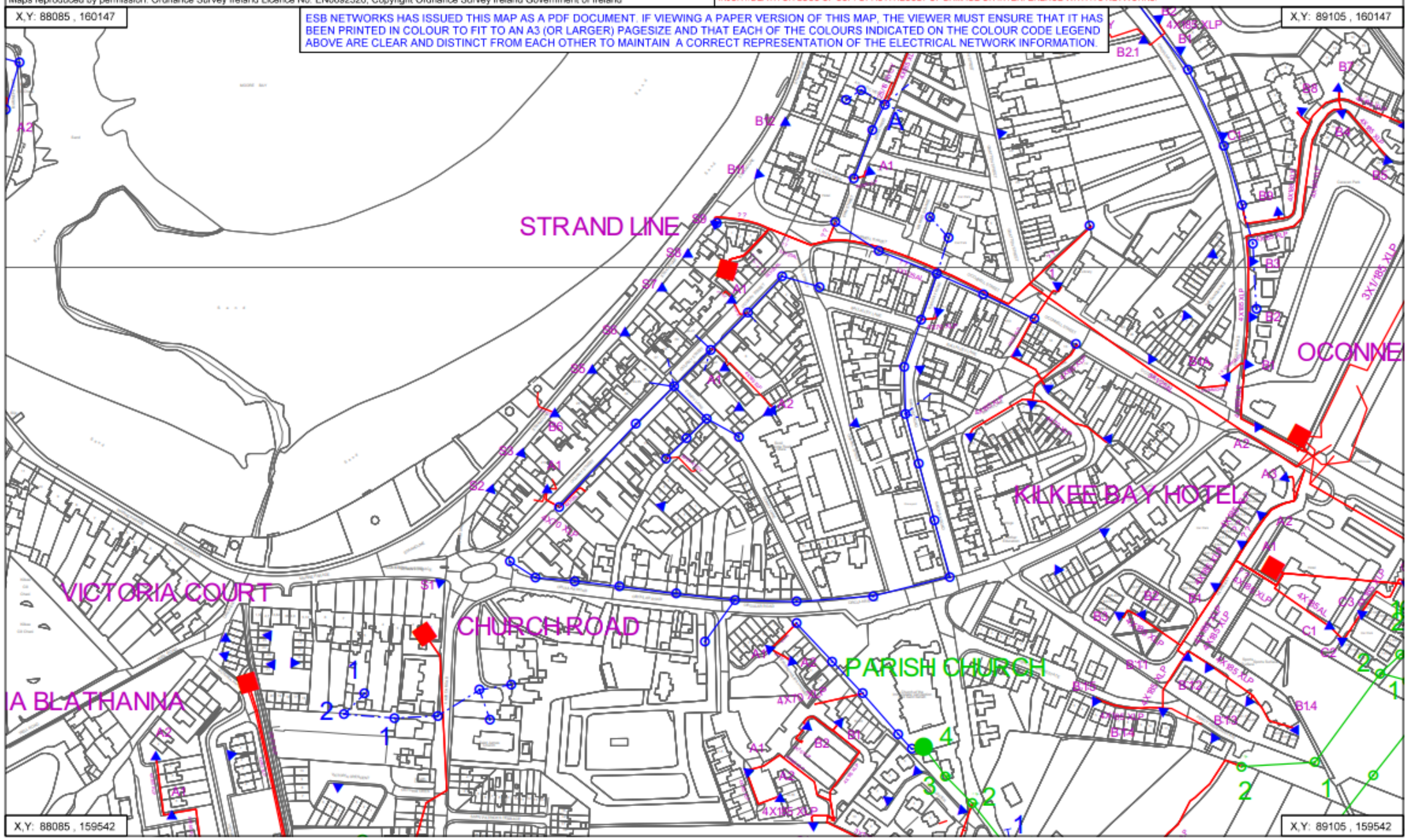
** SCALE: 1:2500

** SCALE WHEN PRINTED ON AN A3 PAGE
XY COORDINATES DISPLAYED IN IRISH GRID COORDINATE SYSTEM

WARNING

THIS MAP INDICATES THE APPROXIMATE LOCATION OF ESB TRANSMISSION (400KV, 220KV, 110KV, 38KV) AND DISTRIBUTION (20KV, 10KV, 230V/400V) UNDERGROUND CABLES AND OVERHEAD LINES IN THE GENERAL AREA OF THE PROPOSED WORKS. ESB NETWORKS TAKES NO RESPONSIBILITY FOR THE ACCURACY OR COMPLETENESS OF THE MAP. IT IS THE USER'S RESPONSIBILITY TO INDEPENDENTLY VERIFY THE INFORMATION AND THE LOCATION OF UNDERGROUND CABLES AND OVERHEAD LINES. LOW VOLTAGE (230V/400V) SERVICE CABLES (E.G. HOUSE SERVICES, FACTORY/SHOP SERVICES, PUBLIC LIGHTING LAMP SERVICES, ETC) ARE NOT INCLUDED BUT THEIR PRESENCE SHOULD BE ANTICIPATED. THE DEPTHS OF UNDERGROUND CABLES MUST NEVER BE ASSUMED. ADDITIONAL MORE DETAILED INFORMATION IS AVAILABLE FOR HIGH VOLTAGE TRANSMISSION UNDERGROUND CABLES (38KV, 110KV, 220KV, 400KV) FROM THE LOCAL ESB NETWORKS TRANSMISSION REPRESENTATIVE - SEE ATTACHED LIST FOR CONTACT DETAILS OR CALL 1850 372 757. NO WORK SHOULD BE CARRIED OUT IN THE VICINITY OF 38KV OR HIGHER VOLTAGE UNDERGROUND CABLES WITHOUT PRIOR CONSULTATION WITH ESB NETWORKS. BEFORE ANY MECHANICAL EXCAVATION IS UNDERTAKEN, THE ACTUAL LOCATION OF ALL UNDERGROUND ELECTRICITY CABLES MUST BE ESTABLISHED AND VERIFIED ON THE SITE USING: (A) UP-TO-DATE MAP RECORDS; (B) CABLE LOCATER EQUIPMENT OPERATED IN BOTH POWER AND RADIO MODES; (C) CAREFUL HAND DIGGING OF TRIAL HOLES USING 'SAFE DIGGING PRACTICE'. REFER ALSO TO 'HSA CODE OF PRACTICE FOR AVOIDING DANGER FROM UNDERGROUND SERVICES'. ESB TAKES NO RESPONSIBILITY FOR AND SHALL BEAR NO LIABILITY, HOWSOEVER ARISING, IN RELATION TO ANY DAMAGE, INJURY/DEATH OR LOSS OF SUPPLY AS A RESULT OF DAMAGE OR INTERFERENCE WITH ITS NETWORKS.

