Appendix B11

Proposed Surface Water Drainage Works

BUSCONNECTS DUBLIN
CORE BUS CORRIDORS INFRASTRUCTURE WORKS

RINGSEND TO CITY CENTRE CORE BUS CORRIDOR SCHEME

PROPOSED SURFACE WATER DRAINAGE WORKS

DRAWING SERIES NUMBER(S)	DRAWING SERIES DESCRIPTION
BCIDD-ROT-DNG_IX-0016_XX_00-DR-CD-0001	RINGSEND TO CITY CENTRE CORE BUS CORRIDOR SCHEME. PROPOSED SURFACE WATER DRAINAGE WORKS. COVER SHEET
BCIDD-ROT-DNG_KP-0016_XX_00-DR-CD-0001	RINGSEND TO CITY CENTRE CORE BUS CORRIDOR SCHEME. PROPOSED SURFACE WATER DRAINAGE WORKS. KEY PLAN
BCIDD-ROT-DNG_RD-0016_XX_00-DR-CD-0001 to 0012	RINGSEND TO CITY CENTRE CORE BUS CORRIDOR SCHEME. PROPOSED SURFACE WATER DRAINAGE WORKS. DRAWINGS.
BCIDD-ROT-DNG_RD-0016_XX_00-DR-CD-1001	RINGSEND TO CITY CENTRE CORE BUS CORRIDOR SCHEME. OVERALL CATCHMENT AREAS. DRAWINGS.

Project Ireland 2040 Building Ireland's Future

Rev	Date	Drn	Chk'd	App'd	Description
M01	MAR 2023	DS	EOC	SMG	ISSUE FOR PHASE 4: PLANNING

Client: NTA Údarás Náisiúnta Iompair National Transport Authority		Engineering Designer: ROD ROUGHAN & O'DONOVAN TYPSA	
Date: MAR 2023	Scale: NTS @ A1 NTS @ A3	Drawn: DS	Checked: EOC / Approved: SMG
Programme Code: BCIDD	Originator Code: ROT	QMS Code	

Programme Title: BUSCONNECTS DUBLIN CORE BUS CORRIDORS INFRASTRUCTURE WORKS

Drawing Title: RINGSEND TO CITY CENTRE CORE BUS CORRIDOR SCHEME PROPOSED SURFACE WATER DRAINAGE WORKS COVER SHEET

Drawing File Name	Sheet Number	Status	Rev
BCIDD-ROT-DNG_IX-0016_XX_00-DR-CD-0001	01 of 01	A	M01

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PHIBSBOROUGH
CROKE PARK
FAIRVIEW
CLONTARF
EAST WALL
TU DUBLIN CAMPUS
CONOLLY STATION
DUBLIN PORT
O' CONNELL STREET
INSERT 03
NORTH WALL
SHEET 01
SHEET 02
SHEET 03
SHEET 04
SHEET 05
SHEET 06
SHEET 07
SHEET 08
SHEET 09
SHEET 10
SHEET 11
SHEET 12
RIVER LIFFEY
TRINITY COLLEGE
GRAND CANAL DOCK
DUBLIN CASTLE
SAINT STEPHENS GREEN
RINGSEND
GRAND CANAL
BALLSBRIDGE
SANDYMOUNT
RANELAGH
RATHMINES
DONNYBROOK
IRISHTOWN NATURE PARK
SEAN MOORE PARK

0 100 200 400 600 800 1000m

SCALE 1:10000 @ A1; 1:20000 @ A3

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Engineering Designer: ROD Roughan & O'Donovan TYPSA

Programme Title: BUSCONNECTS DUBLIN
CORE BUS CORRIDORS INFRASTRUCTURE WORKS

Drawing Title: RINGSEND TO CITY CENTRE SCHEME CORE BUS CORRIDOR SCHEME
PROPOSED SURFACE WATER DRAINAGE WORKS
KEYPLAN

Date	Scale	Drawn	Checked	Approved
MAR 2023	1:10,000 @ A1 1:20,000 @ A3	DS	EOC	SMG

Programme Code	Originator Code	QMS Code
BCIDD	ROT	

Drawing File Name	Sheet Number	Status	Rev
BCIDD-ROT-DNG_KP-0016_XX_00-DR-CD-0001	01 of 01	A	M01

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GEORGE'S DOCK
IFSC HOUSE
CUSTOM HOUSE QUAY
CHQ
JURY'S INN HOTEL
COMMONS STREET
EXCHANGE PLACE
Area Under Construction
Recreational Complex
Jetty
SHEET 01
SHEET 02
TIE INTO EXISTING
TALBOT MEMORIAL BRIDGE
Talbot Memorial Bridge
River Liffey
An Life
A 1613
A 1600
A 1550
A 1500
A 1450
A 1400
A 1350
A 1300
A 1250
B 1000
B 10050
B 10100
B 10150
B 10200
B 10250
B 10300
B 10350
SEAN O'CASEY BRIDGE
CITY QUAY
HWM
MOSS STREET
PRINCE STREET SOUTH
LOMBARD STREET EAST
CREIGHTON STREET
Immaculate Heart Of Mary
City Quay National
PETERSON'S COURT
LOMBARD STREET
1-4
25
7,8
19,20
21-23
3
29,29a
31,31a
32,32a
33,33a
34,34a
36,36a
37
37a
38
38a
39
39a
40
40a
42,42a
43
43a
44
44a
45
45a
46
46a
50
1
1a
2
3
3a
4
5a
7a

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3. STORMWATER DRAINAGE TO BE CONSTRUCTED IN ACCORDANCE WITH THE GREATER DUBLIN REGIONAL CODE OF PRACTICE FOR DRAINAGE WORKS AND/OR THE DRAINAGE DESIGN BASIS REPORT FOR CBC BUSCONNECTS.
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6. EXISTING MANHOLE COVERS SHALL BE ADJUSTED TO MATCH FINISHED SURFACES.
7. ALL THE EXISTING GULLIES THAT ARE NOT ADJACENT TO THE PROPOSED KERBLINE WILL BE REMOVED AND REPLACED BY NARROW PROFILE GULLIES WHICH SHALL BE RELOCATED AT THE PROPOSED ROAD KERBLINE.
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10. ALL SUDS FEATURES SHALL PROVIDE SURFACE WATER QUALITY TREATMENT.
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ABBREVIATIONS:

ADR: ALLOWABLE DISCHARGE RATE
Vol_{att}: VOLUME OF ATTENUATION

LEGEND:

