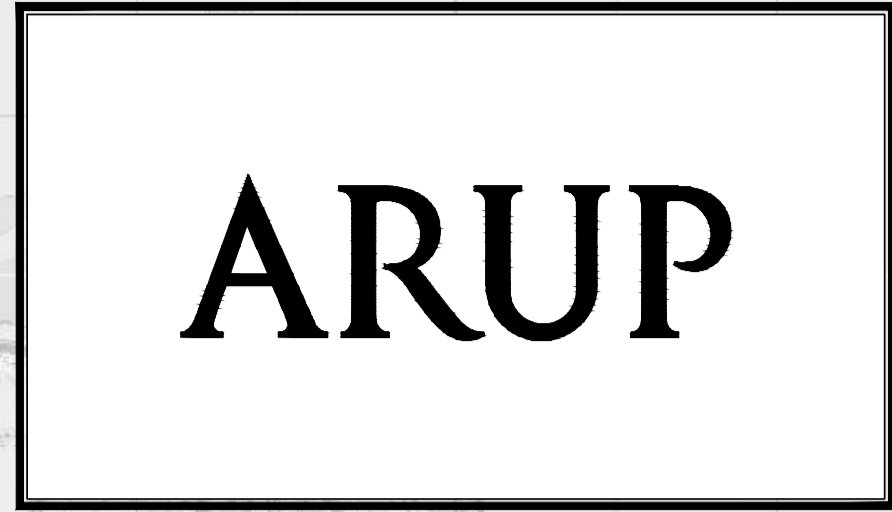




**Appendix II**  
Proposed Surface  
Water Drainage Works  
Drawings





# BUSCONNECTS DUBLIN CORE BUS CORRIDORS INFRASTRUCTURE WORKS

## BELFIELD / BLACKROCK TO CITY CENTRE CORE BUS CORRIDOR SCHEME

DRAWING SERIES NUMBER(S)	DRAWING SERIES DESCRIPTION
BCIDC-ARP-DNG_IX-1415_XX_00-DR-CD-0001	BELFIELD \ BLACKROCK TO CITY CENTRE CORE BUS CORRIDOR SCHEME. PROPOSED SURFACE WATER DRAINAGE WORKS. COVER SHEET
BCIDC-ARP-DNG_RD-1415_XX_00-DR-CD-1001-1004	BELFIELD \ BLACKROCK TO CITY CENTRE CORE BUS CORRIDOR SCHEME. OVERALL CATCHMENT AREAS
BCIDC-ARP-DNG_KP-1415_XX_00-DR-CD-0001	BELFIELD \ BLACKROCK TO CITY CENTRE CORE BUS CORRIDOR SCHEME. PROPOSED SURFACE WATER DRAINAGE WORKS. KEY PLAN
BCIDC-ARP-DNG_RD-1415_XX_00-DR-CD-0001 to 0023	BELFIELD \ BLACKROCK TO CITY CENTRE CORE BUS CORRIDOR SCHEME. PROPOSED SURFACE WATER DRAINAGE WORKS

\\global\europa\Dublin\Jobs\268000\268401-004\_Interna\4-02 Drawings\4-02 BCIDC\BCIDC-ARP-DNG\_IX-1415\_XX\_00-DR-CD-0001.dwg

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Rev	Date	Dm	Chk'd	App'd	Description
M01	04/03/2022	TD	MR	NH	ISSUE FOR PHASE 4: PLANNING

Client <b>NTA</b> Údarás Náisiúnta Iompair National Transport Authority		Engineering Designer <b>ARUP</b>		
Date 04/03/2022	Scale N/A @ A1 N/A @ A3	Drawn TD	Checked MR	Approved NH
Project Code BCIDC	Originator Code ARP	QMS Code 268401-00		

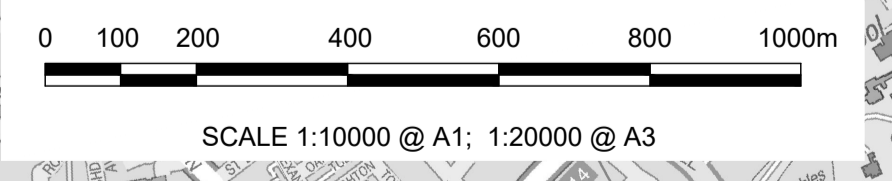
Programme Title <b>BUSCONNECTS DUBLIN CORE BUS CORRIDORS INFRASTRUCTURE WORKS</b>				
Drawing Title BELFIELD / BLACKROCK TO CITY CENTRE CORE BUS CORRIDOR SCHEME PROPOSED SURFACE WATER DRAINAGE WORKS COVER SHEET				
Drawing File Name BCIDC-ARP-DNG_IX-1415_XX_00-DR-CD-0001	Sheet Number 01 of 01	Status A	Rev M01	

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Client: **NTA**  
 Údarás Náisiúnta Iompair  
 National Transport Authority

Engineering Designer: **ARUP**

Date: 04/03/2022  
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 1:20000 @ A3

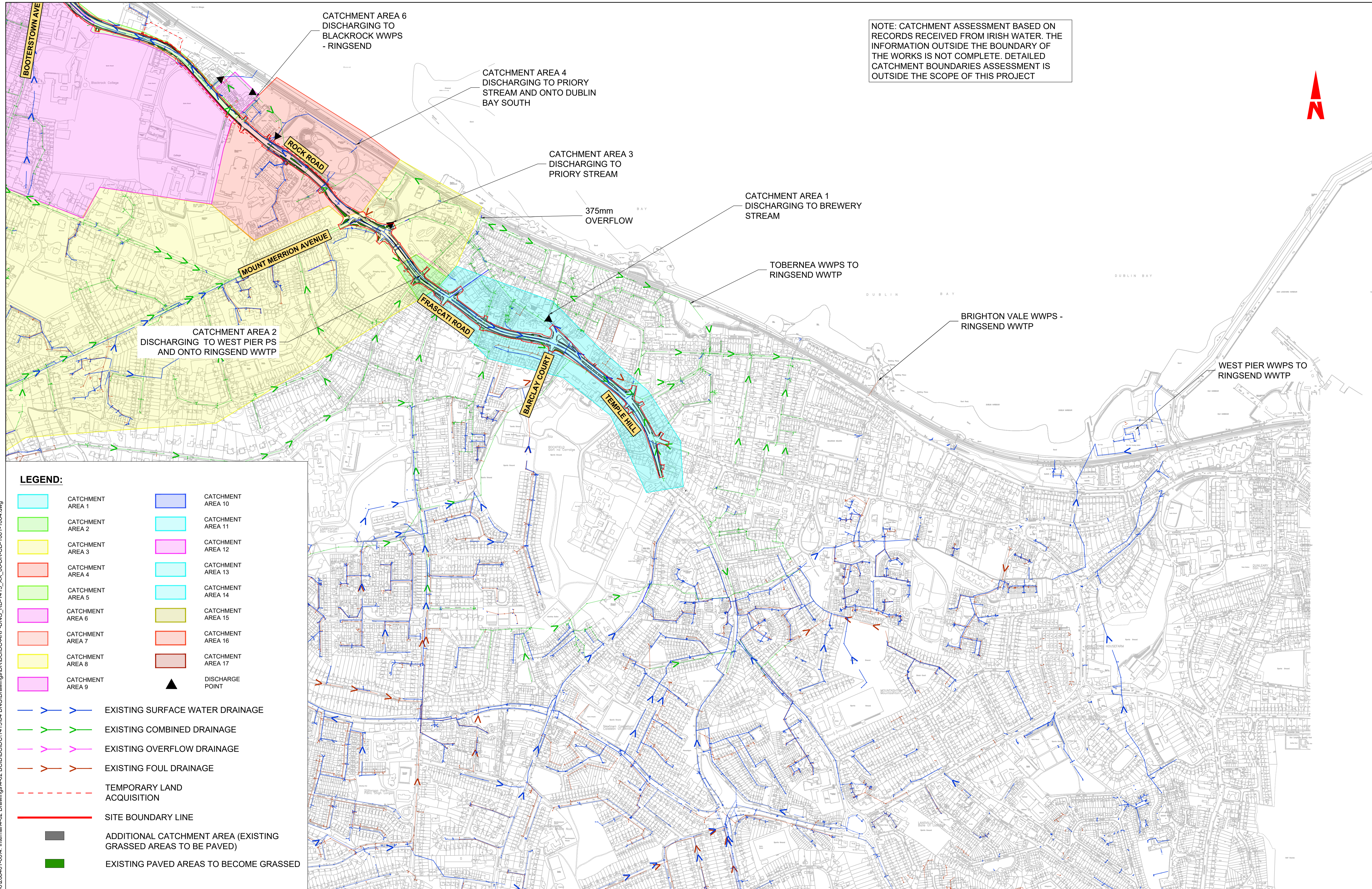
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 Checked: MR  
 Approved: NH

Project Code: BCIDC  
 Originator Code: ARP  
 QMS Code: 268401-00

Programme Title			
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<b>CORE BUS CORRIDORS INFRASTRUCTURE WORKS</b>			
Drawing Title			
BELFIELD / BLACKROCK TO CITY CENTRE CORE BUS CORRIDOR SCHEME PROPOSED SURFACE WATER DRAINAGE WORKS KEY PLAN			
Drawing File Name	Sheet Number	Status	Rev
BCIDC-ARP-DNG_KP-1415_XX_00-DR-CR-0001	01 of 01	A	M01

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**LEGEND:**

	CATCHMENT AREA 1		CATCHMENT AREA 10
	CATCHMENT AREA 2		CATCHMENT AREA 11
	CATCHMENT AREA 3		CATCHMENT AREA 12
	CATCHMENT AREA 4		CATCHMENT AREA 13
	CATCHMENT AREA 5		CATCHMENT AREA 14
	CATCHMENT AREA 6		CATCHMENT AREA 15
	CATCHMENT AREA 7		CATCHMENT AREA 16
	CATCHMENT AREA 8		CATCHMENT AREA 17
	CATCHMENT AREA 9		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

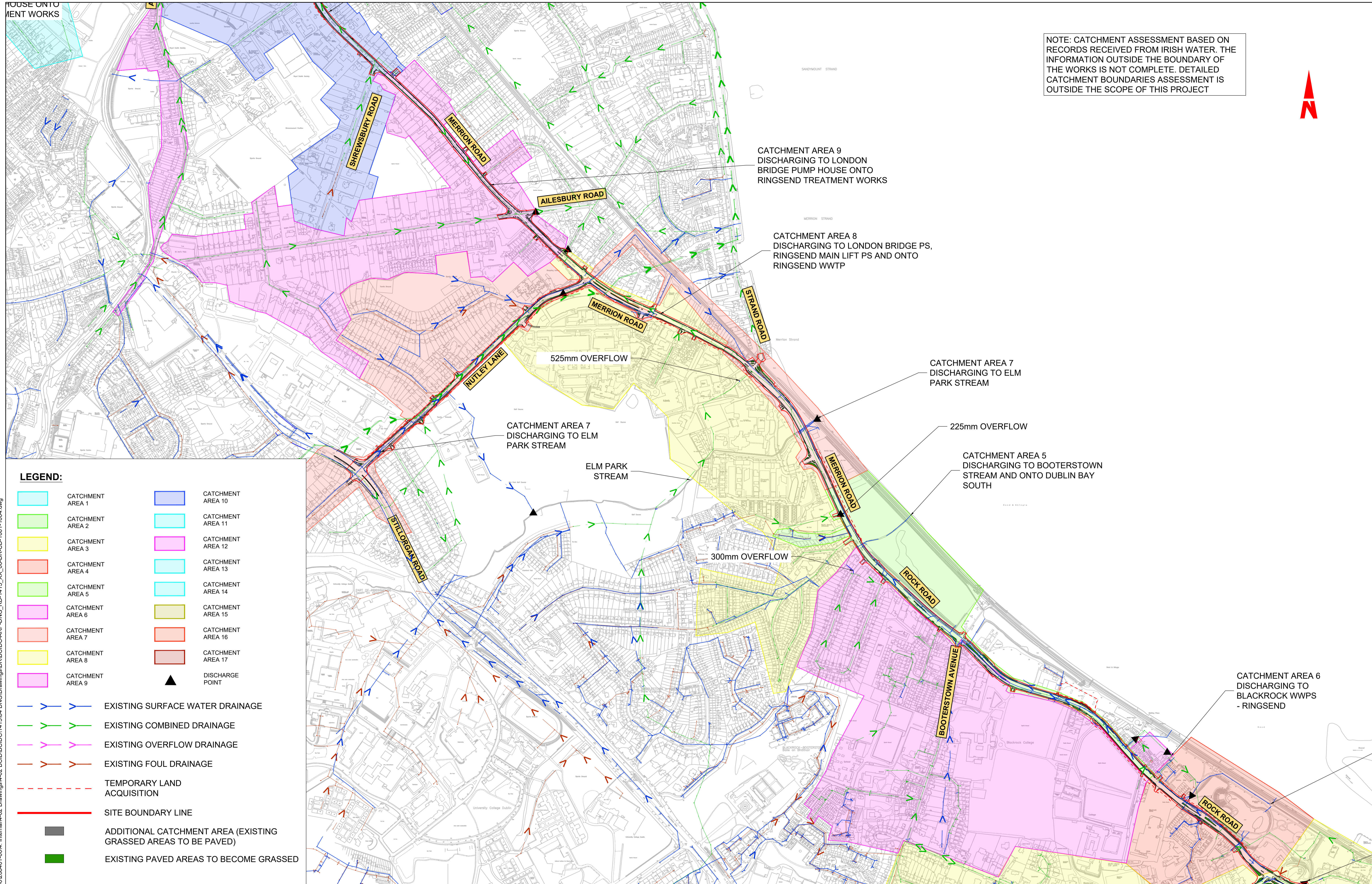
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<p>Date 04/03/2022</p>		<p>Scale 1:5000 @ A1 1:10000 @ A3</p>		<p>Drawn AR</p>		<p>Checked MR</p>		<p>Approved NH</p>		<p>Drawing Title BELFIELD / BLACKROCK TO CITY CENTRE CORE BUS CORRIDOR SCHEME OVERALL CATCHMENT AREAS</p>				
<p>Project Code BCIDC</p>		<p>Originator Code ARP</p>		<p>QMS Code 268401-00</p>		<p>Drawing File Name BCIDC-ARP-DNG_RD-1415_XX_00-DR-CD-1001</p>		<p>Sheet Number 01 of 04</p>		<p>Status A</p>		<p>Rev M01</p>		

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**LEGEND:**

	CATCHMENT AREA 1		CATCHMENT AREA 10
	CATCHMENT AREA 2		CATCHMENT AREA 11
	CATCHMENT AREA 3		CATCHMENT AREA 12
	CATCHMENT AREA 4		CATCHMENT AREA 13
	CATCHMENT AREA 5		CATCHMENT AREA 14
	CATCHMENT AREA 6		CATCHMENT AREA 15
	CATCHMENT AREA 7		CATCHMENT AREA 16
	CATCHMENT AREA 8		CATCHMENT AREA 17
	CATCHMENT AREA 9		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

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Client: **NTA**  
 Údarás Náisiúnta Iompair  
 National Transport Authority

Engineering Designer: **ARUP**

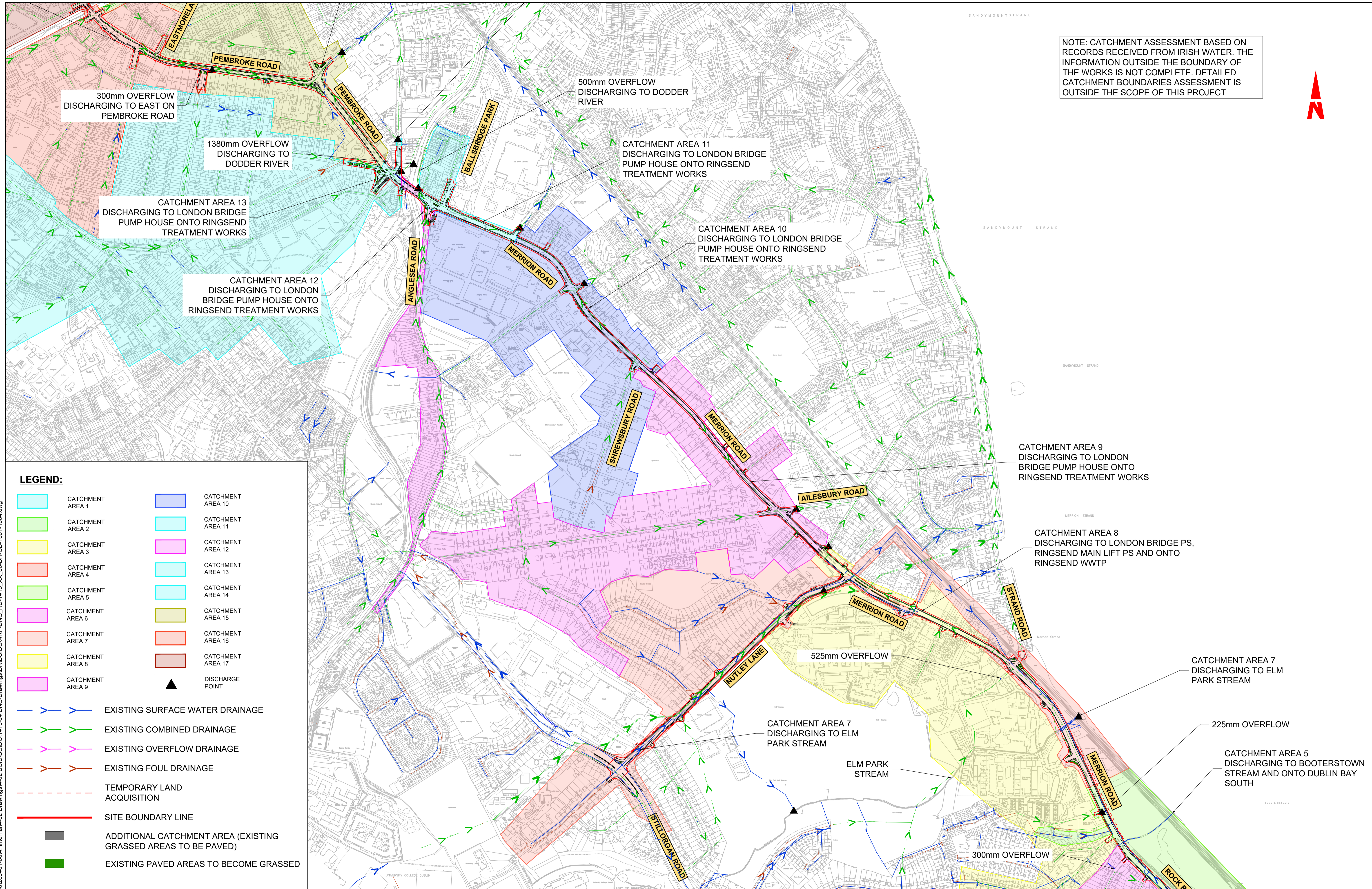
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Project Code: BCIDC	Originator Code: ARP	QMS Code: 268401-00		

Programme Title: <b>BUSCONNECTS DUBLIN CORE BUS CORRIDORS INFRASTRUCTURE WORKS</b>			
Drawing Title: <b>BELFIELD / BLACKROCK TO CITY CENTRE CORE BUS CORRIDOR SCHEME OVERALL CATCHMENT AREAS</b>			
Drawing File Name: BCIDC-ARP-DNG_RD-1415_XX_00-DR-CD-1002	Sheet Number: 02 of 04	Status: A	Rev: M01

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**LEGEND:**

	CATCHMENT AREA 1		CATCHMENT AREA 10
	CATCHMENT AREA 2		CATCHMENT AREA 11
	CATCHMENT AREA 3		CATCHMENT AREA 12
	CATCHMENT AREA 4		CATCHMENT AREA 13
	CATCHMENT AREA 5		CATCHMENT AREA 14
	CATCHMENT AREA 6		CATCHMENT AREA 15
	CATCHMENT AREA 7		CATCHMENT AREA 16
	CATCHMENT AREA 8		CATCHMENT AREA 17
	CATCHMENT AREA 9		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

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M01	04/03/2022	AR	MR	NH	ISSUE FOR PHASE 4: PLANNING