ESB NETWORKS HAS ISSUED THIS MAP AS A PDF DOCUMENT. IF VIEWING A PAPER VERSION OF THIS MAP, THE VIEWER MUST ENSURE THAT IT HAS BEEN PRINTED IN COLOUR TO FIT TO AN A3 (OR LARGER) PAGESIZE AND THAT EACH OF THE COLOURS INDICATED ON THE COLOUR CODE LEGEND ABOVE ARE CLEAR AND DISTINCT FROM EACH OTHER TO MAINTAIN A CORRECT REPRESENTATION OF THE ELECTRICAL NETWORK INFORMATION.



ESB Networks

TITLE: 20210304-024-004_A3

COLOUR CODE:
- BLACK - 38KV & HIGHER VOLTAGE OVERHEAD LINES
- GREEN - MV(10KV/20KV) OVERHEAD LINES
- BLUE - LV (400V/230V) OVERHEAD LINES
- CYAN - 38KV & HIGHER VOLTAGE UNDERGROUND CABLE ROUTES
- RED - MV/LV (10KV/20KV/400V/230V) UNDERGROUND CABLE ROUTES

DATE: 04-Mar-2021

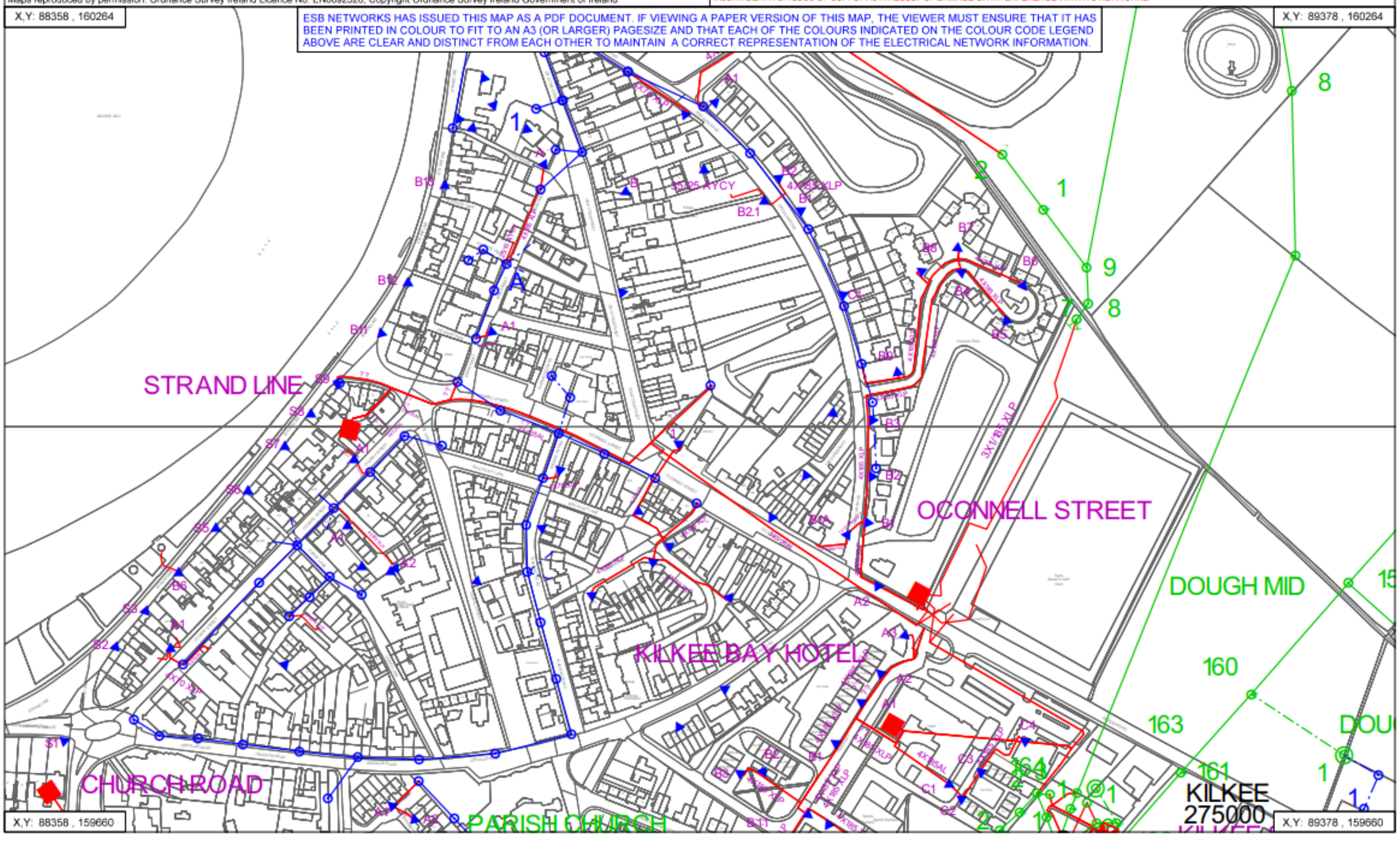
** SCALE: 1:2500

** SCALE WHEN PRINTED ON AN A3 PAGE
XY COORDINATES DISPLAYED IN IRISH GRID COORDINATE SYSTEM

WARNING

THIS MAP INDICATES THE APPROXIMATE LOCATION OF ESB TRANSMISSION (400KV, 220KV, 110KV, 38KV) AND DISTRIBUTION (20KV, 10KV, 230V/400V) UNDERGROUND CABLES AND OVERHEAD LINES IN THE GENERAL AREA OF THE PROPOSED WORKS. ESB NETWORKS TAKES NO RESPONSIBILITY FOR THE ACCURACY OR COMPLETENESS OF THE MAP. IT IS THE USER'S RESPONSIBILITY TO INDEPENDENTLY VERIFY THE INFORMATION AND THE LOCATION OF UNDERGROUND CABLES AND OVERHEAD LINES. LOW VOLTAGE (230V/400V) SERVICE CABLES (E.G. HOUSE SERVICES, FACTORY/SHOP SERVICES, PUBLIC LIGHTING LAMP SERVICES, ETC) ARE NOT INCLUDED BUT THEIR PRESENCE SHOULD BE ANTICIPATED. THE DEPTHS OF UNDERGROUND CABLES MUST NEVER BE ASSUMED. ADDITIONAL MORE DETAILED INFORMATION IS AVAILABLE FOR HIGH VOLTAGE TRANSMISSION UNDERGROUND CABLES (38KV, 110KV, 220KV, 400KV) FROM THE LOCAL ESB NETWORKS TRANSMISSION REPRESENTATIVE - SEE ATTACHED LIST FOR CONTACT DETAILS OR CALL 1850 372 757. NO WORK SHOULD BE CARRIED OUT IN THE VICINITY OF 38KV OR HIGHER VOLTAGE UNDERGROUND CABLES WITHOUT PRIOR CONSULTATION WITH ESB NETWORKS. BEFORE ANY MECHANICAL EXCAVATION IS UNDERTAKEN, THE ACTUAL LOCATION OF ALL UNDERGROUND ELECTRICITY CABLES MUST BE ESTABLISHED AND VERIFIED ON THE SITE USING: (A) UP-TO-DATE MAP RECORDS; (B) CABLE LOCATER EQUIPMENT OPERATED IN BOTH POWER AND RADIO MODES; (C) CAREFUL HAND DIGGING OF TRIAL HOLES USING 'SAFE DIGGING PRACTICE'. REFER ALSO TO HSA CODE OF PRACTICE FOR AVOIDING DANGER FROM UNDERGROUND SERVICES'. ESB TAKES NO RESPONSIBILITY FOR AND SHALL BEAR NO LIABILITY, HOWSOEVER ARISING, IN RELATION TO ANY DAMAGE, INJURY/DEATH OR LOSS OF SUPPLY AS A RESULT OF DAMAGE OR INTERFERENCE WITH ITS NETWORKS.

