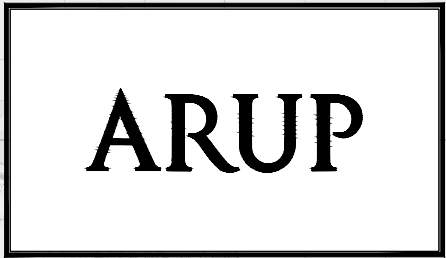


Proposed Surface Water
Drainage Works





BUSCONNECTS DUBLIN CORE BUS CORRIDORS INFRASTRUCTURE WORKS

BLANCHARDSTOWN TO CITY CENTRE CORE BUS CORRIDOR SCHEME

DRAWING SERIES NUMBER(S)	DRAWING SERIES DESCRIPTION
BCIDC-ARP-DNG_IX-0005_XX_00-DR-CD-0001	BLANCHARDSTOWN TO CITY CENTRE CORE BUS CORRIDOR SCHEME. PROPOSED SURFACE WATER DRAINAGE WORKS. COVER SHEET
BCIDC-ARP-DNG_KP-0005_XX_00-DR-CD-0001	BLANCHARDSTOWN TO CITY CENTRE CORE BUS CORRIDOR SCHEME. PROPOSED SURFACE WATER DRAINAGE WORKS. KEY PLAN
BCID-ARP-DNG_RD-0005_XX_00-DR-CD-1001 to 1003	BLANCHARDSTOWN TO CITY CENTRE CORE BUS CORRIDOR SCHEME. OVERALL CATCHMENT AREAS
BCIDC-ARP-DNG_RD-0005_XX_00-DR-CD-0001 to 0040	BLANCHARDSTOWN TO CITY CENTRE CORE BUS CORRIDOR SCHEME. PROPOSED SURFACE WATER DRAINAGE WORKS

Q:\268000\26840-1-004_ Internal\4-02 Drawings\4-02 BCID\BCIDC\00504 DNG\Drawings\DR\BCIDC-ARP-DNG_IX-0005_XX_00-DR-CD-0001.dwg

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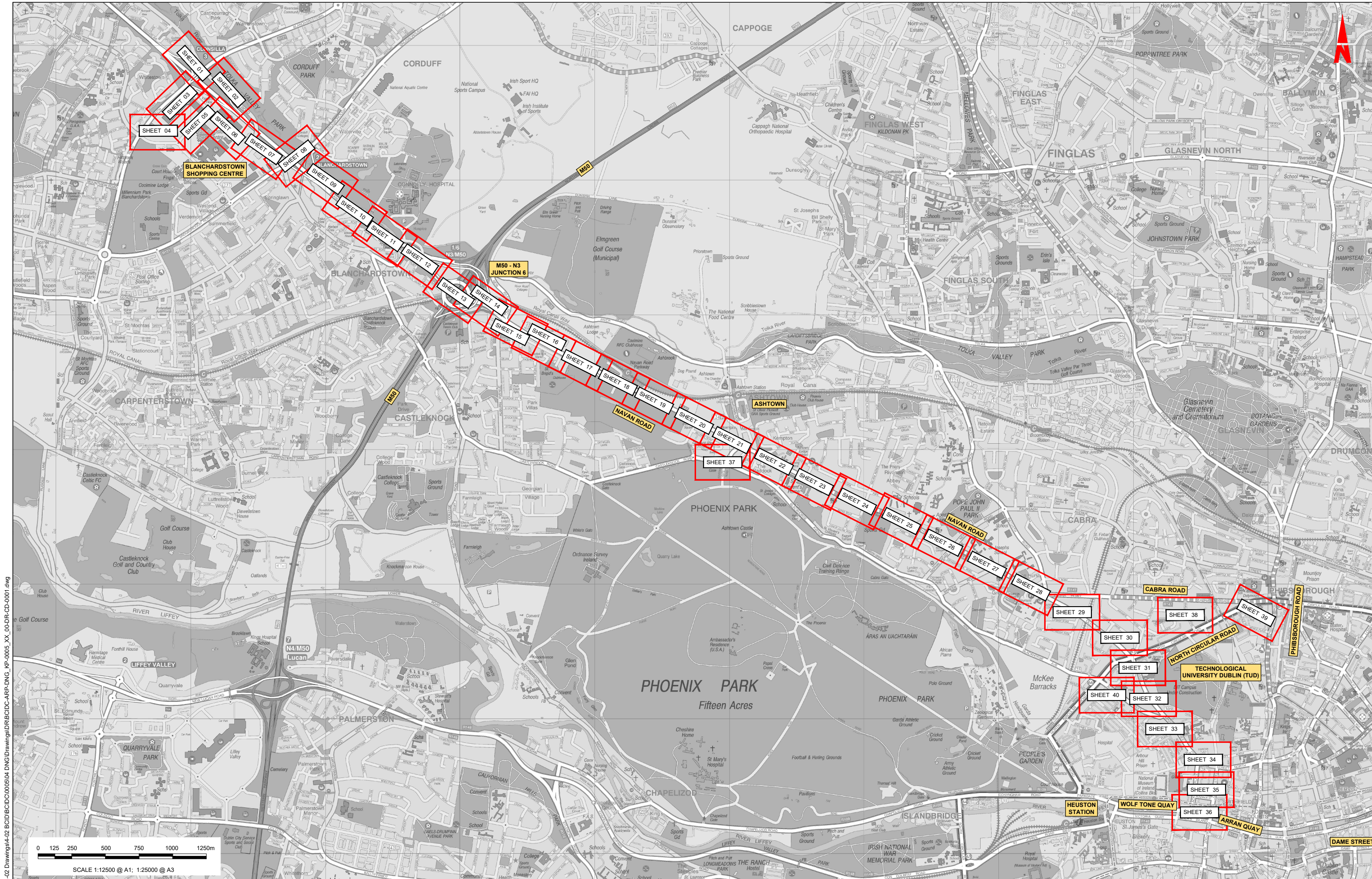


Rev	Date	Drn	Chk'd	App'd	Description
M01	04/04/2022	TD	MR	BD	ISSUE FOR PHASE 4: PLANNING

Date	04/04/2022	Scale	N/A @ A1 N/A @ A3	Drawn	TD	Checked	MR	Approved	BD
Project Code	BCIDC	Originator Code	ARP	QMS Code	268401-00				

Programme Title BUSCONNECTS DUBLIN CORE BUS CORRIDORS INFRASTRUCTURE WORKS			
Drawing Title BLANCHARDSTOWN TO CITY CENTRE CORE BUS CORRIDOR SCHEME PROPOSED SURFACE WATER DRAINAGE WORKS COVER SHEET			
Drawing File Name	BCIDC-ARP-DNG_IX-0005_XX_00-DR-CD-0001	Sheet Number	01 of 01
Status	A	Rev	M01

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Project Ireland 2040
 Building Ireland's Future

Rev	Date	Drn	Chk'd	App'd	Description
M01	04/04/2022	TD	MR	BD	ISSUE FOR PHASE 4: PLANNING

Client
 NTA
 Udarás Náisiúnta Iompair
 National Transport Authority

Engineering Designer
 ARUP

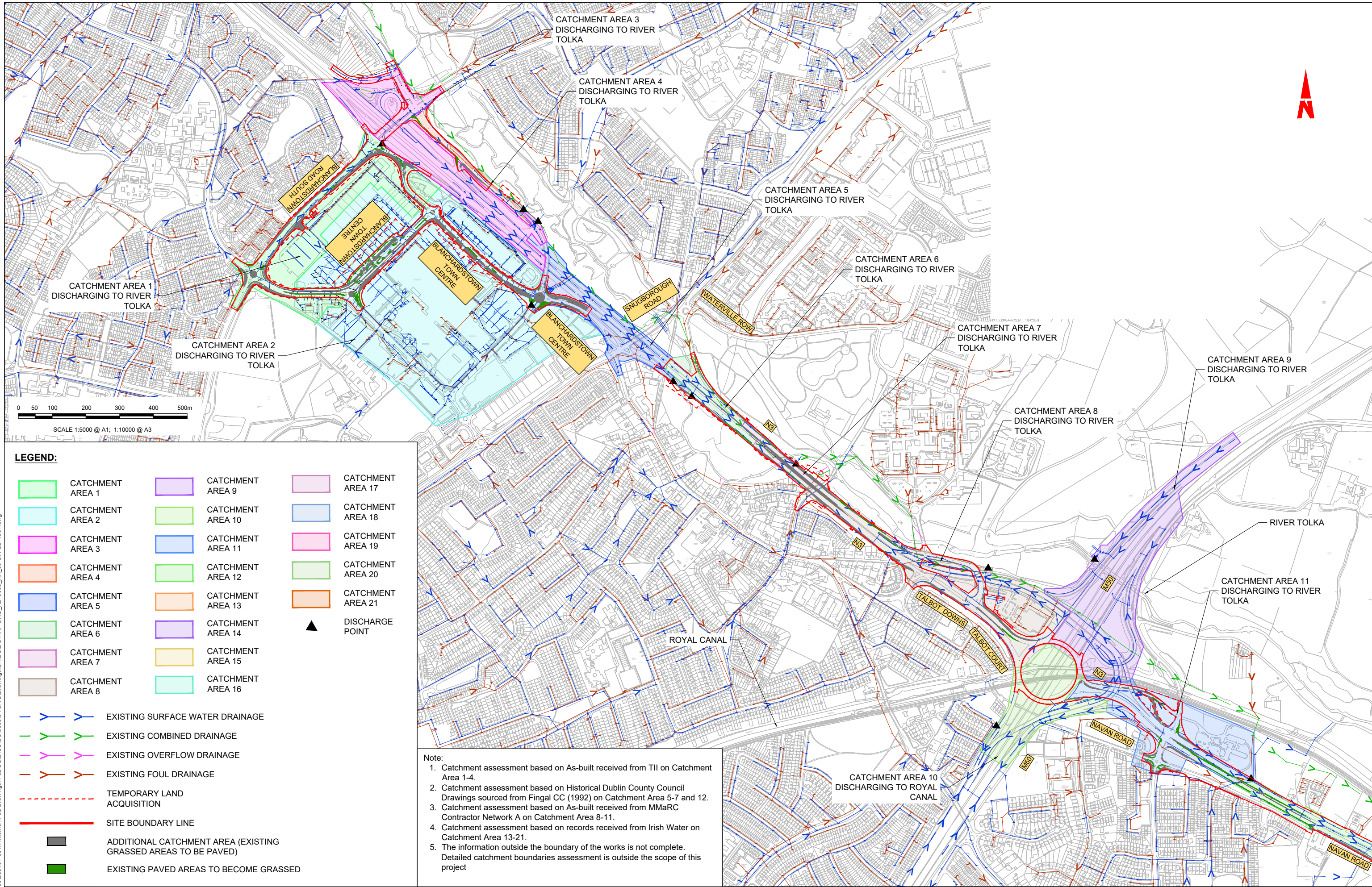
Date: 04/04/2022
 Scale: 1:12500 @ A1
 1:20000 @ A3

Drawn: TD
 Checked: MR
 Approved: BD

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

Programme Title BUSCONNECTS DUBLIN CORE BUS CORRIDORS INFRASTRUCTURE WORKS			
Drawing Title BLANCHARDSTOWN TO CITY CENTRE CORE BUS CORRIDOR SCHEME PROPOSED SURFACE WATER DRAINAGE WORKS KEY PLAN			
Drawing File Name BCIDC-ARP-DNG_KP-0005_XX_00-DR-CD-0001	Sheet Number 01 of 01	Status A	Rev M01

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LEGEND:

	CATCHMENT AREA 1		CATCHMENT AREA 9		CATCHMENT AREA 17
	CATCHMENT AREA 2		CATCHMENT AREA 10		CATCHMENT AREA 18
	CATCHMENT AREA 3		CATCHMENT AREA 11		CATCHMENT AREA 19
	CATCHMENT AREA 4		CATCHMENT AREA 12		CATCHMENT AREA 20
	CATCHMENT AREA 5		CATCHMENT AREA 13		CATCHMENT AREA 21
	CATCHMENT AREA 6		CATCHMENT AREA 14		DISCHARGE POINT
	CATCHMENT AREA 7		CATCHMENT AREA 15		
	CATCHMENT AREA 8		CATCHMENT AREA 16		

	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

Note:

- Catchment assessment based on As-built received from TII on Catchment Area 1-4.
- Catchment assessment based on Historical Dublin County Council Drawings sourced from Fingal CC (1992) on Catchment Area 5-7 and 12.
- Catchment assessment based on As-built received from MMaRC Contractor Network A on Catchment Area 8-11.
- Catchment assessment based on records received from Irish Water on Catchment Area 13-21.
- The information outside the boundary of the works is not complete. Detailed catchment boundaries assessment is outside the scope of this project

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

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

Engineering Designer: **ARUP**

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

Project Code: BCIDC Originator Code: ARP

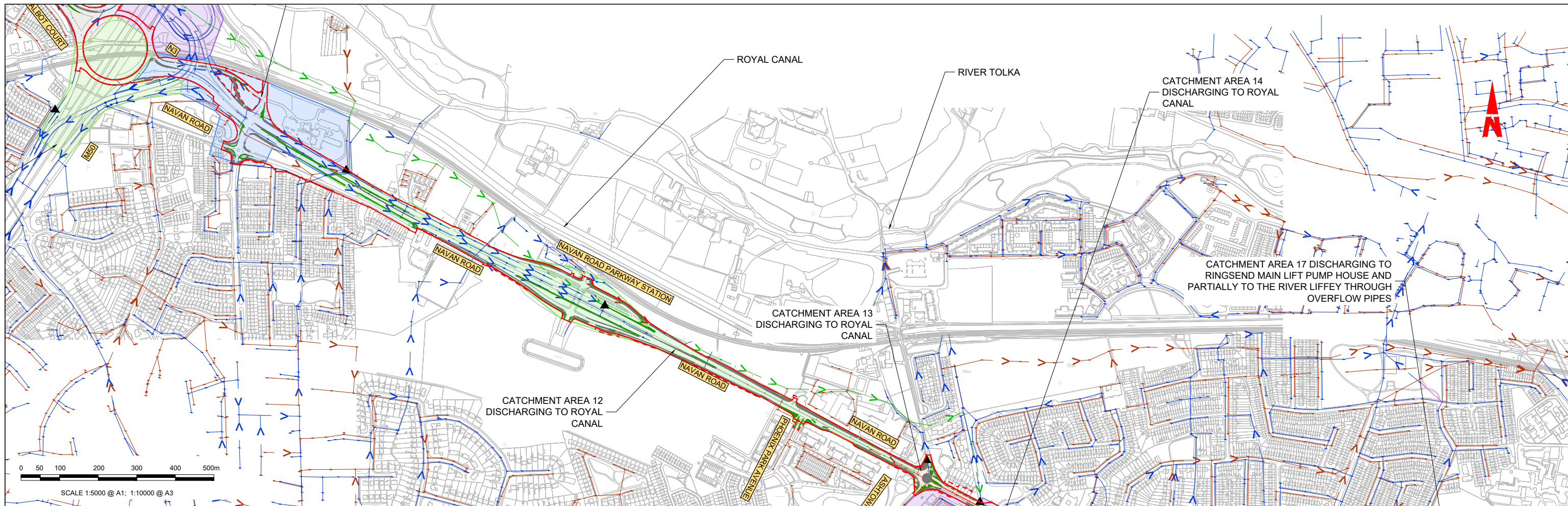
Drawn: AR Checked: MR Approved: DC

OMS Code: 268401-00

Programme Title: BUSCONNECTS DUBLIN CORE BUS CORRIDORS INFRASTRUCTURE WORKS			
Drawing Title: BLANCHARDSTOWN TO CITY CENTRE CORE BUS CORRIDOR SCHEME OVERALL CATCHMENT AREAS			
Drawing File Name: BCIDC-ARP-DNG RD-0005_XX_00-DR-CD-1001	Sheet Number: 01 of 03	Status: A	Rev: M01

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LEGEND:

	CATCHMENT AREA 1		CATCHMENT AREA 9		CATCHMENT AREA 17
	CATCHMENT AREA 2		CATCHMENT AREA 10		CATCHMENT AREA 18
	CATCHMENT AREA 3		CATCHMENT AREA 11		CATCHMENT AREA 19
	CATCHMENT AREA 4		CATCHMENT AREA 12		CATCHMENT AREA 20
	CATCHMENT AREA 5		CATCHMENT AREA 13		CATCHMENT AREA 21
	CATCHMENT AREA 6		CATCHMENT AREA 14		DISCHARGE POINT
	CATCHMENT AREA 7		CATCHMENT AREA 15		
	CATCHMENT AREA 8		CATCHMENT AREA 16		

	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

CATCHMENT AREA 12 DISCHARGING TO ROYAL CANAL

CATCHMENT AREA 13 DISCHARGING TO ROYAL CANAL

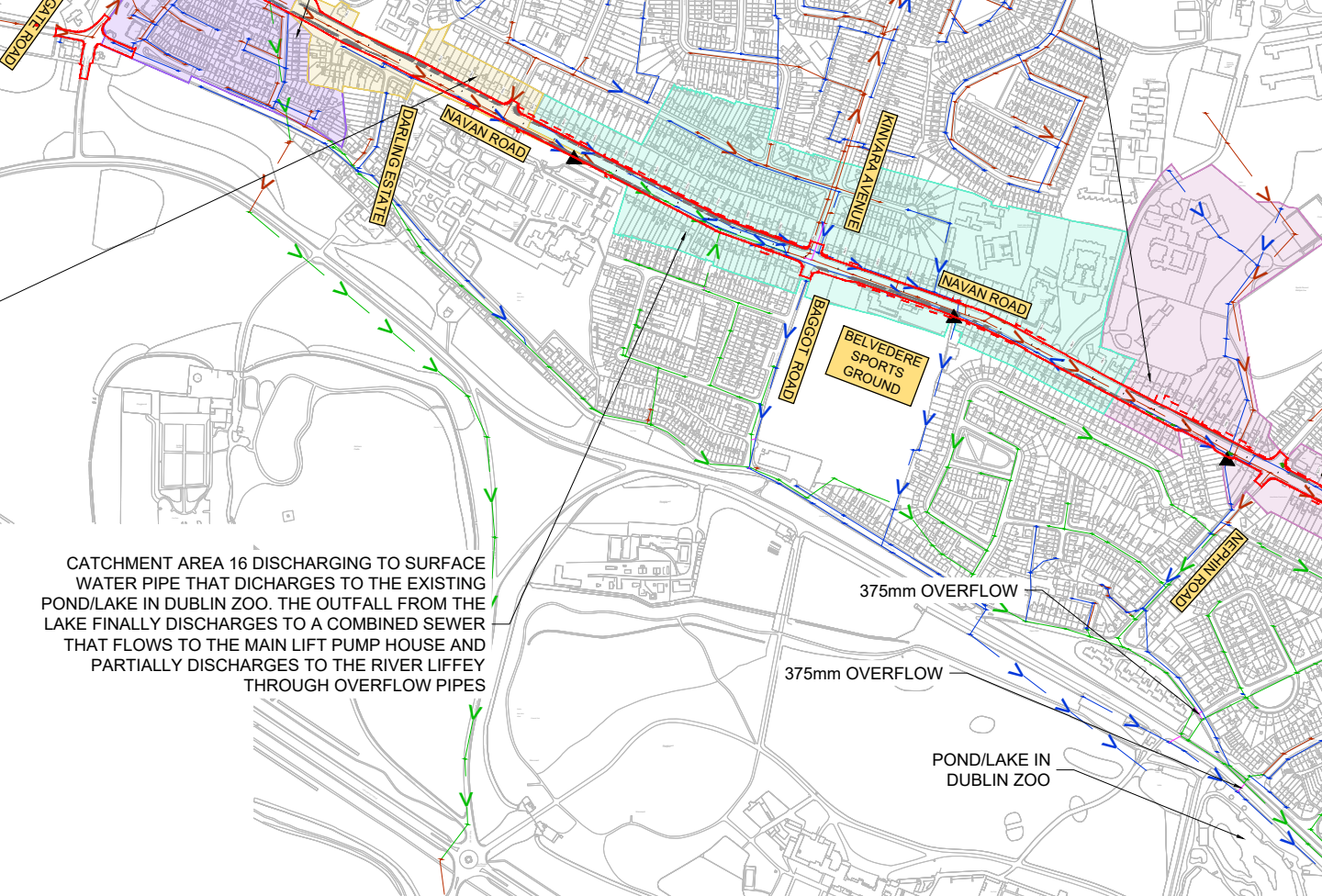
CATCHMENT AREA 14 DISCHARGING TO RINGSEND MAIN LIFT PUMP HOUSE AND PARTIALLY TO THE RIVER LIFFEY THROUGH OVERFLOW PIPES