Client: **NTA**  
 Údarás Náisiúnta Iompair  
 National Transport Authority

Engineering Designer: **ARUP**

Date: 04/03/2022 Scale: 1:5000 @ A1  
 1:10000 @ A3

Drawn: AR Checked: MR Approved: NH

Project Code: BCIDC Originator Code: ARP QMS Code: 268401-00

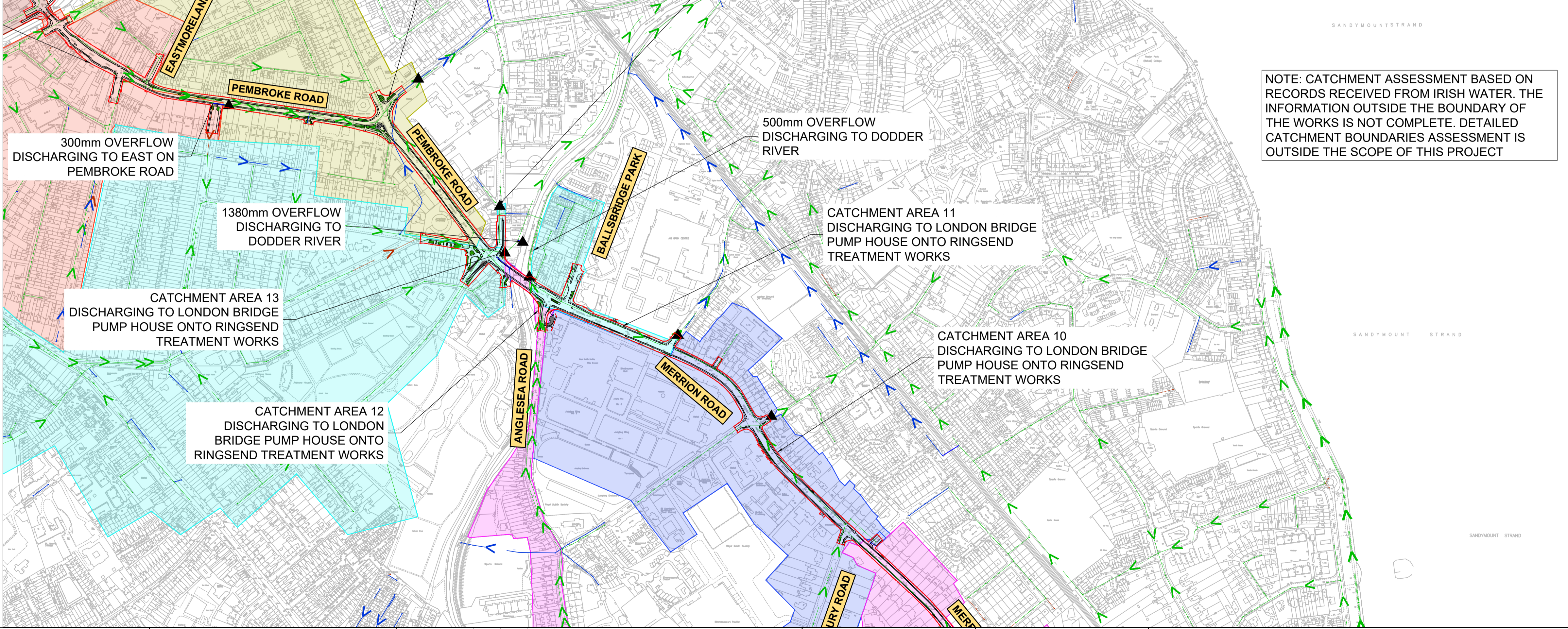
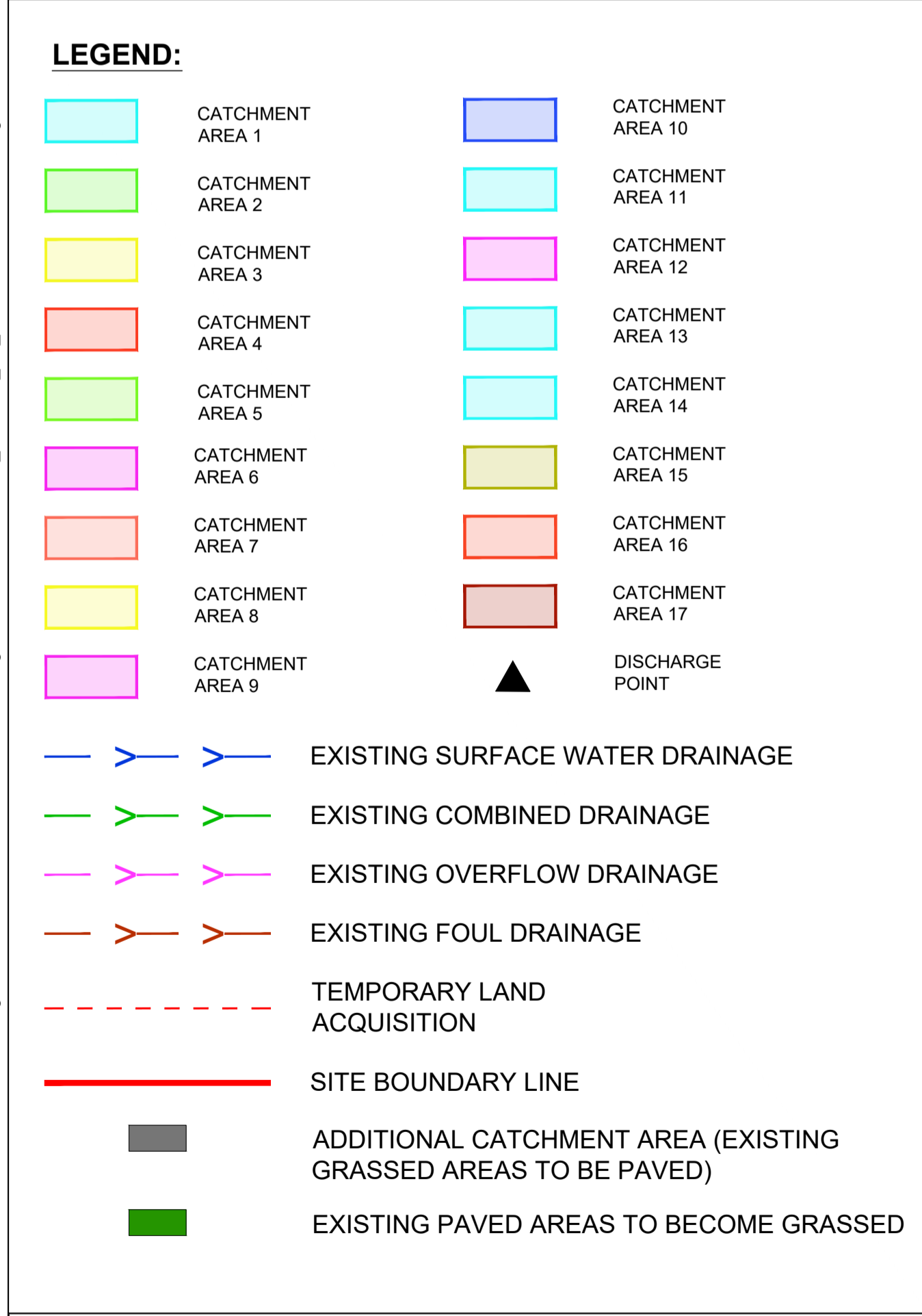
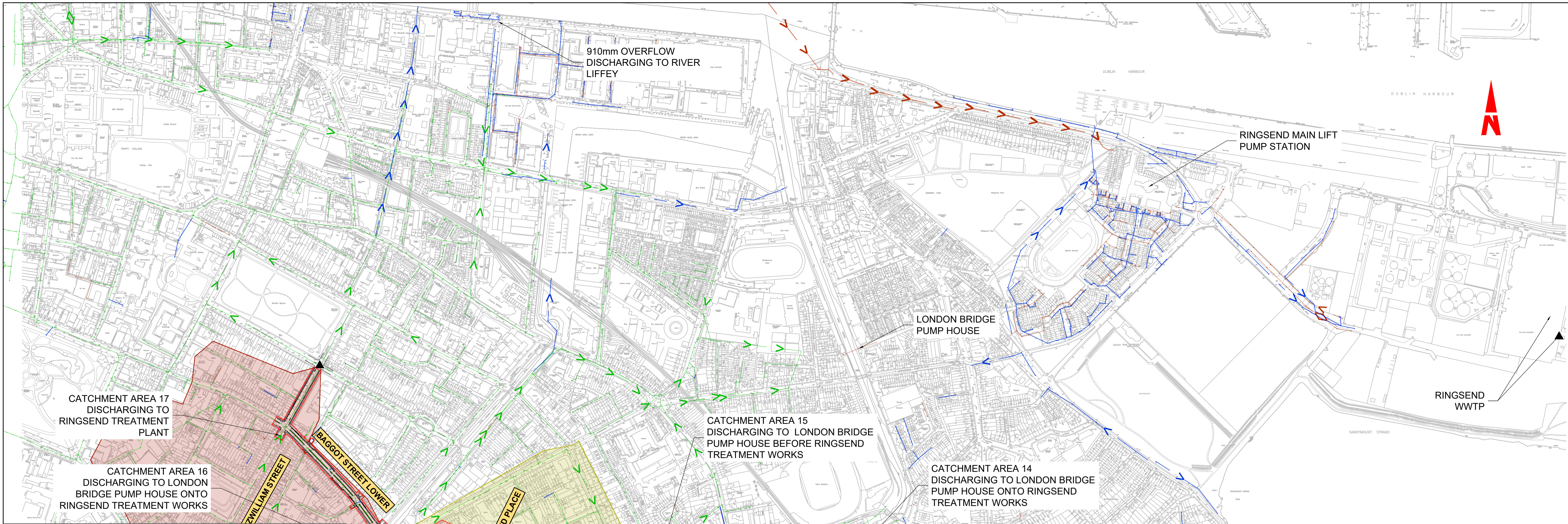
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Drawing Title: BELFIELD / BLACKROCK TO CITY CENTRE CORE BUS CORRIDOR SCHEME OVERALL CATCHMENT AREAS

Drawing File Name: BCIDC-ARP-DNG\_RD-1415\_XX\_00-DR-CD-1003 Sheet Number: 03 of 04 Status: A Rev: M01

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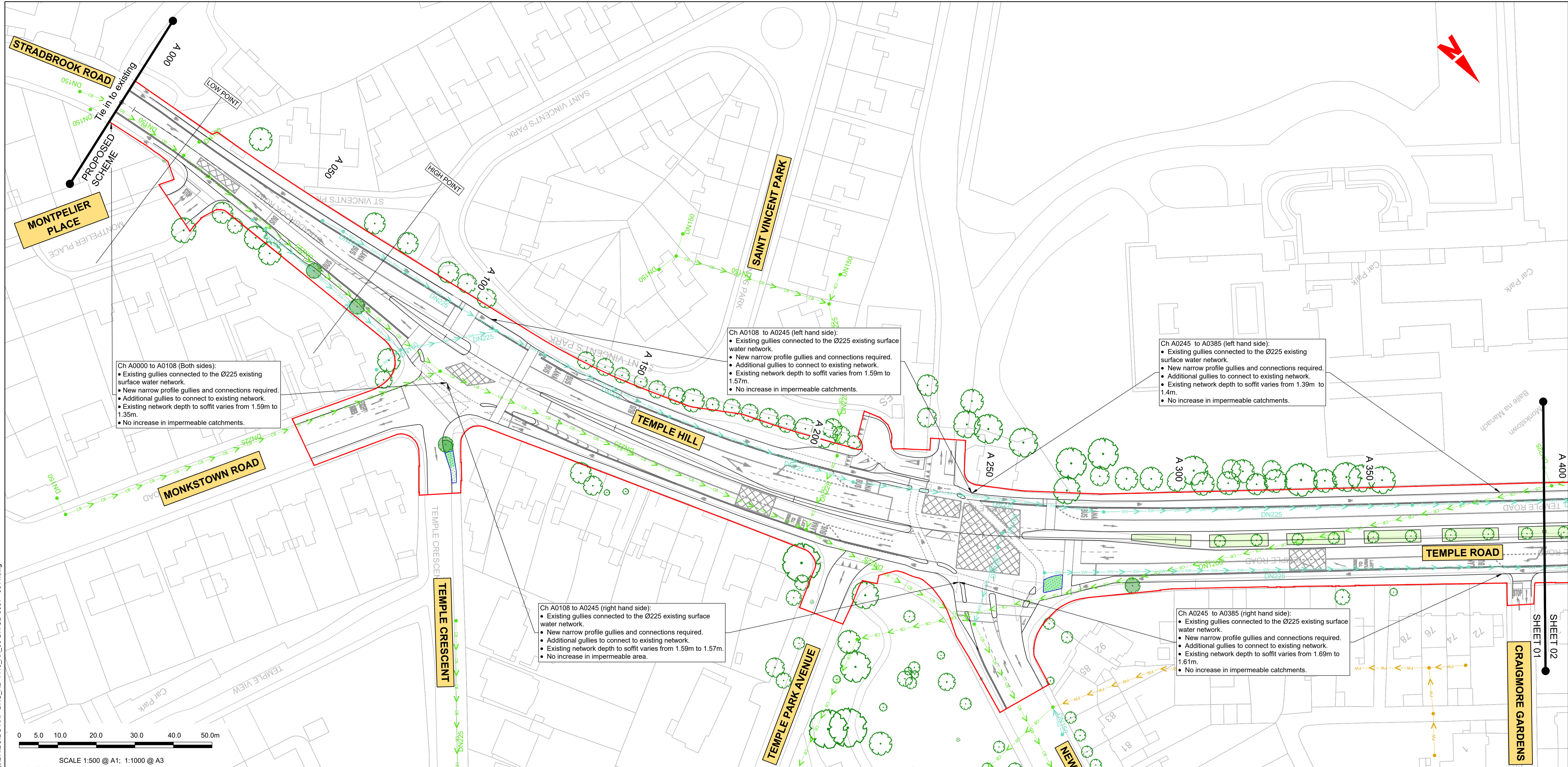




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<p><b>Project Ireland 2040</b> Building Ireland's Future</p>	<p>Rev M01 Date 04/03/2022 Dm AR Chk'd MR App'd NH Description ISSUE FOR PHASE 4: PLANNING</p>	<p>Client <b>NTA</b> Údarás Náisiúnta Iompair National Transport Authority</p>	<p>Engineering Designer <b>ARUP</b></p>	<p>Programme Title <b>BUSCONNECTS DUBLIN CORE BUS CORRIDORS INFRASTRUCTURE WORKS</b></p>
	<p>Date 04/03/2022 Scale 1:5000 @ A1 1:10000 @ A3 Drawn AR Checked MR Approved NH</p>	<p>Project Code BCIDC Originator Code ARP QMS Code 268401-00</p>	<p>Drawing Title BELFIELD / BLACKROCK TO CITY CENTRE CORE BUS CORRIDOR SCHEME OVERALL CATCHMENT AREAS</p>	<p>Drawing File Name BCIDC-ARP-DNG_RD-1415_XX_00-DR-CD-1004 Sheet Number 04 of 04 Status A Rev M01</p>
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Ch A0000 to A0108 (Both sides):

- Existing gullies connected to the Ø225 existing surface water network.
- New narrow profile gullies and connections required.
- Additional gullies to connect to existing network.
- Existing network depth to soffit varies from 1.59m to 1.35m.
- No increase in impermeable catchments.

Ch A0108 to A0245 (left hand side):

- Existing gullies connected to the Ø225 existing surface water network.
- New narrow profile gullies and connections required.
- Additional gullies to connect to existing network.
- Existing network depth to soffit varies from 1.59m to 1.57m.
- No increase in impermeable catchments.

Ch A0245 to A0385 (left hand side):

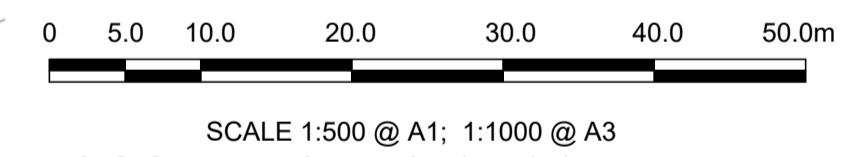
- Existing gullies connected to the Ø225 existing surface water network.
- New narrow profile gullies and connections required.
- Additional gullies to connect to existing network.
- Existing network depth to soffit varies from 1.39m to 1.4m.
- No increase in impermeable catchments.

Ch A0108 to A0245 (right hand side):

- Existing gullies connected to the Ø225 existing surface water network.
- New narrow profile gullies and connections required.
- Additional gullies to connect to existing network.
- Existing network depth to soffit varies from 1.59m to 1.57m.
- No increase in impermeable area.

Ch A0245 to A0385 (right hand side):

- Existing gullies connected to the Ø225 existing surface water network.
- New narrow profile gullies and connections required.
- Additional gullies to connect to existing network.
- Existing network depth to soffit varies from 1.69m to 1.61m.
- No increase in impermeable catchments.



LEGEND:	
	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
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	SITE BOUNDARY LINE
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NOTE: PIPE SHAPE CODING DN = CIRCULAR, RG = RECTANGULAR, EG = EGG SHAPED, AH= ARCH.

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**ABBREVIATIONS:**

ADR: ALLOWABLE DISCHARGE RATE  
Vol<sub>att</sub>: VOLUME OF ATTENUATION

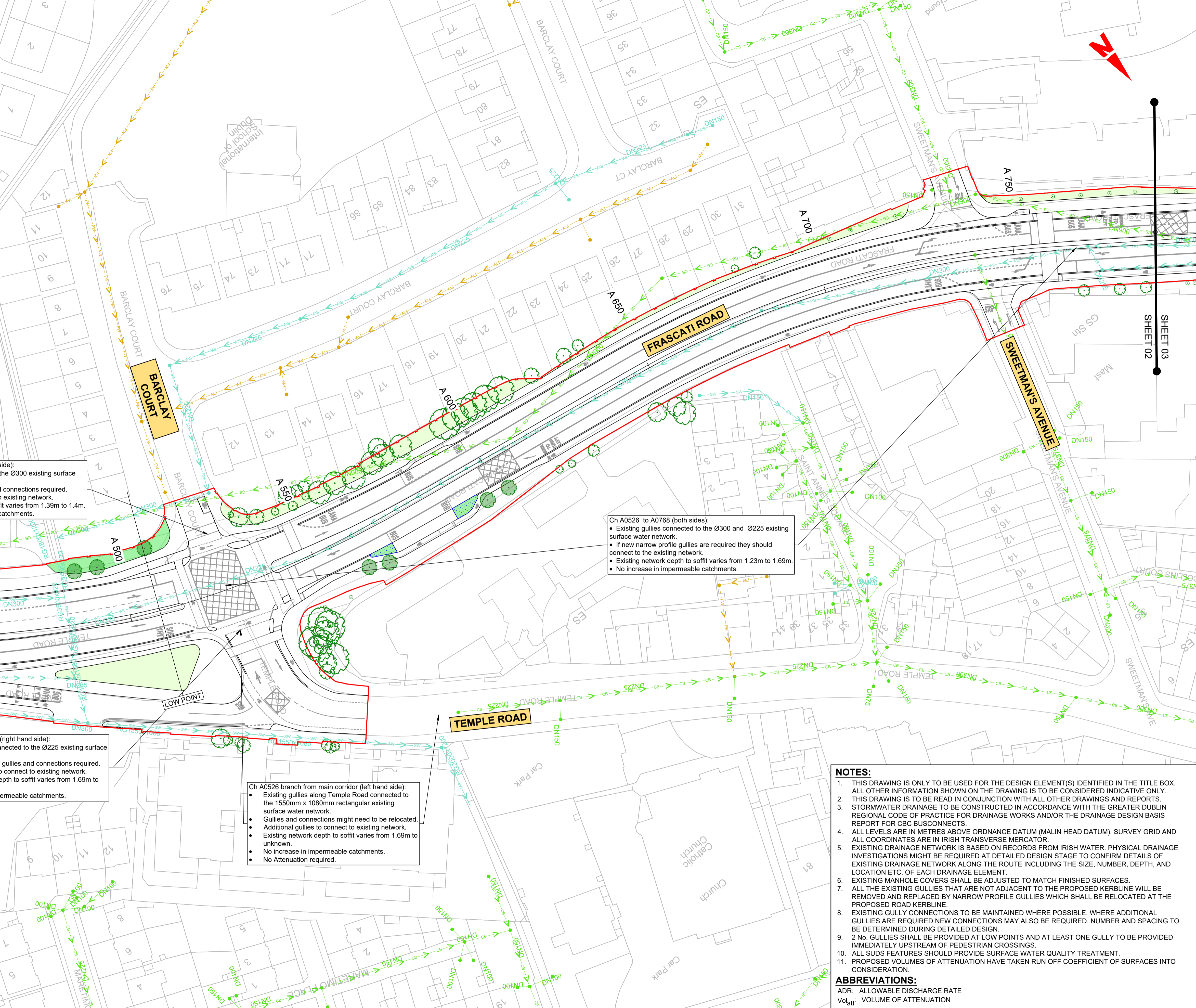
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		Rev	Date	Dm	Chk'd	App'd	Description										
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<p>Date</p> <p>04/03/2022</p> <p>Scale</p> <p>1:500 @ A1 1:1000 @ A3</p> <p>Project Code</p> <p>BCIDC</p> <p>Originator Code</p> <p>ARP</p> <p>QMS Code</p> <p>268401-00</p>	<p>Drawn</p> <p>AR</p> <p>Checked</p> <p>MR</p> <p>Approved</p> <p>NH</p>	<p>Drawing Title</p> <p>BELFIELD / BLACKROCK TO CITY CENTRE CORE BUS CORRIDOR SCHEME PROPOSED SURFACE WATER DRAINAGE WORKS</p>	<p>Drawing File Name</p> <p>BCIDC-ARP-DNG_RD-1415_XX_00-DR-CD-0001</p> <p>Sheet Number</p> <p>01 of 23</p> <p>Status</p> <p>A</p> <p>Rev</p> <p>M01</p>														



**LEGEND:**

- ADDITIONAL CATCHMENT AREA (EXISTING GRASSED AREA TO BE PAVED)
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Ch A0385 to A0526 (left hand side):

- Existing gullies connected to the Ø300 existing surface water network.
- New narrow profile gullies and connections required.
- Additional gullies to connect to existing network.
- Existing network depth to soffit varies from 1.39m to 1.4m.
- No increase in impermeable catchments.

Ch A0526 to A0768 (both sides):

- Existing gullies connected to the Ø300 and Ø225 existing surface water network.
- If new narrow profile gullies are required they should connect to the existing network.
- Existing network depth to soffit varies from 1.23m to 1.69m.
- No increase in impermeable catchments.

Ch A0385 to A0526 (right hand side):

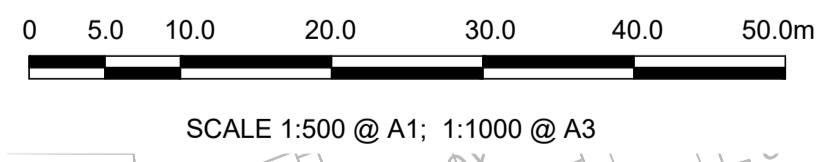
- Existing gullies connected to the Ø225 existing surface water network.
- New narrow profile gullies and connections required.
- Additional gullies to connect to existing network.
- Existing network depth to soffit varies from 1.69m to 1.43m.
- No increase in impermeable catchments.

Ch A0526 branch from main corridor (left hand side):

- Existing gullies along Temple Road connected to the 1550mm x 1080mm rectangular existing surface water network.
- Gullies and connections might need to be relocated.
- Additional gullies to connect to existing network.
- Existing network depth to soffit varies from 1.69m to unknown.
- No increase in impermeable catchments.
- No Attenuation required.

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M01	04/03/2022	AR	MR	NH	ISSUE FOR PHASE 4: PLANNING

Client: **NTA**  
 Údarás Náisiúnta Iompair  
 National Transport Authority

Engineering Designer: **ARUP**

Date: 04/03/2022 | Scale: 1:500 @ A1, 1:1000 @ A3 | Drawn: AR | Checked: MR | Approved: NH

Project Code: BCIDC | Originator Code: ARP | QMS Code: 268401-00

Programme Title: <b>BUSCONNECTS DUBLIN CORE BUS CORRIDORS INFRASTRUCTURE WORKS</b>	
Drawing Title: BELFIELD / BLACKROCK TO CITY CENTRE CORE BUS CORRIDOR SCHEME PROPOSED SURFACE WATER DRAINAGE WORKS	
Drawing File Name: BCIDC-ARP-DNG_RD-1415_XX_00-DR-CD-0002	Sheet Number: 02 of 23
Status: A	Rev: M01

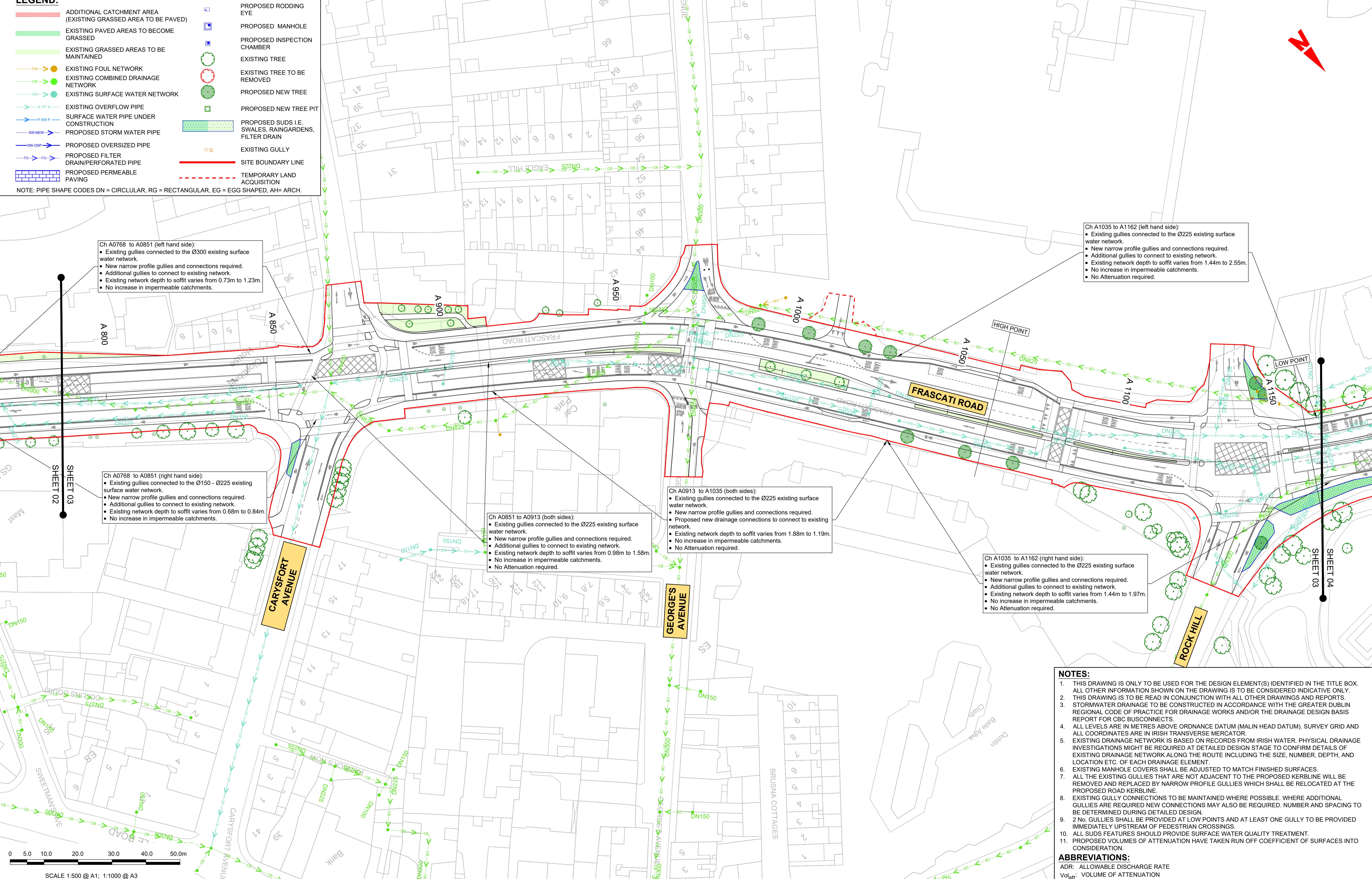
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Ch A0768 to A0851 (left hand side):

- Existing gullies connected to the Ø300 existing surface water network.
- New narrow profile gullies and connections required.
- Additional gullies to connect to existing network.
- Existing network depth to soffit varies from 0.73m to 1.23m.
- No increase in impermeable catchments.