ESB NETWORKS HAS ISSUED THIS MAP AS A PDF DOCUMENT. IF VIEWING A PAPER VERSION OF THIS MAP, THE VIEWER MUST ENSURE THAT IT HAS BEEN PRINTED IN COLOUR TO FIT TO AN A3 (OR LARGER) PAGESIZE AND THAT EACH OF THE COLOURS INDICATED ON THE COLOUR CODE LEGEND ABOVE ARE CLEAR AND DISTINCT FROM EACH OTHER TO MAINTAIN A CORRECT REPRESENTATION OF THE ELECTRICAL NETWORK INFORMATION.



TITLE: 20210304-024-005_A3

COLOUR CODE:
- BLACK - 38KV & HIGHER VOLTAGE OVERHEAD LINES
- GREEN - MV(10KV/20KV) OVERHEAD LINES
- BLUE - LV (400V/230V) OVERHEAD LINES
- CYAN - 38KV & HIGHER VOLTAGE UNDERGROUND CABLE ROUTES
- RED - MV/LV (10KV/20KV/400V/230V) UNDERGROUND CABLE ROUTES

DATE: 04-Mar-2021

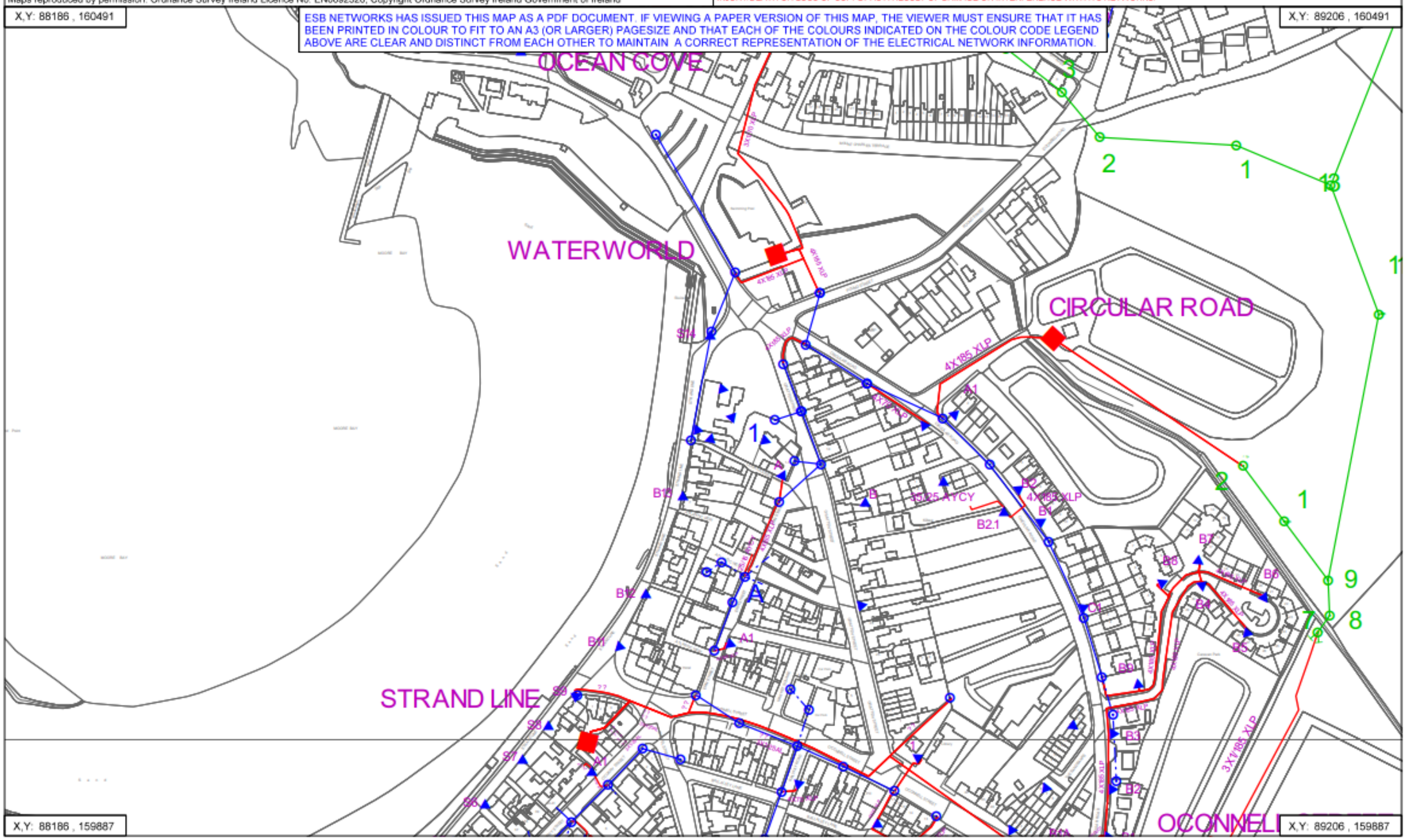
** SCALE: 1:2500

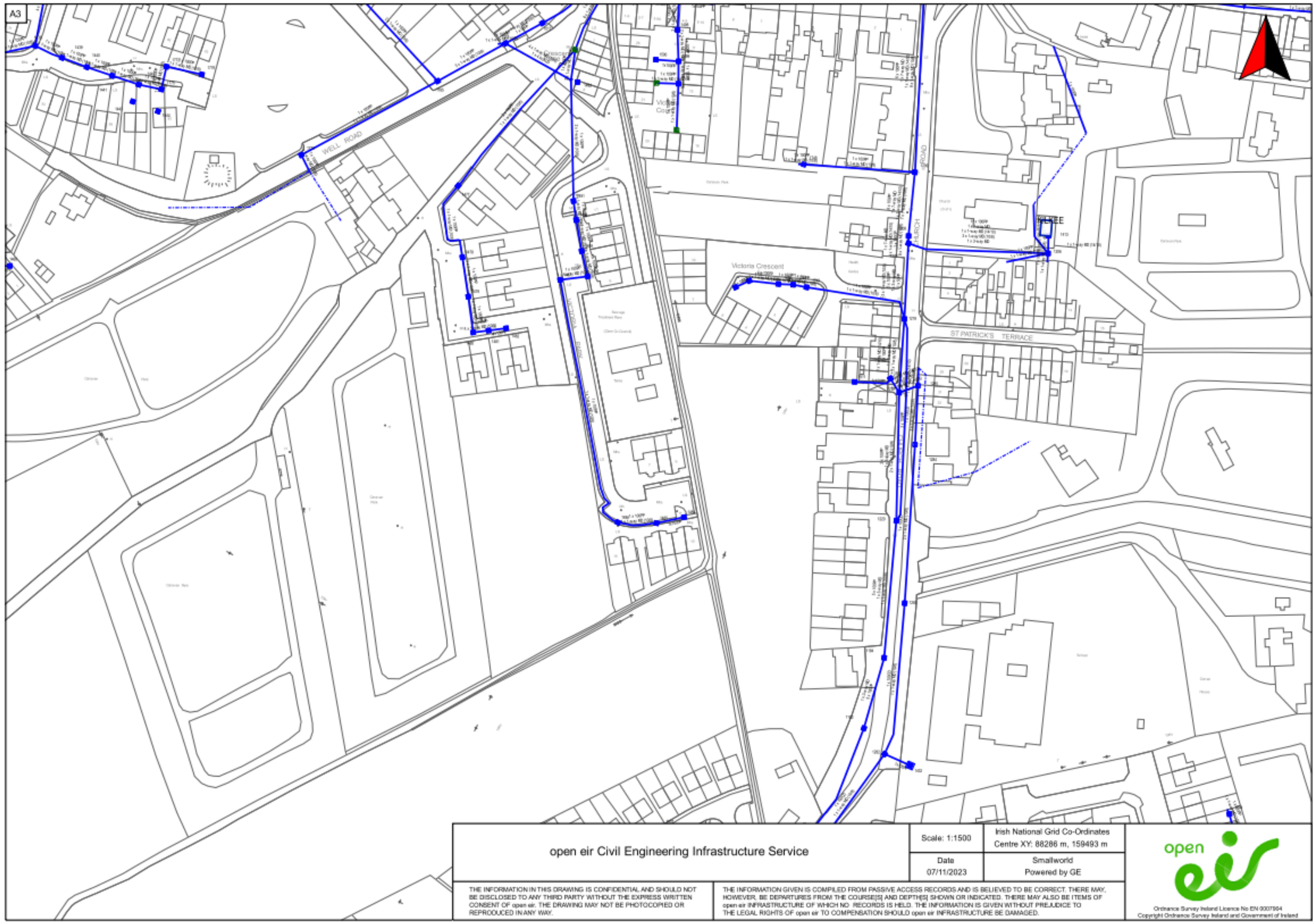
** SCALE WHEN PRINTED ON AN A3 PAGE
XY COORDINATES DISPLAYED IN IRISH GRID COORDINATE SYSTEM