CATCHMENT AREA 15 DISCHARGING TO SURFACE WATER PIPE THAT DICHARGES TO THE EXISTING POND/LAKE IN DUBLIN ZOO. THE OUTFALL FROM THE LAKE FINALLY DISCHARGES TO A COMBINED SEWER THAT FLOWS TO THE MAIN LIFT PUMP HOUSE AND PARTIALLY DISCHARGES TO THE RIVER LIFFEY THROUGH OVERFLOW PIPES

CATCHMENT AREA 16 DISCHARGING TO SURFACE WATER PIPE THAT DICHARGES TO THE EXISTING POND/LAKE IN DUBLIN ZOO. THE OUTFALL FROM THE LAKE FINALLY DISCHARGES TO A COMBINED SEWER THAT FLOWS TO THE MAIN LIFT PUMP HOUSE AND PARTIALLY DISCHARGES TO THE RIVER LIFFEY THROUGH OVERFLOW PIPES

Note:

- Catchment assessment based on As-built received from TII on Catchment Area 1-4.
- Catchment assessment based on Historical Dublin County Council Drawings sourced from Fingal CC (1992) on Catchment Area 5-7 and 12.
- Catchment assessment based on As-built received from MMaRC Contractor Network A on Catchment Area 8-11.
- Catchment assessment based on records received from Irish Water on Catchment Area 13-21.
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Rev	Date	Drn	Chk'd	App'd	Description
M01	04/04/2022	AR	MR	DC	ISSUE FOR PHASE 4: PLANNING

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

Engineering Designer: **ARUP**

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

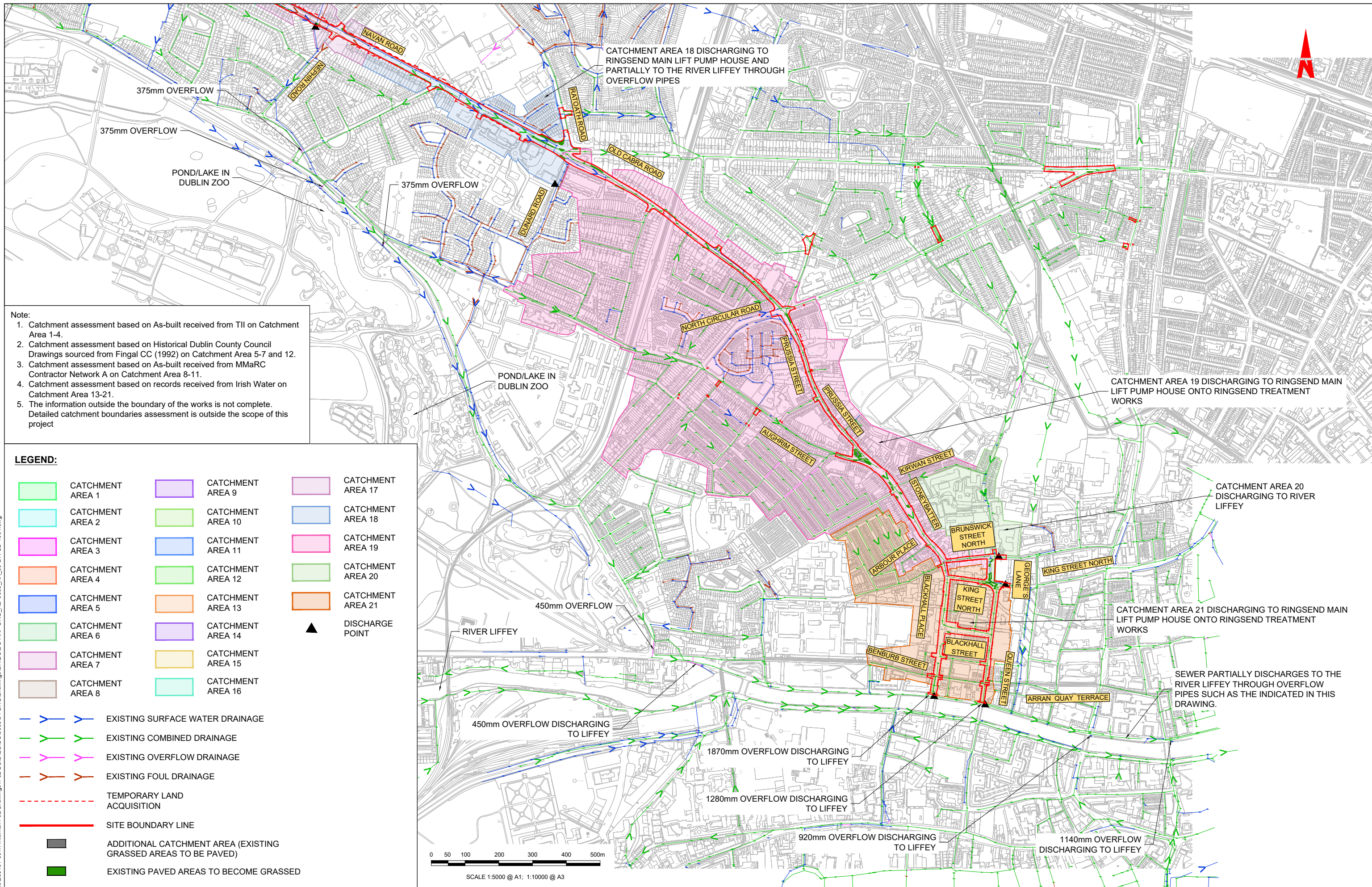
Project Code: BCIDC Originator Code: ARP

Drawn: AR Checked: MR Approved: DC

OMS Code: 268401-00

Programme Title: BUSCONNECTS DUBLIN CORE BUS CORRIDORS INFRASTRUCTURE WORKS	Sheet Number: 02 of 03	Status: A	Rev: M01
Drawing Title: BLANCHARDSTOWN TO CITY CENTRE CORE BUS CORRIDOR SCHEME OVERALL CATCHMENT AREAS			
Drawing File Name: BCIDC-ARP-DNG-RD-0005_XX_00-DR-CD-1002			

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- Note:**
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 - Catchment assessment based on As-built received from MMaRC Contractor Network A on Catchment Area 8-11.
 - Catchment assessment based on records received from Irish Water on Catchment Area 13-21.
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LEGEND:

	CATCHMENT AREA 1		CATCHMENT AREA 9		CATCHMENT AREA 17
	CATCHMENT AREA 2		CATCHMENT AREA 10		CATCHMENT AREA 18
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	CATCHMENT AREA 4		CATCHMENT AREA 12		CATCHMENT AREA 20
	CATCHMENT AREA 5		CATCHMENT AREA 13		CATCHMENT AREA 21
	CATCHMENT AREA 6		CATCHMENT AREA 14		DISCHARGE POINT
	CATCHMENT AREA 7		CATCHMENT AREA 15		
	CATCHMENT AREA 8		CATCHMENT AREA 16		

	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**
Udarás Náisiúnta Iompair
National Transport Authority

Engineering Designer: **ARUP**

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

Project Code: BCIDC | Originator Code: ARP

Drawn: AR | Checked: MR | Approved: BD

QMS Code: 268401-00

Programme Title	BUSCONNECTS DUBLIN CORE BUS CORRIDORS INFRASTRUCTURE WORKS		
Drawing Title	BLANCHARDSTOWN TO CITY CENTRE CORE BUS CORRIDOR SCHEME OVERALL CATCHMENT AREAS		
Drawing File Name	BCIDC-ARP-DNG_RD-0005_XX_00-DR-CD-1003	Sheet Number	03 of 03
Status	A	Rev	M01

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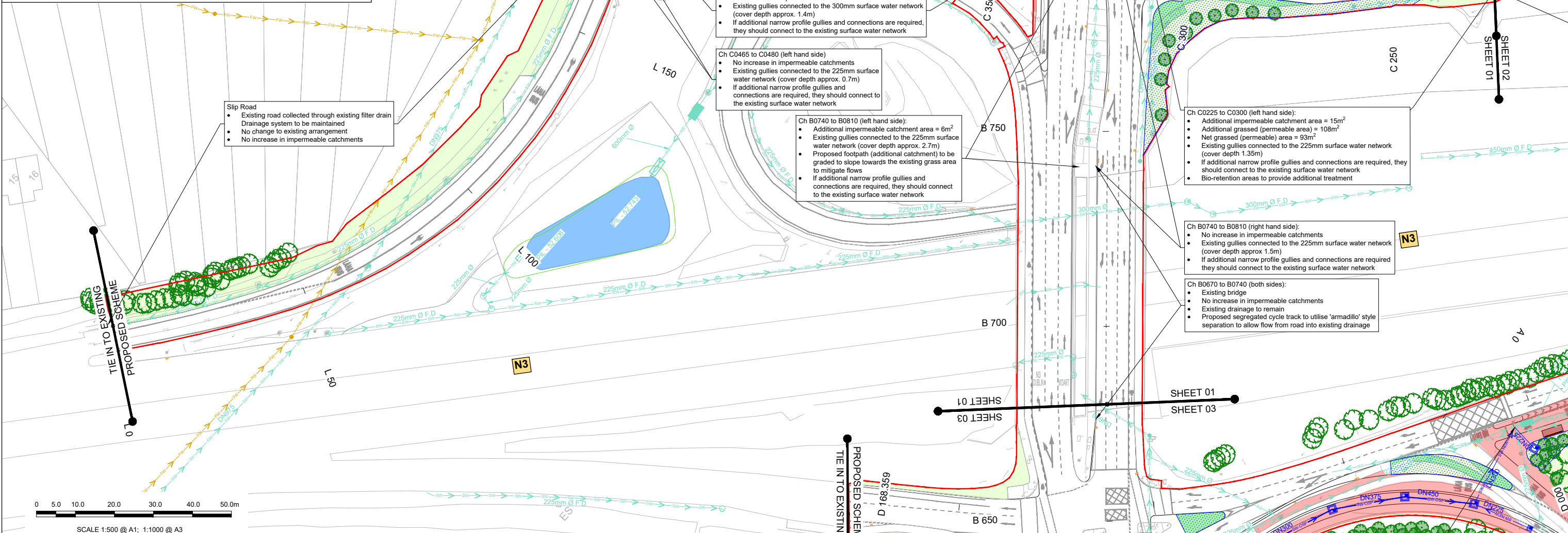
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 - THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER DRAWINGS AND REPORTS.
 - STORMWATER DRAINAGE TO BE CONSTRUCTED IN ACCORDANCE WITH THE GREATER DUBLIN REGIONAL CODE OF PRACTICE FOR DRAINAGE WORKS AND/OR THE DRAINAGE DESIGN BASIS REPORT FOR 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.
 - 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_{att}: 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 = CIRCLULAR, RG = RECTANGULAR, EG = EGG SHAPED, AH= ARCH.



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M01	04/04/2022	AG	MR	BD	ISSUE FOR PHASE 4: PLANNING

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

Engineering Designer: **ARUP**

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

Project Code: BCIDC
 Originator Code: ARP

OMS Code: 268401-00

Drawn: AF
 Checked: MR
 Approved: BD

Programme Title: BUSCONNECTS DUBLIN CORE BUS CORRIDORS INFRASTRUCTURE WORKS			
Drawing Title: BLANCHARDSTOWN TO CITY CENTRE CORE BUS CORRIDOR SCHEME PROPOSED SURFACE WATER DRAINAGE WORKS			
Drawing File Name: BCIDC-ARP-DNG_RD-0005_XX_00-DR-CD-0001	Sheet Number: 01 of 40	Status: A	Rev: M01

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0 5.0 10.0 20.0 30.0 40.0 50.0m

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

Tolka Valley Park

Tolka River - An Tulcha

Tolka River - An Tulcha

Existing drainage information within this drawing is not from Irish water records. For information on existing drainage data sources, please see overall catchment assessment drawing.

Ch C0000 - C0225 (right hand side):
• Additional impermeable catchment area = 26m² (compensated Ch0120 - Ch0225 left hand side)
• No attenuation required.
• Existing gullies connected to the Ø225mm surface water network (cover depth varies between approx. 0.7m and 1.1m).
• If additional narrow profile gullies and connections are required, they should connect to the existing surface water network.

Ch C0000 - C0120 (left hand side):
• Increase of additional catchment area: 332m²
• Existing gullies connected to the Ø300mm surface water network (cover depth varies between approx. 1.20m and 1.65m)
• New narrow profile gullies and connections will be required and will collect surface water from the carriageway and cycle track before discharging to a filter drain for attenuation purposes.
• Location of filter drain subject to 2m increase in width of red line boundary.
• ADR: 8.9 l/s
• Vol_{att}: DN300 FD, 68m long

Ch C0120 - C0225 (left hand side):
• Additional impermeable catchment area: 16m² + 26m² (from right hand side of road) = 42m²
• Additional grassed (permeable area) = 94m²
• Net grassed (permeable) area = 52m²
• No attenuation required.
• Existing gullies connected to the Ø225mm or Ø300mm surface water network, (cover depth varies between approx. 1.35m and 1.70m)
• If additional narrow profile gullies and connections are required, they should connect to the existing surface water network.

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 = 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_{att}: VOLUME OF ATTENUATION

\\global\europa\dublin\jobs\2686000\268640-1004_Intemat4-02_Drawing4-02_BCID\BCID\0005\04_DNG\Drawings\DRIBCD-ARP-DNG_RD-0005_XX_00-DR-CD-001-0040.dwg

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Rev	Date	Drn	Chk'd	App'd	Description
M01	04/04/2022	AG	MR	BD	ISSUE FOR PHASE 4: PLANNING

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

Engineering Designer: **ARUP**

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

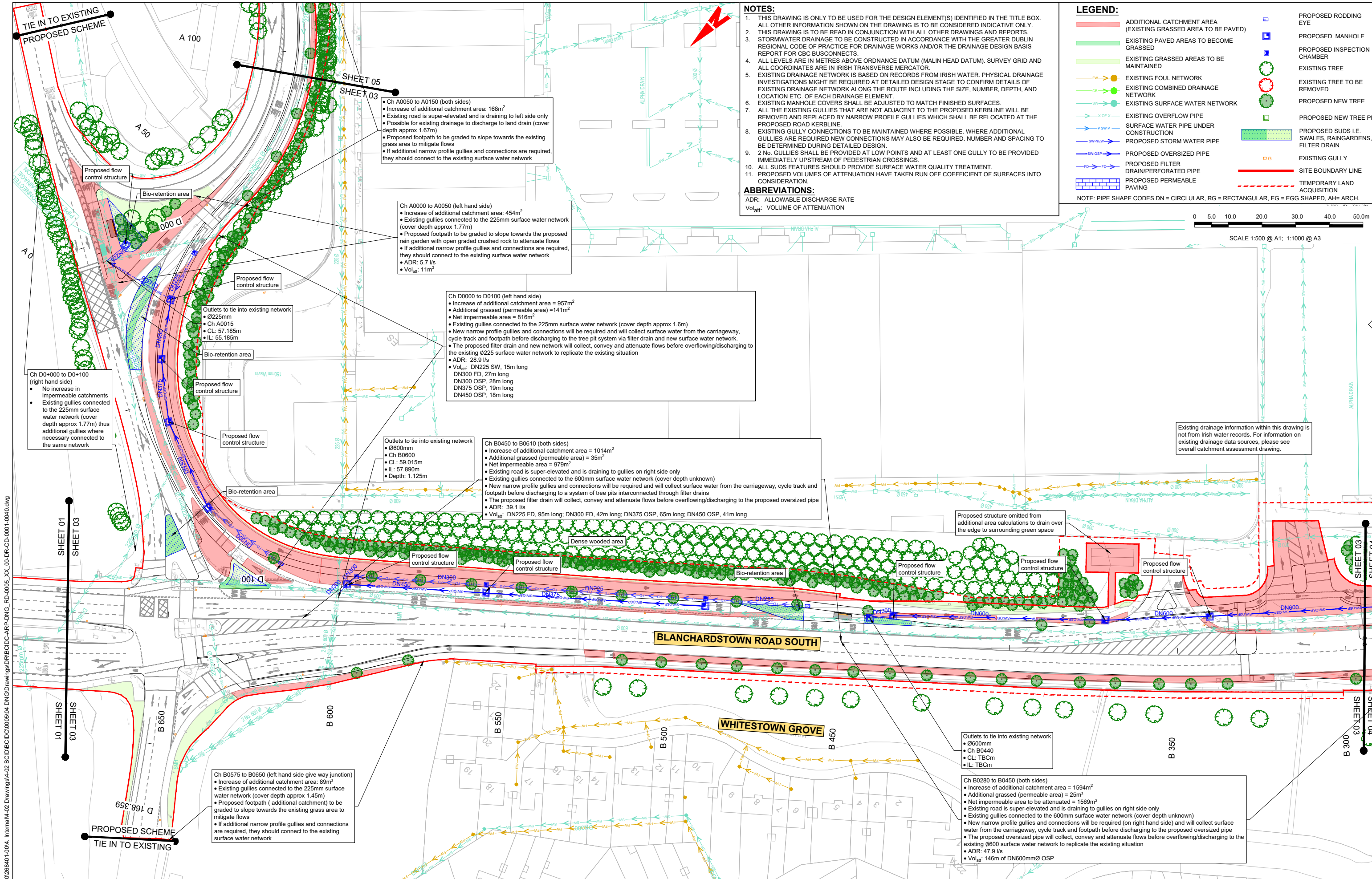
Project Code: BCIDC Originator Code: ARP