- ADDITIONAL CATCHMENT AREA (EXISTING GRASSED AREA TO BE PAVED)
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- EXISTING GRASSED AREAS TO BE MAINTAINED
- EXISTING FOUL NETWORK
- EXISTING COMBINED DRAINAGE NETWORK
- EXISTING SURFACE WATER NETWORK
- EXISTING OVERFLOW PIPE
- SURFACE WATER PIPE - UNDER CONSTRUCTION
- PROPOSED STORM WATER PIPE
- PROPOSED OVERSIZED PIPE
- PROPOSED FILTER DRAIN/PERFORATED PIPE
- PROPOSED PERMEABLE PAVING
- PROPOSED RODDING EYE
- PROPOSED MANHOLE
- PROPOSED INSPECTION CHAMBER
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- EXISTING TREE TO BE REMOVED
- PROPOSED NEW TREE
- PROPOSED NEW TREE PIT
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- SITE BOUNDARY LINE
- TEMPORARY LAND ACQUISITION

NOTE: PIPE SHAPE CODES DN = CIRCLULAR, RG = RECTANGULAR, EG = EGG SHAPED, AH= ARCH.

0 5.0 10.0 20.0 30.0 40.0 50.0m
SCALE 1:500 @ A1; 1:1000 @ A3

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Drawing Title: RINGSEND TO CITY CENTRE CORE BUS CORRIDOR SCHEME
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Drawing File Name	Sheet Number	Status	Rev
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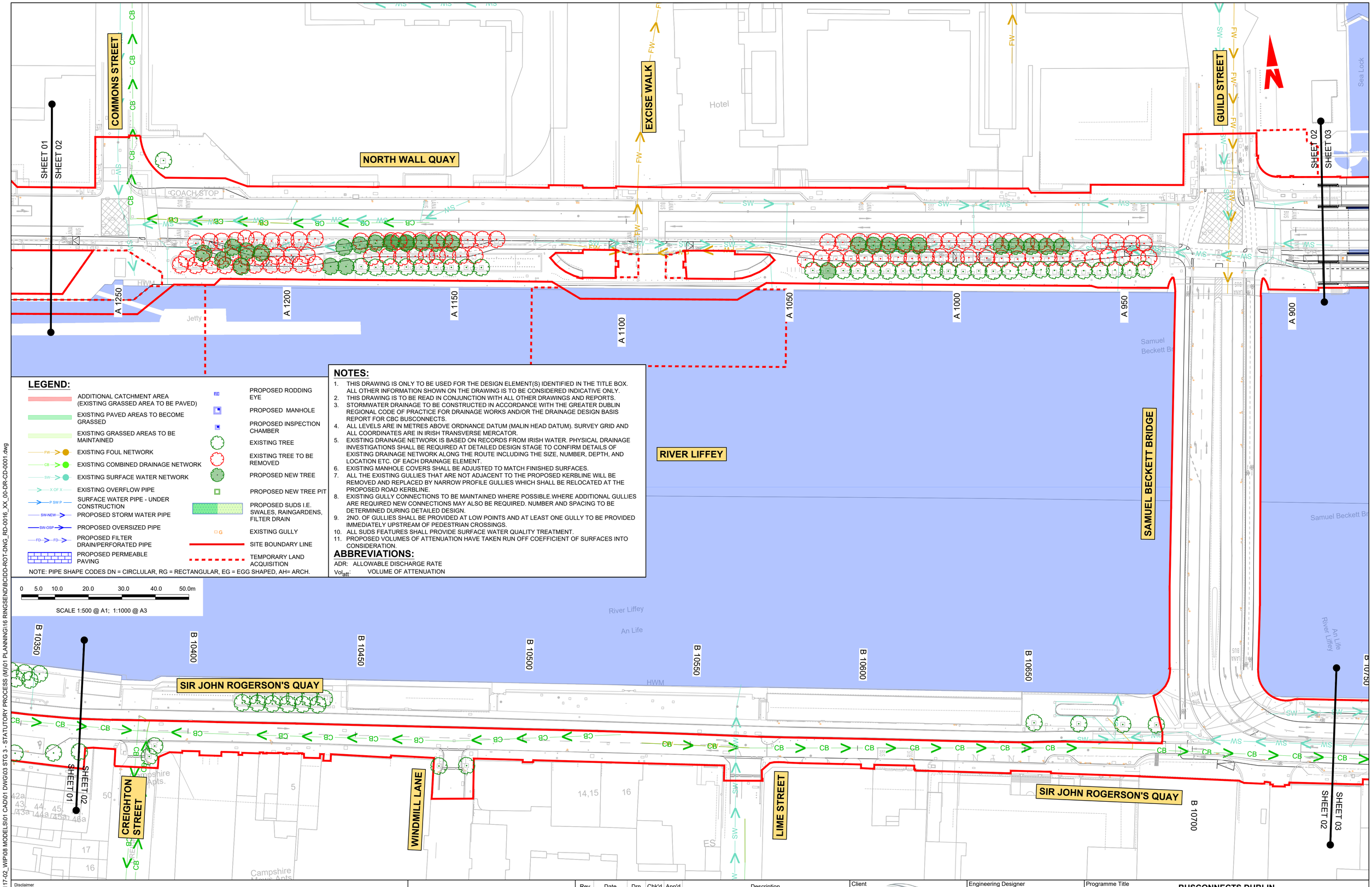

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Drawing Title	RINGSEND TO CITY CENTRE CORE BUS CORRIDOR SCHEME PROPOSED SURFACE WATER DRAINAGE WORKS
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Drawn	DS
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Programme Code	BCIDD
Originator Code	ROT
QMS Code	
Drawing File Name	BCIDD-ROT-DNG_RD-0016_XX_00-DR-CD-0002
Sheet Number	02 of 12
Status	A
Rev	M01