Ch A0768 to A0851 (right hand side):

- Existing gullies connected to the Ø150 - Ø225 existing surface water network.
- New narrow profile gullies and connections required.
- Additional gullies to connect to existing network.
- Existing network depth to soffit varies from 0.68m to 0.84m.
- No increase in impermeable catchments.

Ch A0851 to A0913 (both sides):

- Existing gullies connected to the Ø225 existing surface water network.
- New narrow profile gullies and connections required.
- Additional gullies to connect to existing network.
- Existing network depth to soffit varies from 0.98m to 1.58m.
- No increase in impermeable catchments.
- No Attenuation required.

Ch A0913 to A1035 (both sides):

- Existing gullies connected to the Ø225 existing surface water network.
- New narrow profile gullies and connections required.
- Proposed new drainage connections to connect to existing network.
- Existing network depth to soffit varies from 1.88m to 1.19m.
- No increase in impermeable catchments.
- No Attenuation required.

Ch A1035 to A1162 (left hand side):

- Existing gullies connected to the Ø225 existing surface water network.
- New narrow profile gullies and connections required.
- Additional gullies to connect to existing network.
- Existing network depth to soffit varies from 1.44m to 2.55m.
- No increase in impermeable catchments.
- No Attenuation required.

Ch A1035 to A1162 (right hand side):

- Existing gullies connected to the Ø225 existing surface water network.
- New narrow profile gullies and connections required.
- Additional gullies to connect to existing network.
- Existing network depth to soffit varies from 1.44m to 1.97m.
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**Project Ireland 2040**  
 Building Ireland's Future

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Programme Title			
<b>BUSCONNECTS DUBLIN</b>			
<b>CORE BUS CORRIDORS INFRASTRUCTURE WORKS</b>			
Drawing Title			
BELFIELD / BLACKROCK TO CITY CENTRE CORE BUS CORRIDOR SCHEME PROPOSED SURFACE WATER DRAINAGE WORKS			
Drawing File Name			
BCIDC-ARP-DNG_RD-1415_XX_00-DR-CD-0003			
Sheet Number	Status	Rev	
03 of 23	A	M01	

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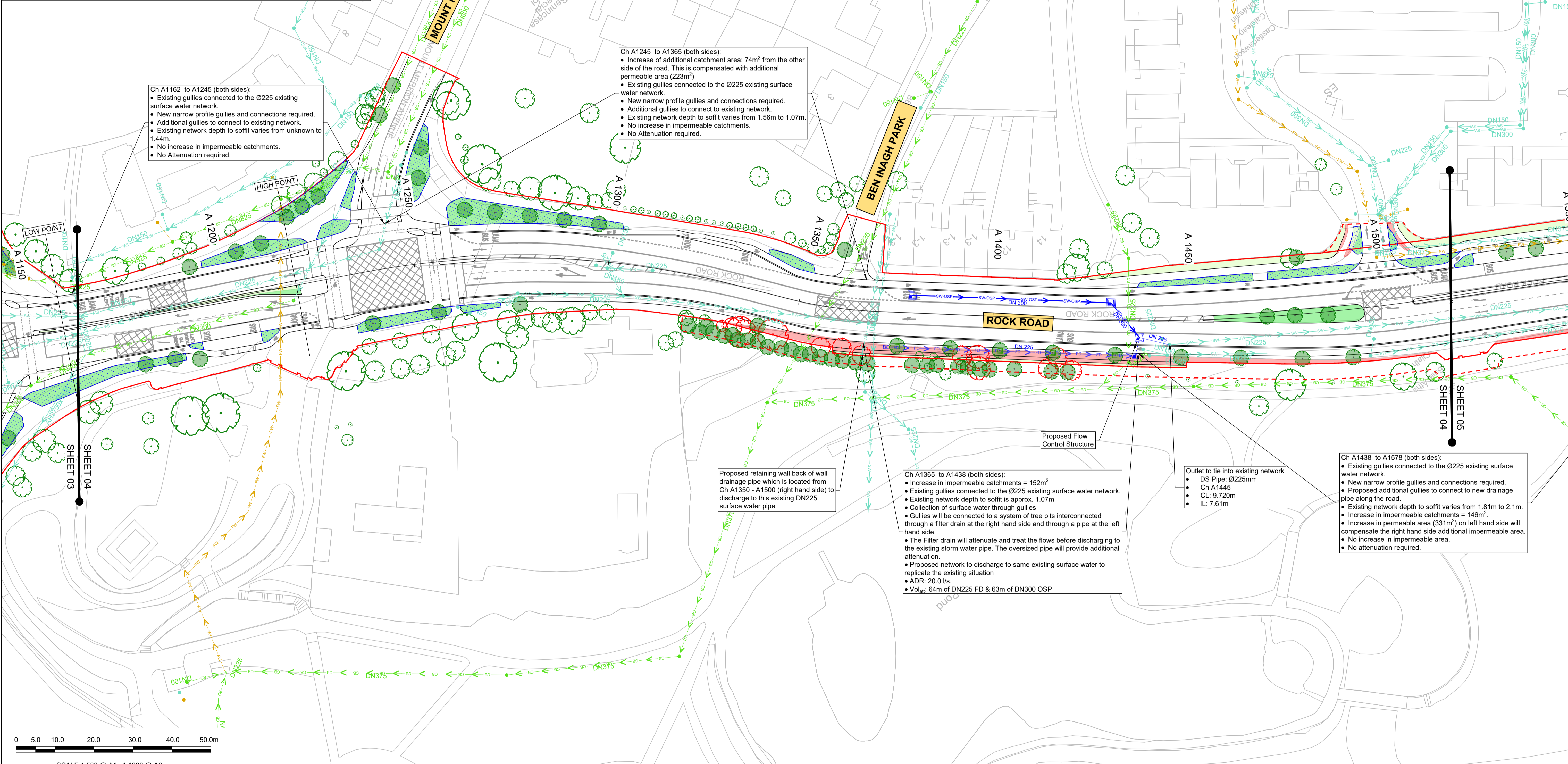
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Ch A1162 to A1245 (both sides):

- Existing gullies connected to the Ø225 existing surface water network.
- New narrow profile gullies and connections required.
- Additional gullies to connect to existing network.
- Existing network depth to soffit varies from unknown to 1.44m.
- No increase in impermeable catchments.
- No Attenuation required.

Ch A1245 to A1365 (both sides):

- Increase of additional catchment area: 74m<sup>2</sup> from the other side of the road. This is compensated with additional permeable area (223m<sup>2</sup>)
- Existing gullies connected to the Ø225 existing surface water network.
- New narrow profile gullies and connections required.
- Additional gullies to connect to existing network.
- Existing network depth to soffit varies from 1.56m to 1.07m.
- No increase in impermeable catchments.
- No Attenuation required.

Proposed retaining wall back of wall drainage pipe which is located from Ch A1350 - A1500 (right hand side) to discharge to this existing DN225 surface water pipe

Ch A1365 to A1438 (both sides):

- Increase in impermeable catchments = 152m<sup>2</sup>
- Existing gullies connected to the Ø225 existing surface water network.
- Existing network depth to soffit is approx. 1.07m
- Collection of surface water through gullies
- Gullies will be connected to a system of tree pits interconnected through a filter drain at the right hand side and through a pipe at the left hand side
- The Filter drain will attenuate and treat the flows before discharging to the existing storm water pipe. The oversized pipe will provide additional attenuation.
- Proposed network to discharge to same existing surface water to replicate the existing situation
- ADR: 20.0 l/s.
- Vol<sub>att</sub>: 64m of DN225 FD & 63m of DN300 OSP

Outlet to tie into existing network

- DS Pipe: Ø225mm
- Ch A1445
- CL: 9.720m
- IL: 7.61m

Ch A1438 to A1578 (both sides):

- Existing gullies connected to the Ø225 existing surface water network.
- New narrow profile gullies and connections required.
- Proposed additional gullies to connect to new drainage pipe along the road.
- Existing network depth to soffit varies from 1.81m to 2.1m.
- Increase in impermeable catchments = 146m<sup>2</sup>
- Increase in permeable area (331m<sup>2</sup>) on left hand side will compensate the right hand side additional impermeable area.
- No increase in impermeable area.
- No attenuation required.

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		Rev	Date	Drn	Chk'd	App'd	Description										
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<p>Drawing File Name</p> <p>BCIDC-ARP-DNG_RD-1415_XX_00-DR-CD-0004</p>		<p>Sheet Number</p> <p>04 of 23</p>	<p>Status</p> <p>A</p>	<p>Rev</p> <p>M01</p>	<p>DO NOT SCALE USE FIGURED DIMENSIONS ONLY</p>												



**LEGEND:**

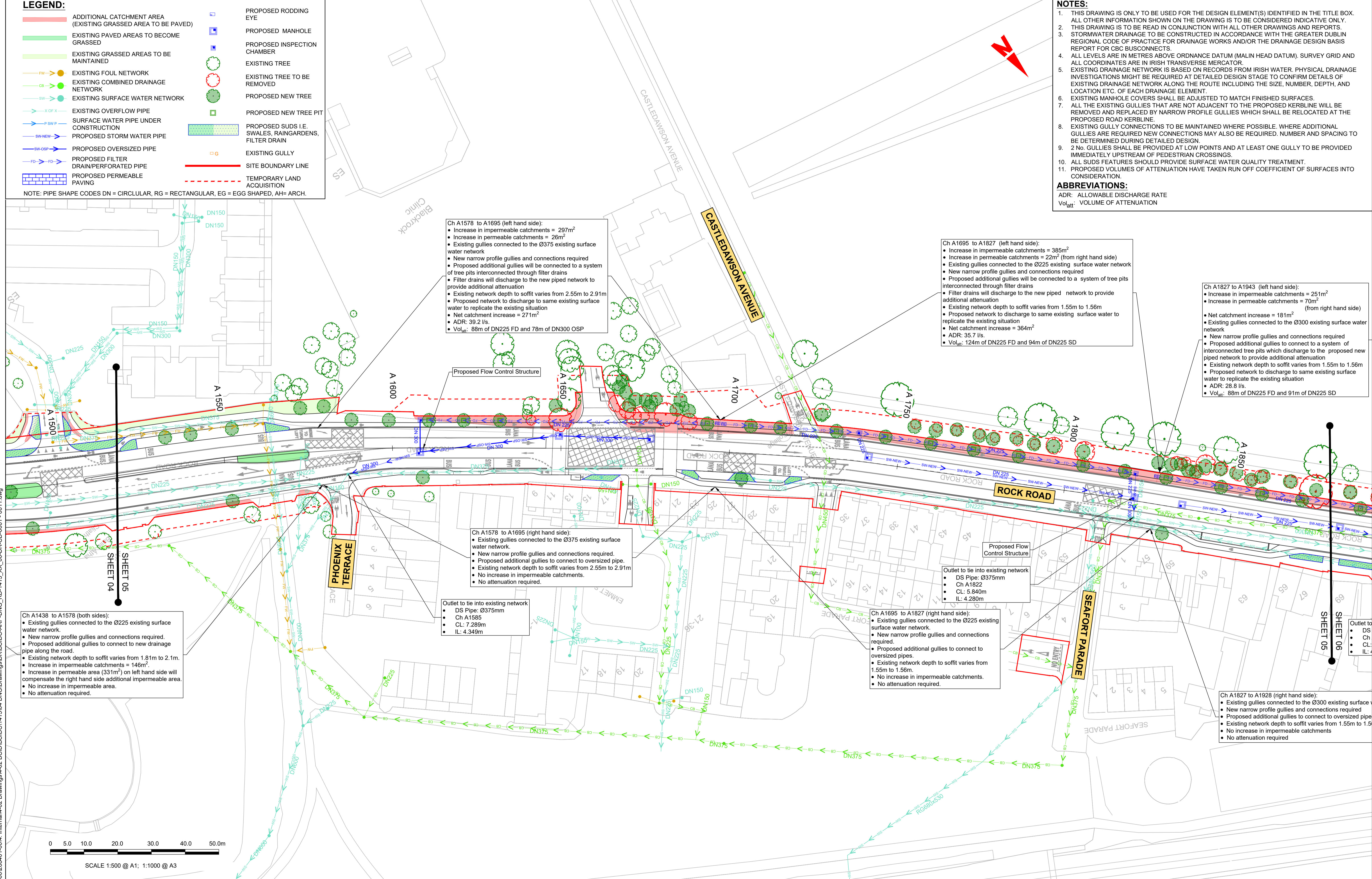
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- PROPOSED SUDS I.E. SWALES, RAINGARDENS, FILTER DRAIN
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- SITE BOUNDARY LINE
- TEMPORARY LAND ACQUISITION

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

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- ALL LEVELS ARE IN METRES ABOVE ORDNANCE DATUM (MALIN HEAD DATUM). SURVEY GRID AND ALL COORDINATES ARE IN IRISH TRANSVERSE MERCATOR.
- EXISTING DRAINAGE NETWORK IS BASED ON RECORDS FROM IRISH WATER. PHYSICAL DRAINAGE INVESTIGATIONS MIGHT 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.
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- 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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- PROPOSED VOLUMES OF ATTENUATION HAVE TAKEN RUN OFF COEFFICIENT OF SURFACES INTO CONSIDERATION.

**ABBREVIATIONS:**  
 ADR: ALLOWABLE DISCHARGE RATE  
 Vol<sub>att</sub>: VOLUME OF ATTENUATION



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**Project Ireland 2040**  
 Building Ireland's Future

Rev	Date	Drn	Chk'd	App'd	Description
M01	04/03/2022	AR	MR	NH	ISSUE FOR PHASE 4: PLANNING

Client: **NTA**  
 Údarás Náisiúnta Iompair  
 National Transport Authority

Engineering Designer: **ARUP**

Date: 04/03/2022 | Scale: 1:500 @ A1, 1:1000 @ A3 | Drawn: AR | Checked: MR | Approved: NH

Project Code: BCIDC | Originator Code: ARP | QMS Code: 268401-00

Programme Title: <b>BUSCONNECTS DUBLIN CORE BUS CORRIDORS INFRASTRUCTURE WORKS</b>			
Drawing Title: BELFIELD / BLACKROCK TO CITY CENTRE CORE BUS CORRIDOR SCHEME PROPOSED SURFACE WATER DRAINAGE WORKS			
Drawing File Name: BCIDC-ARP-DNG_RD-1415_XX_00-DR-CD-0005	Sheet Number: 05 of 23	Status: A	Rev: M01

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**LEGEND:**

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Ch A1827 to A1943 (left hand side):

- Increase in impermeable catchments = 251m<sup>2</sup>
- Increase in permeable catchments = 70m<sup>2</sup> (from right hand side)
- Net catchment increase = 181m<sup>2</sup>
- Existing gullies connected to the Ø300 existing surface water network
- New narrow profile gullies and connections required
- Proposed additional gullies to connect to a system of interconnected tree pits which discharge to the proposed new piped network to provide additional attenuation
- Existing network depth to soffit varies from 1.55m to 1.56m
- Proposed network to discharge to same existing surface water to replicate the existing situation
- ADR: 28.8 l/s
- Vol<sub>att</sub>: 88m<sup>3</sup> of DN225 FD and 91m<sup>3</sup> of DN225 SD

Ch A1943 to A2067 (left hand side):

- Existing gullies connected to the Ø300 existing surface water network
- New narrow profile gullies and connections required
- Proposed additional gullies to connect to existing network
- Existing network depth to soffit varies from 1.48m to 1.37m
- No increase in impermeable catchments
- No attenuation required

Ch A1928 to A2067 (right hand side):

- Increase in impermeable catchments = 357m<sup>2</sup>
- Increase in permeable catchments = 116m<sup>2</sup>
- Net catchment increase = 241m<sup>2</sup>
- Existing gullies connected to the Ø300 existing surface water network
- New narrow profile gullies and connections required
- Proposed additional gullies to connect to a system of tree pits and discharge to a proposed new piped network which provides additional attenuation
- Existing network depth to soffit varies from 1.48m to 1.37m
- Proposed network to discharge to same existing surface water to replicate the existing situation
- ADR: 17.8 l/s
- Vol<sub>att</sub>: 43m<sup>3</sup> of DN225 FD and 48m<sup>3</sup> of DN225 SD

Ch A2067 to A2215 (left hand side):

- Existing gullies connected to the Ø375 existing surface water network
- New narrow profile gullies and connections required
- Proposed additional gullies to connect to existing network
- Existing network depth to soffit varies from 1.22m to 1.48m
- No increase in impermeable catchments
- No attenuation required

Ch A2215 to A2230 (left hand side):

- New narrow profile gullies and connections will be required
- Existing gullies connected to the 400x800 rectangular shaped surface water network
- Depth to soffit is unknown
- All gullies to be therefore connected to the same network
- No increase in impermeable catchments
- No attenuation required

Ch A2210 to A2280 (right hand side):

- New narrow profile gullies and connections will be required
- Existing gullies connected to the Ø375 surface water network. Depth to soffit is approx 0.9m
- All gullies to be therefore connected to the same network
- No increase in impermeable catchments
- No attenuation required

Ch A2067 to A2215 (right hand side):

- Existing gullies connected to the Ø375 existing surface water network
- New narrow profile gullies and connections required
- Proposed additional gullies to connect to existing network
- Existing network depth to soffit varies from 1.22m to 1.48m
- No increase in impermeable catchments
- No attenuation required

Outlet to tie into existing network

- DS Pipe: Ø375mm
- Ch A2060
- CL: 5.19m
- IL: 3.71m

Outlet to tie into existing network

- DS Pipe: Ø375mm
- Ch A1928
- CL: 5.53m
- IL: 4.16m

Ch A1827 to A1928 (right hand side):

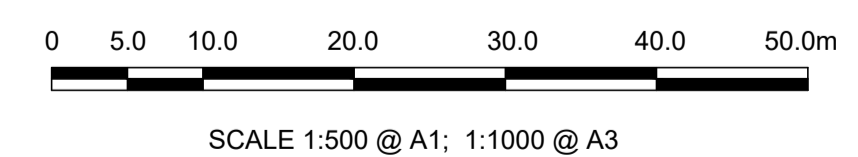
- Existing gullies connected to the Ø300 existing surface water network
- New narrow profile gullies and connections required
- Proposed additional gullies to connect to oversized pipes
- Existing network depth to soffit varies from 1.55m to 1.56m
- No increase in impermeable catchments
- No attenuation required

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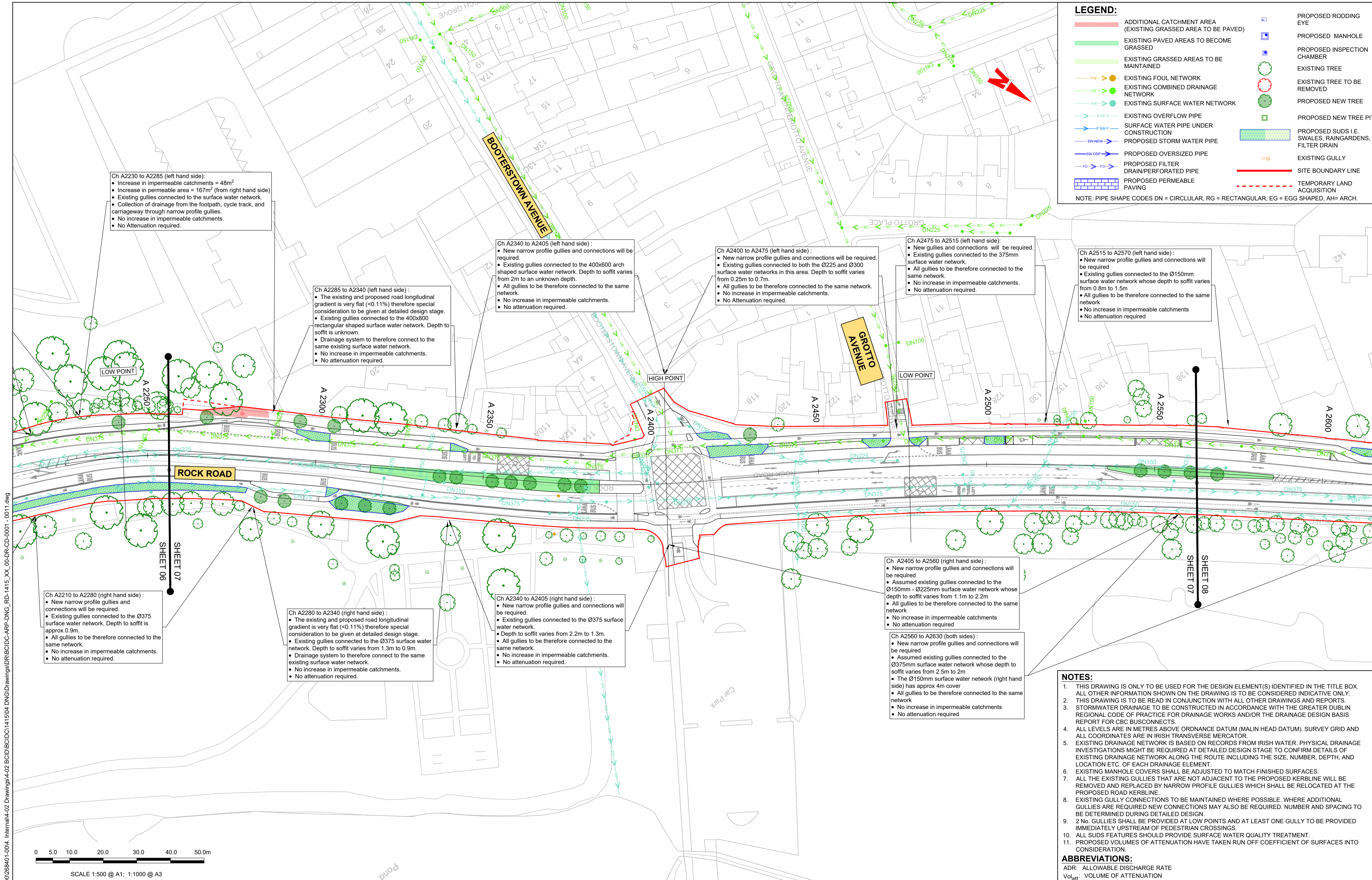
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Ch A2230 to A2285 (left hand side):

- Increase in impermeable catchments = 48m<sup>2</sup>
- Increase in permeable area = 167m<sup>2</sup> (from right hand side)
- Existing gullies connected to the surface water network
- Collection of drainage from the footpath, cycle track, and carriageway through narrow profile gullies.
- No increase in impermeable catchments.
- No Attenuation required.