Drawn: AF Checked: MR Approved: BD

OMS Code: 268401-00

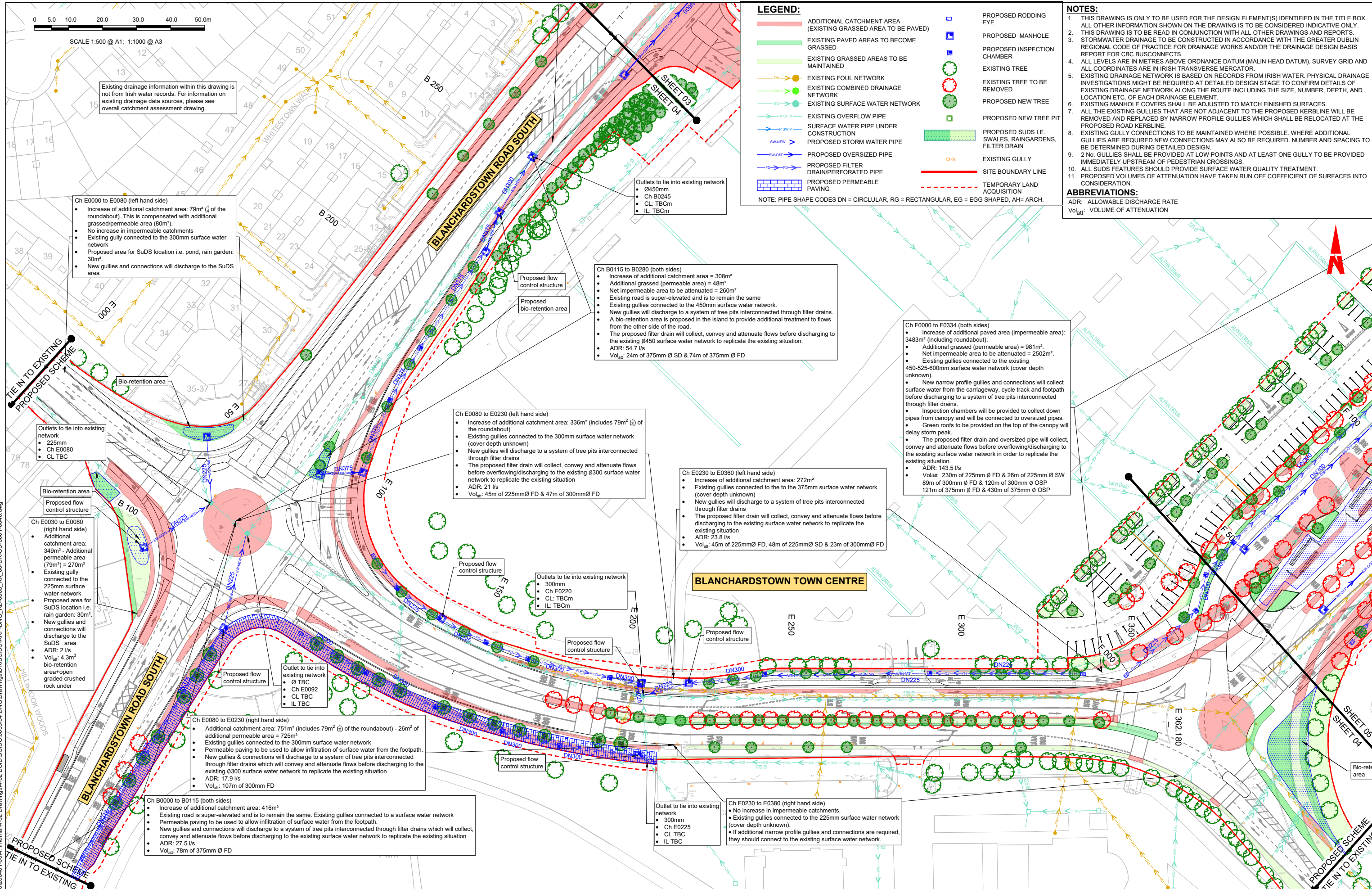
Programme Title: BUSCONNECTS DUBLIN CORE BUS CORRIDORS INFRASTRUCTURE WORKS			
Drawing Title: BLANCHARDSTOWN TO CITY CENTRE CORE BUS CORRIDOR SCHEME PROPOSED SURFACE WATER DRAINAGE WORKS			
Drawing File Name: BCIDC-ARP-DNG_RD-0005_XX_00-DR-CD-0002	Sheet Number: 02 of 40	Status: A	Rev: M01

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LEGEND:

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- EXISTING PAVED AREAS TO BECOME GRASSED
- EXISTING GRASSED AREAS TO BE MAINTAINED
- EXISTING FOUL NETWORK
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- EXISTING SURFACE WATER NETWORK
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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_{att}: VOLUME OF ATTENUATION

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<p>Date 04/04/2022 Scale 1:500 @ A1 1:1000 @ A3</p>		<p>Drawn AF Checked MR Approved BD</p>		<p>Project Code BCIDC Originator Code ARP</p>		<p>OMS Code 268401-00</p>		<p>Drawing File Name BCIDC-ARP-DNG RD-0005_XX_00-DR-CD-0004</p>	
<p>Sheet Number 04 of 40</p>		<p>Status A</p>		<p>Rev M01</p>		<p>DO NOT SCALE USE FIGURED DIMENSIONS ONLY</p>			



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

Ch F0000 to F0334 (both sides)

- Increase of additional paved area (impermeable area): 3483m² (including roundabout).
- Additional grassed (permeable area) = 981m².
- Net impermeable area to be attenuated = 2502m².
- Existing gullies connected to the existing 450-525-600mm surface water network (cover depth unknown).
- New narrow profile gullies and connections will collect surface water from the carriageway, cycle track and footpath before discharging to a system of tree pits interconnected through filter drains.
- Inspection chambers will be provided to collect down pipes from canopy and will be connected to oversized pipes.
- Green roofs to be provided on the top of the canopy will delay storm peak.
- The proposed filter drain and oversized pipe will collect, convey and attenuate flows before overflowing/discharging to the existing surface water network in order to replicate the existing situation.
- ADR: 143.5 l/s
- Vol_{att}: 230m of 225mm Ø FD & 26m of 225mm Ø SW
89m of 300mm Ø FD & 120m of 300mm Ø OSP
121m of 375mm Ø FD & 430m of 375mm Ø OSP

Ch A0150 to A0170 (both sides)

- Increase of additional catchment area: 59m² + 3m² (additional area from the left hand side) = 62m²
- Existing gullies connected to the 225mm surface water network (cover depth approx 1.2m)
- Proposed footpath to be graded to slope towards the existing grass area between A100 - A140 to mitigate flows
- If additional narrow profile gullies and connections are required, they should connect to the existing surface water network

Ch F0334 to F0380 (left hand side)

- Increase of additional catchment area: 67m² (includes 1/2 of roundabout)
- Existing gullies connected to the 225mm surface water network (cover depth approx unknown)
- Additional area to be compensated in Area A200 - A390
- If additional narrow profile gullies and connections are required, they should connect to the existing surface water network.

Ch A0200 - A0390 (both sides)

- Increase of additional catchment area: 1473 + 54 (1/2 of roundabout) + 67m² (from Ch F0334 to F0380) = 1594m²
- Additional grassed (permeable area) = 115m²
- Net impermeable area to be attenuated = 1479m²
- Existing gullies connected to the 750mm surface water network (cover depth unknown).
- New narrow profile gullies and connections will be required and will collect surface water from the carriageway, cycle track and footpath before discharging to a system of tree pits interconnected through filter drains.
- The proposed filter drain will collect, convey and attenuate flows before overflowing/discharging to the oversized pipe.
- The proposed oversized pipe will collect, convey and attenuate flows before overflowing/discharging to the existing Ø750 surface water network to replicate the existing situation.
- ADR: 26.6 l/s
- Vol_{att}: SW DN225, 31m long and FD DN225 201m long
OSP DN300, 58m long
OSP DN375, 92m long

BLANCHARDSTOWN TOWN CENTRE

- NOTES:**
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 6. EXISTING MANHOLE COVERS SHALL BE ADJUSTED TO MATCH FINISHED SURFACES.
 7. ALL THE EXISTING GULLIES THAT ARE NOT ADJACENT TO THE PROPOSED KERBLINE WILL BE REMOVED AND REPLACED BY NARROW PROFILE GULLIES WHICH SHALL BE RELOCATED AT THE PROPOSED ROAD KERBLINE.
 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_{att}: 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		ACQUIRMENT

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

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Rev	Date	Drn	Chk'd	App'd	Description
M01	04/04/2022	AG	MR	BD	ISSUE FOR PHASE 4: PLANNING

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

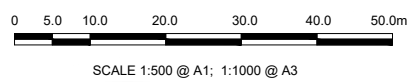
Engineering Designer: **ARUP**

Date: 04/04/2022 | Scale: 1:500 @ A1, 1:1000 @ A3 | Drawn: AF | Checked: MR | Approved: BD

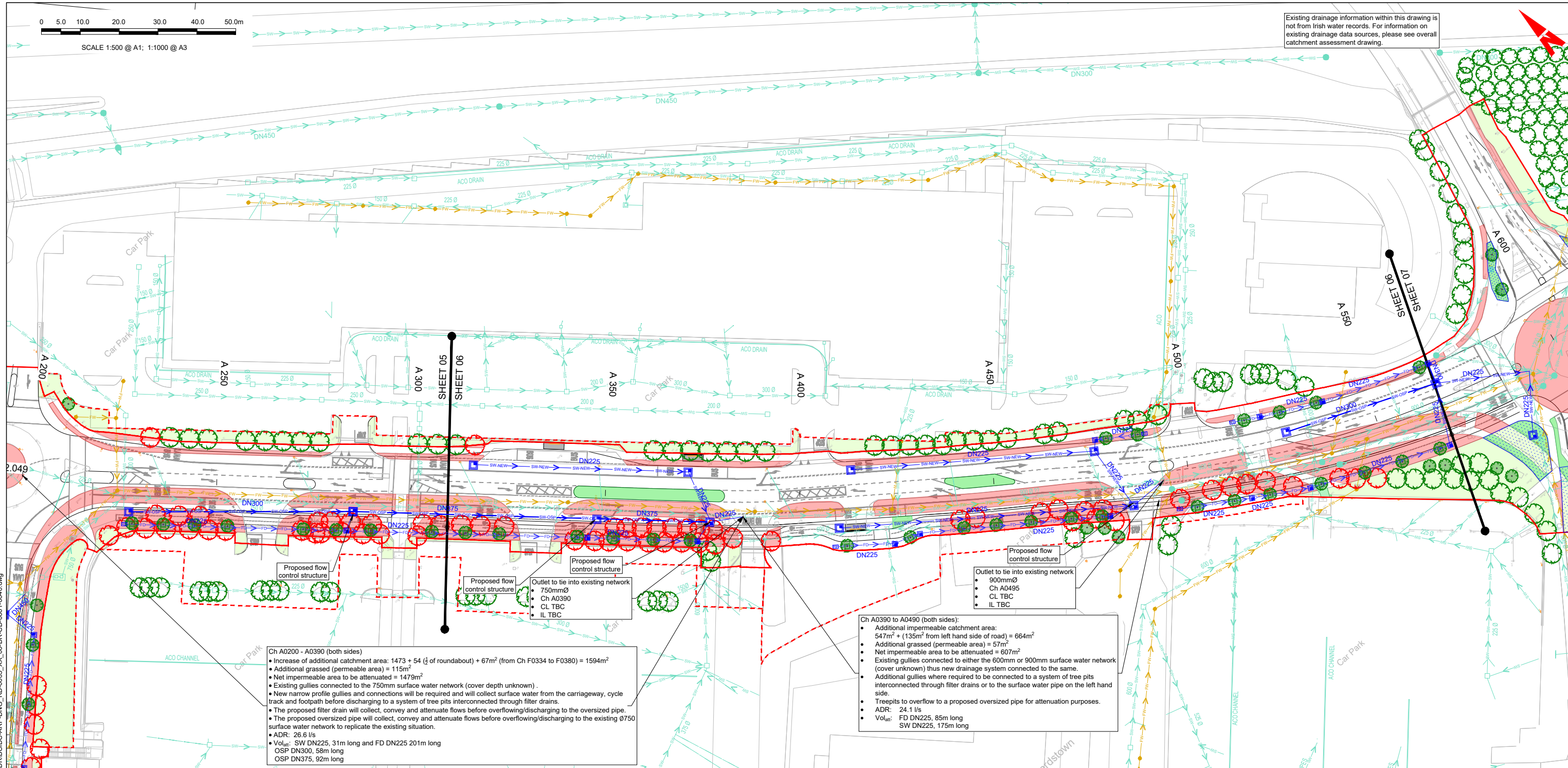
Project Code: BCIDC | Originator Code: ARP | OMS Code: 268401-00

Programme Title: BUSCONNECTS DUBLIN CORE BUS CORRIDORS INFRASTRUCTURE WORKS			
Drawing Title: BLANCHARDSTOWN TO CITY CENTRE CORE BUS CORRIDOR SCHEME PROPOSED SURFACE WATER DRAINAGE WORKS			
Drawing File Name: BCIDC-ARP-DNG_RD-0005_XX_00-DR-CD-0005	Sheet Number: 05 of 40	Status: A	Rev: M01

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Existing drainage information within this drawing is not from Irish water records. For information on existing drainage data sources, please see overall catchment assessment drawing.



Ch A0200 - A0390 (both sides)

- Increase of additional catchment area: 1473 + 54 (1/4 of roundabout) + 67m² (from Ch F0334 to F0380) = 1594m²
- Additional grassed (permeable area) = 115m²
- Net impermeable area to be attenuated = 1479m²
- Existing gullies connected to the 750mm surface water network (cover depth unknown).
- New narrow profile gullies and connections will be required and will collect surface water from the carriageway, cycle track and footpath before discharging to a system of tree pits interconnected through filter drains.
- The proposed filter drain will collect, convey and attenuate flows before overflowing/discharging to the oversized pipe.
- The proposed oversized pipe will collect, convey and attenuate flows before overflowing/discharging to the existing Ø750 surface water network to replicate the existing situation.
- ADR: 26.6 l/s
- Vol_{att}: SW DN225, 31m long and FD DN225 201m long
- OSP DN300, 58m long
- OSP DN375, 92m long

Ch A0390 to A0490 (both sides):

- Additional impermeable catchment area: 547m² + (135m² from left hand side of road) = 664m²
- Additional grassed (permeable area) = 57m²
- Net impermeable area to be attenuated = 607m²
- Existing gullies connected to either the 600mm or 900mm surface water network (cover unknown) thus new drainage system connected to the same.
- Additional gullies where required to be connected to a system of tree pits interconnected through filter drains or to the surface water pipe on the left hand side.
- Treepits to overflow to a proposed oversized pipe for attenuation purposes.
- ADR: 24.1 l/s
- Vol_{att}: FD DN225, 85m long
- SW DN225, 175m long

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 CODING DN = CIRCULAR, RG = RECTANGULAR, EG = EGG SHAPED, AH= ARCH.

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6. EXISTING MANHOLE COVERS SHALL BE ADJUSTED TO MATCH FINISHED SURFACES.
7. ALL THE EXISTING GULLIES THAT ARE NOT ADJACENT TO THE PROPOSED KERBLINE WILL BE REMOVED AND REPLACED BY NARROW PROFILE GULLIES WHICH SHALL BE RELOCATED AT THE PROPOSED ROAD KERBLINE.
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_{att}: VOLUME OF ATTENUATION

BLANCHARDSTOWN TOWN CENTRE

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Rev	Date	Drn	Chk'd	App'd	Description
M01	04/04/2022	AG	MR	BD	ISSUE FOR PHASE 4: PLANNING

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

Engineering Designer: **ARUP**

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

Project Code: BCIDC Originator Code: ARP

Drawn: AF Checked: MR Approved: BD

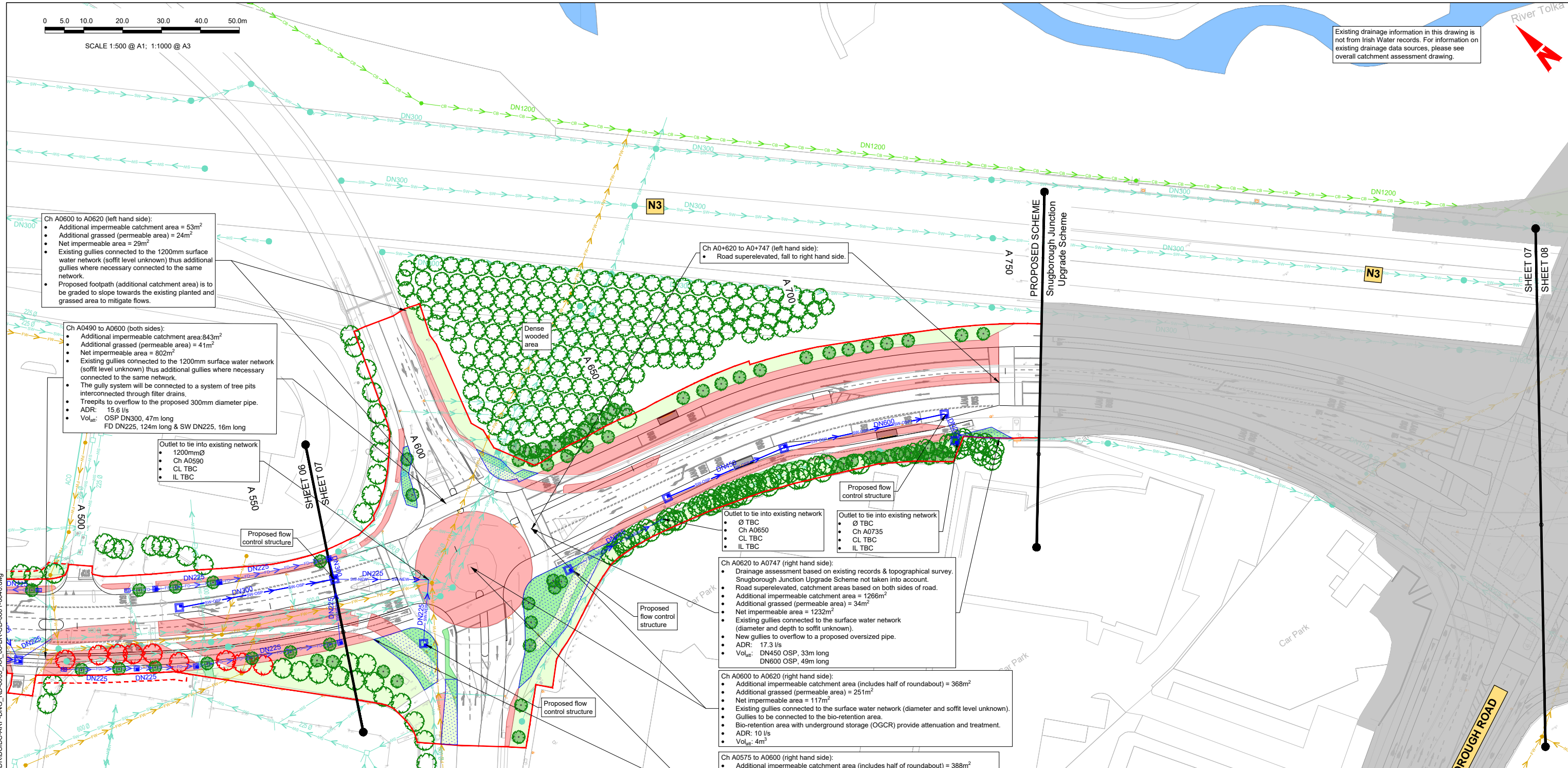
OMS Code: 268401-00

Programme Title	BUSCONNECTS DUBLIN CORE BUS CORRIDORS INFRASTRUCTURE WORKS		
Drawing Title	BLANCHARDSTOWN TO CITY CENTRE CORE BUS CORRIDOR SCHEME PROPOSED SURFACE WATER DRAINAGE WORKS		
Drawing File Name	Sheet Number	Status	Rev
BCIDC-ARP-DNG_RD-0005_XX_00-DR-CD-0006	06 of 40	A	M01

0 5.0 10.0 20.0 30.0 40.0 50.0m

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

Existing drainage information in this drawing is not from Irish Water records. For information on existing drainage data sources, please see overall catchment assessment drawing.



Ch A0600 to A0620 (left hand side):
• Additional impermeable catchment area = 53m²
• Additional grassed (permeable area) = 24m²
• Net impermeable area = 29m²
• Existing gullies connected to the 1200mm surface water network (soffit level unknown) thus additional gullies where necessary connected to the same network.
• Proposed footpath (additional catchment area) is to be graded to slope towards the existing planted and grassed area to mitigate flows.

Ch A0490 to A0600 (both sides):
• Additional impermeable catchment area: 843m²
• Additional grassed (permeable area) = 41m²
• Net impermeable area = 802m²
• Existing gullies connected to the 1200mm surface water network (soffit level unknown) thus additional gullies where necessary connected to the same network.
• The gully system will be connected to a system of tree pits interconnected through filter drains.
• Tree pits to overflow to the proposed 300mm diameter pipe.
• ADR: 15.6 l/s
• Vol_{att}: OSP DN300, 47m long
FD DN225, 124m long & SW DN225, 16m long

Ch A0+620 to A0+747 (left hand side):
• Road super-elevated, fall to right hand side.