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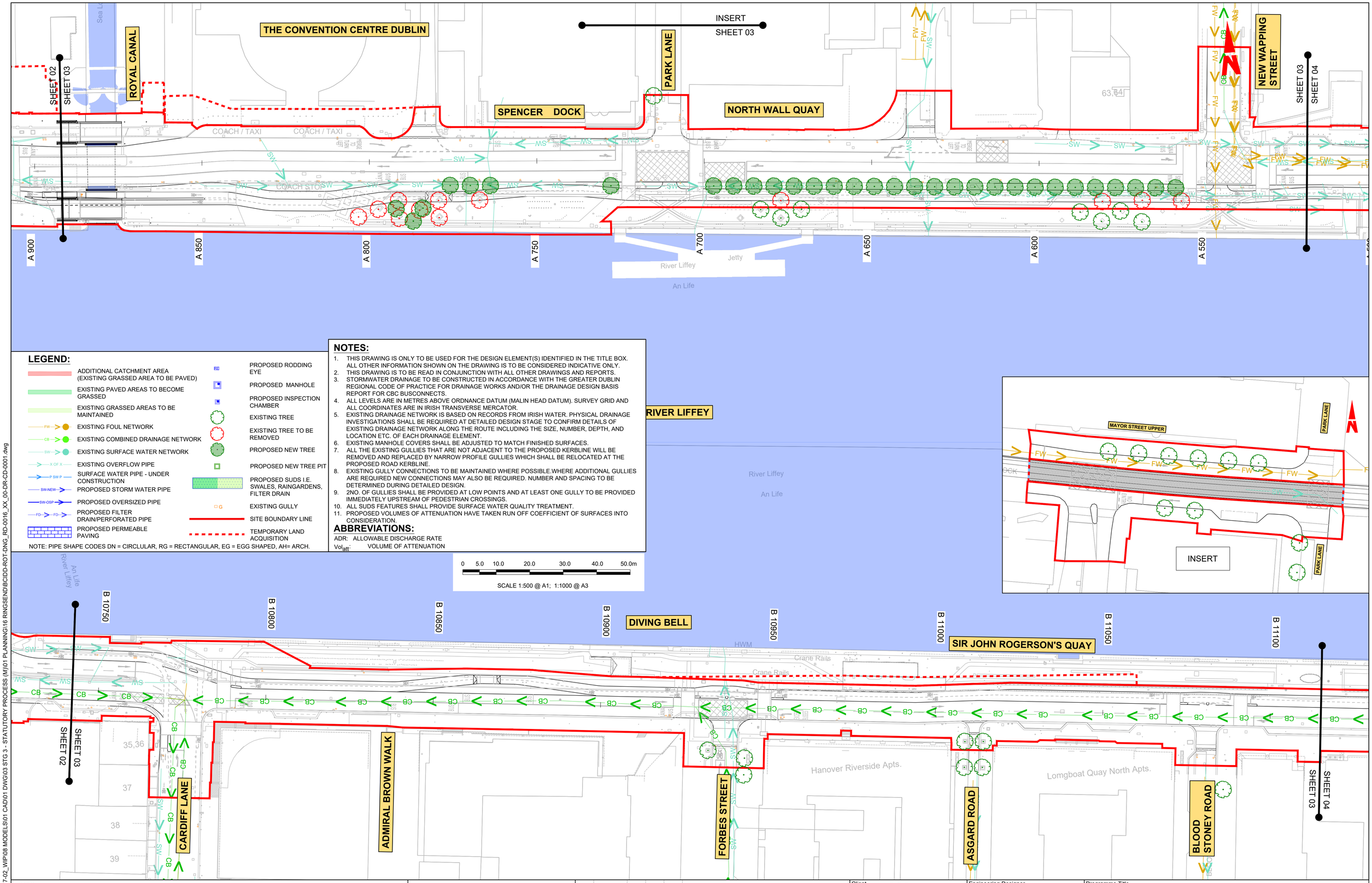

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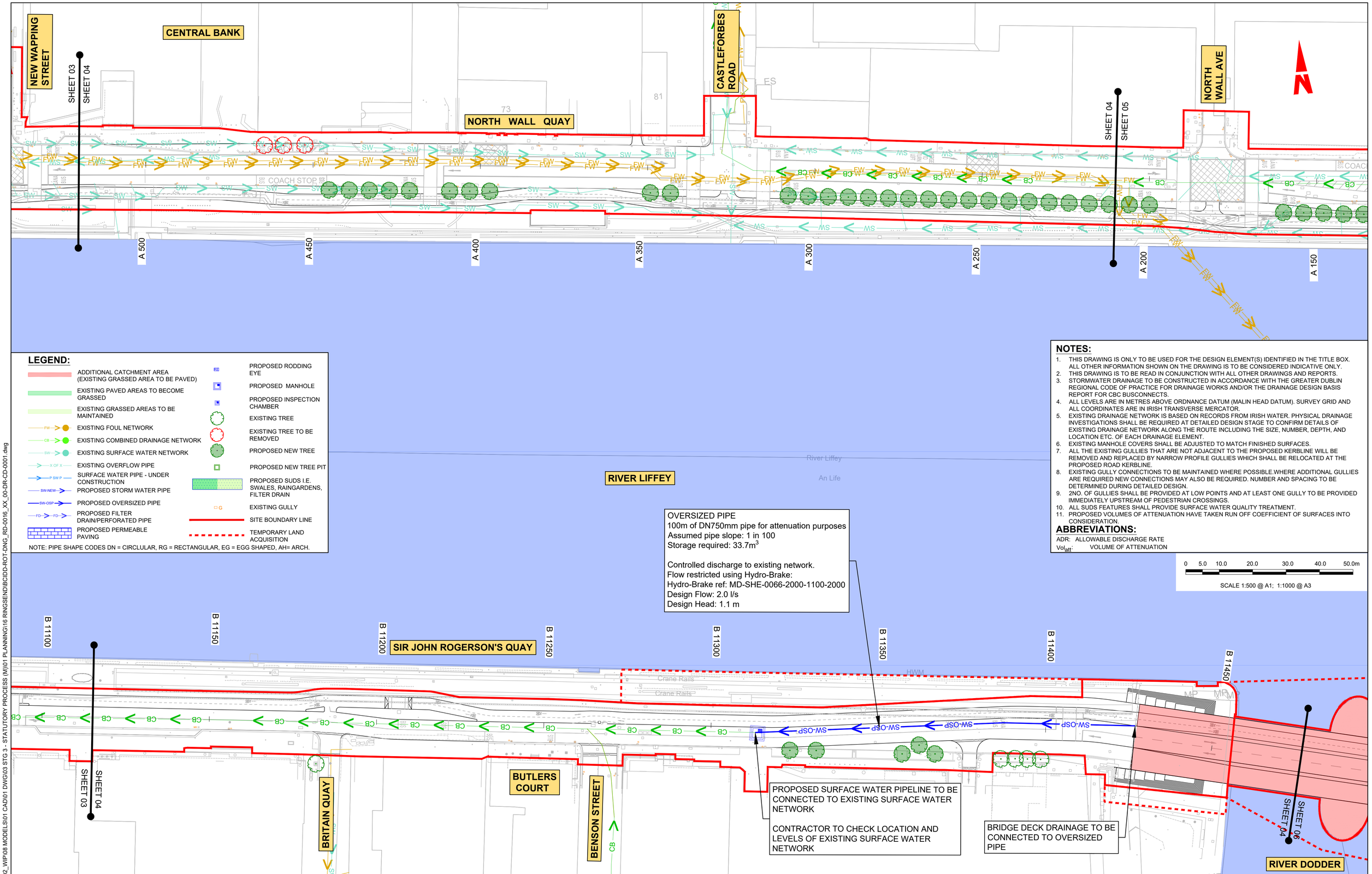