WARNING

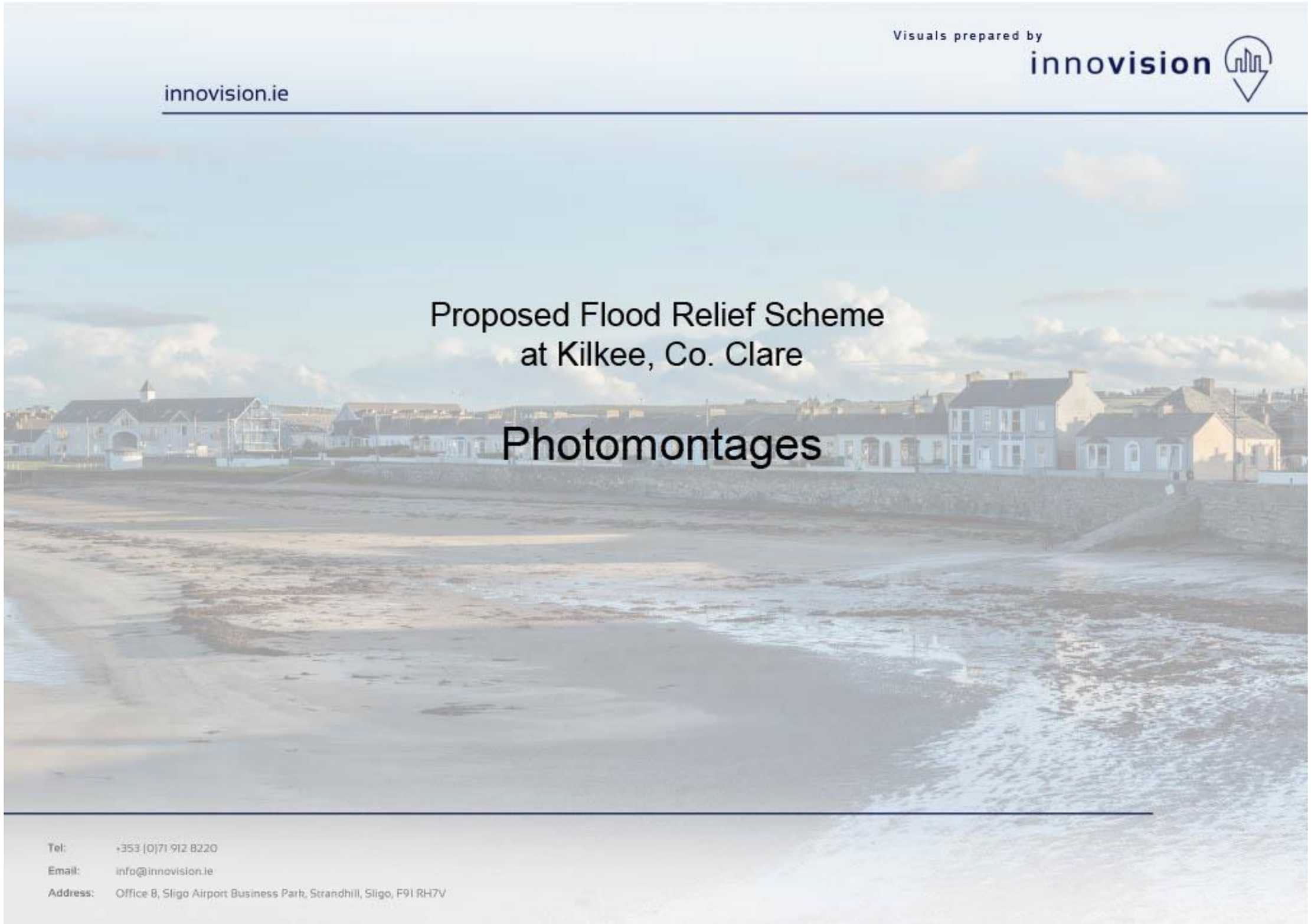
THIS MAP INDICATES THE APPROXIMATE LOCATION OF ESB TRANSMISSION (400KV, 220KV, 110KV, 38KV) AND DISTRIBUTION (20KV, 10KV, 230V/400V) UNDERGROUND CABLES AND OVERHEAD LINES IN THE GENERAL AREA OF THE PROPOSED WORKS. ESB NETWORKS TAKES NO RESPONSIBILITY FOR THE ACCURACY OR COMPLETENESS OF THE MAP. IT IS THE USER'S RESPONSIBILITY TO INDEPENDENTLY VERIFY THE INFORMATION AND THE LOCATION OF UNDERGROUND CABLES AND OVERHEAD LINES. LOW VOLTAGE (230V/400V) SERVICE CABLES (E.G. HOUSE SERVICES, FACTORY/SHOP SERVICES, PUBLIC LIGHTING LAMP SERVICES, ETC) ARE NOT INCLUDED BUT THEIR PRESENCE SHOULD BE ANTICIPATED. THE DEPTHS OF UNDERGROUND CABLES MUST NEVER BE ASSUMED. ADDITIONAL MORE DETAILED INFORMATION IS AVAILABLE FOR HIGH VOLTAGE TRANSMISSION UNDERGROUND CABLES (38KV, 110KV, 220KV, 400KV) FROM THE LOCAL ESB NETWORKS TRANSMISSION REPRESENTATIVE - SEE ATTACHED LIST FOR CONTACT DETAILS OR CALL 1850 372 757. NO WORK SHOULD BE CARRIED OUT IN THE VICINITY OF 38KV OR HIGHER VOLTAGE UNDERGROUND CABLES WITHOUT PRIOR CONSULTATION WITH ESB NETWORKS. BEFORE ANY MECHANICAL EXCAVATION IS UNDERTAKEN, THE ACTUAL LOCATION OF ALL UNDERGROUND ELECTRICITY CABLES MUST BE ESTABLISHED AND VERIFIED ON THE SITE USING: (A) UP-TO-DATE MAP RECORDS; (B) CABLE LOCATER EQUIPMENT OPERATED IN BOTH POWER AND RADIO MODES; (C) CAREFUL HAND DIGGING OF TRIAL HOLES USING 'SAFE DIGGING PRACTICE'. REFER ALSO TO 'HSA CODE OF PRACTICE FOR AVOIDING DANGER FROM UNDERGROUND SERVICES'. ESB TAKES NO RESPONSIBILITY FOR AND SHALL BEAR NO LIABILITY, HOWSOEVER ARISING, IN RELATION TO ANY DAMAGE, INJURY/DEATH OR LOSS OF SUPPLY AS A RESULT OF DAMAGE OR INTERFERENCE WITH ITS NETWORKS.

ESB NETWORKS HAS ISSUED THIS MAP AS A PDF DOCUMENT. IF VIEWING A PAPER VERSION OF THIS MAP, THE VIEWER MUST ENSURE THAT IT HAS BEEN PRINTED IN COLOUR TO FIT TO AN A3 (OR LARGER) PAGESIZE AND THAT EACH OF THE COLOURS INDICATED ON THE COLOUR CODE LEGEND ABOVE ARE CLEAR AND DISTINCT FROM EACH OTHER TO MAINTAIN A CORRECT REPRESENTATION OF THE ELECTRICAL NETWORK INFORMATION.




A3
WELL ROAD
Victoria Crescent
ST PATRICK'S TERRACE
open eir Civil Engineering Infrastructure Service
Scale: 1:1500
Irish National Grid Co-Ordinates
Centre XY: 88286 m, 159493 m
Date
07/11/2023
Smallworld
Powered by GE
THE INFORMATION IN THIS DRAWING IS CONFIDENTIAL AND SHOULD NOT BE DISCLOSED TO ANY THIRD PARTY WITHOUT THE EXPRESS WRITTEN CONSENT OF open eir. THE DRAWING MAY NOT BE PHOTOCOPIED OR REPRODUCED IN ANY WAY.
THE INFORMATION GIVEN IS COMPILED FROM PASSIVE ACCESS RECORDS AND IS BELIEVED TO BE CORRECT. THERE MAY, HOWEVER, BE DEPARTURES FROM THE COURSE[S] AND DEPTH[S] SHOWN OR INDICATED. THERE MAY ALSO BE ITEMS OF open eir INFRASTRUCTURE OF WHICH NO RECORDS IS HELD. THE INFORMATION IS GIVEN WITHOUT PREJUDICE TO THE LEGAL RIGHTS OF open eir TO COMPENSATION SHOULD open eir INFRASTRUCTURE BE DAMAGED.
open
Ordnance Survey Ireland Licence No EN 0007964
Copyright Ordnance Survey Ireland and Government of Ireland

Appendix G Photomontages


Visuals prepared by
innovision
innovision.ie
Proposed Flood Relief Scheme
at Kilkee, Co. Clare
Photomontages
Tel: +353 (0)71 912 8220
Email: info@innovision.ie
Address: Office 8, Sligo Airport Business Park, Strandhill, Sligo, F91 RH7V