Outlet to tie into existing network
• 1200mmØ
• Ch A0590
• CL TBC
• IL TBC

Outlet to tie into existing network
• Ø TBC
• Ch A0650
• CL TBC
• IL TBC

Ch A0620 to A0747 (right hand side):
• Drainage assessment based on existing records & topographical survey. Snugborough Junction Upgrade Scheme not taken into account.
• Road super-elevated, catchment areas based on both sides of road.
• Additional impermeable catchment area = 1260m²
• Additional grassed (permeable area) = 34m²
• Net impermeable area = 1232m²
• Existing gullies connected to the surface water network (diameter and depth to soffit unknown).
• New gullies to overflow to a proposed oversized pipe.
• ADR: 17.3 l/s
• Vol_{att}: DN450 OSP, 33m long
DN600 OSP, 49m long

Ch A0600 to A0620 (right hand side):
• Additional impermeable catchment area (includes half of roundabout) = 368m²
• Additional grassed (permeable area) = 251m²
• Net impermeable area = 117m²
• Existing gullies connected to the surface water network (diameter and soffit level unknown).
• Gullies to be connected to the bio-retention area.
• Bio-retention area with underground storage (OGCR) provide attenuation and treatment.
• ADR: 10 l/s
• Vol_{att}: 4m³

Ch A0575 to A0600 (right hand side):
• Additional impermeable catchment area (includes half of roundabout) = 388m²
• Additional grassed (permeable area) = 102m²
• Net impermeable area = 286m²
• Existing gullies connected to the 1200mm surface water network (soffit level unknown).
• Gullies to drain to bio-retention area.
• Bio-retention area with underground storage (OGCR) to provide attenuation and treatment.
• ADR: 6 l/s
• Vol_{att}: 3.1m³

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
	PROPOSED PERMEABLE PAVING		

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

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

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<p>Date 04/04/2022 Scale 1:500 @ A1 1:1000 @ A3</p>		<p>Drawn AF Checked MR Approved BD</p>		<p>Project Code BCIDC Originator Code ARP</p>		<p>OMS Code 268401-00</p>			<p>Drawing File Name BCIDC-ARP-DNG_RD-0005_XX_00-DR-CD-0007 Sheet Number 07 of 40 Status A Rev M01</p>	

DO NOT SCALE USE FIGURED DIMENSIONS ONLY

0 5.0 10.0 20.0 30.0 40.0 50.0m

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

Existing drainage information in this drawing is not from Irish Water records. For information on existing drainage data sources, please see overall catchment assessment drawing.

Surface water drainage works within the grey hatched area are outside of BusConnects scope and must be carried out as part of Snugborough Interchange and Bridge Works.

SHEET 07
SHEET 08

SHEET 08
SHEET 09
0001 V

Snugborough Junction Upgrade Scheme
PROPOSED SCHEME

TIE IN TO EXISTING PROPOSED SCHEME

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
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ABBREVIATIONS:

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

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Project Ireland 2040
Building Ireland's Future

Rev	Date	Drm	Chk'd	App'd	Description
M01	04/04/2022	AG	MR	BD	ISSUE FOR PHASE 4: PLANNING

Client

NTA
Udarás Náisiúnta Iompair
National Transport Authority

Engineering Designer

ARUP

Programme Title		BUSCONNECTS DUBLIN CORE BUS CORRIDORS INFRASTRUCTURE WORKS		
Drawing Title		BLANCHARDSTOWN TO CITY CENTRE CORE BUS CORRIDOR SCHEME PROPOSED SURFACE WATER DRAINAGE WORKS		
Drawing File Name	Sheet Number	Status	Rev	
BCIDC-ARP-DNG_RD-0005_XX_00-DR-CD-0008	08 of 40	A	M01	

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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
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- - - TEMPORARY LAND ACQUISITION

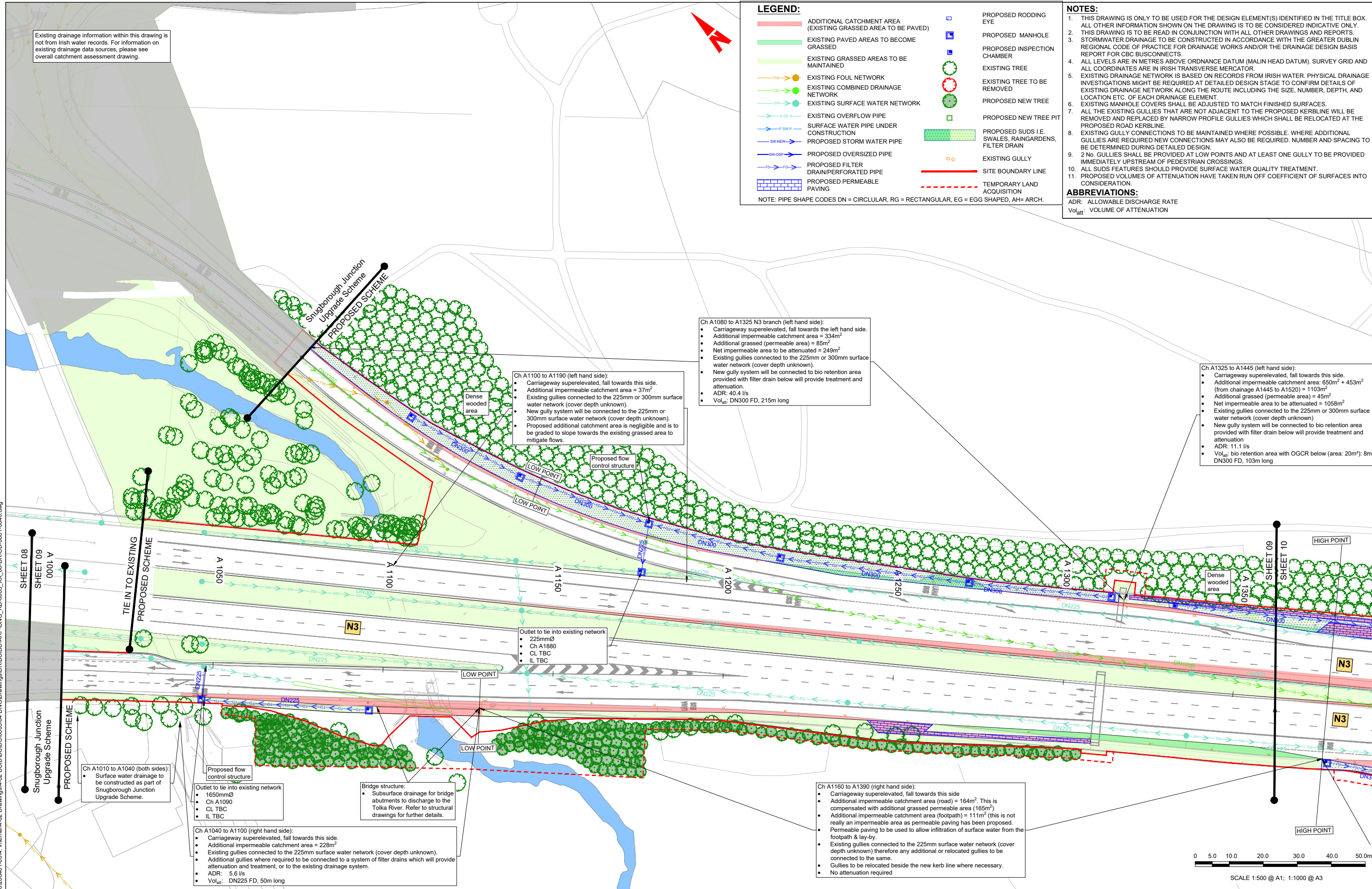
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ABBREVIATIONS:

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- Vol_{att}: VOLUME OF ATTENUATION



Ch A1100 to A1190 (left hand side):

- Carriageway super-elevated, fall towards this side.
- Additional impermeable catchment area = 37m²
- Existing gullies connected to the 225mm or 300mm surface water network (cover depth unknown).
- New gully system will be connected to the 225mm or 300mm surface water network (cover depth unknown).
- Proposed additional catchment area is negligible and is to be graded to slope towards the existing grassed area to mitigate flows.

Ch A1080 to A1325 N3 branch (left hand side):

- Carriageway super-elevated, fall towards the left hand side.
- Additional impermeable catchment area = 334m²
- Additional grassed (permeable area) = 85m²
- Net impermeable area to be attenuated = 249m²
- Existing gullies connected to the 225mm or 300mm surface water network (cover depth unknown).
- New gully system will be connected to bio retention area provided with filter drain below will provide treatment and attenuation.
- ADR: 40.4 l/s
- Vol_{att}: DN300 FD, 215m long

Ch A1325 to A1445 (left hand side):

- Carriageway super-elevated, fall towards this side.
- Additional impermeable catchment area: 650m² + 453m² (from chainage A1445 to A1520) = 1103m²
- Additional grassed (permeable area) = 45m²
- Net impermeable area to be attenuated = 1058m²
- Existing gullies connected to the 225mm or 300mm surface water network (cover depth unknown).
- New gully system will be connected to bio retention area provided with filter drain below will provide treatment and attenuation
- ADR: 11.1 l/s
- Vol_{att}: bio retention area with OGCR below (area: 20m²): 8m³ DN300 FD, 103m long

Ch A1010 to A1040 (both sides):

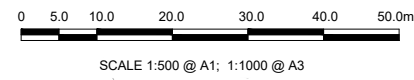
- Surface water drainage to be constructed as part of Snugborough Junction Upgrade Scheme.

Ch A1040 to A1100 (right hand side):

- Carriageway super-elevated, fall towards this side.
- Additional impermeable catchment area = 228m²
- Existing gullies connected to the 225mm surface water network (cover depth unknown).
- Additional gullies where required to be connected to a system of filter drains which will provide attenuation and treatment, or to the existing drainage system.
- ADR: 5.6 l/s
- Vol_{att}: DN225 FD, 50m long

Ch A1160 to A1390 (right hand side):

- Carriageway super-elevated, fall towards this side
- Additional impermeable catchment area (road) = 164m². This is compensated with additional grassed permeable area (165m²)
- Additional impermeable catchment area (footpath) = 111m² (this is not really an impermeable area as permeable paving has been proposed).
- Permeable paving to be used to allow infiltration of surface water from the footpath & lay-by.
- Existing gullies connected to the 225mm surface water network (cover depth unknown) therefore any additional or relocated gullies to be connected to the same.
- Gullies to be relocated beside the new kerb line where necessary.
- No attenuation required



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Project Ireland 2040
Building Ireland's Future

Rev	Date	Drn	Chk'd	App'd	Description
M01	04/04/2022	AG	MR	BD	ISSUE FOR PHASE 4: PLANNING

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

Engineering Designer: **ARUP**

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

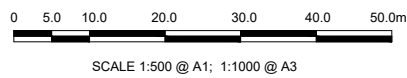
Project Code: BCIDC Originator Code: ARP

Drawn: AF Checked: MR Approved: BD

OMS Code: 268401-00

Programme Title: BUSCONNECTS DUBLIN CORE BUS CORRIDORS INFRASTRUCTURE WORKS			
Drawing Title: BLANCHARDSTOWN TO CITY CENTRE CORE BUS CORRIDOR SCHEME PROPOSED SURFACE WATER DRAINAGE WORKS			
Drawing File Name: BCIDC-ARP-DNG_RD-0005_XX_00-DR-CD-0009	Sheet Number: 09 of 40	Status: A	Rev: M01

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Existing drainage information within this drawing is not from Irish water records. For information on existing drainage data sources, please see overall catchment assessment drawing.

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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_{att}: VOLUME OF ATTENUATION

Ch A1325 to A1445 (left hand side):

- Carriageway super-elevated, fall towards this side.
- Additional impermeable catchment area: 650m² + 453m² (from chainage A1445 to A1520) = 1103m²
- Additional grassed (permeable area) = 45m²
- Net impermeable area to be attenuated = 1058m²
- Existing gullies connected to the 225mm or 300mm surface water network (cover depth unknown)
- New gully system will be connected to bio retention area provided with filter drain below will provide treatment and attenuation
- ADR: 11.1 l/s
- Vol_{att}: bio retention area with OGCR below (area: 20m²): 8m³ DN300 FD, 103m long

Ch A1445 to A1520 (left hand side):

- Carriageway super-elevated, fall towards this side.
- The additional paved (453m²) area from the flow control structure to chainage 1520 will discharge to the existing surface water pipe.
- The additional area will be attenuated upstream in the filter drain and bio-retention area between chainages A1390 and A1445.

Ch A1520 to A1630 (left hand side):

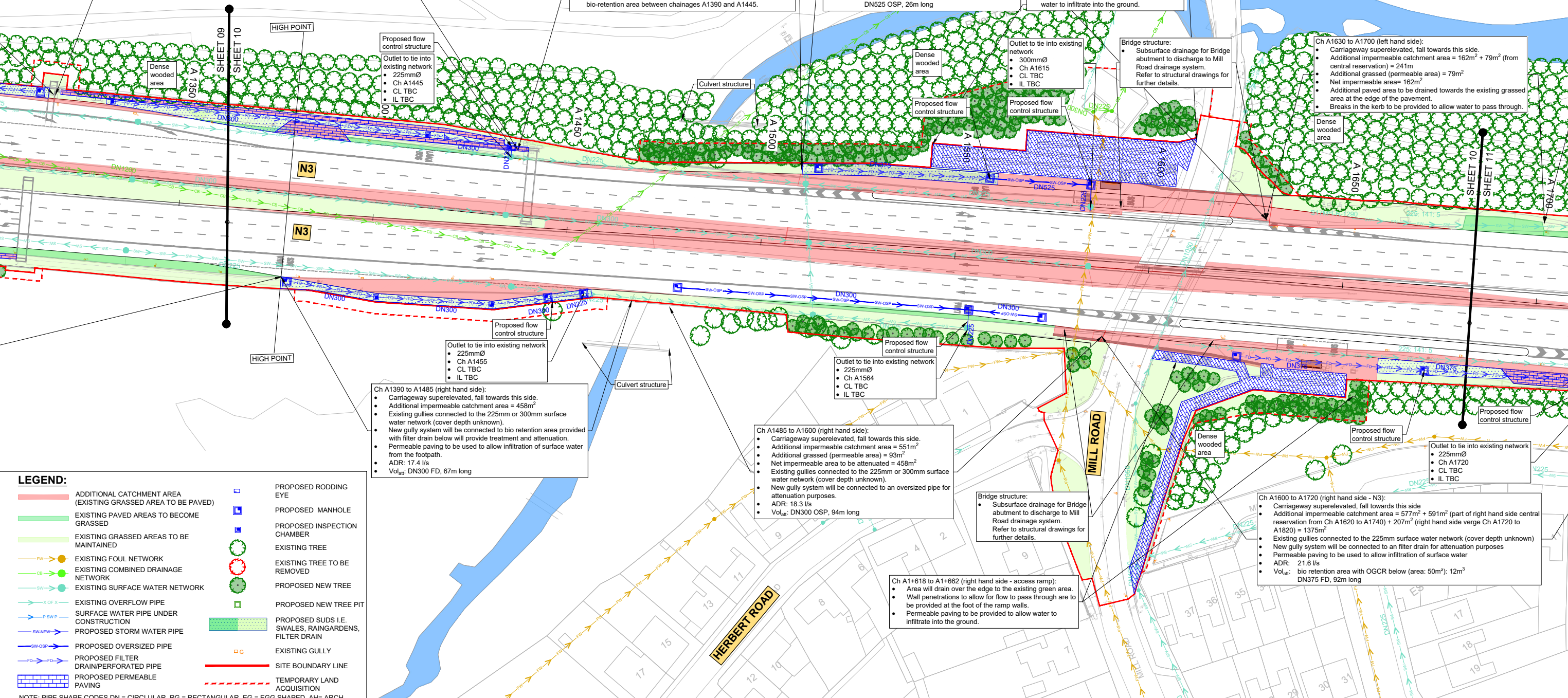
- Carriageway super-elevated, fall towards this side.
- Additional paved area = 725m² + 385m²(from central reservation) = 1110m²
- Existing gullies connected to the 225mm or 300mm surface water network (cover depth unknown) will be removed.
- New gully system will be connected to bio retention area provided with filter drain below will provide treatment and attenuation.
- ADR: 9.6 l/s
- Vol_{att}: DN375 FD, 44m long DN525 OSP, 26m long

Ch A1545 to A1600 (left hand side - access ramp):

- Area will drain over the edge to the existing green area.
- Wall penetrations to allow for flow to pass through are to be provided at the foot of the ramp walls.
- Retaining wall toe drainage to discharge to the existing surface water network at Mill Road.
- Permeable paving to be provided to allow water to infiltrate into the ground.

Ch A1630 to A1700 (left hand side):

- Carriageway super-elevated, fall towards this side.
- Additional impermeable catchment area = 162m² + 79m² (from central reservation) = 241m²
- Additional grassed (permeable area) = 79m²
- Net impermeable area= 162m²
- Additional paved area to be drained towards the existing grassed area at the edge of the pavement.
- Breaks in the kerb to be provided to allow water to pass through.



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

Project Code: BCIDC Originator Code: ARP

Drawn: AF Checked: MR Approved: BD

OMS Code: 268401-00

Programme Title	BUSCONNECTS DUBLIN CORE BUS CORRIDORS INFRASTRUCTURE WORKS		
Drawing Title	BLANCHARDSTOWN TO CITY CENTRE CORE BUS CORRIDOR SCHEME PROPOSED SURFACE WATER DRAINAGE WORKS		
Drawing File Name	BCIDC-ARP-DNG_RD-0005_XX_00-DR-CD-0010	Sheet Number	10 of 40
Status	A	Rev	M01

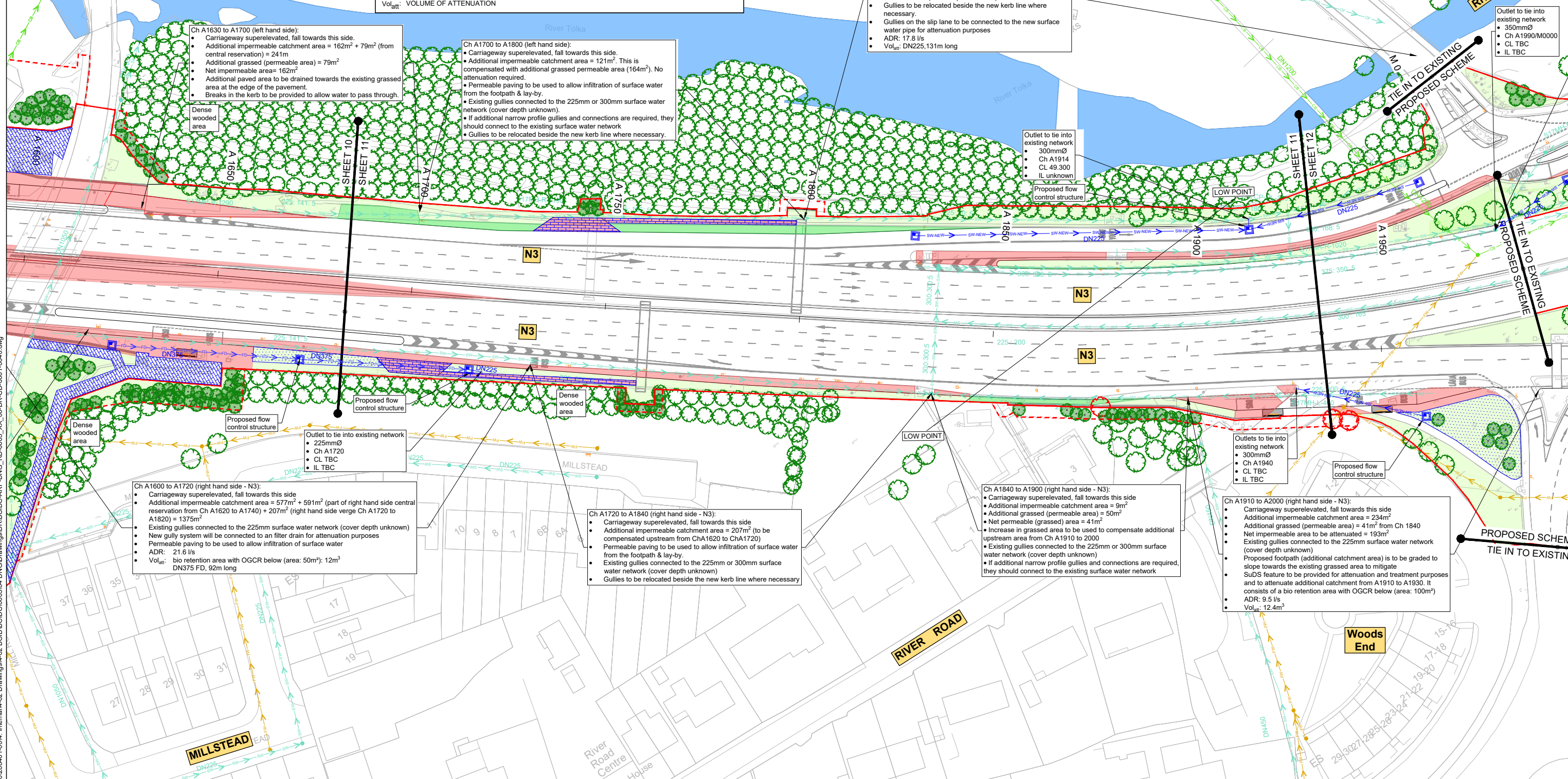
DO NOT SCALE USE FIGURED DIMENSIONS ONLY

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



Existing drainage information this drawing is not from Irish water records. For information on existing drainage data sources, please see overall catchment assessment drawing.