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NORTH WALL AVE

3 ARENA

NORTH WALL QUAY

EAST WALL ROAD

TOM CLARKE BRIDGE

RIVER LIFFEY

RIVER DODDER

SHEET 04

SHEET 05

SHEET 06

A 200

A 150

A 100

A 50

B 11400

B 11450

B 11500

B 11550

B 11600

B 11628

C 20000

C 20050

C 20060

D 30000

Additional impermeable area = 6627m²
NO OVERFLOW
OUTFLOW to Existing Drainage
Draining Dodder Bridge to existing Drainage on both sides of bridge

OVERSIZED PIPE
150m of 1500x1000mm box culvert for attenuation purposes
Assumed pipe slope: 1 in 200
Storage required: 222.4m³

Controlled discharge to existing network.
Flow restricted using Hydro-Brake:
Hydro-Brake ref: MD-SHE-0061-2000-1500-2000
Design Flow: 2.0l/s
Design Head: 1.5m

GE DECK DRAINAGE TO BE
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NOTE: PIPE SHAPE CODES DN = CIRCLULAR, RG = RECTANGULAR, EG = EGG SHAPED, AH= ARCH.

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ABBREVIATIONS:

ADR: ALLOWABLE DISCHARGE RATE
Vol_{att}: VOLUME OF ATTENUATION

0 5.0 10.0 20.0 30.0 40.0 50.0m

SCALE 1:500 @ A1; 1:1000 @ A3

Project Ireland 2040 Building Ireland's Future

Rev	Date	Drn	Chk'd	App'd	Description
M01	MAR 2023	DS	EOC	SMG	ISSUE FOR PHASE 4: PLANNING

Client: NTA Údarás Náisiúnta Iompair National Transport Authority

Engineering Designer: ROD ROBERTSON & O'DONOVAN TYPSA

Programme Title: BUSCONNECTS DUBLIN
CORE BUS CORRIDORS INFRASTRUCTURE WORKS

Drawing Title: RINGSEND TO CITY CENTRE CORE BUS CORRIDOR SCHEME
PROPOSED SURFACE WATER DRAINAGE WORKS

Date	Scale	Drawn	Checked	Approved
MAR 2023	1:500 @ A1 1:1000 @ A3	DS	EOC	SMG

Programme Code	Originator Code	QMS Code
BCIDD	ROT	

Drawing File Name	Sheet Number	Status	Rev
BCIDD-ROT-DNG_RD-0016_XX_00-DR-CD-0005	05 of 12	A	M01

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Additional impermeable area = 6627m²
NO OVERFLOW
OUTFLOW to Existing Drainage
Draining Dodder Bridge to existing Drainage on both sides of bridge

OVERSIZED PIPE
150m of 1500x1000mm box culvert for attenuation purposes
Assumed pipe slope: 1 in 200
Storage required: 222.4m³

Controlled discharge to existing network.
Flow restricted using Hydro-Brake:
Hydro-Brake ref: MD-SHE-0061-2000-1500-2000
Design Flow: 2.0l/s
Design Head: 1.5m

BRIDGE DECK DRAINAGE TO BE CONNECTED TO OVERSIZED PIPE

PROPOSED SURFACE WATER PIPELINE TO BE CONNECTED TO EXISTING SURFACE WATER NETWORK

CONTRACTOR TO CHECK LOCATION AND LEVELS OF EXISTING SURFACE WATER NETWORK

RIVER LIFFEY
RIVER DODDER
THORNCASTLE COURT
EAST LINK TOLL BOOTH
EAST LINK TOLL PLAZA
YORK ROAD
PEMBROKE COTTAGES
RINGSEND COLLEGE
YORK ROAD
Thorncastle Court Apts.
Portview Apts.
Fishermans Wharf Apts.
Noamh Pádraig Rinn Mhuirfean
Ringsend Technical Institute
River Dodder
An Dothra
HWM
FISHERMANS WHARF
B 11500
B 11550
B 11600
B 11628
C 20000
C 20050
C 20099
D 30000
D 30050
D 30100
D 30141
E 40000
E 40050
E 40100
E 40150
F 50000
F 50050
G 60000
G 60050
SHEET 04
SHEET 06
SHEET 07
SHEET 10

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Drawing File Name	Sheet Number	Status	Rev
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RIVER LIFFEY

EAST LINK TOLL BOOTH

HWM

E 40100 E 40150 E 40200 E 40250 E 40300 E 40350 E 40400 E 40450

EAST LINK ROAD

YORK ROAD

PIGEON HOUSE ROAD

RINGSEND PARK

SHEET 06

SHEET 07

SHEET 08

RINGSEND COLLEGE

Ringsend College

Ringsend Technical Institute

ES

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Programme Title: BUSCONNECTS DUBLIN CORE BUS CORRIDORS INFRASTRUCTURE WORKS

Drawing Title: RINGSEND TO CITY CENTRE CORE BUS CORRIDOR SCHEME PROPOSED SURFACE WATER DRAINAGE WORKS

Drawing File Name	Sheet Number	Status	Rev
BCIDD-ROT-DNG_RD-0016_XX_00-DR-CD-0007	07 of 12	A	M01