Ch A2285 to A2340 (left hand side):

- The existing and proposed road longitudinal gradient is very flat (<0.11%) therefore special consideration to be given at detailed design stage.
- Existing gullies connected to the 400x800 rectangular shaped surface water network. Depth to soffit is unknown.
- Drainage system to therefore connect to the same existing surface water network.
- No increase in impermeable catchments.
- No attenuation required.

Ch A2340 to A2405 (left hand side):

- New narrow profile gullies and connections will be required.
- Existing gullies connected to the 400x600 arch shaped surface water network. Depth to soffit varies from 2m to an unknown depth.
- All gullies to be therefore connected to the same network.
- No increase in impermeable catchments.
- No attenuation required.

Ch A2400 to A2475 (left hand side):

- New narrow profile gullies and connections will be required.
- Existing gullies connected to both the Ø225 and Ø300 surface water networks in this area. Depth to soffit varies from 0.25m to 0.7m.
- All gullies to be therefore connected to the same network.
- No increase in impermeable catchments.
- No Attenuation required.

Ch A2475 to A2515 (left hand side):

- New gullies and connections will be required.
- Existing gullies connected to the 375mm surface water network.
- All gullies to be therefore connected to the same network.
- No increase in impermeable catchments.
- No attenuation required.

Ch A2515 to A2570 (left hand side):

- New narrow profile gullies and connections will be required
- Existing gullies connected to the Ø150mm surface water network whose depth to soffit varies from 0.8m to 1.5m
- All gullies to be therefore connected to the same network
- No increase in impermeable catchments
- No attenuation required

Ch A2210 to A2280 (right hand side):

- New narrow profile gullies and connections will be required.
- Existing gullies connected to the Ø375 surface water network. Depth to soffit is approx 0.9m.
- All gullies to be therefore connected to the same network.
- No increase in impermeable catchments.
- No attenuation required.

Ch A2280 to A2340 (right hand side):

- The existing and proposed road longitudinal gradient is very flat (<0.11%) therefore special consideration to be given at detailed design stage.
- Existing gullies connected to the Ø375 surface water network. Depth to soffit varies from 1.3m to 0.9m.
- Drainage system to therefore connect to the same existing surface water network.
- No increase in impermeable catchments.
- No attenuation required.

Ch A2340 to A2405 (right hand side):

- New narrow profile gullies and connections will be required.
- Existing gullies connected to the Ø375 surface water network.
- Depth to soffit varies from 2.2m to 1.3m.
- All gullies to be therefore connected to the same network.
- No increase in impermeable catchments.
- No attenuation required.

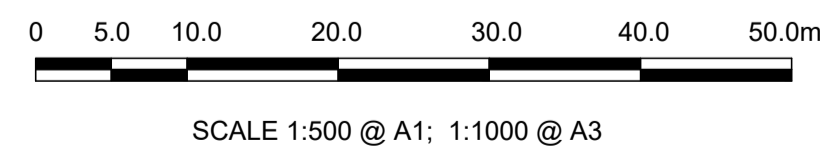
Ch A2405 to A2560 (right hand side):

- New narrow profile gullies and connections will be required
- Assumed existing gullies connected to the Ø150mm - Ø225mm surface water network whose depth to soffit varies from 1.1m to 2.2m
- All gullies to be therefore connected to the same network
- No increase in impermeable catchments
- No attenuation required

Ch A2560 to A2630 (both sides):

- New narrow profile gullies and connections will be required
- Assumed existing gullies connected to the Ø375mm surface water network whose depth to soffit varies from 2.5m to 2m
- The Ø150mm surface water network (right hand side) has approx 4m cover
- All gullies to be therefore connected to the same network
- No increase in impermeable catchments
- No attenuation required

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  - EXISTING DRAINAGE NETWORK IS BASED ON RECORDS FROM IRISH WATER. PHYSICAL DRAINAGE INVESTIGATIONS MIGHT 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.
  - EXISTING MANHOLE COVERS SHALL BE ADJUSTED TO MATCH FINISHED SURFACES.
  - 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.
  - 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.
  - 2 No. GULLIES SHALL BE PROVIDED AT LOW POINTS AND AT LEAST ONE GULLY TO BE PROVIDED IMMEDIATELY UPSTREAM OF PEDESTRIAN CROSSINGS.
  - ALL SUDS FEATURES SHOULD PROVIDE SURFACE WATER QUALITY TREATMENT.
  - PROPOSED VOLUMES OF ATTENUATION HAVE TAKEN RUN OFF COEFFICIENT OF SURFACES INTO CONSIDERATION.
- ABBREVIATIONS:**
- ADR: ALLOWABLE DISCHARGE RATE  
Vol<sub>att</sub>: VOLUME OF ATTENUATION



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Rev	Date	Drn	Chk'd	App'd	Description
M01	04/03/2022	AR	MR	NH	ISSUE FOR PHASE 4: PLANNING

Client: **NTA**  
Udárás Náisiúnta Iompair  
National Transport Authority

Engineering Designer: **ARUP**

Date: 04/03/2022 Scale: 1:500 @ A1, 1:1000 @ A3

Project Code: BCIDC Originator Code: ARP

QMS Code: 268401-00

Drawn: AR Checked: MR Approved: NH

Programme Title: <b>BUSCONNECTS DUBLIN CORE BUS CORRIDORS INFRASTRUCTURE WORKS</b>			
Drawing Title: BELFIELD / BLACKROCK TO CITY CENTRE CORE BUS CORRIDOR SCHEME PROPOSED SURFACE WATER DRAINAGE WORKS			
Drawing File Name: BCIDC-ARP-DNG_RD-1415_XX_00-DR-CD-0007	Sheet Number: 07 of 23	Status: A	Rev: M01

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

Ch A2515 to A2570 (left hand side):

- New narrow profile gullies and connections will be required
- Existing gullies connected to the Ø150mm surface water network whose depth to soffit varies from 0.8m to 1.5m
- All gullies to be therefore connected to the same network
- No increase in impermeable catchments
- No attenuation required

Ch A2880 to A2975 (left hand side):

- The existing and proposed road longitudinal gradient is very flat (<0.01%)
- Flat area - special consideration to be given at detailed design stage
- Existing gullies connected to the Ø300 surface water network on the other side of the road
- No increase in impermeable area
- No attenuation required

Ch A2630 to A2815 (both sides):

- New gullies and connections will be required
- Existing gullies connected to the Ø375mm surface water network whose depth to soffit varies from 3m to 2m
- All gullies to be therefore connected same network
- No increase in impermeable catchments
- No attenuation required

Ch A2815 to A2880 (both sides):

- Additional impermeable area: 70m<sup>2</sup>
- New narrow profile gullies and connections will be required
- Existing gullies connected to Ø300 surface water network whose depth to soffit varies from 1.3m to 2m
- All gullies to be connected to the same network
- The piped network located at Ch A2880 to A2958 will provide attenuation to compensate for the impermeable area

Ch A2560 to A2630 (both sides):

- New narrow profile gullies and connections will be required
- Assumed existing gullies connected to the Ø375mm surface water network whose depth to soffit varies from 2.5m to 2m
- The Ø150mm surface water network (right hand side) has approx 4m cover
- All gullies to be therefore connected to the same network
- No increase in impermeable catchments
- No attenuation required

Outlet to tie into existing network

- DS Pipe: Ø300mm
- Ch: 2880
- CL: 3.04m
- IL: 1.42m

Ch A2880 to A3015 (right hand side):

- Additional impermeable area: 376m<sup>2</sup>
- Existing gullies connected to the Ø300 surface water network which has approx 1.3m cover
- The existing and proposed road longitudinal gradient is very flat (<0.01%)
- Flat area - special consideration to be given at detailed design stage
- Proposed drainage system to connect to a series of tree pits which discharges to a filter drain that provides additional attenuation to compensate for the additional impermeable area located at Ch A2815 to A2880 (70m<sup>2</sup>)
- Net impermeable area to be attenuated: 446m<sup>2</sup>
- ADR: 11.9 l/s
- Vol<sub>att</sub>: 103m of DN300 FD

**LEGEND:**

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

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

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**ABBREVIATIONS:**

ADR: ALLOWABLE DISCHARGE RATE  
Vol<sub>att</sub>: VOLUME OF ATTENUATION

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Rev	Date	Drn	Chk'd	App'd	Description
M01	04/03/2022	AR	MR	NH	ISSUE FOR PHASE 4: PLANNING

Client: **NTA**  
Udarás Náisiúnta Iompair  
National Transport Authority

Engineering Designer: **ARUP**

Date: 04/03/2022 Scale: 1:500 @ A1, 1:1000 @ A3

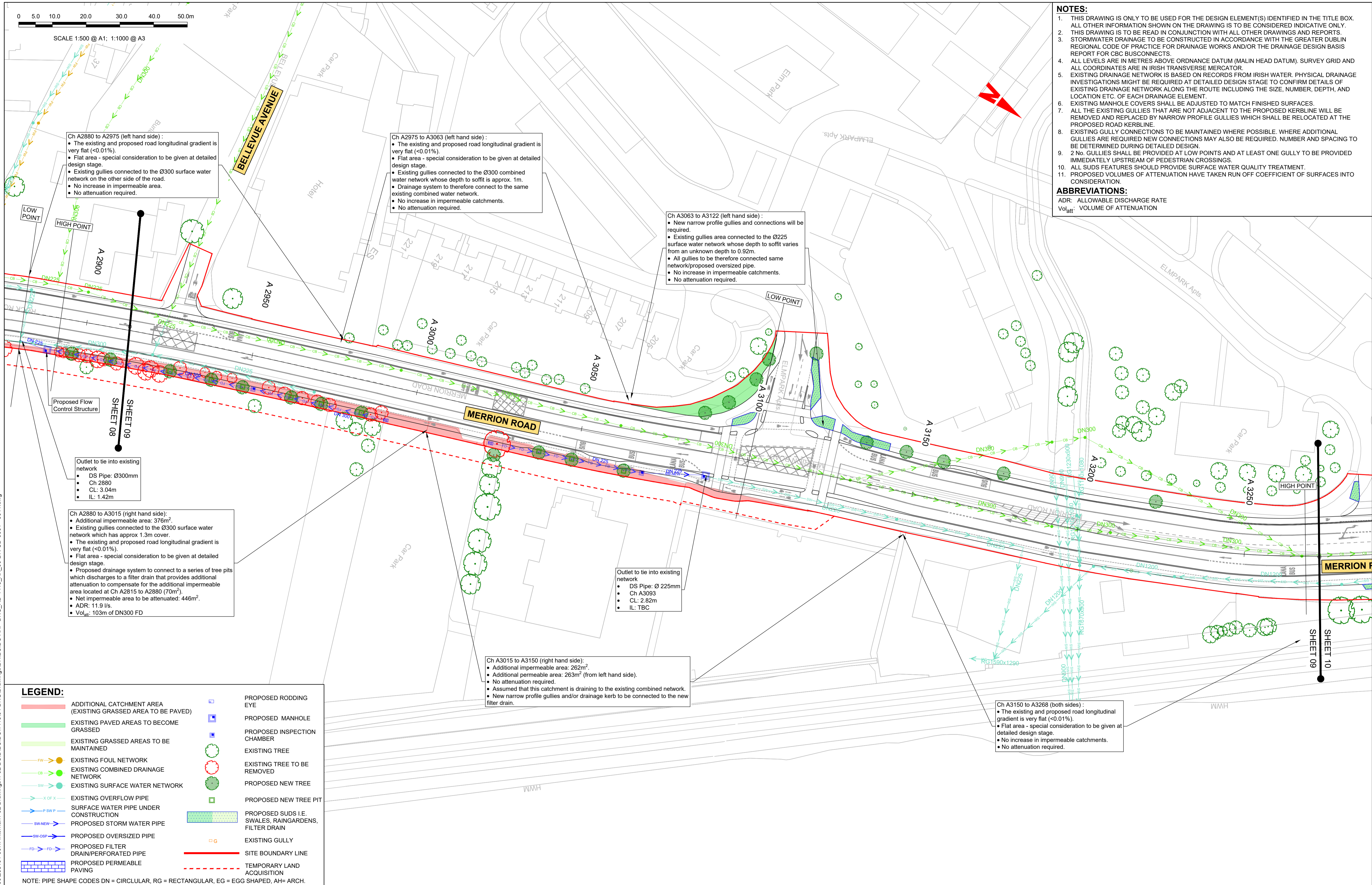
Project Code: BCIDC Originator Code: ARP QMS Code: 268401-00

Drawn: AR Checked: MR Approved: NH

Programme Title: <b>BUSCONNECTS DUBLIN CORE BUS CORRIDORS INFRASTRUCTURE WORKS</b>			
Drawing Title: BELFIELD / BLACKROCK TO CITY CENTRE CORE BUS CORRIDOR SCHEME PROPOSED SURFACE WATER DRAINAGE WORKS			
Drawing File Name: BCIDC-ARP-DNG_RD-1415_XX_00-DR-CD-0008	Sheet Number: 08 of 23	Status: A	Rev: M01

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- ABBREVIATIONS:**  
 ADR: ALLOWABLE DISCHARGE RATE  
 Vol<sub>att</sub>: VOLUME OF ATTENUATION

Ch A2880 to A2975 (left hand side):

- The existing and proposed road longitudinal gradient is very flat (<0.01%).
- Flat area - special consideration to be given at detailed design stage.
- Existing gullies connected to the Ø300 surface water network on the other side of the road.
- No increase in impermeable area.
- No attenuation required.

Ch A2975 to A3063 (left hand side):

- The existing and proposed road longitudinal gradient is very flat (<0.01%).
- Flat area - special consideration to be given at detailed design stage.
- Existing gullies connected to the Ø300 combined water network whose depth to soffit is approx. 1m.
- Drainage system to therefore connect to the same existing combined water network.
- No increase in impermeable catchments.
- No attenuation required.

Ch A3063 to A3122 (left hand side):

- New narrow profile gullies and connections will be required.
- Existing gullies area connected to the Ø225 surface water network whose depth to soffit varies from an unknown depth to 0.92m.
- All gullies to be therefore connected same network/proposed oversized pipe.
- No increase in impermeable catchments.
- No attenuation required.

Outlet to tie into existing network

- DS Pipe: Ø300mm
- Ch 2880
- CL: 3.04m
- IL: 1.42m

Ch A2880 to A3015 (right hand side):

- Additional impermeable area: 376m<sup>2</sup>.
- Existing gullies connected to the Ø300 surface water network which has approx 1.3m cover.
- The existing and proposed road longitudinal gradient is very flat (<0.01%).
- Flat area - special consideration to be given at detailed design stage.
- Proposed drainage system to connect to a series of tree pits which discharges to a filter drain that provides additional attenuation to compensate for the additional impermeable area located at Ch A2815 to A2880 (70m<sup>2</sup>).
- Net impermeable area to be attenuated: 446m<sup>2</sup>.
- ADR: 11.9 l/s.
- Vol<sub>att</sub>: 103m of DN300 FD

Outlet to tie into existing network

- DS Pipe: Ø 225mm
- Ch A3093
- CL: 2.82m
- IL: TBC

Ch A3015 to A3150 (right hand side):

- Additional impermeable area: 262m<sup>2</sup>.
- Additional permeable area: 263m<sup>2</sup> (from left hand side).
- No attenuation required.
- Assumed that this catchment is draining to the existing combined network.
- New narrow profile gullies and/or drainage kerb to be connected to the new filter drain.

Ch A3150 to A3268 (both sides):

- The existing and proposed road longitudinal gradient is very flat (<0.01%).
- Flat area - special consideration to be given at detailed design stage.
- No increase in impermeable catchments.
- No attenuation required.

**LEGEND:**

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

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

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**Project Ireland 2040**  
Building Ireland's Future

Rev	Date	Drn	Chk'd	App'd	Description
M01	04/03/2022	AR	MR	NH	ISSUE FOR PHASE 4: PLANNING

Client: **NTA**  
Údarás Náisiúnta Iompair  
National Transport Authority

Engineering Designer: **ARUP**

Date: 04/03/2022 | Scale: 1:500 @ A1, 1:1000 @ A3

Drawn: AR | Checked: MR | Approved: NH

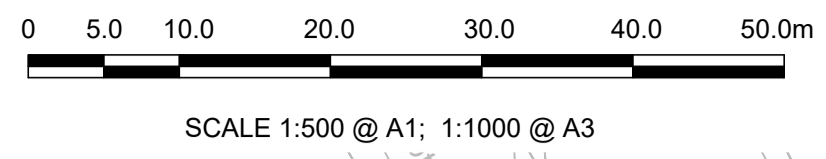
Project Code: BCIDC | Originator Code: ARP | QMS Code: 268401-00

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

Drawing Title: BELFIELD / BLACKROCK TO CITY CENTRE CORE BUS CORRIDOR SCHEME PROPOSED SURFACE WATER DRAINAGE WORKS

Drawing File Name: BCIDC-ARP-DNG\_RD-1415\_XX\_00-DR-CD-0009 | Sheet Number: 09 of 23 | Status: A | Rev: M01





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Vol<sub>att</sub>: VOLUME OF ATTENUATION

Ch A3255 to A3320 (both sides):

- New narrow profile gullies and connections will be required
- Existing gullies connected to the Ø300 combined water network whose depth to soffit is unknown
- All gullies to be therefore connected to the same network
- No increase in impermeable catchments
- No attenuation required

Ch A3320 to A3410 (left hand side):

- Existing gullies connected to the Ø1200mm surface water network.
- Proposed new drainage network to collect new side gully connections.
- New network also added to avoid multiple connections to the surface water network across the road.
- New narrow profile gullies and connections will be required.
- Proposed network to discharge to existing Ø1200 surface network to replicate the existing situation.
- No increase in impermeable catchments.
- No attenuation required.

Ch A3410 to A3452 (left hand side):

- Increase in impermeable area: 104m<sup>2</sup>.
- Increase in impermeable area to be compensated with permeable area on right hand side Ch A3319 to A3452.
- Existing gullies connected to the surface water network.
- Collection of drainage from the footpath, cycle track and carriageway through narrow profile gullies.
- Narrow profile gullies will be connected to a new drainage pipe.
- No attenuation required.

Ch A3452 to A3630 (left hand side):

- Increase of additional area: 48m<sup>2</sup>.
- New narrow profile gullies and connections will be required.
- Existing gullies connected to the egg shaped combined water network whose depth to soffit varies from 1.12m to 2.37m.
- The existing egg shaped combined network varies in pipe size from 1020x800 to 1050x770.
- All gullies to be connected to the same network.
- The filter drain located at Ch A3660 to A3772 will provide attenuation to compensate for this impermeable area.

Ch A3319 to A3452 (right hand side):

- Total additional impermeable catchment area: 134m<sup>2</sup> + 104m<sup>2</sup> (from left hand side) = 238m<sup>2</sup>.
- This is compensated with existing paved area to become grassed (300m<sup>2</sup>).
- Existing gullies connected to the Ø1200mm surface water network whose depth to soffit varies from an unknown depth.
- Collection of drainage from the footpath and carriageway through narrow profile gullies which will discharge to the existing surface water pipe.
- Breaks will also be provided in the cycle track kerbline to discharge surface water into the bio retention area.
- No attenuation required.

Outlet to tie into existing network

- DS Pipe: Ø1200mm
- Ch A3452
- CL: 3.391m
- IL: 1.928m

Ch A3452 to A3535 (right hand side):

- Existing gullies are located at intersection of Merrion Road and Strand Road drain this section of roadway and are connected to the Ø1200 existing surface water network.
- New narrow profile gullies and connections required.
- Proposed new drainage network to collect new narrow profile gullies.
- Proposed network to discharge to the same existing surface water to replicate the existing situation.
- Increase in impermeable catchment compensated for at Ch A3319 to A3452.

Ch A3535 to A3630 (right hand side):

- New narrow profile gullies and connections will be required.
- Existing gullies connected to the egg shaped combined sewer network whose depth to soffit varies from 2.37m to 2.13m.
- All gullies to be connected to the same combined network.
- No increase in impermeable catchments.
- No attenuation required.

2 Outlets to tie into existing network

- DS Pipe: Ø1200mm
- Ch A3319m
- CL: 3.7m
- IL: TBC

Strand Road

- No increase of impermeable area.