Viewpoint Location Map

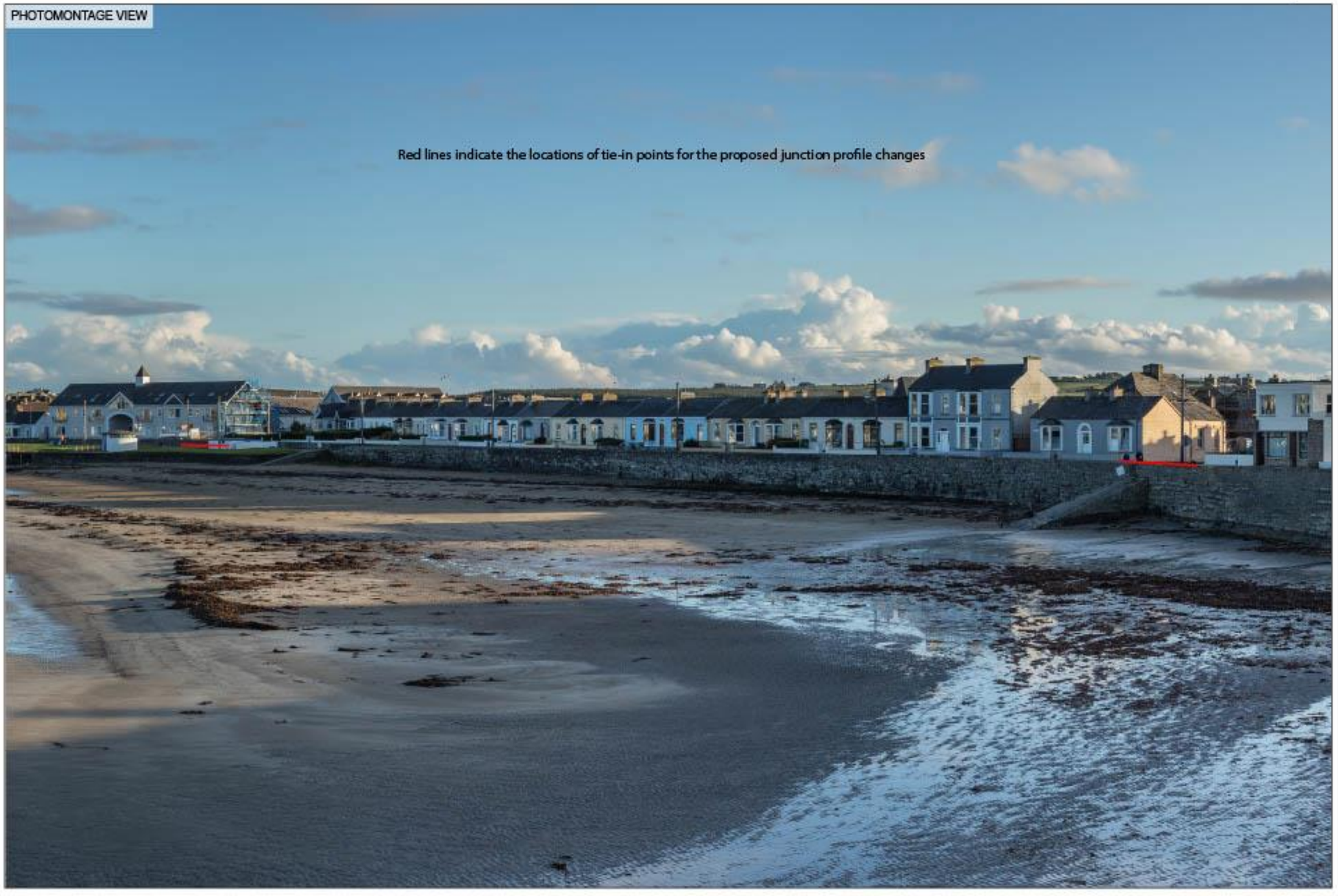
innovision
innovision.ie

Kilkee Flood Relief Scheme | View from Marine Parade | Viewpoint 2

Viewpoint Location & Capture Information	Camera Information	Visuals prepared by
Location (ITM): 488044.06, 660024.15 Camera Level (Metres Above Ordnance Datum): 10.4 Date & Time: 24/10/2023, 5:20 PM	Camera: Canon 5D Mark IV Lens: Canon EF 50mm f/1.4 USM Focal Length: 50mm	innovision Sligo Airport Business Park Strandhill Sligo www.innovision.ie +353(0)71 - 913 8220

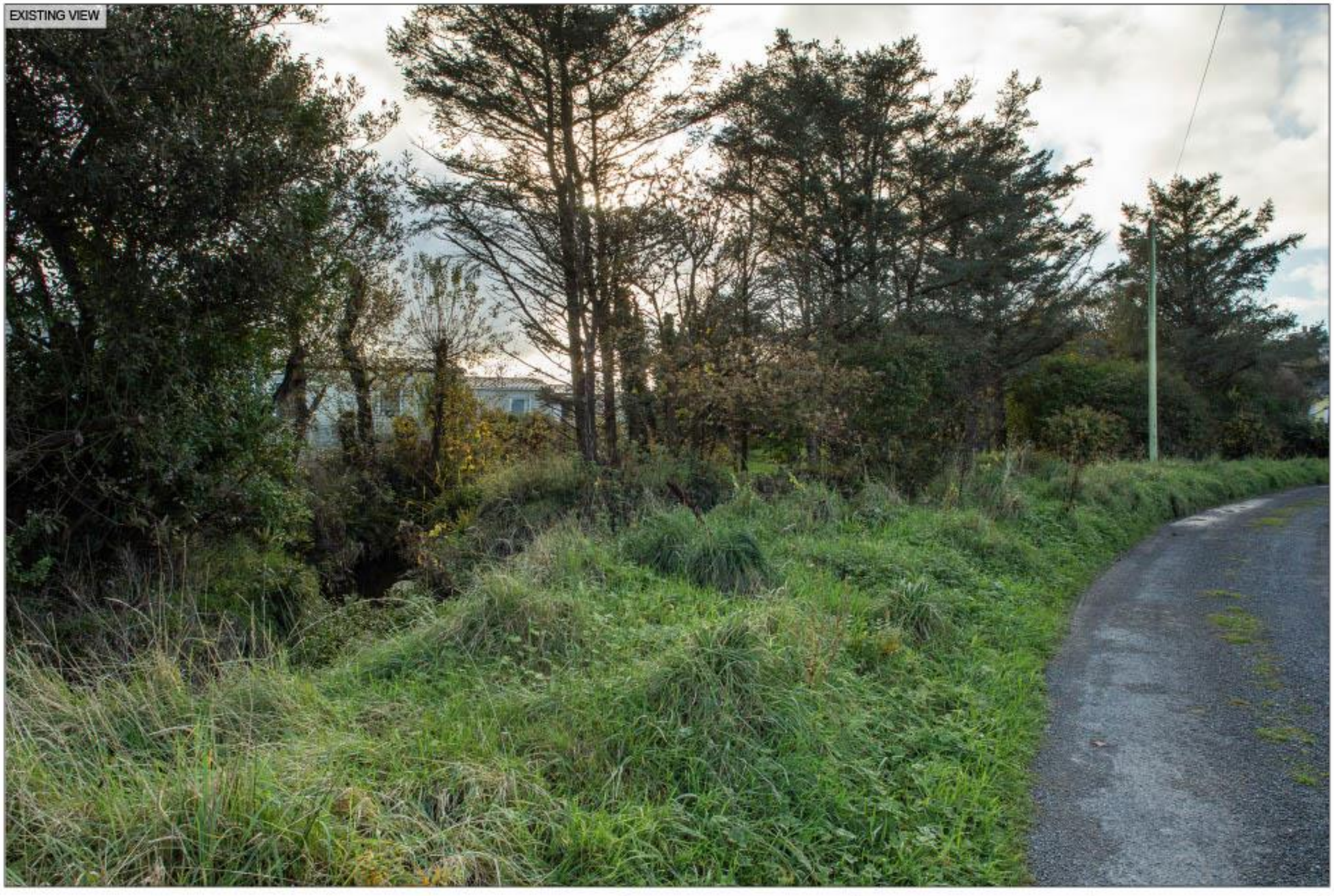
Kilkee Flood Relief Scheme | View from Marine Parade | Viewpoint 2