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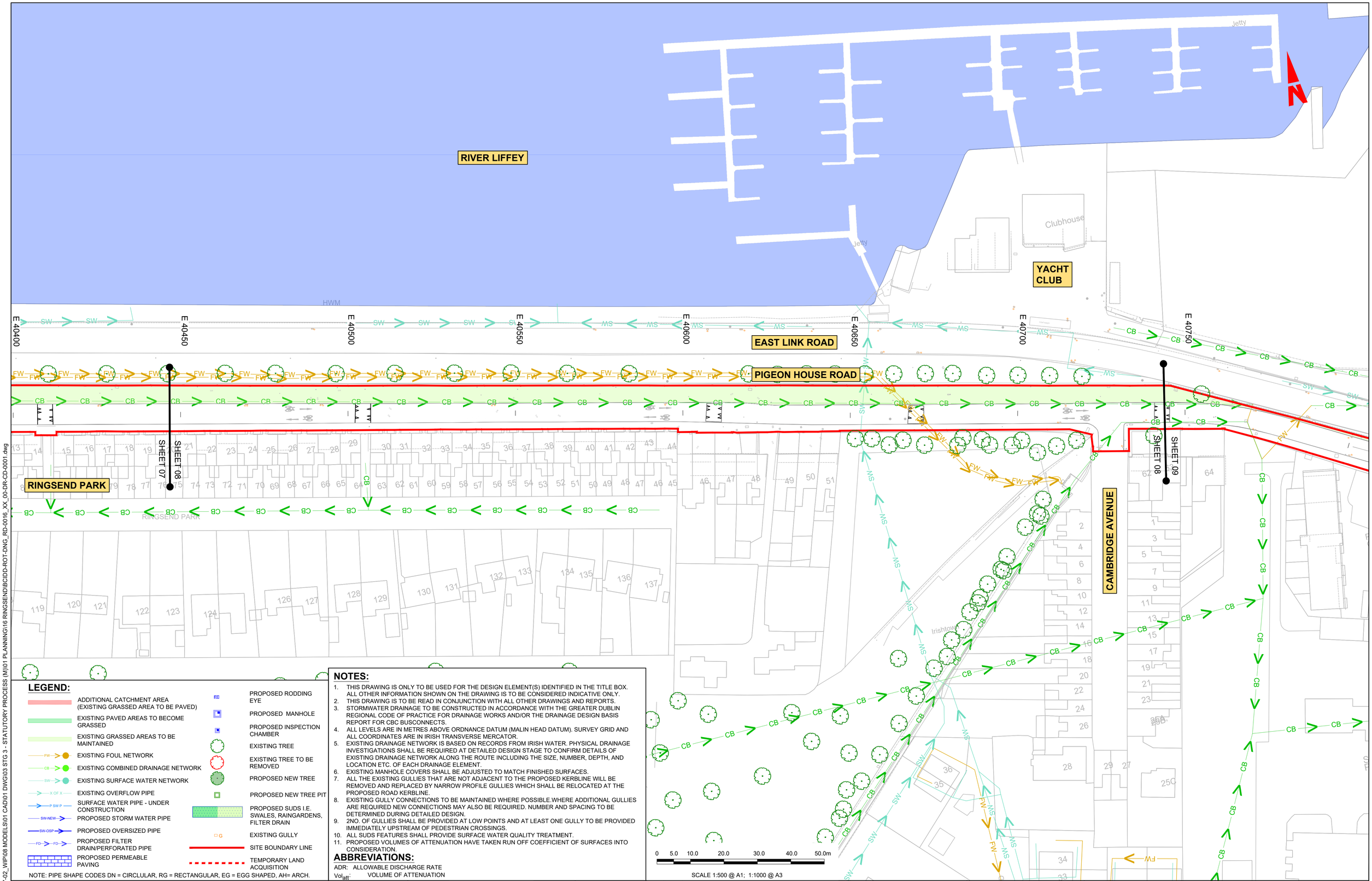

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Date: MAR 2023	Scale: 1:500 @ A1, 1:1000 @ A3	Drawn: DS	Checked: EOC / Approved: SMG
Programme Code: BCIDD	Originator Code: ROT	QMS Code:	

Drawing File Name: BCIDD-ROT-DNG_RD-0016_XX_00-DR-CD-0008
Sheet Number: 08 of 12
Status: A
Rev: M01

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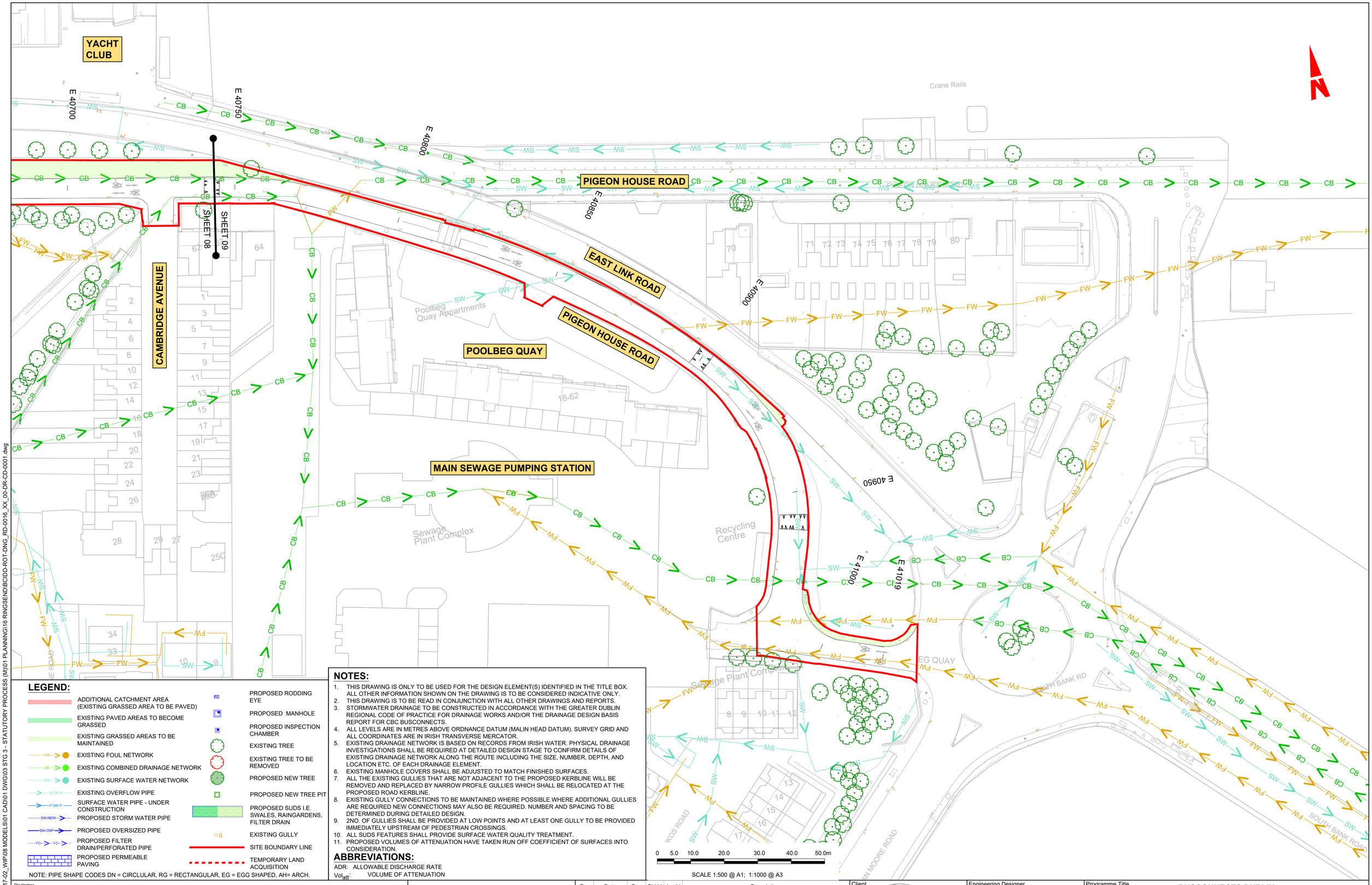