**LEGEND:**

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

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

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Building Ireland's Future

Rev	Date	Drn	Chk'd	App'd	Description
M01	04/03/2022	AR	MR	NH	ISSUE FOR PHASE 4: PLANNING

Client: **NTA**  
Udárás Náisiúnta Iompair  
National Transport Authority

Date: 04/03/2022 Scale: 1:500 @ A1  
1:1000 @ A3

Engineering Designer: **ARUP**

Drawn: AR Checked: MR Approved: NH

Project Code: BCIDC Originator Code: ARP QMS Code: 268401-00

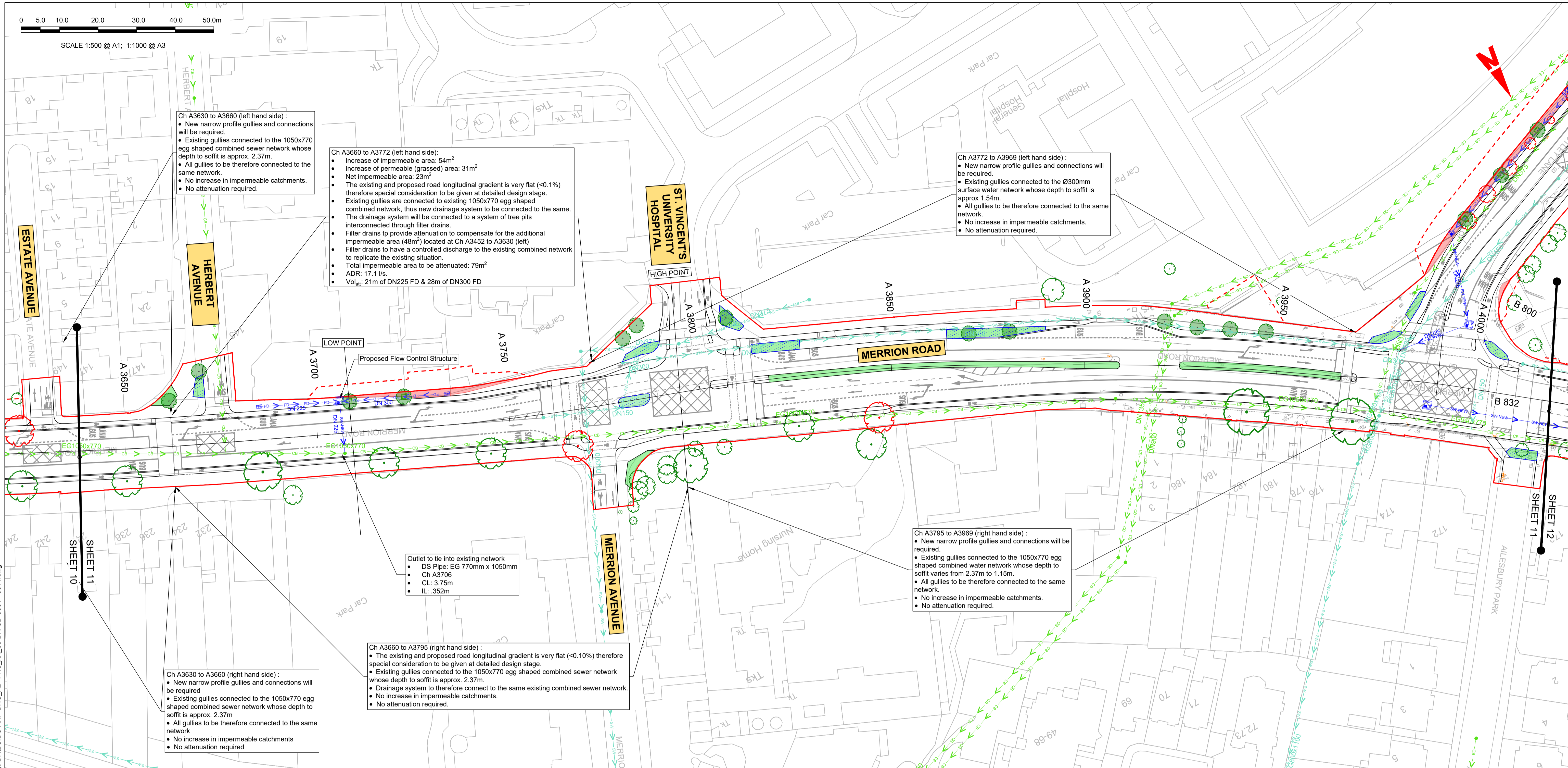
Programme Title: **BUSCONNECTS DUBLIN**  
**CORE BUS CORRIDORS INFRASTRUCTURE WORKS**

Drawing Title: BELFIELD / BLACKROCK TO CITY CENTRE CORE BUS CORRIDOR SCHEME  
PROPOSED SURFACE WATER DRAINAGE WORKS

Drawing File Name: BCIDC-ARP-DNG\_RD-1415\_XX\_00-DR-CD-0010 Sheet Number: 10 of 23 Status: A Rev: M01

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Ch A3630 to A3660 (left hand side):

- New narrow profile gullies and connections will be required.
- Existing gullies connected to the 1050x770 egg shaped combined sewer network whose depth to soffit is approx. 2.37m.
- All gullies to be therefore connected to the same network.
- No increase in impermeable catchments.
- No attenuation required.

Ch A3660 to A3772 (left hand side):

- Increase of impermeable area: 54m<sup>2</sup>
- Increase of permeable (grassed) area: 31m<sup>2</sup>
- Net impermeable area: 23m<sup>2</sup>
- The existing and proposed road longitudinal gradient is very flat (<0.1%) therefore special consideration to be given at detailed design stage.
- Existing gullies are connected to existing 1050x770 egg shaped combined network, thus new drainage system to be connected to the same.
- The drainage system will be connected to a system of tree pits interconnected through filter drains.
- Filter drains to provide attenuation to compensate for the additional impermeable area (48m<sup>2</sup>) located at Ch A3452 to A3630 (left)
- Filter drains to have a controlled discharge to the existing combined network to replicate the existing situation.
- Total impermeable area to be attenuated: 79m<sup>2</sup>
- ADR: 17.1 l/s.
- Vol<sub>att</sub>: 21m of DN225 FD & 28m of DN300 FD

Ch A3772 to A3969 (left hand side):

- New narrow profile gullies and connections will be required.
- Existing gullies connected to the Ø300mm surface water network whose depth to soffit is approx 1.54m.
- All gullies to be therefore connected to the same network.
- No increase in impermeable catchments.
- No attenuation required.

Ch A3795 to A3969 (right hand side):

- New narrow profile gullies and connections will be required.
- Existing gullies connected to the 1050x770 egg shaped combined water network whose depth to soffit varies from 2.37m to 1.15m.
- All gullies to be therefore connected to the same network.
- No increase in impermeable catchments.
- No attenuation required.

Ch A3660 to A3795 (right hand side):

- The existing and proposed road longitudinal gradient is very flat (<0.10%) therefore special consideration to be given at detailed design stage.
- Existing gullies connected to the 1050x770 egg shaped combined sewer network whose depth to soffit is approx. 2.37m.
- Drainage system to therefore connect to the same existing combined sewer network.
- No increase in impermeable catchments.
- No attenuation required.

Ch A3630 to A3660 (right hand side):

- New narrow profile gullies and connections will be required.
- Existing gullies connected to the 1050x770 egg shaped combined sewer network whose depth to soffit is approx. 2.37m
- All gullies to be therefore connected to the same network
- No increase in impermeable catchments
- No attenuation required

Outlet to tie into existing network

- DS Pipe: EG 770mm x 1050mm
- Ch A3706
- CL: 3.75m
- IL: .352m

**LEGEND:**

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

NOTE: PIPE SHAPE CODING DN = CIRCULAR, RG = RECTANGULAR, EG = EGG SHAPED, AH= ARCH.

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- ALL LEVELS ARE IN METRES ABOVE ORDNANCE DATUM (MALIN HEAD DATUM). SURVEY GRID AND ALL COORDINATES ARE IN IRISH TRANSVERSE MERCATOR.
- EXISTING DRAINAGE NETWORK IS BASED ON RECORDS FROM IRISH WATER. PHYSICAL DRAINAGE INVESTIGATIONS MIGHT 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.
- EXISTING MANHOLE COVERS SHALL BE ADJUSTED TO MATCH FINISHED SURFACES.
- 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.
- 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.
- 2 No. GULLIES SHALL BE PROVIDED AT LOW POINTS AND AT LEAST ONE GULLY TO BE PROVIDED IMMEDIATELY UPSTREAM OF PEDESTRIAN CROSSINGS.
- ALL SUDS FEATURES SHOULD PROVIDE SURFACE WATER QUALITY TREATMENT.
- PROPOSED VOLUMES OF ATTENUATION HAVE TAKEN RUN OFF COEFFICIENT OF SURFACES INTO CONSIDERATION.

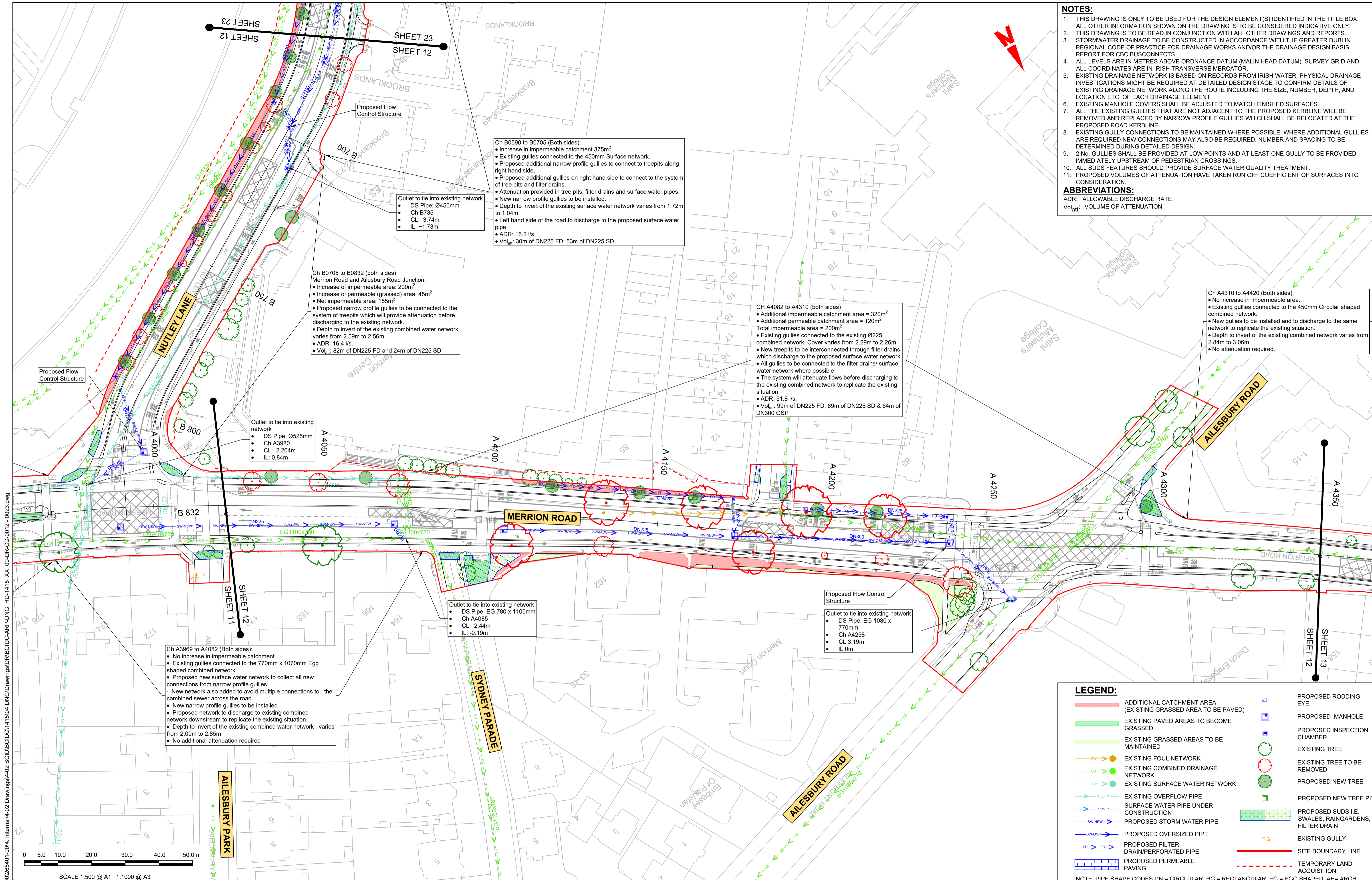
**ABBREVIATIONS:**

ADR: ALLOWABLE DISCHARGE RATE  
Vol<sub>att</sub>: VOLUME OF ATTENUATION

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<p>Date: 04/03/2022</p>		<p>Scale: 1:500 @ A1 1:1000 @ A3</p>		<p>Drawn: AR</p>		<p>Checked: MR</p>		<p>Approved: NH</p>		<p>Drawing Title: BELFIELD / BLACKROCK TO CITY CENTRE CORE BUS CORRIDOR SCHEME PROPOSED SURFACE WATER DRAINAGE WORKS</p>	
<p>Project Code: BCIDC</p>		<p>Originator Code: ARP</p>		<p>QMS Code: 268401-00</p>		<p>Drawing File Name: BCIDC-ARP-DNG_RD-1415_XX_00-DR-CD-0011</p>		<p>Sheet Number: 11 of 23</p>		<p>Status: A</p>	
<p>Project Logo: <b>Project Ireland 2040</b> Building Ireland's Future</p>		<p>Rev M01</p>		<p>Date: 04/03/2022</p>		<p>Scale: 1:500 @ A1 1:1000 @ A3</p>		<p>Drawn: AR</p>		<p>Approved: NH</p>	

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  - EXISTING DRAINAGE NETWORK IS BASED ON RECORDS FROM IRISH WATER. PHYSICAL DRAINAGE INVESTIGATIONS MIGHT 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.
  - EXISTING MANHOLE COVERS SHALL BE ADJUSTED TO MATCH FINISHED SURFACES.
  - 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.
  - 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.
  - 2 No. GULLIES SHALL BE PROVIDED AT LOW POINTS AND AT LEAST ONE GULLY TO BE PROVIDED IMMEDIATELY UPSTREAM OF PEDESTRIAN CROSSINGS.
  - ALL SUDS FEATURES SHOULD PROVIDE SURFACE WATER QUALITY TREATMENT.
  - PROPOSED VOLUMES OF ATTENUATION HAVE TAKEN RUN OFF COEFFICIENT OF SURFACES INTO CONSIDERATION.
- ABBREVIATIONS:**  
 ADR: ALLOWABLE DISCHARGE RATE  
 Vol<sub>att</sub>: VOLUME OF ATTENUATION

**Ch B0590 to B0705 (Both sides):**

- Increase in impermeable catchment 375m<sup>2</sup>.
- Existing gullies connected to the 450mm Surface network.
- Proposed additional narrow profile gullies to connect to treepits along right hand side.
- Proposed additional gullies on right hand side to connect to the system of tree pits and filter drains.
- Attenuation provided in tree pits, filter drains and surface water pipes.
- New narrow profile gullies to be installed.
- Depth to invert of the existing surface water network varies from 1.72m to 1.04m.
- Left hand side of the road to discharge to the proposed surface water pipe.
- ADR: 16.2 l/s.
- Vol<sub>att</sub>: 30m of DN225 FD; 53m of DN225 SD.

**Ch B0705 to B0832 (both sides) Merrion Road and Ailesbury Road Junction:**

- Increase of impermeable area: 200m<sup>2</sup>
- Increase of permeable (grassed) area: 45m<sup>2</sup>
- Net impermeable area: 155m<sup>2</sup>
- Proposed narrow profile gullies to be connected to the system of treepits which will provide attenuation before discharging to the existing network.
- Depth to invert of the existing combined water network varies from 2.59m to 2.56m.
- ADR: 16.4 l/s.
- Vol<sub>att</sub>: 82m of DN225 FD and 24m of DN225 SD

**Ch A4082 to A4310 (both sides)**

- Additional impermeable catchment area = 320m<sup>2</sup>
- Additional permeable catchment area = 120m<sup>2</sup>
- Total impermeable area = 200m<sup>2</sup>
- Existing gullies connected to the existing Ø225 combined network. Cover varies from 2.29m to 2.26m.
- New treepits to be interconnected through filter drains which discharge to the proposed surface water network
- All gullies to be connected to the filter drains/ surface water network where possible
- The system will attenuate flows before discharging to the existing combined network to replicate the existing situation
- ADR: 51.8 l/s.
- Vol<sub>att</sub>: 99m of DN225 FD, 89m of DN225 SD & 64m of DN300 OSP

**Ch A4310 to A4420 (Both sides):**

- No increase in impermeable area.
- Existing gullies connected to the 450mm Circular shaped combined network.
- New gullies to be installed and to discharge to the same network to replicate the existing situation.
- Depth to invert of the existing combined network varies from 2.84m to 3.06m
- No attenuation required.

**Ch A3969 to A4082 (Both sides):**

- No increase in impermeable catchment
- Existing gullies connected to the 770mm x 1070mm Egg shaped combined network
- Proposed new surface water network to collect all new connections from narrow profile gullies
- New network also added to avoid multiple connections to the combined sewer across the road
- New narrow profile gullies to be installed
- Proposed network to discharge to existing combined network downstream to replicate the existing situation
- Depth to invert of the existing combined water network varies from 2.09m to 2.85m
- No additional attenuation required

**Outlet to tie into existing network**

- DS Pipe: Ø450mm
- Ch B735
- CL: 3.74m
- IL: -1.73m

**Outlet to tie into existing network**

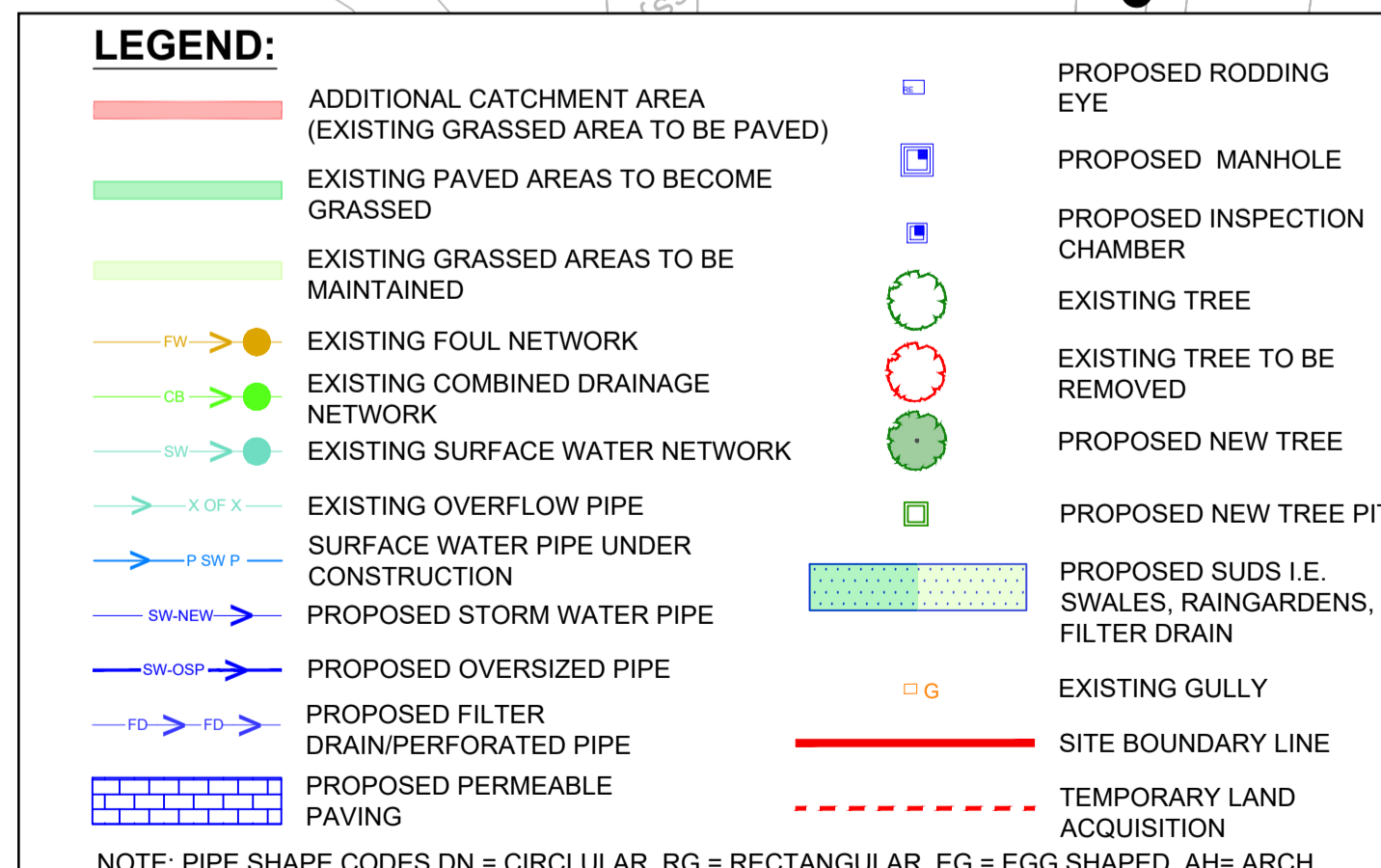
- DS Pipe: Ø525mm
- Ch A3980
- CL: 2.204m
- IL: 0.84m

**Outlet to tie into existing network**

- DS Pipe: EG 780 x 1100mm
- Ch A4085
- CL: 2.44m
- IL: -0.19m

**Proposed Flow Control Structure**

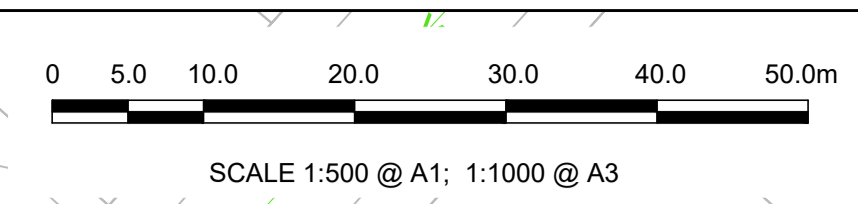
- Outlet to tie into existing network
- DS Pipe: EG 1080 x 770mm
- Ch A4258
- CL 3.19m
- IL 0m



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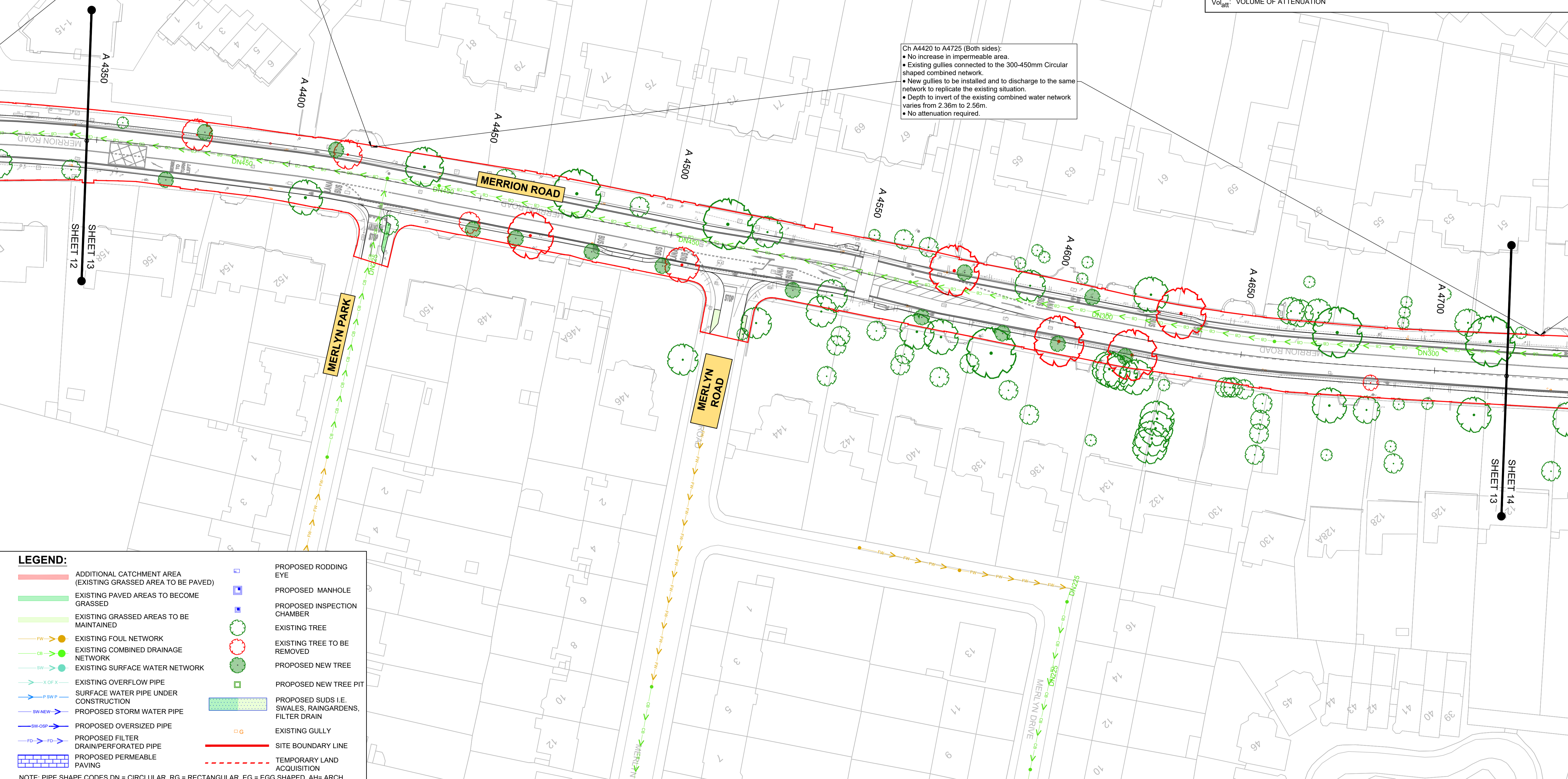
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- ABBREVIATIONS:**  
 ADR: ALLOWABLE DISCHARGE RATE  
 Vol<sub>att</sub>: VOLUME OF ATTENUATION

Ch A4310 to A4420 (Both sides):

- No increase in impermeable area.
- Existing gullies connected to the 450mm Circular shaped combined network.
- New gullies to be installed and to discharge to the same network to replicate the existing situation.
- Depth to invert of the existing combined network varies from 2.84m to 3.06m
- No attenuation required.