Ch A1630 to A1700 (left hand side):

- Carriageway super-elevated, fall towards this side.
- Additional impermeable catchment area = 162m² + 79m² (from central reservation) = 241m²
- Additional grassed (permeable area) = 79m²
- Net impermeable area = 162m²
- Additional paved area to be drained towards the existing grassed area at the edge of the pavement.
- Breaks in the kerb to be provided to allow water to pass through.

Ch A1700 to A1800 (left hand side):

- Carriageway super-elevated, fall towards this side.
- Additional impermeable catchment area = 121m². This is compensated with additional grassed permeable area (164m²). No attenuation required.
- Permeable paving to be used to allow infiltration of surface water from the footpath & lay-by.
- Existing gullies connected to the 225mm or 300mm surface water network (cover depth unknown).
- If additional narrow profile gullies and connections are required, they should connect to the existing surface water network
- Gullies to be relocated beside the new kerb line where necessary.

Ch A1800 to A2000 (left hand side - N3 & slip road):

- Carriageway super-elevated, fall towards left hand side barrier.
- Additional impermeable catchment area = 319m²
- Additional grassed (permeable area) = 77m²
- Net impermeable area to be attenuated = 242m²
- Existing gullies connected to the 300mm or 350mm surface water network (cover depth unknown).
- Gullies to be relocated beside the new kerb line where necessary.
- Gullies on the slip lane to be connected to the new surface water pipe for attenuation purposes
- ADR: 17.8 l/s
- Vol_{att}: DN225.131m long

Outlet to tie into existing network:

- 350mmØ
- Ch A1990/M0000
- CL TBC
- IL TBC

Outlet to tie into existing network:

- 300mmØ
- Ch A1914
- CL 49.300
- IL unknown

Outlet to tie into existing network:

- 225mmØ
- Ch A1720
- CL TBC
- IL TBC

Ch A1600 to A1720 (right hand side - N3):

- Carriageway super-elevated, fall towards this side
- Additional impermeable catchment area = 577m² + 591m² (part of right hand side central reservation from Ch A1620 to A1740) + 207m² (right hand side verge Ch A1720 to A1820) = 1375m²
- Existing gullies connected to the 225mm surface water network (cover depth unknown)
- New gully system will be connected to an filter drain for attenuation purposes
- Permeable paving to be used to allow infiltration of surface water
- ADR: 21.6 l/s
- Vol_{att}: bio retention area with OGCR below (area: 50m²): 12m³ DN375 FD, 92m long

Ch A1720 to A1840 (right hand side - N3):

- Carriageway super-elevated, fall towards this side
- Additional impermeable catchment area = 207m² (to be compensated upstream from ChA1620 to ChA1720)
- Permeable paving to be used to allow infiltration of surface water from the footpath & lay-by.
- Existing gullies connected to the 225mm or 300mm surface water network (cover depth unknown)
- Gullies to be relocated beside the new kerb line where necessary

Ch A1840 to A1900 (right hand side - N3):

- Carriageway super-elevated, fall towards this side
- Additional impermeable catchment area = 9m²
- Additional grassed (permeable area) = 50m²
- Net permeable (grassed) area = 41m²
- Increase in grassed area to be used to compensate additional upstream area from Ch A1910 to 2000
- Existing gullies connected to the 225mm or 300mm surface water network (cover depth unknown)
- If additional narrow profile gullies and connections are required, they should connect to the existing surface water network

Ch A1910 to A2000 (right hand side - N3):

- Carriageway super-elevated, fall towards this side
- Additional impermeable catchment area = 234m²
- Additional grassed (permeable area) = 41m² from Ch 1840
- Net impermeable area to be attenuated = 193m²
- Existing gullies connected to the 225mm surface water network (cover depth unknown)
- Proposed footpath (additional catchment area) is to be graded to slope towards the existing grassed area to mitigate
- SuDS feature to be provided for attenuation and treatment purposes and to attenuate additional catchment from A1910 to A1930. It consists of a bio retention area with OGCR below (area: 100m²)
- ADR: 9.5 l/s
- Vol_{att}: 12.4m³

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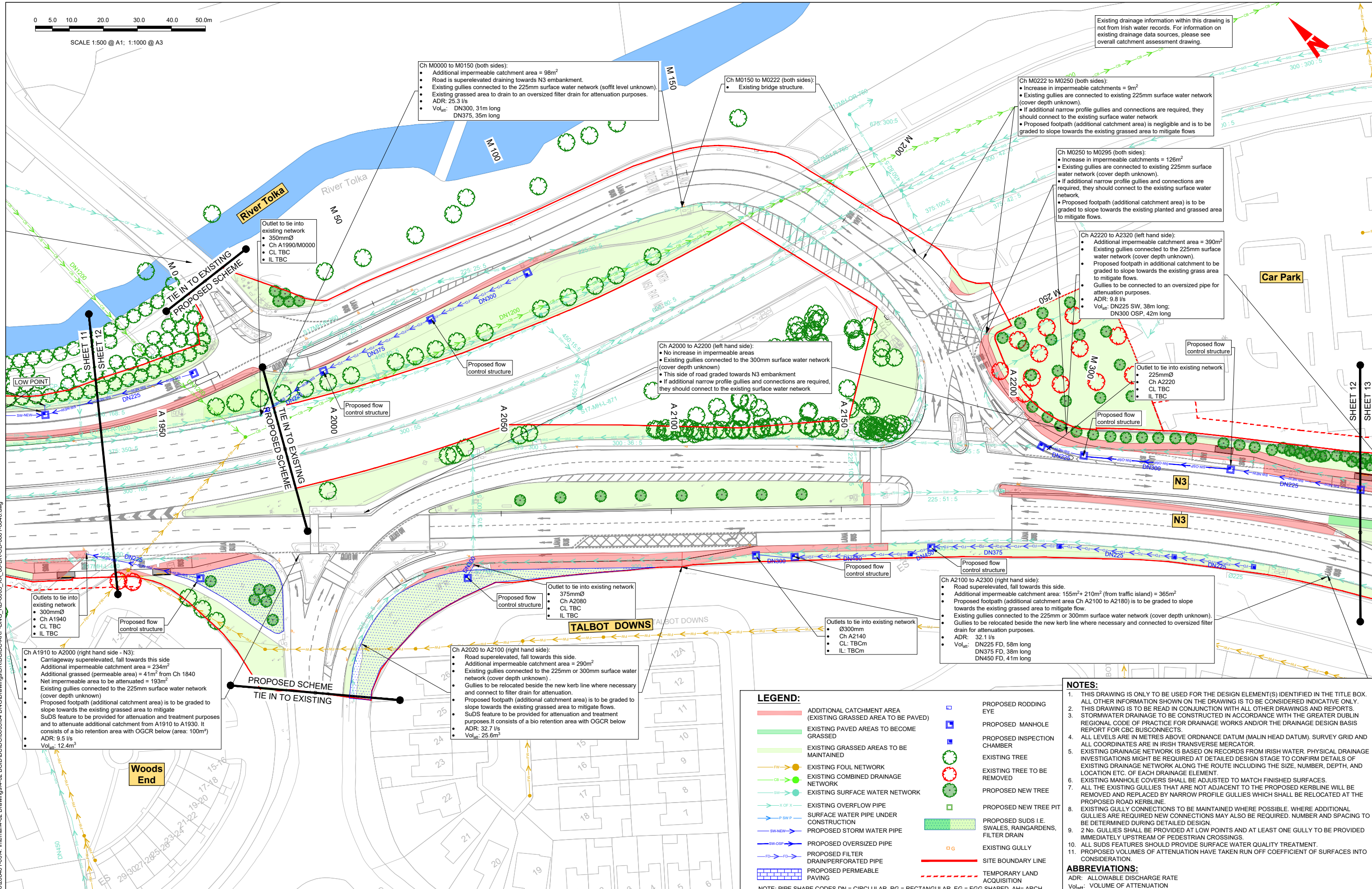
Programme Title: BUSCONNECTS DUBLIN CORE BUS CORRIDORS INFRASTRUCTURE WORKS	Sheet Number: 11 of 40	Status: A	Rev: M01
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Drawing File Name: BCIDC-ARP-DNG_RD-0005_XX_00-DR-CD-0011			

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0 5.0 10.0 20.0 30.0 40.0 50.0m

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

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Ch M0000 to M0150 (both sides):
• Additional impermeable catchment area = 98m²
• Road is super-elevated draining towards N3 embankment.
• Existing gullies connected to the 225mm surface water network (soffit level unknown).
• Existing grassed area to drain to an oversized filter drain for attenuation purposes.
• ADR: 25.3 l/s
• Vol_{att}: DN300, 31m long
DN375, 35m long

Ch M0150 to M0222 (both sides):
• Existing bridge structure.

Ch M0222 to M0250 (both sides):
• Increase in impermeable catchments = 9m²
• Existing gullies are connected to existing 225mm surface water network (cover depth unknown).
• If additional narrow profile gullies and connections are required, they should connect to the existing surface water network.
• Proposed footpath (additional catchment area) is negligible and is to be graded to slope towards the existing grassed area to mitigate flows

Ch M0250 to M0295 (both sides):
• Increase in impermeable catchments = 126m²
• Existing gullies are connected to existing 225mm surface water network (cover depth unknown).
• If additional narrow profile gullies and connections are required, they should connect to the existing surface water network.
• Proposed footpath (additional catchment area) is to be graded to slope towards the existing planted and grassed area to mitigate flows.

Ch A2220 to A2320 (left hand side):
• Additional impermeable catchment area = 390m²
• Existing gullies connected to the 225mm surface water network (cover depth unknown).
• Proposed footpath in additional catchment to be graded to slope towards the existing grass area to mitigate flows.
• Gullies to be connected to an oversized pipe for attenuation purposes.
• ADR: 9.8 l/s
• Vol_{att}: DN225 SW, 38m long;
DN300 OSP, 42m long

Ch A2000 to A2200 (left hand side):
• No increase in impermeable areas
• Existing gullies connected to the 300mm surface water network (cover depth unknown)
• This side of road graded towards N3 embankment
• If additional narrow profile gullies and connections are required, they should connect to the existing surface water network

Ch A2100 to A2300 (right hand side):
• Road super-elevated, fall towards this side.
• Additional impermeable catchment area: 155m² + 210m² (from traffic island) = 365m²
• Proposed footpath (additional catchment area Ch A2100 to A2180) is to be graded to slope towards the existing grassed area to mitigate flow.
• Existing gullies connected to the 225mm or 300mm surface water network (cover depth unknown).
• Gullies to be relocated beside the new kerb line where necessary and connected to oversized filter drain for attenuation purposes.
• ADR: 32.1 l/s
• Vol_{att}: DN225 FD, 58m long
DN375 FD, 38m long
DN450 FD, 41m long

Ch A2020 to A2100 (right hand side):
• Road super-elevated, fall towards this side.
• Additional impermeable catchment area = 290m²
• Existing gullies connected to the 225mm or 300mm surface water network (cover depth unknown).
• Gullies to be relocated beside the new kerb line where necessary and connect to filter drain for attenuation.
• Proposed footpath (additional catchment area) is to be graded to slope towards the existing grassed area to mitigate flows.
• SuDS feature to be provided for attenuation and treatment purposes. It consists of a bio retention area with OGCR below
• ADR: 32.7 l/s
• Vol_{att}: 25.6m³

Ch A1910 to A2000 (right hand side - N3):
• Carriageway super-elevated, fall towards this side
• Additional impermeable catchment area = 23m²
• Additional grassed (permeable area) = 41m² from Ch 1840
• Net impermeable area to be attenuated = 193m²
• Existing gullies connected to the 225mm surface water network (cover depth unknown)
• Proposed footpath (additional catchment area) is to be graded to slope towards the existing grassed area to mitigate
• SuDS feature to be provided for attenuation and treatment purposes and to attenuate additional catchment from A1910 to A1930. It consists of a bio retention area with OGCR below (area: 100m²)
• ADR: 9.5 l/s
• Vol_{att}: 12.4m³

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

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

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Rev	Date	Drn	Chk'd	App'd	Description
M01	04/04/2022	AG	MR	BD	ISSUE FOR PHASE 4: PLANNING

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

Engineering Designer: **ARUP**

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

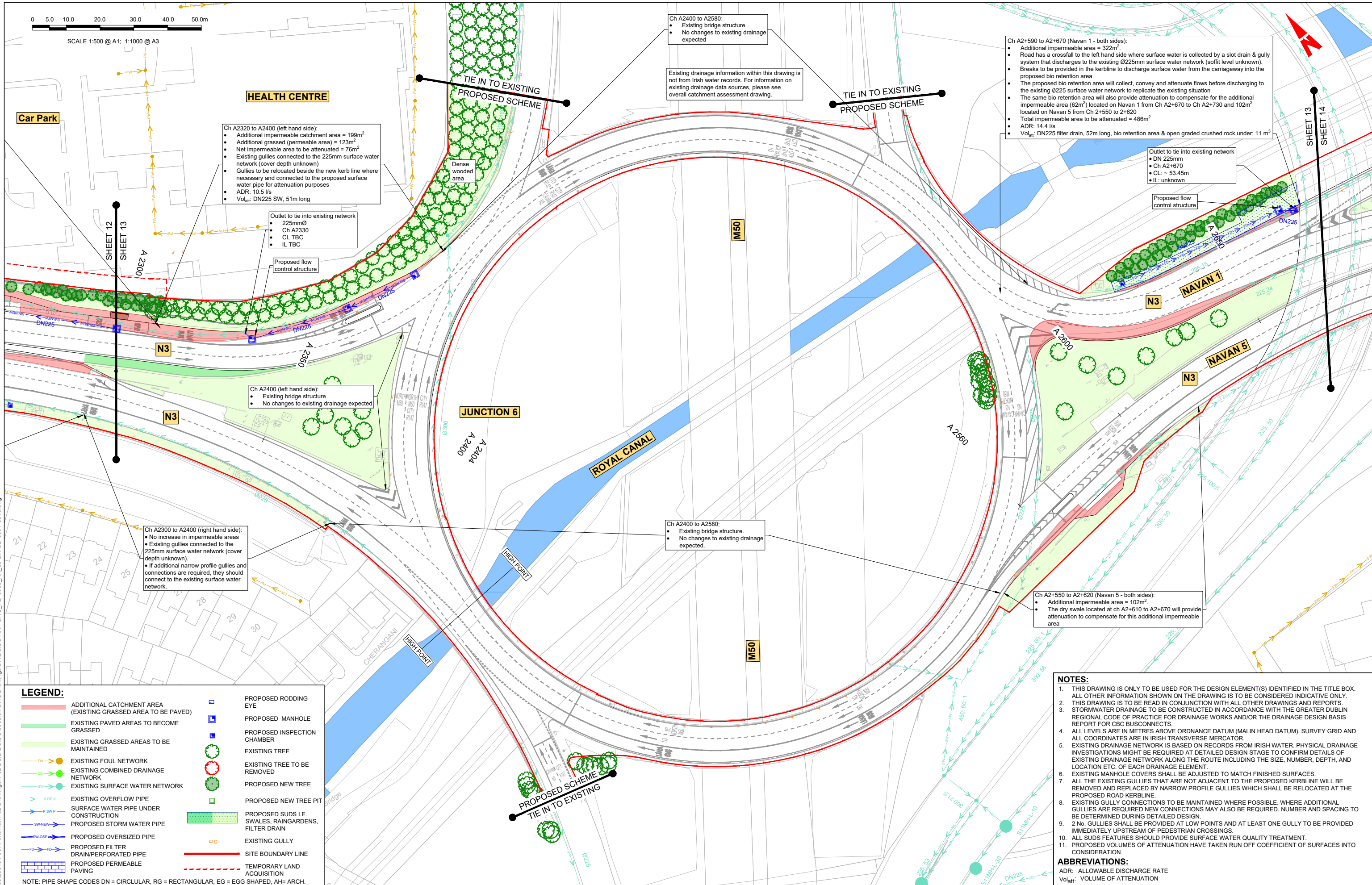
Project Code: BCIDC Originator Code: ARP

Drawn: AF Checked: MR Approved: BD

OMS Code: 268401-00

Programme Title			
BUSCONNECTS DUBLIN CORE BUS CORRIDORS INFRASTRUCTURE WORKS			
Drawing Title			
BLANCHARDSTOWN TO CITY CENTRE CORE BUS CORRIDOR SCHEME PROPOSED SURFACE WATER DRAINAGE WORKS			
Drawing File Name			
BCIDC-ARP-DNG_RD-0005_XX_00-DR-CD-0012			
Sheet Number	Status	Rev	
12 of 40	A	M01	

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LEGEND:

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	EXISTING PAVED AREAS TO BECOME GRASSED		PROPOSED MANHOLE
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	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
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National Transport Authority

Engineering Designer: **ARUP**

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Drawn: AF, Checked: MR, Approved: BD

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

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

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

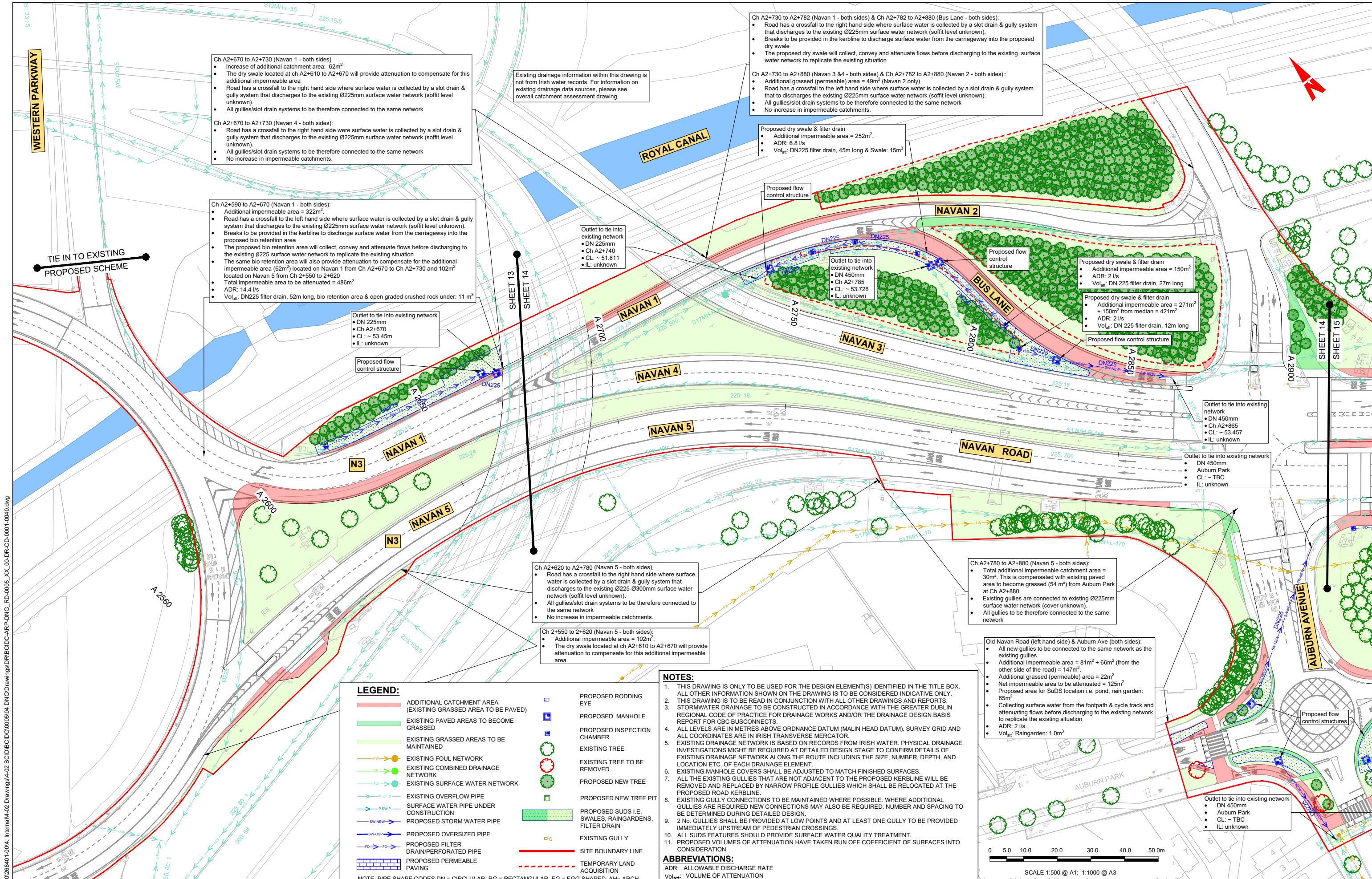
Drawing File Name: BCIDC-ARP-DNG_RD-0005_XX_00-DR-CD-0013, Sheet Number: 13 of 40, Status: A, Rev: M01

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WESTERN PARKWAY

ROYAL CANAL



Ch A2+670 to A2+730 (Navan 1 - both sides):

- Increase of additional catchment area: 62m²
- The dry swale located at ch A2+610 to A2+670 will provide attenuation to compensate for this additional impermeable area
- Road has a crossfall to the right hand side where surface water is collected by a slot drain & gully system that discharges to the existing Ø225mm surface water network (soffit level unknown).
- All gullies/slot drain systems to be therefore connected to the same network

Ch A2+670 to A2+730 (Navan 4 - both sides):

- Road has a crossfall to the right hand side where surface water is collected by a slot drain & gully system that discharges to the existing Ø225mm surface water network (soffit level unknown).
- All gullies/slot drain systems to be therefore connected to the same network
- No increase in impermeable catchments.