PHOTOMONTAGE VIEW



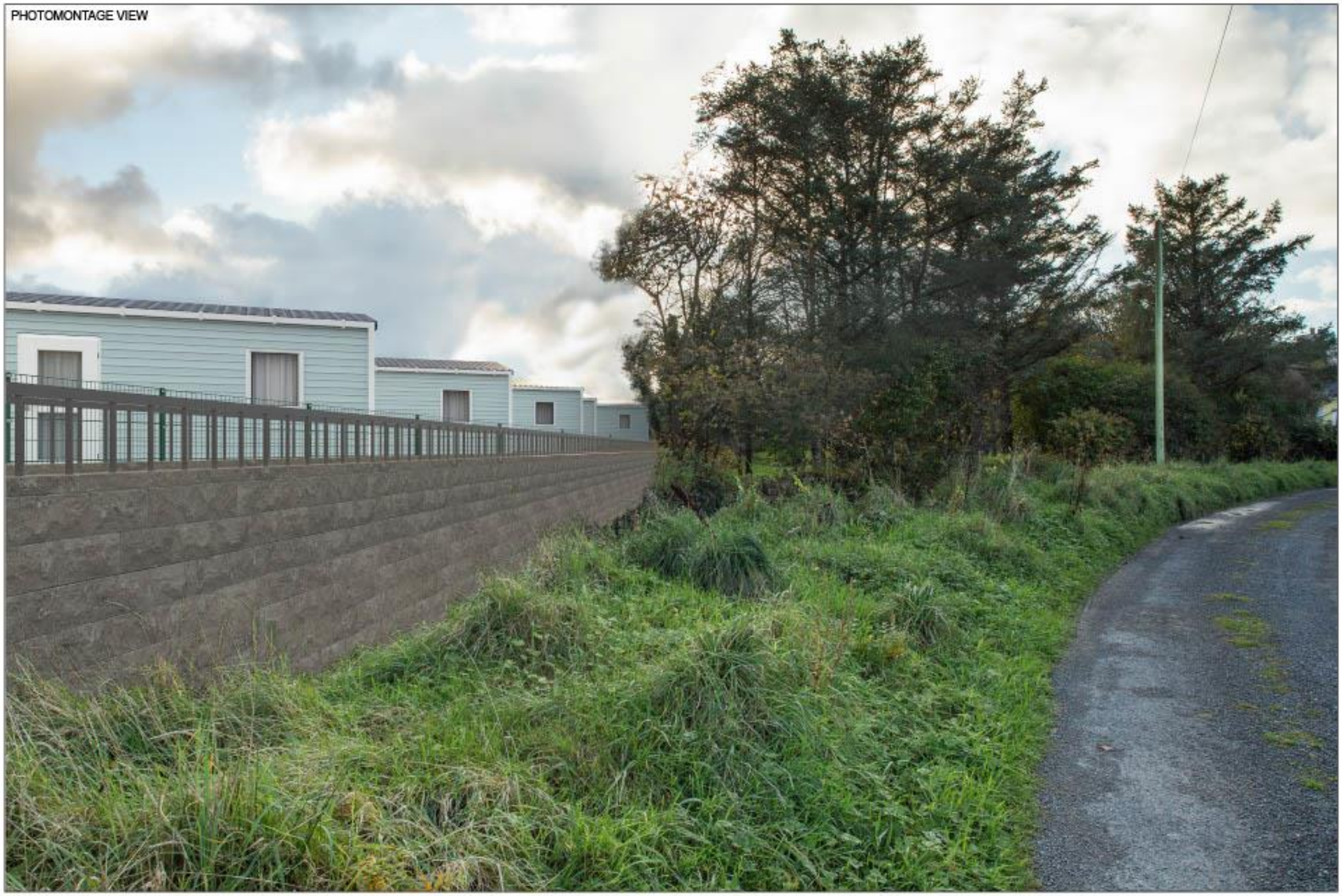
Viewpoint Location & Capture Information	Camera Information	Visuals prepared by
Location (ITM): 488044.06, 660024.15 Camera Level (Metres Above Ordnance Datum): 10.4 Date & Time: 24/10/2023, 5:20 PM	Camera: Canon 5D Mark IV Lens: Canon EF 50mm f/1.4 USM Focal Length: 50mm	innovision Sligo Airport Business Park Strandhill Sligo www.innovision.ie +353(0)71 - 913 8220

Kilkee Flood Relief Scheme | View from Well Road | Viewpoint 3



Viewpoint Location & Capture Information	Camera Information	Visuals prepared by
Location (ITM): 488049.38, 659651.53 Camera Level (Metres Above Ordnance Datum): 6.3 Date & Time: 24/10/2023, 4:48 PM	Camera: Canon 5D Mark IV Lens: Canon TS-E 24mm f/3.5L Focal Length: 24mm	innovision Sligo Airport Business Park Strandhill Sligo www.innovision.ie +353(0)71 - 913 8210

Kilkee Flood Relief Scheme | View from Well Road | Viewpoint 3



Viewpoint Location & Capture Information	Camera Information	Visuals prepared by
Location (ITM): 488049.38, 659651.53 Camera Level (Metres Above Ordnance Datum): 6.3 Date & Time: 24/10/2023, 4:48 PM	Camera: Canon 5D Mark IV Lens: Canon TS-E 24mm f/3.5L Focal Length: 24mm	innovision Sligo Airport Business Park Strandhill Sligo www.innovision.ie +353(0)71 - 913 8220