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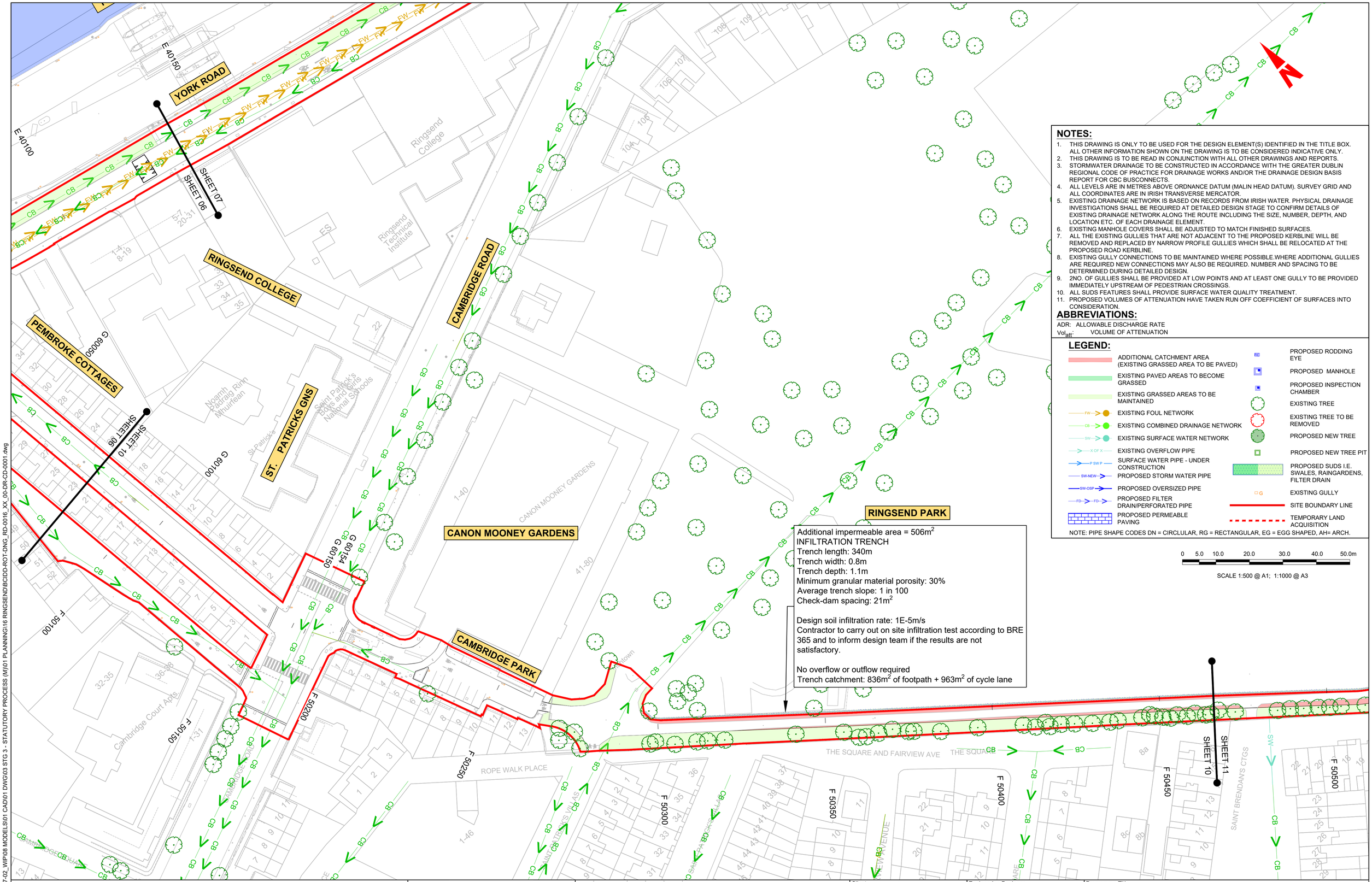

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- ADDITIONAL CATCHMENT AREA (EXISTING GRASSED AREA TO BE PAVED)
- EXISTING PAVED AREAS TO BECOME GRASSED
- EXISTING GRASSED AREAS TO BE MAINTAINED
- EXISTING FOUL NETWORK
- EXISTING COMBINED DRAINAGE NETWORK
- EXISTING SURFACE WATER NETWORK
- EXISTING OVERFLOW PIPE
- SURFACE WATER PIPE - UNDER CONSTRUCTION
- PROPOSED STORM WATER PIPE
- PROPOSED OVERSIZED PIPE
- PROPOSED FILTER DRAIN/PERFORATED PIPE
- PROPOSED PERMEABLE PAVING
- PROPOSED RODDING EYE
- PROPOSED MANHOLE
- PROPOSED INSPECTION CHAMBER
- EXISTING TREE
- EXISTING TREE TO BE REMOVED
- PROPOSED NEW TREE
- PROPOSED NEW TREE PIT
- PROPOSED SUDS I.E. SWALES, RAINGARDENS, FILTER DRAIN
- EXISTING GULLY
- SITE BOUNDARY LINE
- TEMPORARY LAND ACQUISITION

NOTE: PIPE SHAPE CODES DN = CIRCLULAR, RG = RECTANGULAR, EG = EGG SHAPED, AH= ARCH.