Ch A2+590 to A2+670 (Navan 1 - both sides):

- Additional impermeable area = 322m²
- Road has a crossfall to the left hand side where surface water is collected by a slot drain & gully system that discharges to the existing Ø225mm surface water network (soffit level unknown).
- Breaks to be provided in the kerblines to discharge surface water from the carriageway into the proposed bio retention area
- The proposed bio retention area will collect, convey and attenuate flows before discharging to the existing Ø225 surface water network to replicate the existing situation
- The same bio retention area will also provide attenuation to compensate for the additional impermeable area (62m²) located on Navan 1 from Ch A2+670 to Ch A2+730 and 102m² located on Navan 5 from Ch 2+550 to 2+620
- Total impermeable area to be attenuated = 486m²
- ADR: 14.4 l/s
- Vol_{att}: DN225 filter drain, 52m long, bio retention area & open graded crushed rock under: 11 m³

Existing drainage information within this drawing is not from Irish water records. For information on existing drainage data sources, please see overall catchment assessment drawing.

Ch A2+730 to A2+782 (Navan 1 - both sides) & Ch A2+782 to A2+880 (Bus Lane - both sides):

- Road has a crossfall to the right hand side where surface water is collected by a slot drain & gully system that discharges to the existing Ø225mm surface water network (soffit level unknown).
- Breaks to be provided in the kerblines to discharge surface water from the carriageway into the proposed dry swale
- The proposed dry swale will collect, convey and attenuate flows before discharging to the existing surface water network to replicate the existing situation

Ch A2+730 to A2+880 (Navan 3 & 4 - both sides) & Ch A2+782 to A2+880 (Navan 2 - both sides):

- Additional grassed (permeable) area = 49m² (Navan 2 only)
- Road has a crossfall to the left hand side where surface water is collected by a slot drain & gully system that discharges to the existing Ø225mm surface water network (soffit level unknown).
- All gullies/slot drain systems to be therefore connected to the same network
- No increase in impermeable catchments.

Proposed dry swale & filter drain

- Additional impermeable area = 252m²
- ADR: 6.8 l/s
- Vol_{att}: DN225 filter drain, 45m long & Swale: 15m³

Outlet to tie into existing network

- DN 450mm
- Ch A2+785
- CL: ~ 53.728
- IL: unknown

Proposed dry swale & filter drain

- Additional impermeable area = 150m²
- ADR: 2 l/s
- Vol_{att}: DN 225 filter drain, 27m long

Proposed dry swale & filter drain

- Additional impermeable area = 271m²
- + 150m² from median = 421m²
- ADR: 2 l/s
- Vol_{att}: DN 225 filter drain, 12m long

Outlet to tie into existing network

- DN 450mm
- Ch A2+865
- CL: ~ 53.457
- IL: unknown

Outlet to tie into existing network

- DN 450mm
- Auburn Park
- CL: ~ TBC
- IL: unknown

Ch A2+620 to A2+780 (Navan 5 - both sides):

- Road has a crossfall to the right hand side where surface water is collected by a slot drain & gully system that discharges to the existing Ø225-Ø300mm surface water network (soffit level unknown).
- All gullies/slot drain systems to be therefore connected to the same network
- No increase in impermeable catchments.

Ch 2+550 to 2+620 (Navan 5 - both sides):

- Additional impermeable area = 102m²
- The dry swale located at ch A2+610 to A2+670 will provide attenuation to compensate for this additional impermeable area

Ch A2+780 to A2+880 (Navan 5 - both sides):

- Total additional impermeable catchment area = 30m². This is compensated with existing paved area to become grassed (54 m²) from Auburn Park at Ch A2+880
- Existing gullies are connected to existing Ø225mm surface water network (cover unknown).
- All gullies to be therefore connected to the same network

Old Navan Road (left hand side) & Auburn Ave (both sides):

- All new gullies to be connected to the same network as the existing gullies
- Additional impermeable area = 81m² + 66m² (from the other side of the road) = 147m²
- Additional grassed (permeable) area = 22m²
- Net impermeable area to be attenuated = 125m²
- Proposed area for SuDS location i.e. pond, rain garden: 65m²
- Collecting surface water from the footpath & cycle track and attenuating flows before discharging to the existing network to replicate the existing situation
- ADR: 2 l/s
- Vol_{att}: Rain garden: 1.0m³

Outlet to tie into existing network

- DN 450mm
- Auburn Park
- CL: ~ TBC
- IL: unknown

LEGEND:

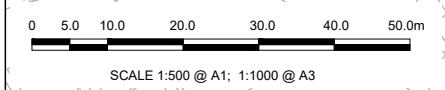
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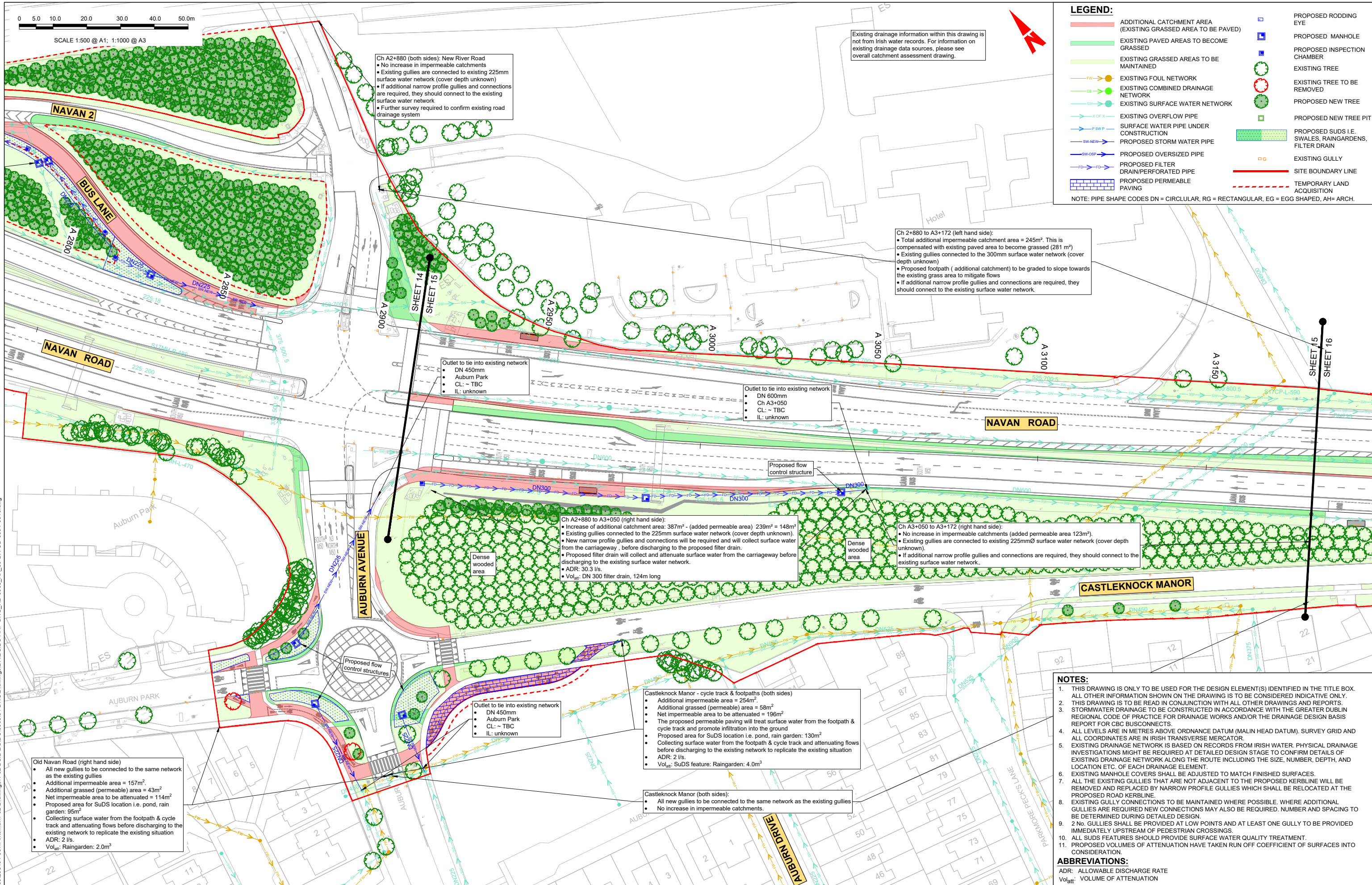
Programme Title: **BUSCONNECTS DUBLIN**
CORE BUS CORRIDORS INFRASTRUCTURE WORKS

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

Drawing File Name: BCIDC-ARP-DNG_RD-0005_XX_00-DR-CD-0014

Sheet Number: 14 of 40 Status: A Rev: M01

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DO NOT SCALE USE FIGURED DIMENSIONS ONLY

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

Existing drainage information within this drawing is not from Irish water records. For information on existing drainage data sources, please see overall catchment assessment drawing.

Ch A3+172 to A3+438 (left hand side):
 • No increase in impermeable catchments
 • Existing gullies are connected to existing 300mmØ surface water network (cover depth unknown).
 • If additional narrow profile gullies and connections are required, they should connect to the existing surface water network.

Ch A3+172 to A3+400 (Castleknock Manor):
 • No increase in impermeable catchments.
 • Existing gullies are connected to existing surface water network (cover depth unknown). If additional narrow profile gullies and connections are required, they should connect to the existing surface water network.

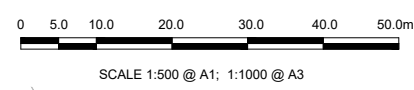
Ch A3+172 to A3+470 (right hand side):
 • Total additional impermeable catchment area = 351m². This is compensated with existing paved area to become grassed (400 m²)
 • No increase in impermeable catchments.
 • Existing gullies are connected to existing 225mmØ surface water network (cover depth unknown).
 • If additional narrow profile gullies and connections are required, they should connect to the existing surface water network.



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		

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Rev	Date	Drn	Chk'd	App'd	Description
M01	04/04/2022	AG	MR	BD	ISSUE FOR PHASE 4: PLANNING

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

Engineering Designer: **ARUP**

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

Project Code: BCIDC
 Originator Code: ARP

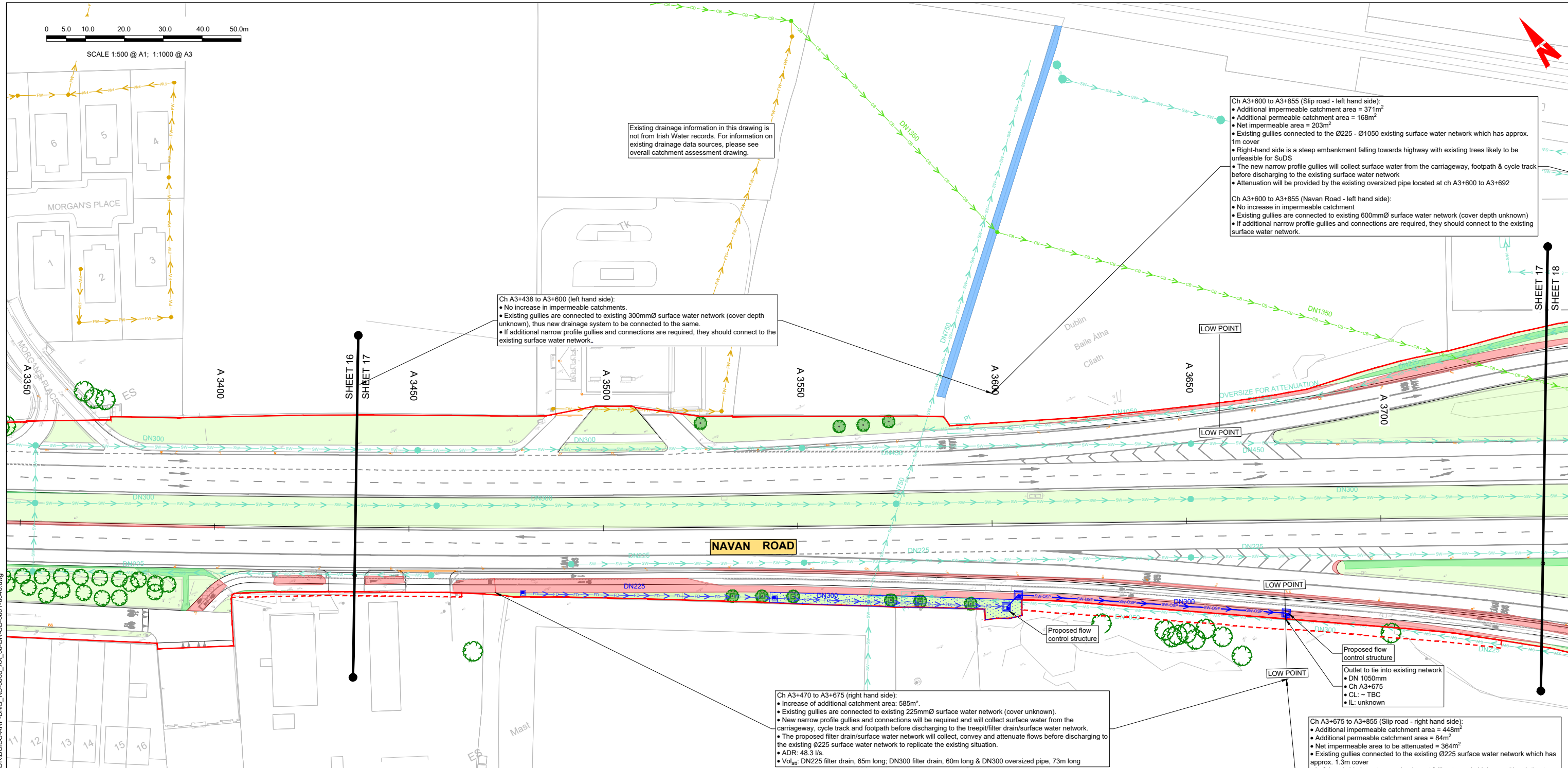
OMS Code: 268401-00

Programme Title	BUSCONNECTS DUBLIN CORE BUS CORRIDORS INFRASTRUCTURE WORKS		
Drawing Title	BLANCHARDSTOWN TO CITY CENTRE CORE BUS CORRIDOR SCHEME PROPOSED SURFACE WATER DRAINAGE WORKS		
Drawing File Name	BCIDC-ARP-DNG_RD-0005_XX_00-DR-CD-0016	Sheet Number	16 of 40
Status	A	Rev	M01

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



Existing drainage information in this drawing is not from Irish Water records. For information on existing drainage data sources, please see overall catchment assessment drawing.

Ch A3+438 to A3+600 (left hand side):
 • No increase in impermeable catchments.
 • Existing gullies are connected to existing 300mmØ surface water network (cover depth unknown), thus new drainage system to be connected to the same.
 • If additional narrow profile gullies and connections are required, they should connect to the existing surface water network.

Ch A3+600 to A3+855 (Slip road - left hand side):
 • Additional impermeable catchment area = 371m²
 • Additional permeable catchment area = 168m²
 • Net impermeable area = 203m²
 • Existing gullies connected to the Ø225 - Ø1050 existing surface water network which has approx. 1m cover
 • Right-hand side is a steep embankment falling towards highway with existing trees likely to be unfeasible for SuDS
 • The new narrow profile gullies will collect surface water from the carriageway, footpath & cycle track before discharging to the existing surface water network
 • Attenuation will be provided by the existing oversized pipe located at ch A3+600 to A3+692

Ch A3+600 to A3+855 (Navan Road - left hand side):
 • No increase in impermeable catchment
 • Existing gullies are connected to existing 600mmØ surface water network (cover depth unknown)
 • If additional narrow profile gullies and connections are required, they should connect to the existing surface water network.

Ch A3+470 to A3+675 (right hand side):
 • Increase of additional catchment area: 585m².
 • Existing gullies are connected to existing 225mmØ surface water network (cover unknown).
 • New narrow profile gullies and connections will be required and will collect surface water from the carriageway, cycle track and footpath before discharging to the treepit/filter drain/surface water network.
 • The proposed filter drain/surface water network will collect, convey and attenuate flows before discharging to the existing Ø225 surface water network to replicate the existing situation.
 • ADR: 48.3 l/s.
 • Vol_{att}: DN225 filter drain, 65m long; DN300 filter drain, 60m long & DN300 oversized pipe, 73m long

Ch A3+675 to A3+855 (Slip road - right hand side):
 • Additional impermeable catchment area = 448m²
 • Additional permeable catchment area = 84m²
 • Net impermeable area to be attenuated = 364m²
 • Existing gullies connected to the existing Ø225 surface water network which has approx. 1.3m cover
 • Left-hand side is a steep embankment falling towards highway with existing trees likely to be unfeasible for SuDS
 • The new narrow profile gullies will collect surface water from the carriageway, footpath & cycle track before discharging to the proposed oversized filter drain/ existing surface water network
 • The proposed oversized filter drain will collect, convey and attenuate flows before discharging to the existing surface water network to replicate the existing situation
 • ADR: 13.3 l/s
 • Vol_{att}: DN 450 filter drain, 72m long

Ch A3+650 to A3+855 (Navan Road - right hand side):
 • No increase in impermeable catchment
 • Total additional permeable area = 329m²
 • Existing gullies are connected to existing 225-300mmØ surface water network (cover depth unknown)
 • If additional narrow profile gullies and connections are required, they should connect to the existing surface water network.