Kilkee Flood Relief Scheme | View from Well Road | Viewpoint 4

Viewpoint Location & Capture Information	Camera Information	Visuals prepared by
Location (ITM): 488108.42, 659681.18 Camera Level (Metres Above Ordnance Datum): 6.4 Date & Time: 24/10/2023, 4:58 PM	Camera: Canon 5D Mark IV Lens: Canon TS-E 24mm f/3.5L Focal Length: 24mm	innovision Sligo Airport Business Park Strandhill Sligo www.innovision.ie +353(0)71 - 912 3220

Kilkee Flood Relief Scheme | View from Well Road | Viewpoint 4

Viewpoint Location & Capture Information	Camera Information	Visuals prepared by
Location (ITM): 488108.42, 659681.18 Camera Level (Metres Above Ordnance Datum): 6.4 Date & Time: 24/10/2023, 4:58 PM	Camera: Canon 5D Mark IV Lens: Canon TS-E 24mm f/3.5L Focal Length: 24mm	innovision Sligo Airport Business Park Strandhill Sligo www.innovision.ie +353(0)71 - 913 8220

Kilkee Flood Relief Scheme | View from St. Joseph's Community College | Viewpoint 8

Viewpoint Location & Capture Information	Camera Information	Visuals prepared by
Location (ITM): 488377.77, 659426.11 Camera Level (Metres Above Ordnance Datum): 7.8 Date & Time: 24/10/2023, 4:23 PM	Camera: Canon 5D Mark IV Lens: Canon TS-E 24mm f/3.5L Focal Length: 24mm	innovision Sligo Airport Business Park Strandhill Sligo www.innovision.ie +353(0)71 - 913 8220

Kilkee Flood Relief Scheme | View from St. Joseph's Community College | Viewpoint 8

Viewpoint Location & Capture Information	Camera Information	Visuals prepared by
Location (ITM): 488377.77, 659426.11 Camera Level (Metres Above Ordnance Datum): 7.8 Date & Time: 24/10/2023, 4:23 PM	Camera: Canon 5D Mark IV Lens: Canon TS-E 24mm f/3.5L Focal Length: 24mm	innovision Sligo Airport Business Park Strandhill Sligo www.innovision.ie +353(0)71 - 913 8220

Kilkee Flood Relief Scheme

View from Church Road

Viewpoint 9

Viewpoint Location & Capture Information	Camera Information	Visuals prepared by
Location (ITM): 488377.72, 659545.45 Camera Level (Metres Above Ordnance Datum): 6.8 Date & Time: 24/10/2023, 4:12 PM	Camera: Canon 5D Mark IV Lens: Canon TS-E 24mm f/3.5L Focal Length: 24mm	innovision Sligo Airport Business Park Strandhill Sligo www.innovision.ie +353(0)71 - 913 8220

Kilkee Flood Relief Scheme

View from Church Road

Viewpoint 9

Viewpoint Location & Capture Information	Camera Information	Visuals prepared by
Location (ITM): 488377.72, 659545.45 Camera Level (Metres Above Ordnance Datum): 6.8 Date & Time: 24/10/2023, 4:12 PM	Camera: Canon 5D Mark IV Lens: Canon TS-E 24mm f/3.5L Focal Length: 24mm	innovision Sligo Airport Business Park Strandhill Sligo www.innovision.ie +353(0)71 - 913 8220

Kilkee Flood Relief Scheme | View from Kilkee Beach | Viewpoint 10

Viewpoint Location & Capture Information	Camera Information	Visuals prepared by
Location (ITM): 488652.46, 660351.60 Camera Level (Metres Above Ordnance Datum): 6.0 Date & Time: 24/10/2023, 3:32 PM	Camera: Canon 5D Mark IV Lens: Canon TS-E 24mm f/3.5L Focal Length: 24mm	innovision Sligo Airport Business Park Strandhill Sligo www.innovision.ie +353(0)71 - 913 8220

Kilkee Flood Relief Scheme | View from Kilkee Beach | Viewpoint 10

Viewpoint Location & Capture Information	Camera Information	Visuals prepared by
Location (ITM): 488652.46, 660351.60 Camera Level (Metres Above Ordnance Datum): 6.0 Date & Time: 24/10/2023, 3:32 PM	Camera: Canon 5D Mark IV Lens: Canon TS-E 24mm f/3.5L Focal Length: 24mm	innovision Sligo Airport Business Park Strandhill Sligo www.innovision.ie +353(0)71 - 913 8220

Kilkee Flood Relief Scheme | View from Kilkee Waterword CLG | Viewpoint 11

Viewpoint Location & Capture Information	Camera Information	Visuals prepared by
Location (ITM): 488766.79, 660375.73 Camera Level (Metres Above Ordnance Datum): 9.0 Date & Time: 24/10/2023, 3:39 PM	Camera: Canon 5D Mark IV Lens: Canon TS-E 24mm f/3.5L Focal Length: 24mm	innovision Sligo Airport Business Park Strandhill Sligo www.innovision.ie +353(0)71 - 913 8220

Kilkee Flood Relief Scheme

View from Kilkee Waterword CLG

Viewpoint 11

Viewpoint Location & Capture Information	Camera Information	Visuals prepared by
Location (ITM): 488766.79, 660375.73 Camera Level (Metres Above Ordnance Datum): 9.0 Date & Time: 24/10/2023, 3:39 PM	Camera: Canon 5D Mark IV Lens: Canon TS-E 24mm f/3.5L Focal Length: 24mm	innovision Sligo Airport Business Park Strandhill Sligo www.innovision.ie +353(0)71 - 913 8220

Kilkee Flood Relief Scheme | View from Kilkee Bay Apartments | Viewpoint 13

Viewpoint Location & Capture Information	Camera Information	Visuals prepared by
Location (ITM): 489011.24, 659749.64 Camera Level (Metres Above Ordnance Datum): 14.0 Date & Time: 24/10/2023, 3:56 PM	Camera: Canon 5D Mark IV Lens: Canon TS-E 24mm f/3.5L Focal Length: 24mm	innovision Sligo Airport Business Park Strandhill Sligo www.innovision.ie +353(0)71 - 913 8220

Kilkee Flood Relief Scheme

View from Kilkee Bay Apartments

Viewpoint 13

Viewpoint Location & Capture Information	Camera Information	Visuals prepared by
Location (ITM): 489011.24, 659749.64 Camera Level (Metres Above Ordnance Datum): 14.0 Date & Time: 24/10/2023, 3:56 PM	Camera: Canon 5D Mark IV Lens: Canon TS-E 24mm f/3.5L Focal Length: 24mm	innovision Sligo Airport Business Park Strandhill Sligo www.innovision.ie +353(0)71 - 913 8220

Offices at:
Dublin
Limerick
Cork

JBA Registered Office
24 Grove Island
Corbally, Limerick
Ireland
+353 61 507400
info@jbaconsulting.ie
www.jbaconsulting.ie