0 5.0 10.0 20.0 30.0 40.0 50.0m

SCALE 1:500 @ A1; 1:1000 @ A3

Project Ireland 2040 Building Ireland's Future

Rev	Date	Drn	Chk'd	App'd	Description
M01	MAR 2023	DS	EOC	SMG	ISSUE FOR PHASE 4: PLANNING

Client: NTA Údarás Náisiúnta Iompair National Transport Authority
Engineering Designer: ROD ROUGHAN & O'DONOVAN TYPSA

Date	Scale	Drawn	Checked	Approved
MAR 2023	1:500 @ A1 1:1000 @ A3	DS	EOC	SMG

Programme Code	Originator Code	QMS Code
BCIDD	ROT	

Programme Title: BUSCONNECTS DUBLIN CORE BUS CORRIDORS INFRASTRUCTURE WORKS
Drawing Title: RINGSEND TO CITY CENTRE CORE BUS CORRIDOR SCHEME PROPOSED SURFACE WATER DRAINAGE WORKS

Drawing File Name	Sheet Number	Status	Rev
BCIDD-ROT-DNG_RD-0016_XX_00-DR-CD-0010	10 of 12	A	M01

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Additional impermeable area = 161m²
INFILTRATION TRENCH
Trench length: 166m
Trench width: 0.8m
Trench depth: 1.1m
Minimum granular material porosity: 30%
Average trench slope: 1 in 100
Check-dam spacing: 18m

Design soil infiltration rate: 1E-5m/s
Contractor to carry out on site infiltration test according to BRE 365 and to inform design team if the results are not satisfactory.

No overflow or outflow required

Trench catchment: 364m² of footpath + 487m² of cycle lane

Additional impermeable area = 506m²
INFILTRATION TRENCH
Trench length: 340m
Trench width: 0.8m
Trench depth: 1.1m
Minimum granular material porosity: 30%
Average trench slope: 1 in 100
Check-dam spacing: 21m

Design soil infiltration rate: 1E-5m/s
Contractor to carry out on site infiltration test according to BRE 365 and to inform design team if the results are not satisfactory.

No overflow or outflow required

Trench catchment: 836m² of footpath + 963m² of cycle lane

Additional impermeable area = 206m²
INFILTRATION TRENCH
Trench length: 69m
Trench width: 0.8m
Trench depth: 0.5m
Minimum granular material porosity: 30%
Average trench slope: 1 in 100
Check-dam spacing: 14m

Design soil infiltration rate: 1E-5m/s
Contractor to carry out on site infiltration test according to BRE 365 and to inform design team if the results are not satisfactory.

No overflow or outflow required

Trench catchment: 112m² of cycle lane

Additional impermeable area = 280m²
INFILTRATION TRENCH
Trench length: 45m
Trench width: 0.8m
Trench depth: 0.6m
Minimum granular material porosity: 30%
Average trench slope: 1 in 100
Check-dam spacing: 9m

Design soil infiltration rate: 1E-5m/s
Contractor to carry out on site infiltration test according to BRE 365 and to inform design team if the results are not satisfactory.

No overflow or outflow required

Trench catchment: 112m² of cycle lane

LEGEND:

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- EXISTING PAVED AREAS TO BECOME GRASSED
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NOTES:

1. THIS DRAWING IS ONLY TO BE USED FOR THE DESIGN ELEMENT(S) IDENTIFIED IN THE TITLE BOX. ALL OTHER INFORMATION SHOWN ON THE DRAWING IS TO BE CONSIDERED INDICATIVE ONLY.
2. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER DRAWINGS AND REPORTS.
3. STORMWATER DRAINAGE TO BE CONSTRUCTED IN ACCORDANCE WITH THE GREATER DUBLIN REGIONAL CODE OF PRACTICE FOR DRAINAGE WORKS AND/OR THE DRAINAGE DESIGN BASIS REPORT FOR CBC BUSCONNECTS.
4. ALL LEVELS ARE IN METRES ABOVE ORDNANCE DATUM (MALIN HEAD DATUM). SURVEY GRID AND ALL COORDINATES ARE IN IRISH TRANSVERSE MERCATOR.
5. EXISTING DRAINAGE NETWORK IS BASED ON RECORDS FROM IRISH WATER. PHYSICAL DRAINAGE INVESTIGATIONS SHALL BE REQUIRED AT DETAILED DESIGN STAGE TO CONFIRM DETAILS OF EXISTING DRAINAGE NETWORK ALONG THE ROUTE INCLUDING THE SIZE, NUMBER, DEPTH, AND LOCATION ETC. OF EACH DRAINAGE ELEMENT.
6. EXISTING MANHOLE COVERS SHALL BE ADJUSTED TO MATCH FINISHED SURFACES.
7. ALL THE EXISTING GULLIES THAT ARE NOT ADJACENT TO THE PROPOSED KERBLINE WILL BE REMOVED AND REPLACED BY NARROW PROFILE GULLIES WHICH SHALL BE RELOCATED AT THE PROPOSED ROAD KERBLINE.
8. EXISTING GULLY CONNECTIONS TO BE MAINTAINED WHERE POSSIBLE.WHERE ADDITIONAL GULLIES ARE REQUIRED NEW CONNECTIONS MAY ALSO BE REQUIRED. NUMBER AND SPACING TO BE DETERMINED DURING DETAILED DESIGN.
9. 2NO. OF GULLIES SHALL BE PROVIDED AT LOW POINTS AND AT LEAST ONE GULLY TO BE PROVIDED IMMEDIATELY UPSTREAM OF PEDESTRIAN CROSSINGS.
10. ALL SUDS FEATURES SHALL PROVIDE SURFACE WATER QUALITY TREATMENT.
11. PROPOSED VOLUMES OF ATTENUATION HAVE TAKEN RUN OFF COEFFICIENT OF SURFACES INTO CONSIDERATION.