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

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		SITE BOUNDARY LINE
	PROPOSED STORM WATER PIPE		TEMPORARY LAND ACQUISITION
	PROPOSED OVERSIZED PIPE		EXISTING GULLY
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Rev	Date	Drn	Chk'd	App'd	Description
M01	04/04/2022	AG	MR	BD	ISSUE FOR PHASE 4: PLANNING

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

Engineering Designer: **ARUP**

Date: 04/04/2022 | Scale: 1:500 @ A1, 1:1000 @ A3 | Drawn: AG | Checked: MR | Approved: BD

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

Programme Title: BUSCONNECTS DUBLIN CORE BUS CORRIDORS INFRASTRUCTURE WORKS	Sheet Number: 17 of 40	Status: A	Rev: M01
Drawing Title: BLANCHARDSTOWN TO CITY CENTRE CORE BUS CORRIDOR SCHEME PROPOSED SURFACE WATER DRAINAGE WORKS			
Drawing File Name: BCIDC-ARP-DNG_RD-0005_XX_00-DR-CD-0017			

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

LEGEND:

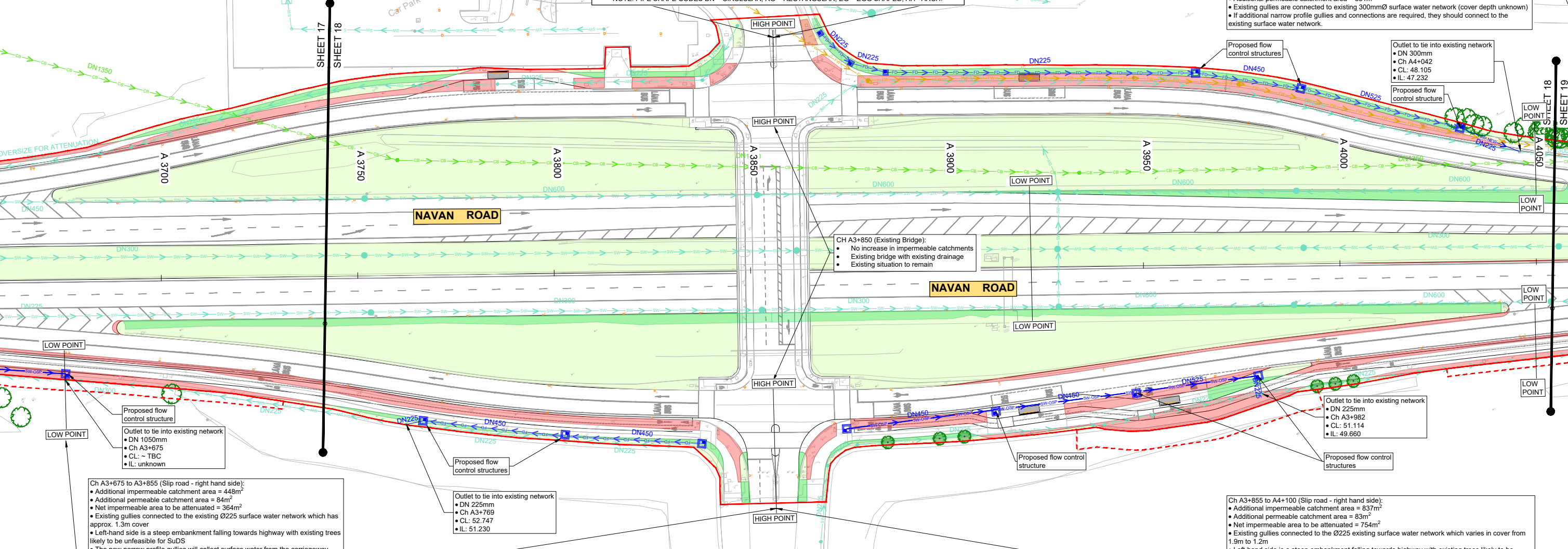
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EXISTING GRASSED AREAS TO BE MAINTAINED
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SURFACE WATER PIPE UNDER CONSTRUCTION
PROPOSED STORM WATER PIPE
PROPOSED OVERSIZED PIPE
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PROPOSED PERMEABLE PAVING
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Ch A3+600 to A3+855 (Slip road - left hand side):
Additional impermeable catchment area = 371m²
Additional permeable catchment area = 168m²
Net impermeable area = 203m²
Existing gullies connected to the Ø225 - Ø1050 existing surface water network which has approx. 1m cover
Right-hand side is a steep embankment falling towards highway with existing trees likely to be unfeasible for SuDS
The new narrow profile gullies will collect surface water from the carriageway, footpath & cycle track before discharging to the existing surface water network
Attenuation will be provided by the existing oversized pipe located at ch A3+600 to A3+692

Ch A3+855 to A4+070 (Slip road - left hand side):
Additional impermeable catchment area = 495m²
Additional permeable catchment area = 252m²
Net impermeable area to be attenuated = 243m²
Existing gullies connected to the Ø225 - Ø300 existing surface water network which varies in cover from 1m to 0.6m
Right-hand side is a steep embankment falling towards highway with existing trees likely to be unfeasible for SuDS
The new narrow profile gullies will collect surface water from the carriageway & footpath before discharging to the proposed oversized filter drain
The proposed oversized filter drain will collect, convey and attenuate flows before discharging to the existing surface water network to replicate the existing situation
ADR: 26.1 l/s
Volatt: DN 225 filter drain, 100m long; DN 450 filter drain, 27m long & DN 525 filter drain, 42m long



Ch A3+675 to A3+855 (Slip road - right hand side):
Additional impermeable catchment area = 448m²
Additional permeable catchment area = 84m²
Net impermeable area to be attenuated = 364m²
Existing gullies connected to the existing Ø225 surface water network which has approx. 1.3m cover
Left-hand side is a steep embankment falling towards highway with existing trees likely to be unfeasible for SuDS
The new narrow profile gullies will collect surface water from the carriageway, footpath & cycle track before discharging to the proposed oversized filter drain/ existing surface water network
The proposed oversized filter drain will collect, convey and attenuate flows before discharging to the existing surface water network to replicate the existing situation
ADR: 13.3 l/s
Volatt: DN 450 filter drain, 72m long

Ch A3+855 to A4+100 (Slip road - right hand side):
Additional impermeable catchment area = 837m²
Additional permeable catchment area = 83m²
Net impermeable area to be attenuated = 754m²
Existing gullies connected to the Ø225 existing surface water network which varies in cover from 1.9m to 1.2m
Left-hand side is a steep embankment falling towards highway with existing trees likely to be unfeasible for SuDS
The new narrow profile gullies will collect surface water from the carriageway & footpath before discharging to the proposed oversized pipe
The proposed oversized pipe will collect, convey and attenuate flows before discharging to the existing surface water network to replicate the existing situation
ADR: 18.1 l/s
Volatt: DN450 OSP, 75m long & DN525 OSP, 32m long

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Table with columns: Rev, Date, Dm, Chkd, App'd, Description. Row 1: M01, 04/04/2022, AG, MR, BD, ISSUE FOR PHASE 4: PLANNING

Client: NTA (Udarás Náisiúnta Iompair National Transport Authority)
Engineering Designer: ARUP
Date: 04/04/2022
Scale: 1:500 @ A1, 1:1000 @ A3
Drawn: AG, Checked: MR, Approved: BD

Programme Title: BUSCONNECTS DUBLIN CORE BUS CORRIDORS INFRASTRUCTURE WORKS
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Sheet Number: 18 of 40
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Existing drainage information in this drawing is not from Irish Water records. For information on existing drainage data sources, please see overall catchment assessment drawing.

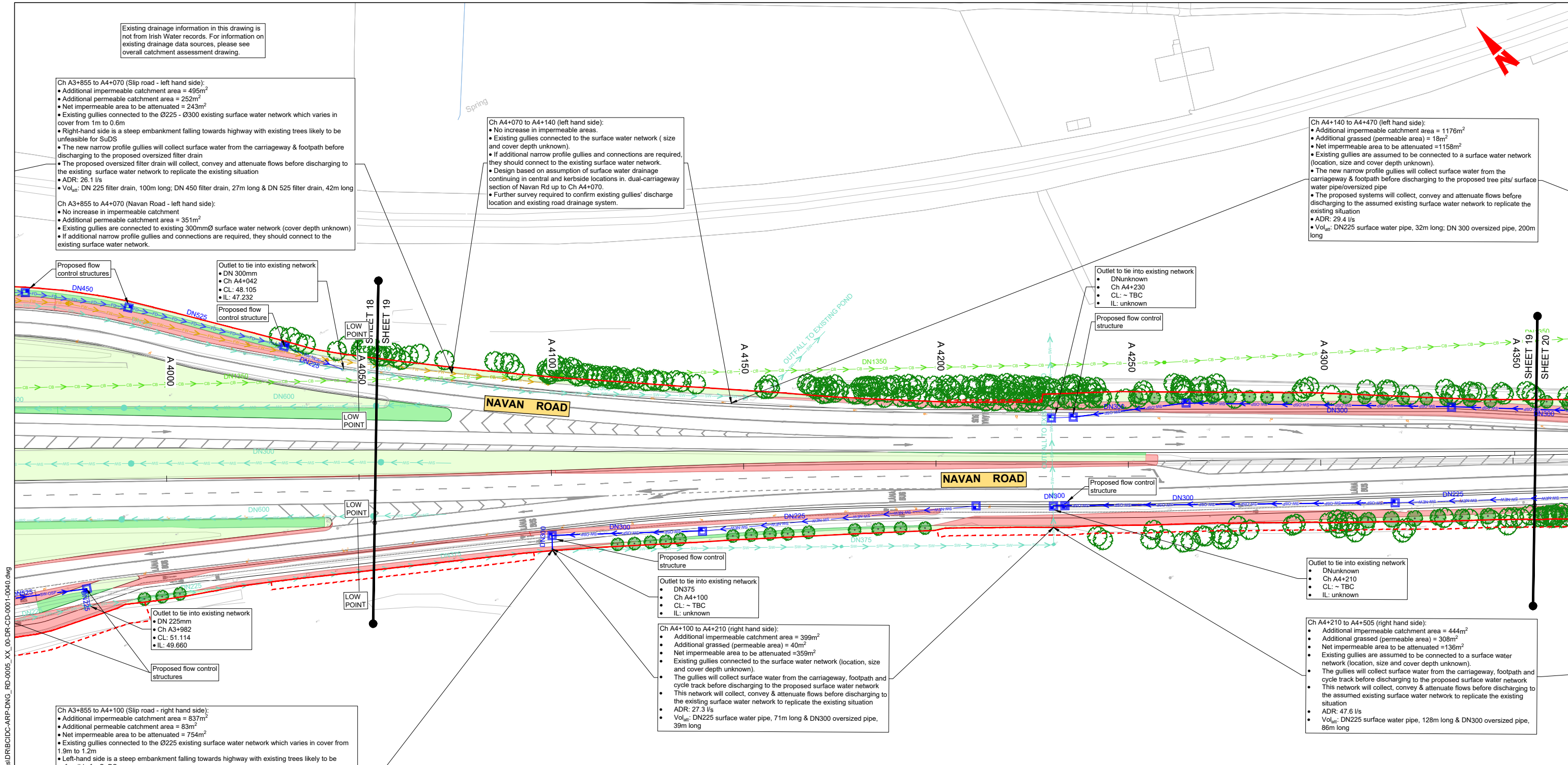
Ch A3+855 to A4+070 (Slip road - left hand side):
 • Additional impermeable catchment area = 495m²
 • Additional permeable catchment area = 252m²
 • Net impermeable area to be attenuated = 243m²
 • Existing gullies connected to the Ø225 - Ø300 existing surface water network which varies in cover from 1m to 0.6m

• Right-hand side is a steep embankment falling towards highway with existing trees likely to be unfeasible for SuDS
 • The new narrow profile gullies will collect surface water from the carriageway & footpath before discharging to the proposed oversized filter drain
 • The proposed oversized filter drain will collect, convey and attenuate flows before discharging to the existing surface water network to replicate the existing situation
 • ADR: 26.1 l/s
 • Vol_{att}: DN 225 filter drain, 100m long; DN 450 filter drain, 27m long & DN 525 filter drain, 42m long

Ch A3+855 to A4+070 (Navan Road - left hand side):
 • No increase in impermeable catchment
 • Additional permeable catchment area = 351m²
 • Existing gullies are connected to existing 300mmØ surface water network (cover depth unknown)
 • If additional narrow profile gullies and connections are required, they should connect to the existing surface water network.

Ch A4+070 to A4+140 (left hand side):
 • No increase in impermeable areas.
 • Existing gullies connected to the surface water network (size and cover depth unknown).
 • If additional narrow profile gullies and connections are required, they should connect to the existing surface water network.
 • Design based on assumption of surface water drainage continuing in central and kerbside locations in dual-carriageway section of Navan Rd up to Ch A4+070.
 • Further survey required to confirm existing gullies' discharge location and existing road drainage system.

Ch A4+140 to A4+470 (left hand side):
 • Additional impermeable catchment area = 1176m²
 • Additional grassed (permeable area) = 18m²
 • Net impermeable area to be attenuated = 1158m²
 • Existing gullies are assumed to be connected to a surface water network (location, size and cover depth unknown).
 • The new narrow profile gullies will collect surface water from the carriageway & footpath before discharging to the proposed tree pits/ surface water pipe/oversized pipe
 • The proposed systems will collect, convey and attenuate flows before discharging to the assumed existing surface water network to replicate the existing situation
 • ADR: 29.4 l/s
 • Vol_{att}: DN225 surface water pipe, 32m long; DN 300 oversized pipe, 200m long



Ch A3+855 to A4+100 (Slip road - right hand side):
 • Additional impermeable catchment area = 837m²
 • Additional permeable catchment area = 83m²
 • Net impermeable area to be attenuated = 754m²
 • Existing gullies connected to the Ø225 existing surface water network which varies in cover from 1.9m to 1.2m
 • Left-hand side is a steep embankment falling towards highway with existing trees likely to be unfeasible for SuDS
 • The new narrow profile gullies will collect surface water from the carriageway & footpath before discharging to the proposed oversized pipe
 • The proposed oversized pipe will collect, convey and attenuate flows before discharging to the existing surface water network to replicate the existing situation
 • ADR: 18.1 l/s
 • Vol_{att}: DN450 OSP, 75m long & DN525 OSP, 32m long

Ch A3+855 to A4+100 (Navan Road - right hand side):
 • No increase in impermeable catchment
 • Total additional permeable area = 375m²
 • Existing gullies are connected to existing 600mmØ surface water network (cover depth unknown)
 • If additional narrow profile gullies and connections are required, they should connect to the existing surface water network.

Ch A4+100 to A4+210 (right hand side):
 • Additional impermeable catchment area = 399m²
 • Additional grassed (permeable area) = 40m²
 • Net impermeable area to be attenuated = 359m²
 • Existing gullies connected to the surface water network (location, size and cover depth unknown).
 • The gullies will collect surface water from the carriageway, footpath and cycle track before discharging to the proposed surface water network
 • This network will collect, convey & attenuate flows before discharging to the existing surface water network to replicate the existing situation
 • ADR: 27.3 l/s
 • Vol_{att}: DN225 surface water pipe, 71m long & DN300 oversized pipe, 39m long

Ch A4+210 to A4+505 (right hand side):
 • Additional impermeable catchment area = 444m²
 • Additional grassed (permeable area) = 308m²
 • Net impermeable area to be attenuated = 136m²
 • Existing gullies are assumed to be connected to a surface water network (location, size and cover depth unknown).
 • The gullies will collect surface water from the carriageway, footpath and cycle track before discharging to the proposed surface water network
 • This network will collect, convey & attenuate flows before discharging to the assumed existing surface water network to replicate the existing situation
 • ADR: 47.6 l/s
 • Vol_{att}: DN225 surface water pipe, 128m long & DN300 oversized pipe, 80m long

LEGEND:

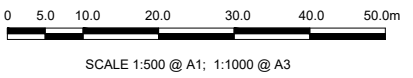
	ADDITIONAL CATCHMENT AREA (EXISTING GRASSED AREA TO BE PAVED)		PROPOSED RODDING EYE
	EXISTING PAVED AREAS TO BECOME GRASSED		PROPOSED MANHOLE
	EXISTING GRASSED AREAS TO BE MAINTAINED		PROPOSED INSPECTION CHAMBER
	EXISTING FOUL NETWORK		EXISTING TREE
	EXISTING COMBINED DRAINAGE NETWORK		EXISTING TREE 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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- 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 ORDINANCE 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_{att}: VOLUME OF ATTENUATION



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d. Information concerning the position of apparatus shown on this drawing is based on drawings supplied by the utility owners and/or the utility works contractor, whilst every care has been taken in the preparation of this drawing, positions should be taken as approximate and are intended for general guidance only and no representation is made by the NTA as to the accuracy, completeness, sufficiency or otherwise of this drawing and the position of the apparatus. The information contained herein does not purport to be comprehensive or final as the apparatus is subject to being altered and/or superseded. Recipients should not rely on this information. Any liabilities are hereby expressly disclaimed.

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Project Ireland 2040
 Building Ireland's Future

Rev	Date	Drm	Chk'd	App'd	Description
M01	04/04/2022	AG	MR	BD	ISSUE FOR PHASE 4: PLANNING

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

Engineering Designer: **ARUP**

Date: 04/04/2022 Scale: 1:500 @ A1, 1:1000 @ A3
 Drawn: AG, Checked: MR, Approved: BD

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

Programme Title: BUSCONNECTS DUBLIN CORE BUS CORRIDORS INFRASTRUCTURE WORKS	Sheet Number: 19 of 40	Status: A	Rev: M01
Drawing Title: BLANCHARDSTOWN TO CITY CENTRE CORE BUS CORRIDOR SCHEME PROPOSED SURFACE WATER DRAINAGE WORKS	Drawing File Name: BCIDC-ARP-DNG_RD-0005_XX_00-DR-CD-0019	Sheet Number: 19 of 40	Status: A



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

Ch A4+140 to A4+470 (left hand side):

- Additional impermeable catchment area = 1176m²
- Additional grassed (permeable area) = 18m²
- Net impermeable area to be attenuated = 1158m²
- Existing gullies are assumed to be connected to a surface water network (location, size and cover depth unknown).
- The new narrow profile gullies will collect surface water from the carriageway & footpath before discharging to the proposed tree pits/ surface water pipe/oversized pipe
- The proposed systems will collect, convey and attenuate flows before discharging to the assumed existing surface water network to replicate the existing situation
- ADR: 29.4 l/s
- Vol_{att}: DN225 surface water pipe, 32m long; DN 300 oversized pipe, 200m long

Ch A4+470 to A4+660 (left hand side):

- Additional impermeable catchment area = 681m²
- Additional grassed (permeable area) = 203m²
- Net impermeable area to be attenuated = 478m²
- Existing gullies are assumed to be connected to a surface water network (location, size and cover depth unknown)
- Proposed footpath (additional catchment area) is to be graded to slope towards the proposed grassed area to mitigate flows
- New narrow profile gullies will collect surface water from the carriageway and footpath before discharging to a system of tree pits interconnected through filter drains
- The proposed filter drains will convey and attenuate flows before discharging to the assumed existing surface water network to replicate the existing situation
- ADR: 12.4 l/s
- Vol_{att}: DN225 filter drain, 69m long & DN300 filter drain, 63m long

Outlet to tie into existing network

- DN: unknown
- Ch: A4+210
- CL: ~ TBC
- IL: unknown

Ch A4+210 to A4+505 (right hand side):

- Additional impermeable catchment area = 444m²
- Additional grassed (permeable area) = 308m²
- Net impermeable area to be attenuated = 136m²
- Existing gullies are assumed to be connected to a surface water network (location, size and cover depth unknown).
- The gullies will collect surface water from the carriageway, footpath and cycle track before discharging to the proposed surface water network
- This network will collect, convey & attenuate flows before discharging to the assumed existing surface water network to replicate the existing situation
- ADR: 47.6 l/s
- Vol_{att}: DN225 surface water pipe, 128m long & DN300 oversized pipe, 86m long

Outlet to tie into existing network

- DN: unknown
- Ch: A4+522
- CL: ~ TBC
- IL: unknown

Ch A4+505 to A4+590 (right hand side):

- Total additional impermeable catchment area = 40m². This is compensated with existing paved area to become grassed (313 m²)
- Existing gullies connected to the surface water network (location, size and cover depth unknown).
- If additional narrow profile gullies and connections are required, they should connect to the existing surface water network.