Ch A4420 to A4725 (Both sides):

- No increase in impermeable area.
- Existing gullies connected to the 300-450mm Circular shaped combined network.
- New gullies to be installed and to discharge to the same network to replicate the existing situation.
- Depth to invert of the existing combined water network varies from 2.36m to 2.56m.
- No attenuation required.



**LEGEND:**

	ADDITIONAL CATCHMENT AREA (EXISTING GRASSED AREA TO BE PAVED)		PROPOSED RODDING EYE
	EXISTING PAVED AREAS TO BECOME GRASSED		PROPOSED MANHOLE
	EXISTING GRASSED AREAS TO BE MAINTAINED		PROPOSED INSPECTION CHAMBER
	EXISTING FOUL NETWORK		EXISTING TREE
	EXISTING COMBINED DRAINAGE NETWORK		EXISTING TREE TO BE REMOVED
	EXISTING SURFACE WATER NETWORK		PROPOSED NEW TREE
	EXISTING OVERFLOW PIPE		PROPOSED NEW TREE PIT
	SURFACE WATER PIPE UNDER CONSTRUCTION		PROPOSED SUDS I.E. SWALES, RAINGARDENS, FILTER DRAIN
	PROPOSED STORM WATER PIPE		EXISTING GULLY
	PROPOSED OVERSIZED PIPE		SITE BOUNDARY LINE
	PROPOSED FILTER DRAIN/PERFORATED PIPE		TEMPORARY LAND ACQUISITION
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Rev	Date	Drn	Chk'd	App'd	Description
M01	04/03/2022	AR	MR	NH	ISSUE FOR PHASE 4: PLANNING

Client: **NTA**  
 Údarás Náisiúnta Iompair  
 National Transport Authority

Engineering Designer: **ARUP**

Date: 04/03/2022 Scale: 1:500 @ A1, 1:1000 @ A3

Project Code: BCIDC Originator Code: ARP QMS Code: 268401-00

Drawn: AR Checked: MR Approved: NH

Programme Title: <b>BUSCONNECTS DUBLIN CORE BUS CORRIDORS INFRASTRUCTURE WORKS</b>			
Drawing Title: BELFIELD 1 BLACKROCK TO CITY CENTRE CORE BUS CORRIDOR SCHEME PROPOSED SURFACE WATER DRAINAGE WORKS			
Drawing File Name: BCIDC-ARP-DNG_RD-1415_XX_00-DR-CD-0013	Sheet Number: 13 of 23	Status: A	Rev: M01

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**LEGEND:**

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

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

**NOTES:**

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- THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER DRAWINGS AND REPORTS.
- 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.
- ALL LEVELS ARE IN METRES ABOVE ORDNANCE DATUM (MALIN HEAD DATUM), SURVEY GRID AND ALL COORDINATES ARE IN IRISH TRANSVERSE MERCATOR.
- EXISTING DRAINAGE NETWORK IS BASED ON RECORDS FROM IRISH WATER. PHYSICAL DRAINAGE INVESTIGATIONS MIGHT 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.
- EXISTING MANHOLE COVERS SHALL BE ADJUSTED TO MATCH FINISHED SURFACES.
- 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.
- 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.
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- ALL SUDS FEATURES SHOULD PROVIDE SURFACE WATER QUALITY TREATMENT.
- PROPOSED VOLUMES OF ATTENUATION HAVE TAKEN RUN OFF COEFFICIENT OF SURFACES INTO CONSIDERATION.

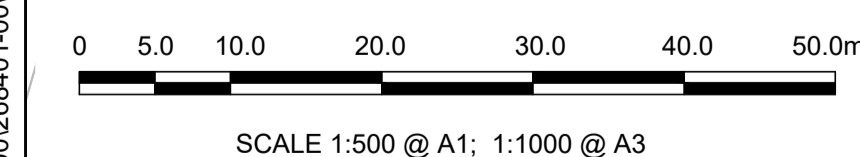
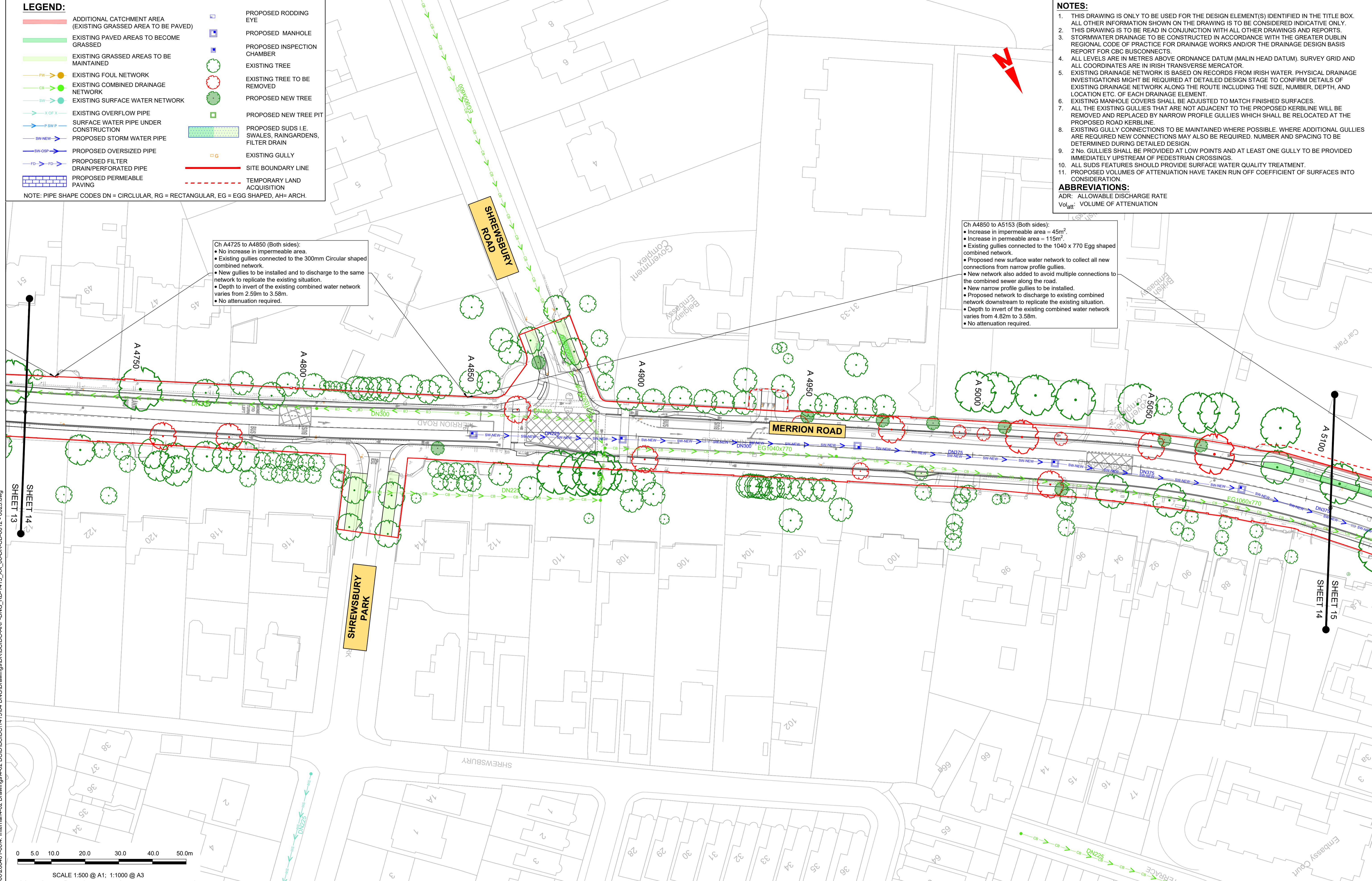
**ABBREVIATIONS:**  
ADR: ALLOWABLE DISCHARGE RATE  
Vol<sub>att</sub>: VOLUME OF ATTENUATION

Ch A4725 to A4850 (Both sides):

- No increase in impermeable area.
- Existing gullies connected to the 300mm Circular shaped combined network.
- New gullies to be installed and to discharge to the same network to replicate the existing situation.
- Depth to invert of the existing combined water network varies from 2.59m to 3.58m.
- No attenuation required.

Ch A4850 to A5153 (Both sides):

- Increase in impermeable area = 45m<sup>2</sup>.
- Increase in permeable area = 115m<sup>2</sup>.
- Existing gullies connected to the 1040 x 770 Egg shaped combined network.
- Proposed new surface water network to collect all new connections from narrow profile gullies.
- New network also added to avoid multiple connections to the combined sewer along the road.
- New narrow profile gullies to be installed.
- Proposed network to discharge to existing combined network downstream to replicate the existing situation.
- Depth to invert of the existing combined water network varies from 4.82m to 3.58m.
- No attenuation required.



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Rev	Date	Drn	Chk'd	App'd	Description
M01	04/03/2022	AR	MR	NH	ISSUE FOR PHASE 4: PLANNING

Client: **NTA**  
Údarás Náisiúnta Iompair  
National Transport Authority

Engineering Designer: **ARUP**

Date: 04/03/2022 Scale: 1:500 @ A1, 1:1000 @ A3  
Drawn: AR, Checked: MR, Approved: NH

Project Code: BCIDC, Originator Code: ARP, QMS Code: 268401-00

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

Drawing Title: BELFIELD | BLACKROCK TO CITY CENTRE CORE BUS CORRIDOR SCHEME PROPOSED SURFACE WATER DRAINAGE WORKS

Drawing File Name: BCIDC-ARP-DNG\_RD-1415\_XX\_00-DR-CD-0014, Sheet Number: 14 of 23, Status: A, Rev: M01

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**NOTES:**

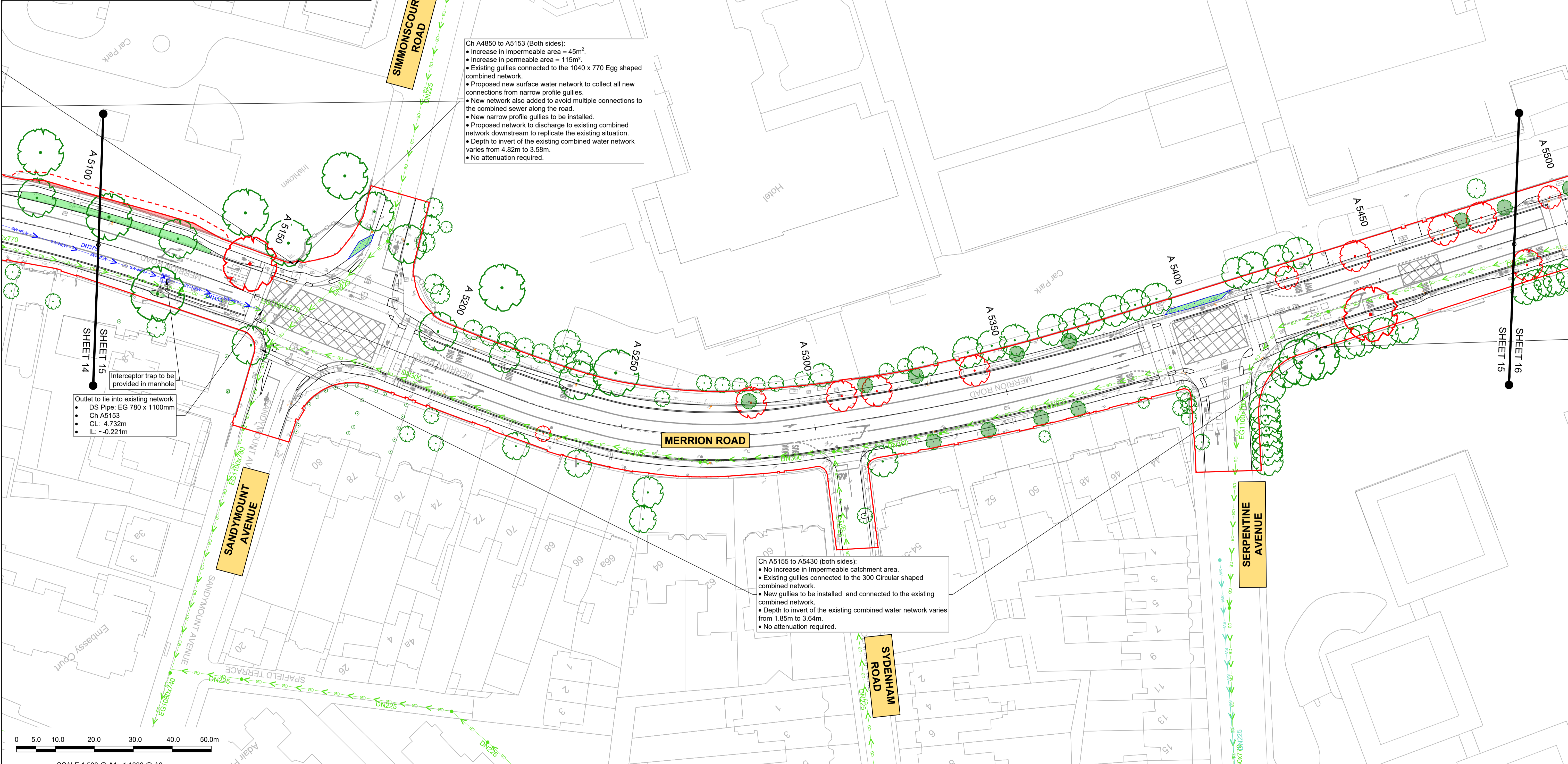
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- PROPOSED VOLUMES OF ATTENUATION HAVE TAKEN RUN OFF COEFFICIENT OF SURFACES INTO CONSIDERATION.

**ABBREVIATIONS:**  
 ADR: ALLOWABLE DISCHARGE RATE  
 Vol<sub>att</sub>: VOLUME OF ATTENUATION

**LEGEND:**

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

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



<p>Rev   Date   Drn   Chk'd   App'd   Description</p> <p>M01   04/03/2022   AR   MR   NH   ISSUE FOR PHASE 4: PLANNING</p>					<p>Client</p> <p><b>NTA</b> Údarás Náisiúnta Iompair National Transport Authority</p>			<p>Engineering Designer</p> <p><b>ARUP</b></p>			<p>Programme Title</p> <p><b>BUSCONNECTS DUBLIN CORE BUS CORRIDORS INFRASTRUCTURE WORKS</b></p>			
<p>Project Code: BCIDC</p> <p>Originator Code: ARP</p> <p>QMS Code: 268401-00</p>					<p>Date: 04/03/2022</p> <p>Scale: 1:500 @ A1, 1:1000 @ A3</p> <p>Drawn: AR</p> <p>Checked: MR</p> <p>Approved: NH</p>			<p>Drawing Title</p> <p>BELFIELD   BLACKROCK TO CITY CENTRE CORE BUS CORRIDOR SCHEME PROPOSED SURFACE WATER DRAINAGE WORKS</p>						
<p>Drawing File Name: BCIDC-ARP-DNG_RD-1415_XX_00-DR-CD-0015</p> <p>Sheet Number: 15 of 23</p> <p>Status: A</p> <p>Rev: M01</p>					<p>Scale: 1:500 @ A1; 1:1000 @ A3</p>									

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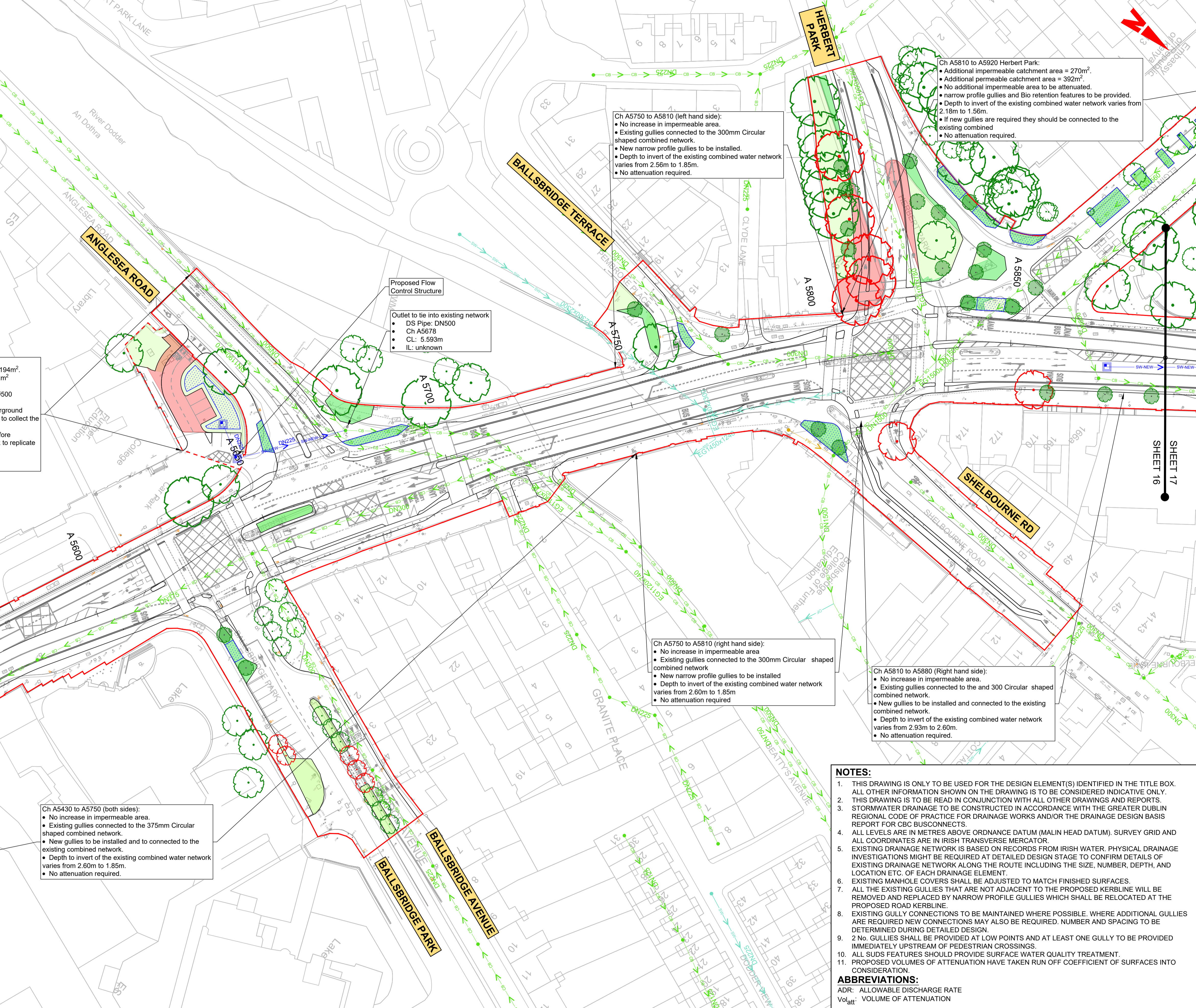
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**LEGEND:**

- 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.



Anglesea Road (both sides):

- Additional impermeable catchment area = 194m<sup>2</sup>
- Increase of permeable (grassed) area: 142m<sup>2</sup>
- Net impermeable area: 52m<sup>2</sup>
- Existing gullies connected to the existing Ø500 combined network.
- Proposed SuDS area in the shape of underground storage (open graded crushed rock - OGCR) to collect the impermeable area
- The SuDS area will provide attenuation before discharging to the existing combined network to replicate the existing situation.
- ADR: 2.7 l/s.
- Vol<sub>att</sub>: OGCR = 3.1 m<sup>3</sup>

Ch A5430 to A5750 (both sides):

- No increase in impermeable area.
- Existing gullies connected to the 375mm Circular shaped combined network.
- New gullies to be installed and to be connected to the existing combined network.
- Depth to invert of the existing combined water network varies from 2.60m to 1.85m.
- No attenuation required.

Ch A5750 to A5810 (right hand side):

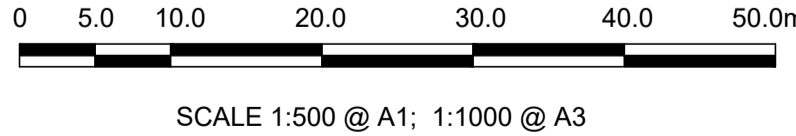
- No increase in impermeable area.
- Existing gullies connected to the 300mm Circular shaped combined network.
- New narrow profile gullies to be installed.
- Depth to invert of the existing combined water network varies from 2.60m to 1.85m.
- No attenuation required.

Ch A5810 to A5880 (Right hand side):

- No increase in impermeable area.
- Existing gullies connected to the and 300 Circular shaped combined network.
- New gullies to be installed and connected to the existing combined network.
- Depth to invert of the existing combined water network varies from 2.93m to 2.60m.
- No attenuation required.