ABBREVIATIONS:

ADR: ALLOWABLE DISCHARGE RATE
Vol_{att}: VOLUME OF ATTENUATION

SCALE 1:500 @ A1; 1:1000 @ A3

Project Ireland 2040 Building Ireland's Future

Rev	Date	Drn	Chk'd	App'd	Description
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Programme Title: BUSCONNECTS DUBLIN CORE BUS CORRIDORS INFRASTRUCTURE WORKS
Drawing Title: RINGSEND TO CITY CENTRE CORE BUS CORRIDOR SCHEME PROPOSED SURFACE WATER DRAINAGE WORKS

Drawing File Name	Sheet Number	Status	Rev
BCIDD-ROT-DNG_RD-0016_XX_00-DR-CD-0011	11 of 12	A	M01

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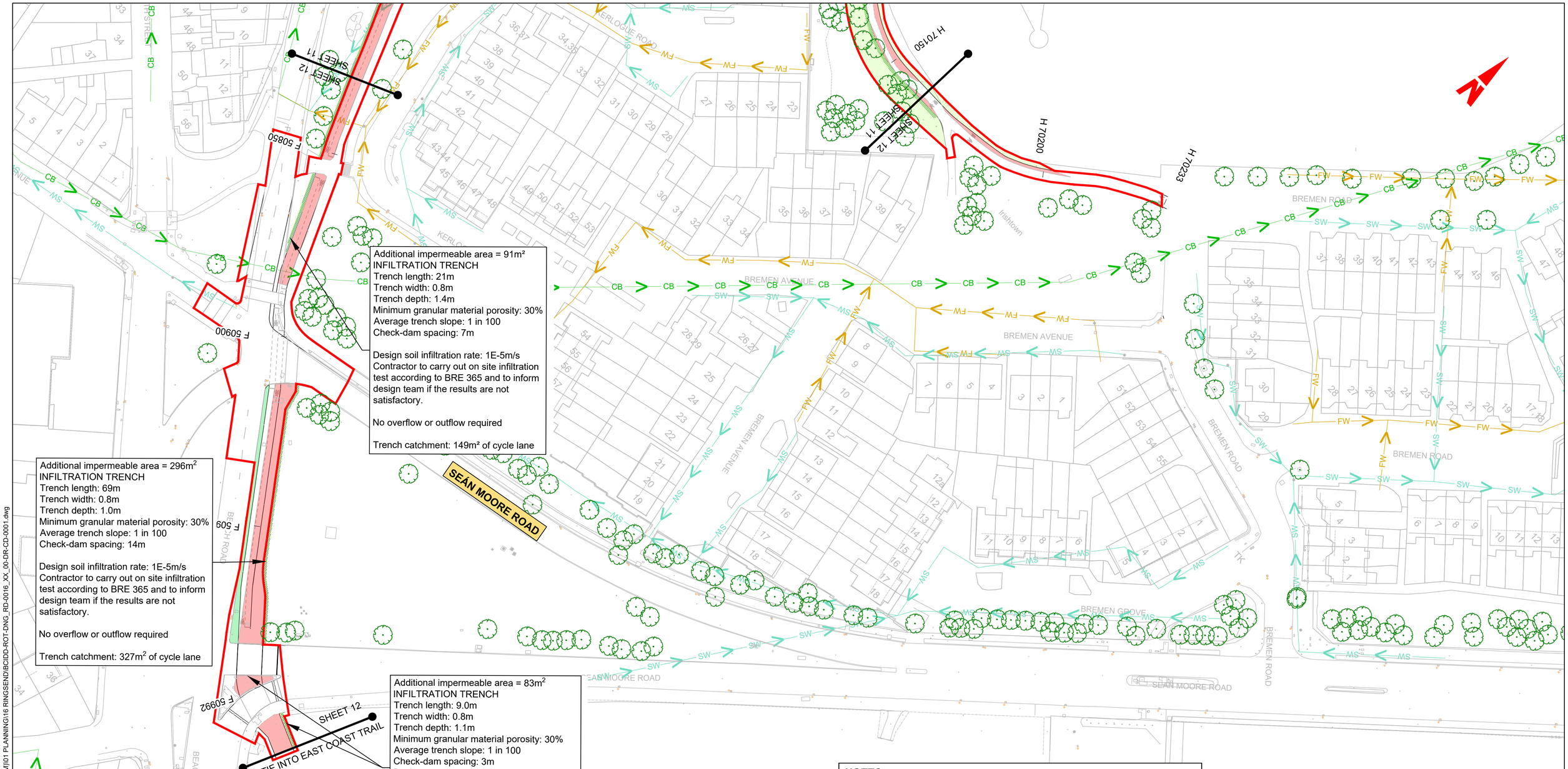

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Drawing Title: RINGSEND TO CITY CENTRE CORE BUS CORRIDOR SCHEME
PROPOSED SURFACE WATER DRAINAGE WORKS

Drawing File Name	Sheet Number	Status	Rev
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LEGEND:

CATCHMENT AREA 1	CATCHMENT AREA 7
CATCHMENT AREA 2	CATCHMENT AREA 8
CATCHMENT AREA 3	CATCHMENT AREA 9
CATCHMENT AREA 4	CATCHMENT AREA 10
CATCHMENT AREA 5	CATCHMENT AREA 11
CATCHMENT AREA 6	DISCHARGE POINT

- EXISTING SURFACE WATER DRAINAGE
- EXISTING COMBINED DRAINAGE
- EXISTING OVERFLOW DRAINAGE
- EXISTING FOUL DRAINAGE
- TEMPORARY LAND ACQUISITION
- SITE BOUNDARY LINE
- ADDITIONAL CATCHMENT AREA (EXISTING GRASSED AREAS TO BE PAVED)
- EXISTING PAVED AREAS TO BECOME GRASSED

0 50 100 200 300 400 500m

SCALE 1:5000 @ A1; 1:10000 @ A3

Project Ireland 2040
Building Ireland's Future

Rev	Date	Drn	Chk'd	App'd	Description
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Client: NTA – Údarás Náisiúnta Iompair – National Transport Authority

Engineering Designer: ROD Roughan & O'Donovan – TYPSA

Date: MAR 2023	Scale: 1:5,000 @ A1 / 1:10,000 @ A3	Drawn: DS	Checked: EOC	Approved: SMG
Programme Code: BCIDD	Originator Code: ROT	QMS Code:		

Programme Title: **BUSCONNECTS DUBLIN CORE BUS CORRIDORS INFRASTRUCTURE WORKS**

Drawing Title: RINGSEND TO CITY CENTRE CORE BUS CORRIDOR SCHEME OVERALL CATCHMENT AREAS

Drawing File Name	Sheet Number	Status	Rev
BCIDD-ROT-DNG_RD-0016_XX_00-DR-CD-1001	01 of 01	A	M01

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