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  - EXISTING MANHOLE COVERS SHALL BE ADJUSTED TO MATCH FINISHED SURFACES.
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  - PROPOSED VOLUMES OF ATTENUATION HAVE TAKEN RUN OFF COEFFICIENT OF SURFACES INTO CONSIDERATION.
- ABBREVIATIONS:**
- ADR: ALLOWABLE DISCHARGE RATE  
Vol<sub>att</sub>: VOLUME OF ATTENUATION

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Rev	Date	Drn	Chk'd	App'd	Description
M01	04/03/2022	AR	MR	NH	ISSUE FOR PHASE 4: PLANNING

Client: **NTA**  
Udárás Náisiúnta Iompair  
National Transport Authority

Engineering Designer: **ARUP**

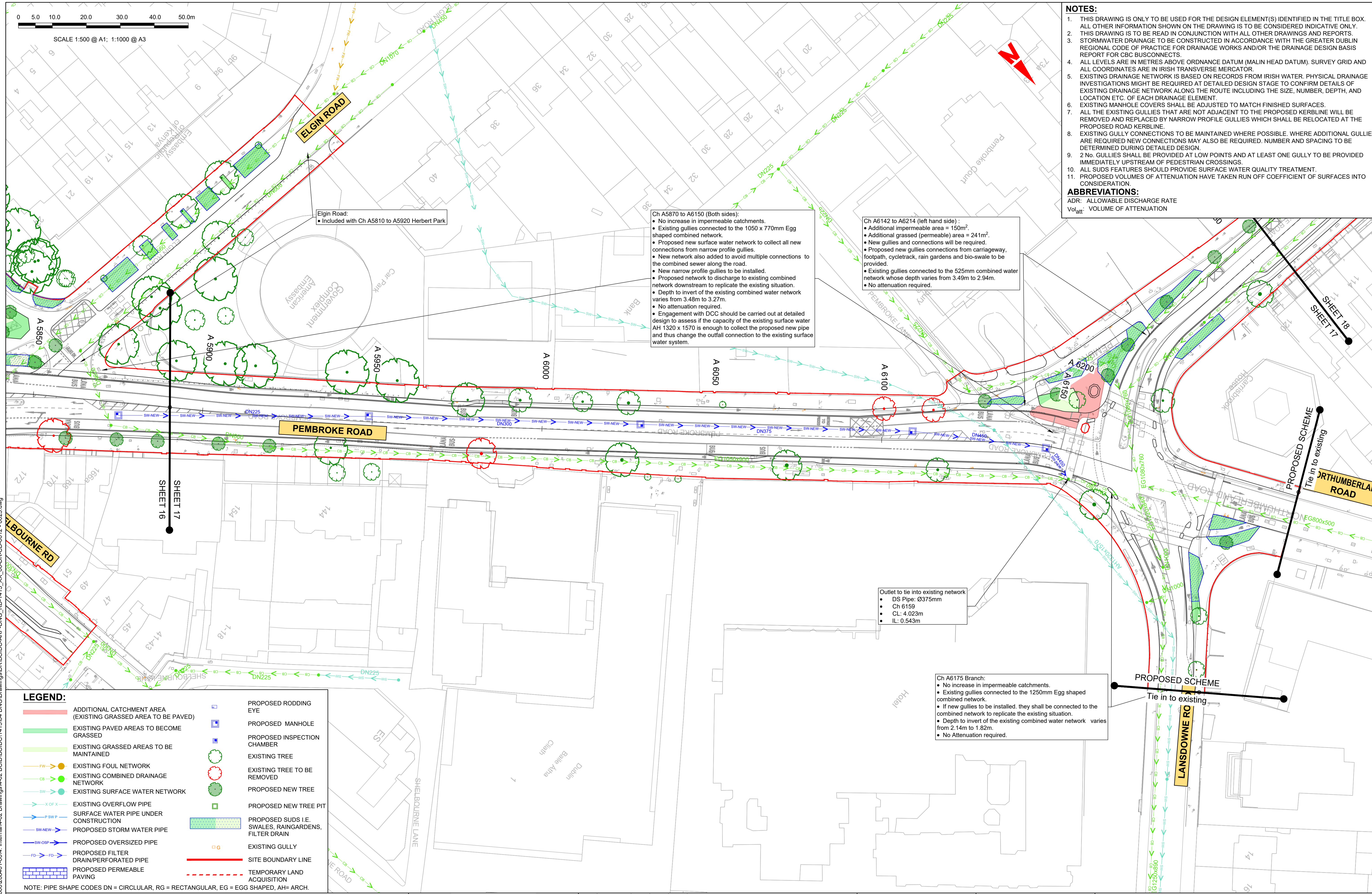
Date: 04/03/2022 | Scale: 1:500 @ A1, 1:1000 @ A3 | Drawn: AR | Checked: MR | Approved: NH

Project Code: BCIDC | Originator Code: ARP | QMS Code: 26840-00

Programme Title: <b>BUSCONNECTS DUBLIN CORE BUS CORRIDORS INFRASTRUCTURE WORKS</b>			
Drawing Title: BELFIELD BLACKROCK TO CITY CENTRE CORE BUS CORRIDOR SCHEME PROPOSED SURFACE WATER DRAINAGE WORKS			
Drawing File Name: BCIDC-ARP-DNG_RD-1415_XX_00-DR-CD-0016	Sheet Number: 16 of 23	Status: A	Rev: M01

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- ABBREVIATIONS:**  
 ADR: ALLOWABLE DISCHARGE RATE  
 Vol<sub>att</sub>: VOLUME OF ATTENUATION

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

Elgin Road:  
 • Included with Ch A5810 to A5920 Herbert Park

Ch A5870 to A6150 (Both sides):  
 • No increase in impermeable catchments.  
 • Existing gullies connected to the 1050 x 770mm Egg shaped combined network.  
 • Proposed new surface water network to collect all new connections from narrow profile gullies.  
 • New network also added to avoid multiple connections to the combined sewer along the road.  
 • New narrow profile gullies to be installed.  
 • Proposed network to discharge to existing combined network downstream to replicate the existing situation.  
 • Depth to invert of the existing combined water network varies from 3.48m to 3.27m.  
 • No attenuation required.  
 • Engagement with DCC should be carried out at detailed design to assess if the capacity of the existing surface water AH 1320 x 1570 is enough to collect the proposed new pipe and thus change the outfall connection to the existing surface water system.

Ch A6142 to A6214 (left hand side):  
 • Additional impermeable area = 150m<sup>2</sup>.  
 • Additional grassed (permeable) area = 241m<sup>2</sup>.  
 • New gullies and connections will be required.  
 • Proposed new gullies connections from carriageway, footpath, cycletrack, rain gardens and bio-swale to be provided.  
 • Existing gullies connected to the 525mm combined water network whose depth varies from 3.49m to 2.94m.  
 • No attenuation required.

Outlet to tie into existing network  
 • DS Pipe: Ø375mm  
 • Ch 6159  
 • CL: 4.023m  
 • IL: 0.543m

Ch A6175 Branch:  
 • No increase in impermeable catchments.  
 • Existing gullies connected to the 1250mm Egg shaped combined network.  
 • If new gullies to be installed, they shall be connected to the combined network to replicate the existing situation.  
 • Depth to invert of the existing combined water network varies from 2.14m to 1.82m.  
 • No Attenuation required.

**LEGEND:**

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

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

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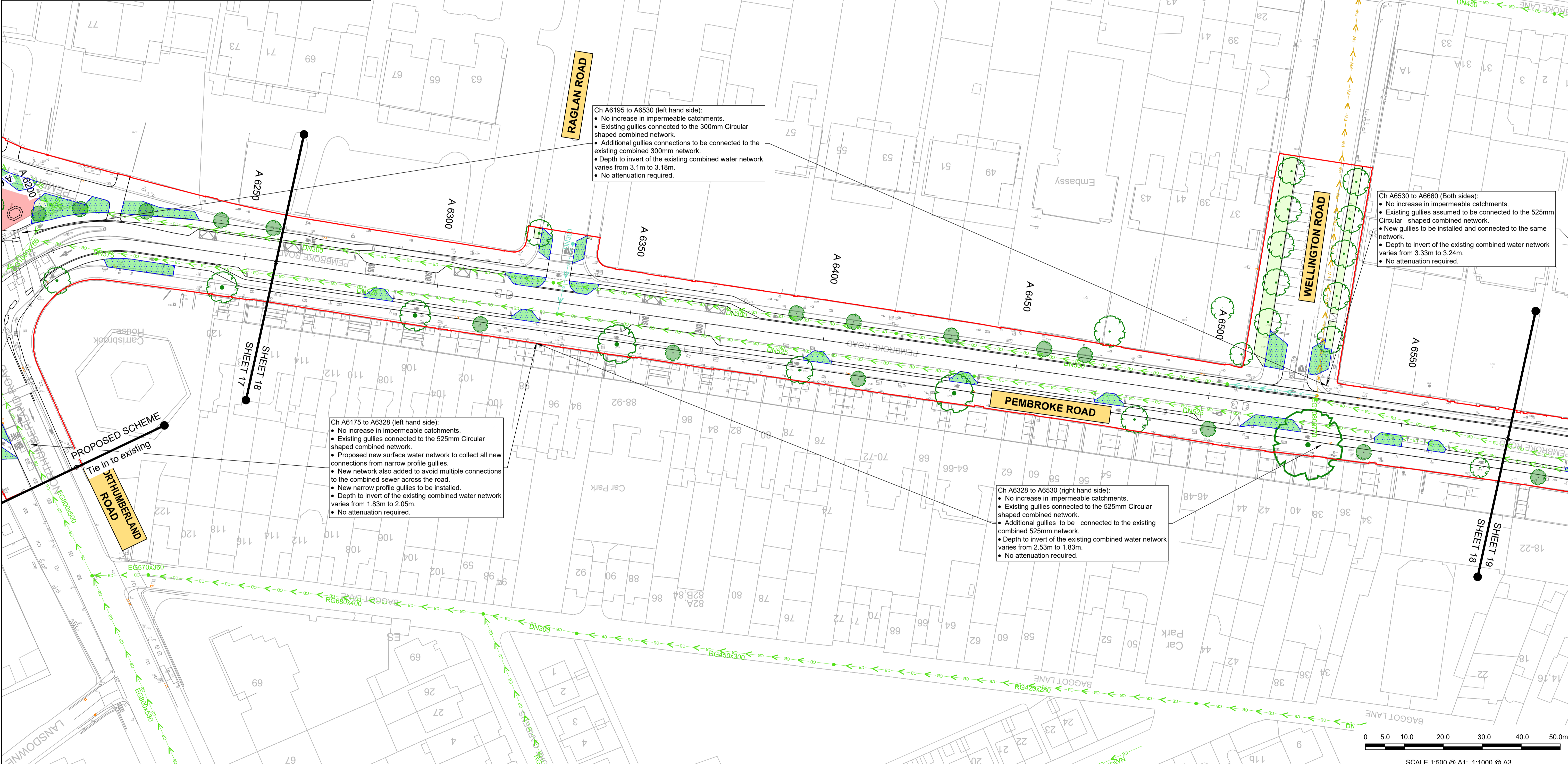
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- EXISTING DRAINAGE NETWORK IS BASED ON RECORDS FROM IRISH WATER. PHYSICAL DRAINAGE INVESTIGATIONS MIGHT BE REQUIRED AT DETAILED DESIGN STAGE TO CONFIRM DETAILS OF EXISTING DRAINAGE NETWORK ALONG THE ROUTE INCLUDING THE SIZE, NUMBER, DEPTH, AND LOCATION ETC. OF EACH DRAINAGE ELEMENT.
- EXISTING MANHOLE COVERS SHALL BE ADJUSTED TO MATCH FINISHED SURFACES.
- 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.
- 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.
- 2 No. GULLIES SHALL BE PROVIDED AT LOW POINTS AND AT LEAST ONE GULLY TO BE PROVIDED IMMEDIATELY UPSTREAM OF PEDESTRIAN CROSSINGS.
- ALL SUDS FEATURES SHOULD PROVIDE SURFACE WATER QUALITY TREATMENT.
- PROPOSED VOLUMES OF ATTENUATION HAVE TAKEN RUN OFF COEFFICIENT OF SURFACES INTO CONSIDERATION.

**ABBREVIATIONS:**  
 ADR: ALLOWABLE DISCHARGE RATE  
 Vol<sub>att</sub>: VOLUME OF ATTENUATION

**LEGEND:**

- 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
- TEMPORARY LAND ACQUISITION
- NOTE: PIPE SHAPE CODES DN = CIRCULAR, RG = RECTANGULAR, EG = EGG SHAPED, AH= ARCH.



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**Project Ireland 2040**  
 Building Ireland's Future

Rev	Date	Drn	Chk'd	App'd	Description
M01	04/03/2022	AR	MR	NH	ISSUE FOR PHASE 4: PLANNING

Client: **NTA**  
 Údaráis Náisiúnta Iompair  
 National Transport Authority

Engineering Designer: **ARUP**

Date: 04/03/2022 Scale: 1:500 @ A1, 1:1000 @ A3  
 Drawn: AR, Checked: MR, Approved: NH

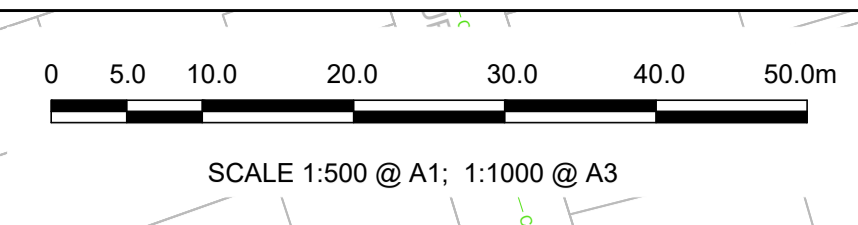
Project Code: BCIDC, Originator Code: ARP, QMS Code: 268401-00

Programme Title	Drawing Title	Drawing File Name	Sheet Number	Status	Rev
<b>BUSCONNECTS DUBLIN CORE BUS CORRIDORS INFRASTRUCTURE WORKS</b>	BELFIELD   BLACKROCK TO CITY CENTRE CORE BUS CORRIDOR SCHEME PROPOSED SURFACE WATER DRAINAGE WORKS	BCIDC-ARP-DNG_RD-1415_XX_00-DR-CD-0018	18 of 23	A	M01

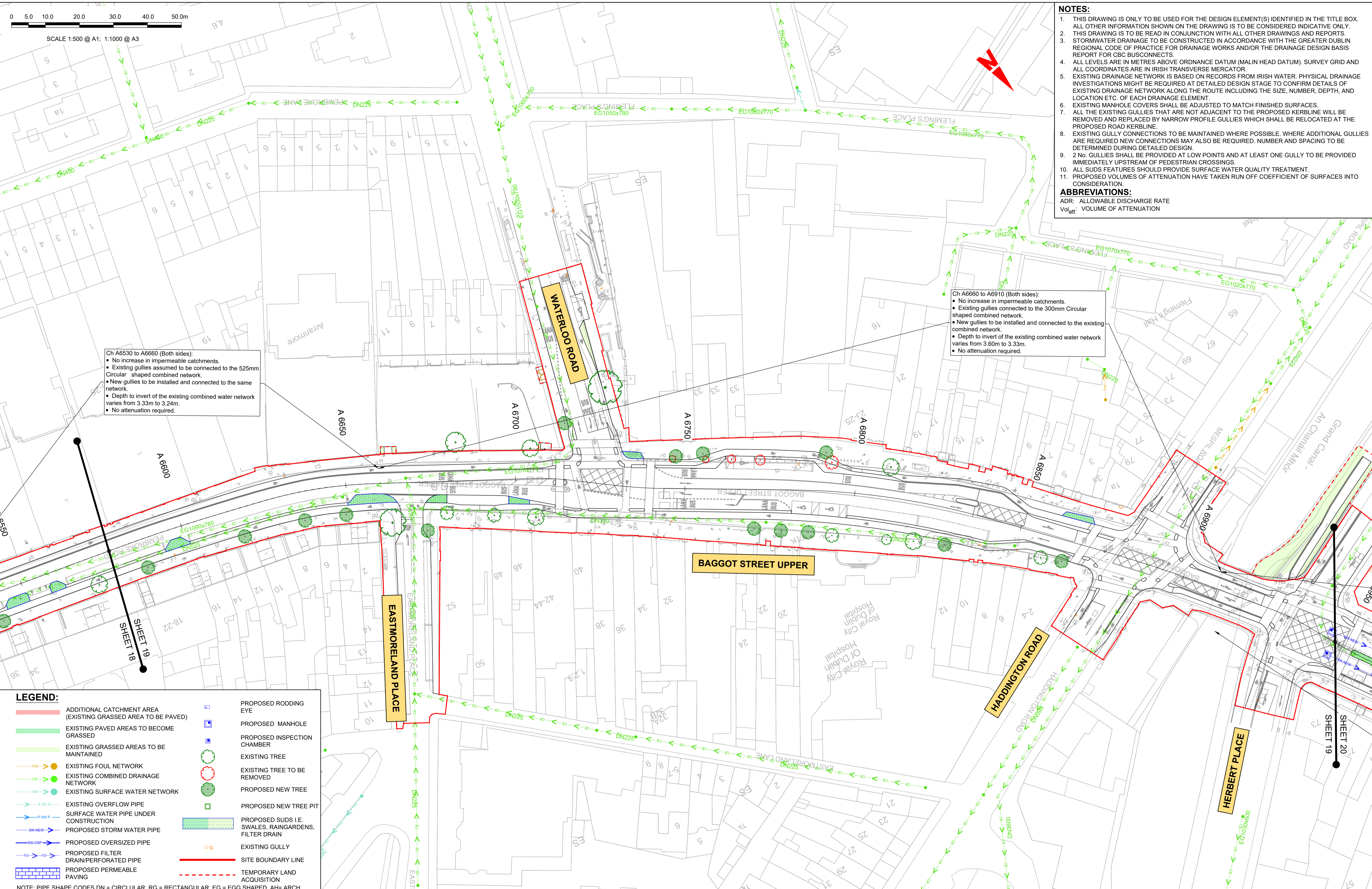
Scale: 1:500 @ A1; 1:1000 @ A3

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  - ALL LEVELS ARE IN METRES ABOVE ORDNANCE DATUM (MALIN HEAD DATUM), SURVEY GRID AND ALL COORDINATES ARE IN IRISH TRANSVERSE MERCATOR.
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  - EXISTING MANHOLE COVERS SHALL BE ADJUSTED TO MATCH FINISHED SURFACES.
  - 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.
  - 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.
  - 2 No. GULLIES SHALL BE PROVIDED AT LOW POINTS AND AT LEAST ONE GULLY TO BE PROVIDED IMMEDIATELY UPSTREAM OF PEDESTRIAN CROSSINGS.
  - ALL SUDS FEATURES SHOULD PROVIDE SURFACE WATER QUALITY TREATMENT.
  - PROPOSED VOLUMES OF ATTENUATION HAVE TAKEN RUN OFF COEFFICIENT OF SURFACES INTO CONSIDERATION.
- ABBREVIATIONS:**  
 ADR: ALLOWABLE DISCHARGE RATE  
 Vol<sub>att</sub>: VOLUME OF ATTENUATION



Ch A6530 to A6660 (Both sides):

- No increase in impermeable catchments.
- Existing gullies assumed to be connected to the 525mm Circular shaped combined network.
- New gullies to be installed and connected to the same network.
- Depth to invert of the existing combined water network varies from 3.33m to 3.24m.
- No attenuation required.

Ch A6660 to A6910 (Both sides):

- No increase in impermeable catchments.
- Existing gullies connected to the 300mm Circular shaped combined network.
- New gullies to be installed and connected to the existing combined network.
- Depth to invert of the existing combined water network varies from 3.60m to 3.33m.
- No attenuation required.

**LEGEND:**

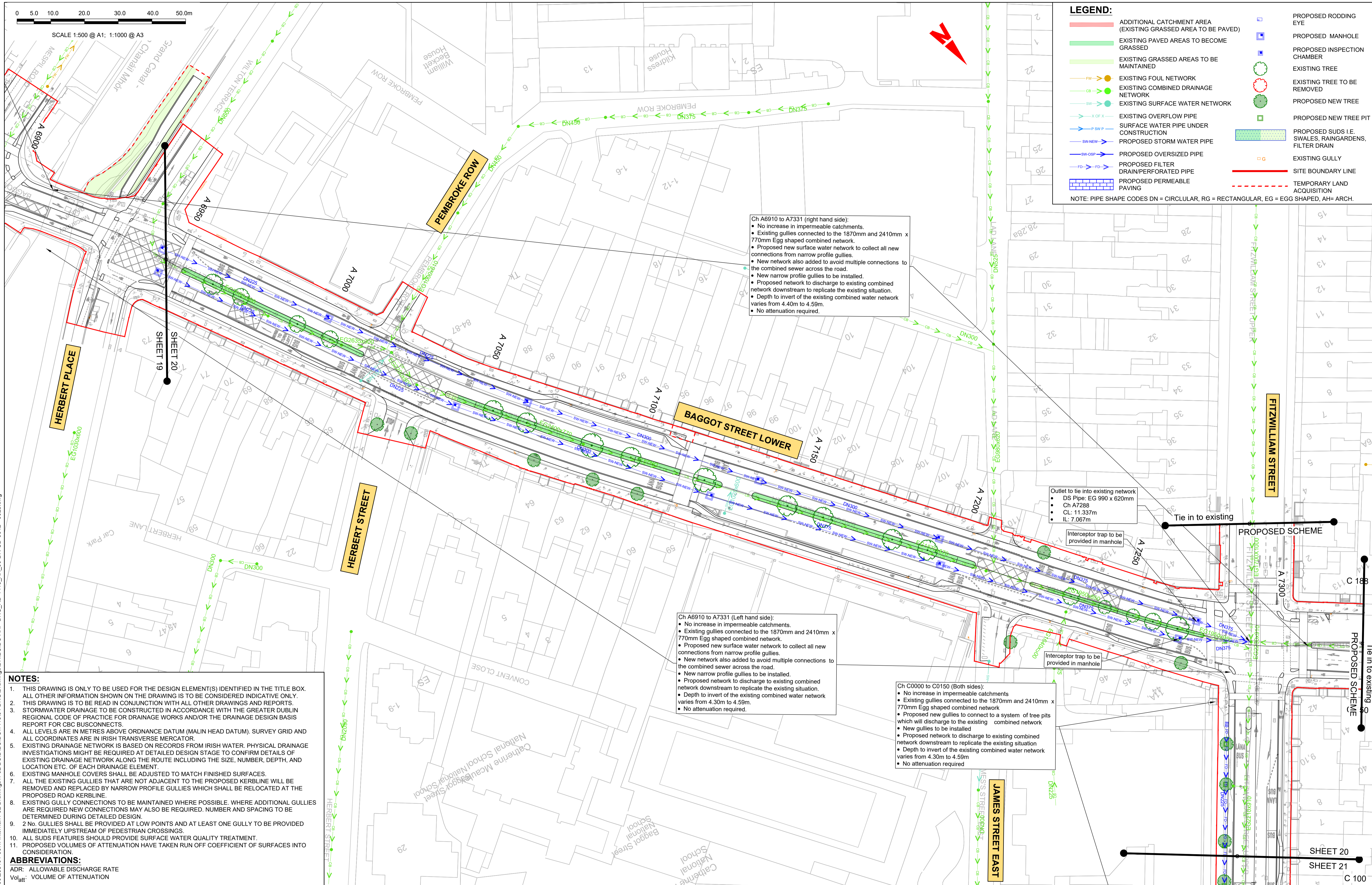
	ADDITIONAL CATCHMENT AREA (EXISTING GRASSED AREA TO BE PAVED)		PROPOSED RODDING EYE
	EXISTING PAVED AREAS TO BECOME GRASSED		PROPOSED MANHOLE
	EXISTING GRASSED AREAS TO BE MAINTAINED		PROPOSED INSPECTION CHAMBER
	EXISTING FOUL NETWORK		EXISTING TREE
	EXISTING COMBINED DRAINAGE NETWORK		EXISTING TREE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

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

<p>Project Ireland 2040 Building Ireland's Future</p>		<p>Rev M01 Date 04/03/2022 Dmn AR Chk'd MR App'd NH Description ISSUE FOR PHASE 4: PLANNING</p>		<p>Client NTA (National Transport Authority) Engineering Designer ARUP</p>		<p>Programme Title BUSCONNECTS DUBLIN CORE BUS CORRIDORS INFRASTRUCTURE WORKS</p>	
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**LEGEND:**

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- EXISTING SURFACE WATER NETWORK
- EXISTING OVERFLOW PIPE
- SURFACE WATER PIPE UNDER CONSTRUCTION
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- EXISTING GULLY
- SITE BOUNDARY LINE
- TEMPORARY LAND ACQUISITION

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

Ch A6910 to A7331 (right hand side):

- No increase in impermeable catchments.
- Existing gullies connected to the 1870mm and 2410mm x 770mm Egg shaped combined network.
- Proposed new surface water network to collect all new connections from narrow profile gullies.
- New network also added to avoid multiple connections to the combined sewer across the road.
- New narrow profile gullies to be installed.
- Proposed network to discharge to existing combined network downstream to replicate the existing situation.
- Depth to invert of the existing combined water network varies from 4.40m to 4.59m.
- No attenuation required.

Ch A6910 to A7331 (Left hand side):

- No increase in impermeable catchments.
- Existing gullies connected to the 1870mm and 2410mm x 770mm Egg shaped combined network.
- Proposed new surface water network to collect all new connections from narrow profile gullies.
- New network also added to avoid multiple connections to the combined sewer across the road.
- New narrow profile gullies to be installed.
- Proposed network to discharge to existing combined network downstream to replicate the existing situation.
- Depth to invert of the existing combined water network varies from 4.30m to 4.59m.
- No attenuation required.

Ch C0000 to C0150 (Both sides):

- No increase in impermeable catchments
- Existing gullies connected to the 1870mm and 2410mm x 770mm Egg shaped combined network
- Proposed new gullies to connect to a system of tree pits which will discharge to the existing combined network
- New gullies to be installed.
- Proposed network to discharge to existing combined network downstream to replicate the existing situation.
- Depth to invert of the existing combined water network varies from 4.30m to 4.59m
- No attenuation required

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- PROPOSED VOLUMES OF ATTENUATION HAVE TAKEN RUN OFF COEFFICIENT OF SURFACES INTO CONSIDERATION.

**ABBREVIATIONS:**  
 ADR: ALLOWABLE DISCHARGE RATE  
 Vol<sub>att</sub>: VOLUME OF ATTENUATION

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**Project Ireland 2040**  
 Building Ireland's Future

Rev	Date	Drn	Chk'd	App'd	Description
M01	04/03/2022	AR	MR	NH	ISSUE FOR PHASE 4: PLANNING

Client: **NTA**  
 Údarás Náisiúnta Iompair  
 National Transport Authority

Engineering Designer: **ARUP**

Date: 04/03/2022 Scale: 1:500 @ A1, 1:1000 @ A3  
 Drawn: AR Checked: MR Approved: NH

Project Code: BCIDC Originator Code: ARP QMS Code: 268401-00

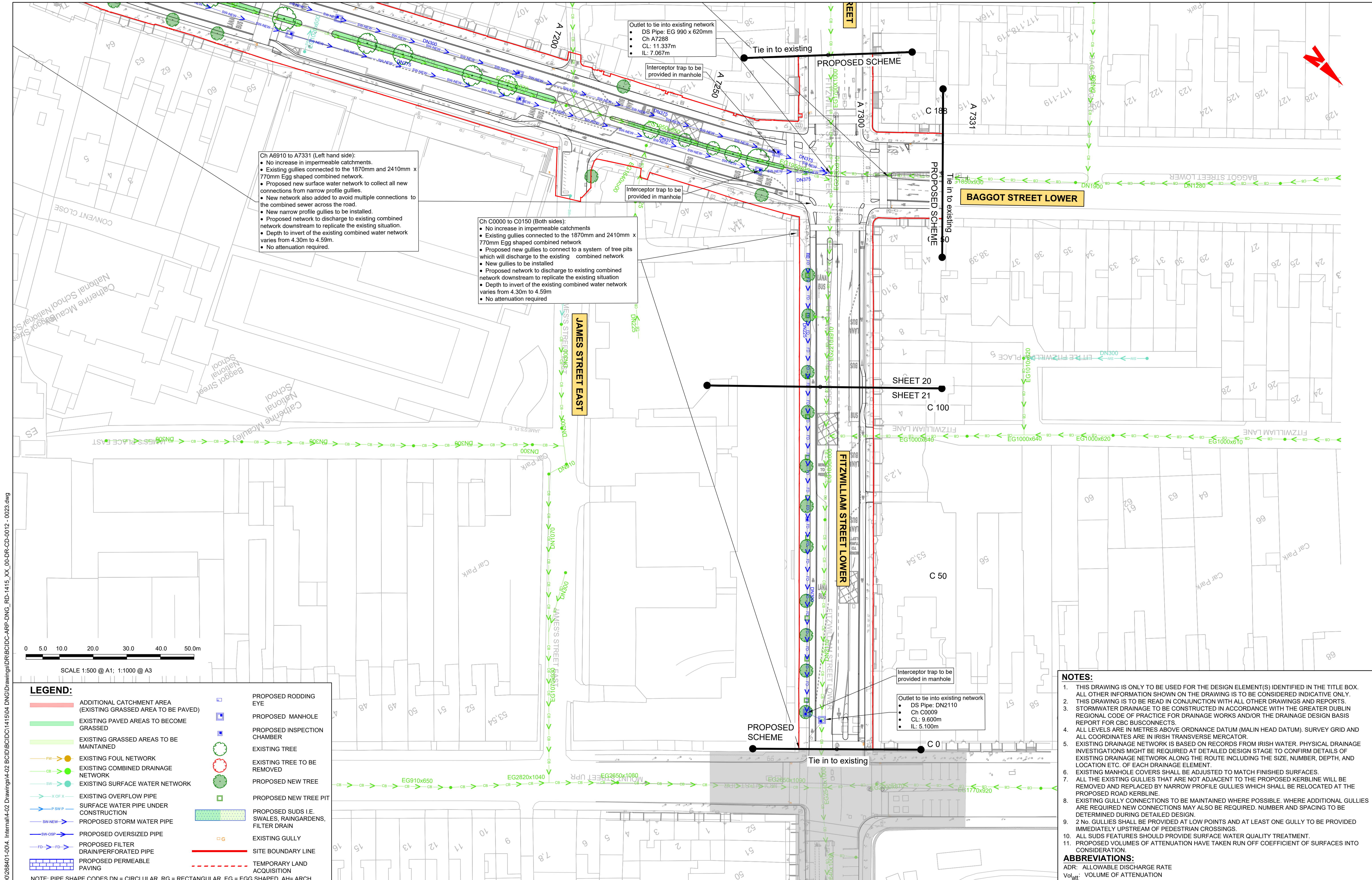
Programme Title: **BUSCONNECTS DUBLIN CORE BUS CORRIDORS INFRASTRUCTURE WORKS**

Drawing Title: BELFIELD | BLACKROCK TO CITY CENTRE CORE BUS CORRIDOR SCHEME PROPOSED SURFACE WATER DRAINAGE WORKS

Drawing File Name: BCIDC-ARP-DNG\_RD-1415\_XX\_00-DR-CD-0020 Sheet Number: 20 of 23 Status: A Rev: M01

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Ch A6910 to A7331 (Left hand side):

- No increase in impermeable catchments.
- Existing gullies connected to the 1870mm and 2410mm x 770mm Egg shaped combined network.
- Proposed new surface water network to collect all new connections from narrow profile gullies.
- New network also added to avoid multiple connections to the combined sewer across the road.
- New narrow profile gullies to be installed.
- Proposed network to discharge to existing combined network downstream to replicate the existing situation.
- Depth to invert of the existing combined water network varies from 4.30m to 4.59m.
- No attenuation required.

Ch C0000 to C0150 (Both sides):

- No increase in impermeable catchments.
- Existing gullies connected to the 1870mm and 2410mm x 770mm Egg shaped combined network.
- Proposed new gullies to connect to a system of tree pits which will discharge to the existing combined network.
- New gullies to be installed.
- Proposed network to discharge to existing combined network downstream to replicate the existing situation.
- Depth to invert of the existing combined water network varies from 4.30m to 4.59m.
- No attenuation required.

Outlet to tie into existing network

- DS Pipe: DN2110
- Ch: C0009
- CL: 9.600m
- IL: 5.100m

**LEGEND:**

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

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

**NOTES:**

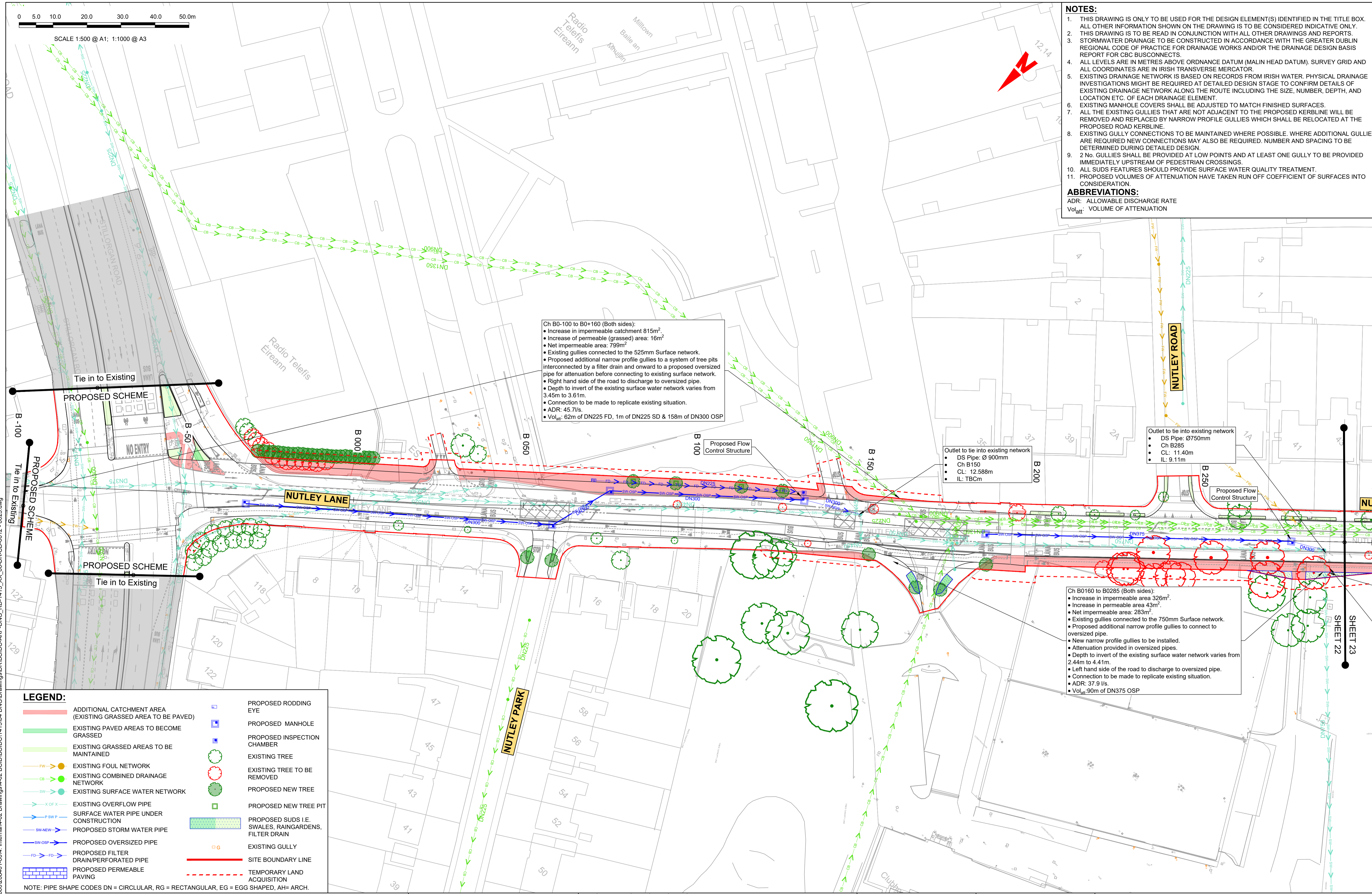
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- EXISTING MANHOLE COVERS SHALL BE ADJUSTED TO MATCH FINISHED SURFACES.
- ALL THE EXISTING GULLIES THAT ARE NOT ADJACENT TO THE PROPOSED KERBLINE WILL BE REMOVED AND REPLACED BY NARROW PROFILE GULLIES WHICH SHALL BE RELOCATED AT THE PROPOSED ROAD KERBLINE.
- 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.
- 2 No. GULLIES SHALL BE PROVIDED AT LOW POINTS AND AT LEAST ONE GULLY TO BE PROVIDED IMMEDIATELY UPSTREAM OF PEDESTRIAN CROSSINGS.
- ALL SUDS FEATURES SHOULD PROVIDE SURFACE WATER QUALITY TREATMENT.
- PROPOSED VOLUMES OF ATTENUATION HAVE TAKEN RUN OFF COEFFICIENT OF SURFACES INTO CONSIDERATION.

**ABBREVIATIONS:**

ADR: ALLOWABLE DISCHARGE RATE  
Vol<sub>att</sub>: VOLUME OF ATTENUATION

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		Rev	Date	Drn	Chk'd	App'd	Description										
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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 MIGHT 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. 2 No. GULLIES SHALL BE PROVIDED AT LOW POINTS AND AT LEAST ONE GULLY TO BE PROVIDED IMMEDIATELY UPSTREAM OF PEDESTRIAN CROSSINGS.
10. ALL SUDS FEATURES SHOULD 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<sub>att</sub>: VOLUME OF ATTENUATION

**Ch B0-100 to B0+160 (Both sides):**

- Increase in impermeable catchment 815m<sup>2</sup>.
- Increase of permeable (grassed) area: 16m<sup>2</sup>.
- Net impermeable area: 799m<sup>2</sup>.
- Existing gullies connected to the 525mm Surface network.
- Proposed additional narrow profile gullies to a system of tree pits interconnected by a filter drain and onward to a proposed oversized pipe for attenuation before connecting to existing surface network.
- Right hand side of the road to discharge to oversized pipe.
- Depth to invert of the existing surface water network varies from 3.45m to 3.61m.
- Connection to be made to replicate existing situation.
- ADR: 45.7l/s.
- Vol<sub>att</sub>: 62m of DN225 FD, 1m of DN225 SD & 158m of DN300 OSP

**Outlet to tie into existing network**

- DS Pipe: Ø 900mm
- Ch B150
- CL: 12.588m
- IL: TBCM

**Outlet to tie into existing network**

- DS Pipe: Ø 750mm
- Ch B285
- CL: 11.40m
- IL: 9.11m

**Ch B0160 to B0285 (Both sides):**

- Increase in impermeable area 326m<sup>2</sup>.
- Increase in permeable area 43m<sup>2</sup>.
- Net impermeable area: 283m<sup>2</sup>.
- Existing gullies connected to the 750mm Surface network.
- Proposed additional narrow profile gullies to connect to oversized pipe.
- New narrow profile gullies to be installed.
- Attenuation provided in oversized pipes.
- Depth to invert of the existing surface water network varies from 2.44m to 4.41m.
- Left hand side of the road to discharge to oversized pipe.
- Connection to be made to replicate existing situation.
- ADR: 37.9 l/s.
- Vol<sub>att</sub>: 90m of DN375 OSP

**LEGEND:**

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

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

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<p><b>Project Ireland 2040</b> Building Ireland's Future</p>		<p>DO NOT SCALE USE FIGURED DIMENSIONS ONLY</p>	



0 5.0 10.0 20.0 30.0 40.0 50.0m

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

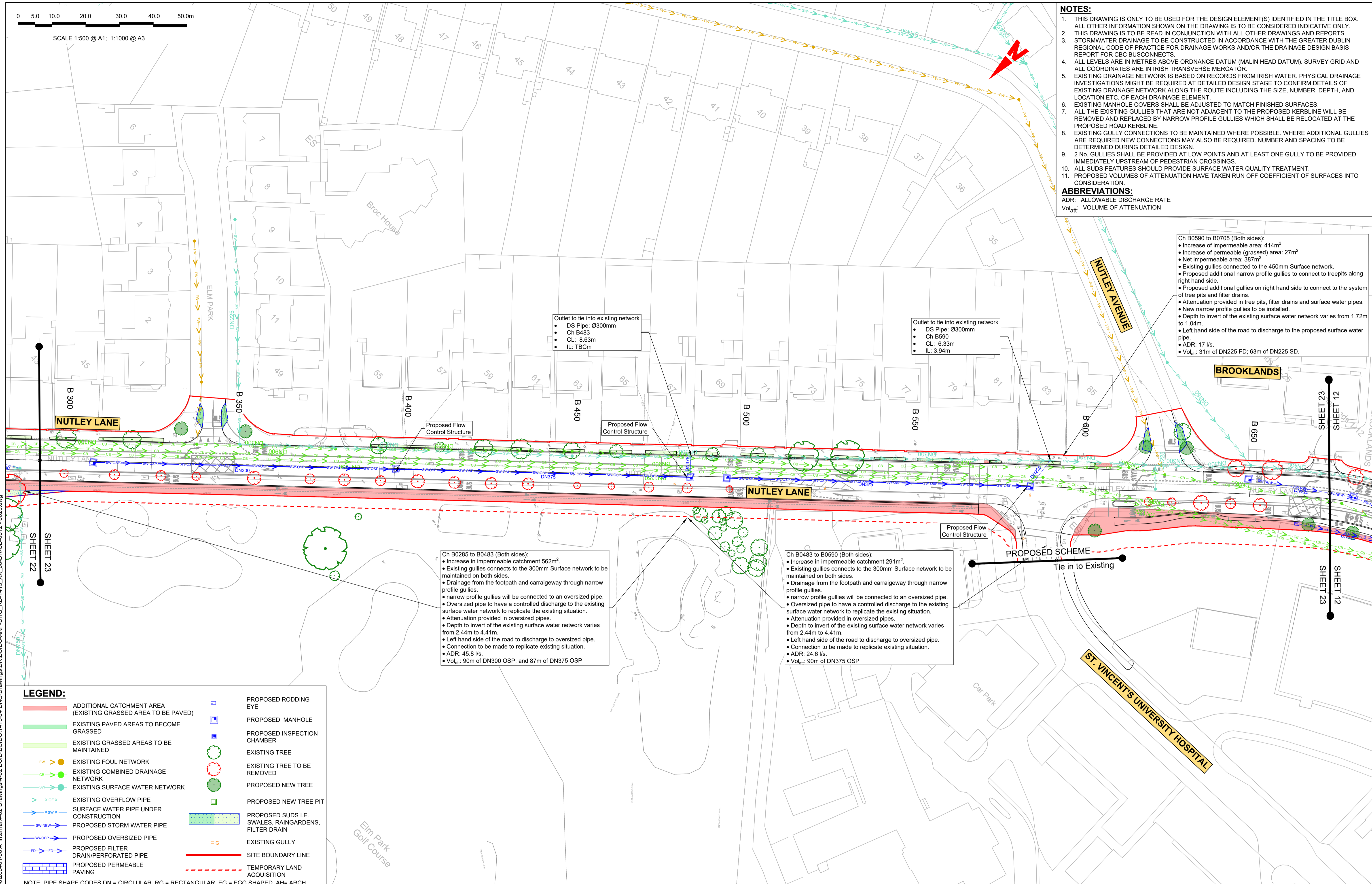
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**ABBREVIATIONS:**

ADR: ALLOWABLE DISCHARGE RATE  
 Vol<sub>att</sub>: VOLUME OF ATTENUATION

Ch B0590 to B0705 (Both sides):  
 • Increase of impermeable area: 414m<sup>2</sup>  
 • Increase of permeable (grassed) area: 27m<sup>2</sup>  
 • Net impermeable area: 387m<sup>2</sup>  
 • Existing gullies connected to the 450mm Surface network.  
 • Proposed additional narrow profile gullies to connect to treepits along right hand side.  
 • Proposed additional gullies on right hand side to connect to the system of tree pits and filter drains.  
 • Attenuation provided in tree pits, filter drains and surface water pipes.  
 • New narrow profile gullies to be installed.  
 • Depth to invert of the existing surface water network varies from 1.72m to 1.04m.  
 • Left hand side of the road to discharge to the proposed surface water pipe.  
 • ADR: 17 l/s.  
 • Vol<sub>att</sub>: 31m<sup>3</sup> of DN225 FD; 63m<sup>3</sup> of DN225 SD.



Outlet to tie into existing network  
 • DS Pipe: Ø300mm  
 • Ch B483  
 • CL: 8.63m  
 • IL: TBCm

Outlet to tie into existing network  
 • DS Pipe: Ø300mm  
 • Ch B590  
 • CL: 6.33m  
 • IL: 3.94m

Ch B0285 to B0483 (Both sides):  
 • Increase in impermeable catchment 562m<sup>2</sup>.  
 • Existing gullies connects to the 300mm Surface network to be maintained on both sides.  
 • Drainage from the footpath and carriageway through narrow profile gullies.  
 • narrow profile gullies will be connected to an oversized pipe.  
 • Oversized pipe to have a controlled discharge to the existing surface water network to replicate the existing situation.  
 • Attenuation provided in oversized pipes.  
 • Depth to invert of the existing surface water network varies from 2.44m to 4.41m.  
 • Left hand side of the road to discharge to oversized pipe.  
 • Connection to be made to replicate existing situation.  
 • ADR: 45.8 l/s.  
 • Vol<sub>att</sub>: 90m<sup>3</sup> of DN300 OSP, and 87m<sup>3</sup> of DN375 OSP

Ch B0483 to B0590 (Both sides):  
 • Increase in impermeable catchment 291m<sup>2</sup>.  
 • Existing gullies connects to the 300mm Surface network to be maintained on both sides.  
 • Drainage from the footpath and carriageway through narrow profile gullies.  
 • narrow profile gullies will be connected to an oversized pipe.  
 • Oversized pipe to have a controlled discharge to the existing surface water network to replicate the existing situation.  
 • Attenuation provided in oversized pipes.  
 • Depth to invert of the existing surface water network varies from 2.44m to 4.41m.  
 • Left hand side of the road to discharge to oversized pipe.  
 • Connection to be made to replicate existing situation.  
 • ADR: 24.6 l/s.  
 • Vol<sub>att</sub>: 90m<sup>3</sup> of DN375 OSP

**LEGEND:**

- 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
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Rev	Date	Drn	Chk'd	App'd	Description
M01	04/03/2022	AR	MR	NH	ISSUE FOR PHASE 4: PLANNING

Client: **NTA**  
 Údarás Náisiúnta Iompair  
 National Transport Authority

Engineering Designer: **ARUP**

Date: 04/03/2022 | Scale: 1:500 @ A1, 1:1000 @ A3 | Drawn: AR | Checked: MR | Approved: NH

Project Code: BCIDC | Originator Code: ARP | QMS Code: 268401-00

Programme Title: <b>BUSCONNECTS DUBLIN CORE BUS CORRIDORS INFRASTRUCTURE WORKS</b>	
Drawing Title: <b>BELFIELD   BLACKROCK TO CITY CENTRE CORE BUS CORRIDOR SCHEME PROPOSED SURFACE WATER DRAINAGE WORKS</b>	
Drawing File Name: BCIDC-ARP-DNG_RD-1415_XX_00-DR-CD-0023	Sheet Number: 23 of 23
Status: <b>A</b>	Rev: <b>M01</b>

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