Ch A4+590 to A4+660 (right hand side):

- No increase in impermeable areas.
- Existing gullies connected to the surface water network (size and cover depth unknown).
- Design based on assumption of existing surface water locations from manholes and gullies located by topographical survey
- If additional narrow profile gullies and connections are required, they should connect to the existing surface water network.
- Gullies to be relocated beside the new kerb line where necessary.

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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6. EXISTING MANHOLE COVERS SHALL BE ADJUSTED TO MATCH FINISHED SURFACES.
7. ALL THE EXISTING GULLIES THAT ARE NOT ADJACENT TO THE PROPOSED KERBLINE WILL BE REMOVED AND REPLACED BY NARROW PROFILE GULLIES WHICH SHALL BE RELOCATED AT THE PROPOSED ROAD KERBLINE.
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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_{att}: VOLUME OF ATTENUATION

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Building Ireland's Future

Rev	Date	Drn	Chk'd	App'd	Description
M01	04/04/2022	AG	MR	BD	ISSUE FOR PHASE 4: PLANNING

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

Engineering Designer: **ARUP**

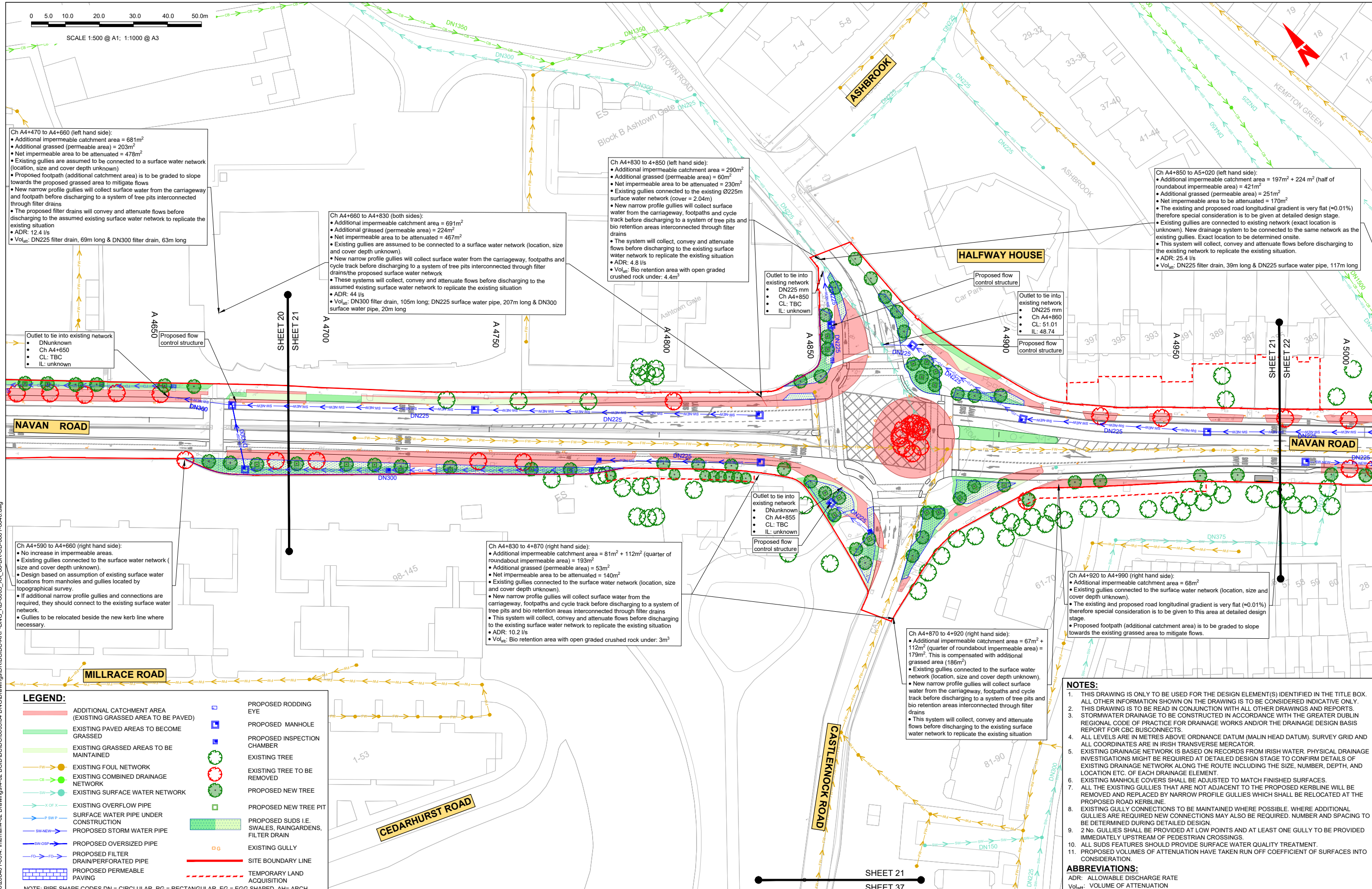
Date: 04/04/2022 Scale: 1:500 @ A1; 1:1000 @ A3

Drawn: AG Checked: MR Approved: BD

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

Programme Title	BUSCONNECTS DUBLIN CORE BUS CORRIDORS INFRASTRUCTURE WORKS		
Drawing Title	BLANCHARDSTOWN TO CITY CENTRE CORE BUS CORRIDOR SCHEME PROPOSED SURFACE WATER DRAINAGE WORKS		
Drawing File Name	BCIDC-ARP-DNG_RD-0005_XX_00-DR-CD-0020	Sheet Number	20 of 40
Status	A	Rev	M01

DO NOT SCALE USE FIGURED DIMENSIONS ONLY



Ch A4+470 to A4+660 (left hand side):

- Additional impermeable catchment area = 681m²
- Additional grassed (permeable area) = 203m²
- Net impermeable area to be attenuated = 478m²
- Existing gullies are assumed to be connected to a surface water network (location, size and cover depth unknown)
- Proposed footpath (additional catchment area) is to be graded to slope towards the proposed grassed area to mitigate flows
- New narrow profile gullies will collect surface water from the carriageway and footpath before discharging to a system of tree pits interconnected through filter drains
- The proposed filter drains will convey and attenuate flows before discharging to the assumed existing surface water network to replicate the existing situation
- ADR: 12.4 l/s
- Vol_{att}: DN225 filter drain, 69m long & DN300 filter drain, 63m long

Ch A4+660 to A4+830 (both sides):

- Additional impermeable catchment area = 691m²
- Additional grassed (permeable area) = 224m²
- Net impermeable area to be attenuated = 467m²
- Existing gullies are assumed to be connected to a surface water network (location, size and cover depth unknown)
- New narrow profile gullies will collect surface water from the carriageway, footpaths and cycle track before discharging to a system of tree pits interconnected through filter drains/the proposed surface water network
- These systems will collect, convey and attenuate flows before discharging to the assumed existing surface water network to replicate the existing situation
- ADR: 44 l/s
- Vol_{att}: DN300 filter drain, 105m long; DN225 surface water pipe, 207m long & DN300 surface water pipe, 20m long

Ch A4+830 to 4+850 (left hand side):

- Additional impermeable catchment area = 290m²
- Additional grassed (permeable area) = 60m²
- Net impermeable area to be attenuated = 230m²
- Existing gullies connected to the existing Ø225m surface water network (cover = 2.04m)
- New narrow profile gullies will collect surface water from the carriageway, footpaths and cycle track before discharging to a system of tree pits and bio retention areas interconnected through filter drains
- The system will collect, convey and attenuate flows before discharging to the existing surface water network to replicate the existing situation
- ADR: 4.8 l/s
- Vol_{att}: Bio retention area with open graded crushed rock under: 4.4m³

Ch A4+850 to A5+020 (left hand side):

- Additional impermeable catchment area = 197m² + 224 m² (half of roundabout impermeable area) = 421m²
- Additional grassed (permeable area) = 251m²
- Net impermeable area to be attenuated = 170m²
- The existing and proposed road longitudinal gradient is very flat (≈0.01%) therefore special consideration is to be given at detailed design stage.
- Existing gullies are connected to existing network (exact location is unknown). New drainage system to be connected to the same network as the existing gullies. Exact location to be determined onsite.
- This system will collect, convey and attenuate flows before discharging to the existing network to replicate the existing situation.
- ADR: 25.4 l/s
- Vol_{att}: DN225 filter drain, 39m long & DN225 surface water pipe, 117m long

Outlet to tie into existing network

- DNUnknown
- Ch A4+650
- CL: TBC
- IL: unknown

Outlet to tie into existing network

- DN225 mm
- Ch A4+850
- CL: TBC
- IL: unknown

Outlet to tie into existing network

- DN225 mm
- Ch A4+860
- CL: 51.01
- IL: 48.74

Outlet to tie into existing network

- DNUnknown
- Ch A4+855
- CL: TBC
- IL: unknown

Ch A4+590 to A4+660 (right hand side):

- No increase in impermeable areas.
- Existing gullies connected to the surface water network (location, size and cover depth unknown).
- Design based on assumption of existing surface water network locations from manholes and gullies located by topographical survey.
- If additional narrow profile gullies and connections are required, they should connect to the existing surface water network.
- Gullies to be relocated beside the new kerb line where necessary.

Ch A4+830 to 4+870 (right hand side):

- Additional impermeable catchment area = 81m² + 112m² (quarter of roundabout impermeable area) = 193m²
- Additional grassed (permeable area) = 53m²
- Net impermeable area to be attenuated = 140m²
- Existing gullies connected to the surface water network (location, size and cover depth unknown).
- New narrow profile gullies will collect surface water from the carriageway, footpaths and cycle track before discharging to a system of tree pits and bio retention areas interconnected through filter drains
- This system will collect, convey and attenuate flows before discharging to the existing surface water network to replicate the existing situation
- ADR: 10.2 l/s
- Vol_{att}: Bio retention area with open graded crushed rock under: 3m³

Ch A4+870 to 4+920 (right hand side):

- Additional impermeable catchment area = 67m² + 112m² (quarter of roundabout impermeable area) = 179m². This is compensated with additional grassed area (186m²)
- Existing gullies connected to the surface water network (location, size and cover depth unknown).
- New narrow profile gullies will collect surface water from the carriageway, footpaths and cycle track before discharging to a system of tree pits and bio retention areas interconnected through filter drains
- This system will collect, convey and attenuate flows before discharging to the existing surface water network to replicate the existing situation

Ch A4+920 to A4+990 (right hand side):

- Additional impermeable catchment area = 68m²
- Existing gullies connected to the surface water network (location, size and cover depth unknown).
- The existing and proposed road longitudinal gradient is very flat (≈0.01%) therefore special consideration is to be given to this area at detailed design stage.
- Proposed footpath (additional catchment area) is to be graded to slope towards the existing grassed area to mitigate flows.

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.

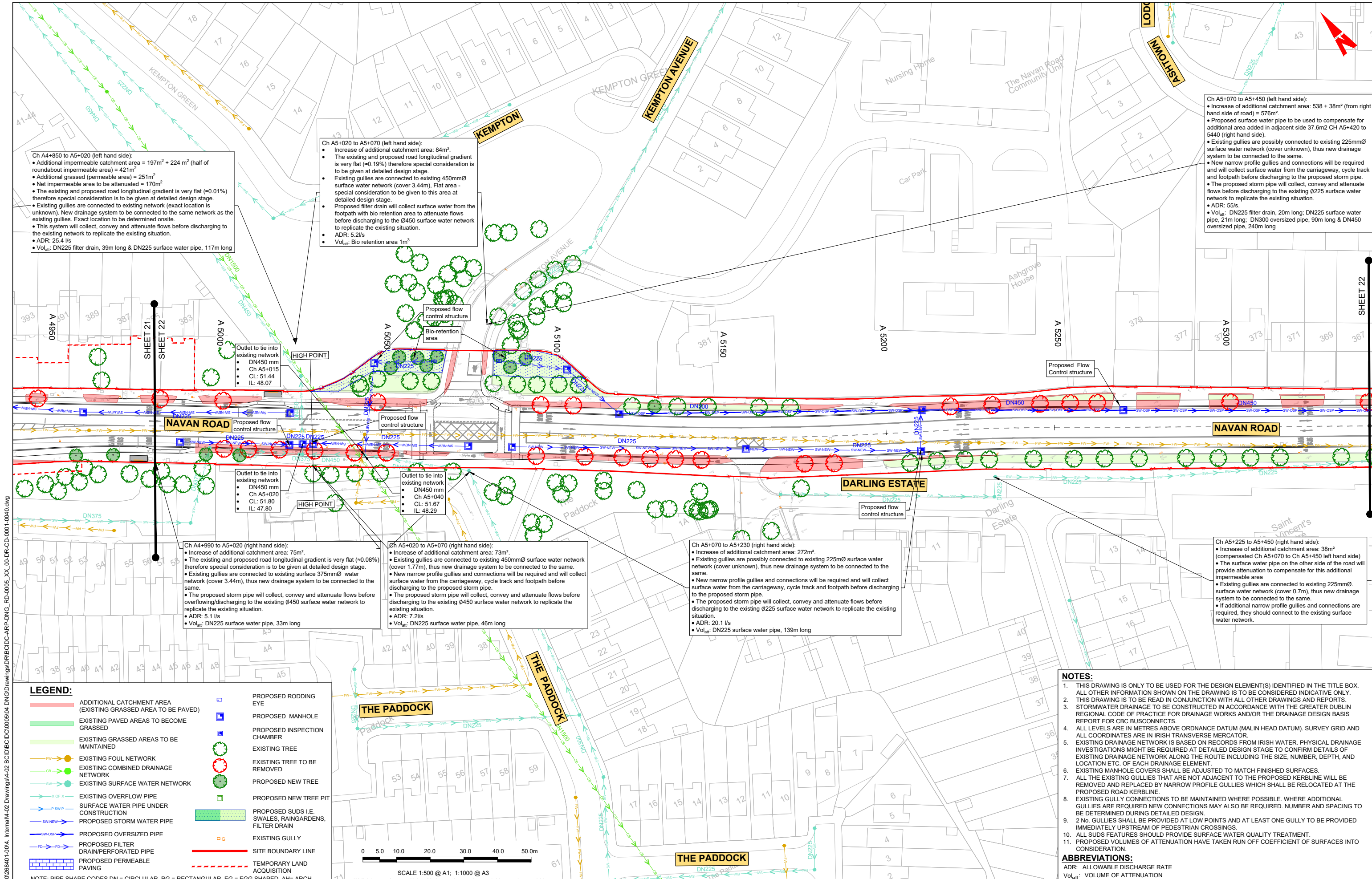
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4. ALL LEVELS ARE IN METRES ABOVE ORDNANCE DATUM (MALIN HEAD DATUM). SURVEY GRID AND ALL COORDINATES ARE IN IRISH TRANSVERSE MERCATOR.
5. EXISTING DRAINAGE NETWORK IS BASED ON RECORDS FROM IRISH WATER. PHYSICAL DRAINAGE INVESTIGATIONS MIGHT BE REQUIRED 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_{att}: VOLUME OF ATTENUATION

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<p>Date 04/04/2022 Scale 1:500 @ A1 1:1000 @ A3</p>		<p>Drawn AG</p>		<p>Checked MR</p>		<p>Approved BD</p>		<p>Drawing Title</p> <p>BLANCHARDSTOWN TO CITY CENTRE CORE BUS CORRIDOR SCHEME PROPOSED SURFACE WATER DRAINAGE WORKS</p>		
<p>Project Code BCIDC</p>		<p>Originator Code ARP</p>		<p>OMS Code 268401-00</p>		<p>Drawing File Name BCIDC-ARP-DNG-RD-0005_XX_00-DR-CD-0021</p>		<p>Sheet Number 21 of 40 Status A Rev M01</p>		



Ch A4+850 to A5+020 (left hand side):

- Increase of additional catchment area = 197m² + 224 m² (half of roundabout impermeable area) = 421m²
- Additional grassed (permeable area) = 251m²
- Net impermeable area to be attenuated = 170m²
- The existing and proposed road longitudinal gradient is very flat (=0.01%) therefore special consideration is to be given at detailed design stage.
- Existing gullies are connected to existing network (exact location is unknown). New drainage system to be connected to the same network as the existing gullies. Exact location to be determined onsite.
- This system will collect, convey and attenuate flows before discharging to the existing network to replicate the existing situation.
- ADR: 25.4 l/s
- Vol_{att}: DN225 filter drain, 39m long & DN225 surface water pipe, 117m long

Ch A5+020 to A5+070 (left hand side):

- Increase of additional catchment area: 84m²
- The existing and proposed road longitudinal gradient is very flat (=0.19%) therefore special consideration is to be given at detailed design stage.
- Existing gullies are connected to existing 450mmØ surface water network (cover 3.44m). Flat area - special consideration to be given to this area at detailed design stage.
- Proposed filter drain will collect surface water from the footpath with bio retention area to attenuate flows before discharging to the Ø450 surface water network to replicate the existing situation.
- ADR: 5.2l/s
- Vol_{att}: Bio retention area 1m³

Ch A5+070 to A5+450 (left hand side):

- Increase of additional catchment area: 538 + 38m² (from right hand side of road) = 576m²
- Proposed surface water pipe to be used to compensate for additional area added in adjacent side 37.6m² CH A5+420 to 5440 (right hand side).
- Existing gullies are possibly connected to existing 225mmØ surface water network (cover unknown), thus new drainage system to be connected to the same.
- New narrow profile gullies and connections will be required and will collect surface water from the carriageway, cycle track and footpath before discharging to the proposed storm pipe.
- The proposed storm pipe will collect, convey and attenuate flows before discharging to the existing Ø225 surface water network to replicate the existing situation.
- ADR: 55l/s
- Vol_{att}: DN225 filter drain, 20m long; DN225 surface water pipe, 21m long; DN300 oversized pipe, 90m long & DN450 oversized pipe, 240m long

Outlet to tie into existing network

- DN450 mm
- Ch A5+015
- CL: 51.44
- IL: 48.07

Outlet to tie into existing network

- DN450 mm
- Ch A5+020
- CL: 51.80
- IL: 47.80

Outlet to tie into existing network

- DN450 mm
- Ch A5+040
- CL: 51.67
- IL: 48.29

Ch A4+990 to A5+020 (right hand side):

- Increase of additional catchment area: 75m²
- The existing and proposed road longitudinal gradient is very flat (=0.08%) therefore special consideration is to be given at detailed design stage.
- Existing gullies are connected to existing surface 375mmØ water network (cover 3.44m), thus new drainage system to be connected to the same.
- The proposed storm pipe will collect, convey and attenuate flows before overflowing/discharging to the existing Ø450 surface water network to replicate the existing situation.
- ADR: 5.1 l/s
- Vol_{att}: DN225 surface water pipe, 33m long

Ch A5+020 to A5+070 (right hand side):

- Increase of additional catchment area: 73m²
- Existing gullies are connected to existing 450mmØ surface water network (cover 1.77m), thus new drainage system to be connected to the same.
- New narrow profile gullies and connections will be required and will collect surface water from the carriageway, cycle track and footpath before discharging to the proposed storm pipe.
- The proposed storm pipe will collect, convey and attenuate flows before discharging to the existing Ø450 surface water network to replicate the existing situation.
- ADR: 7.2l/s
- Vol_{att}: DN225 surface water pipe, 46m long

Ch A5+070 to A5+230 (right hand side):

- Increase of additional catchment area: 272m²
- Existing gullies are possibly connected to existing 225mmØ surface water network (cover unknown), thus new drainage system to be connected to the same.
- New narrow profile gullies and connections will be required and will collect surface water from the carriageway, cycle track and footpath before discharging to the proposed storm pipe.
- The proposed storm pipe will collect, convey and attenuate flows before discharging to the existing Ø225 surface water network to replicate the existing situation.
- ADR: 20.1 l/s
- Vol_{att}: DN225 surface water pipe, 139m long

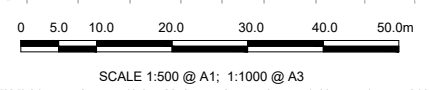
Ch A5+225 to A5+450 (right hand side):

- Increase of additional catchment area: 38m² (compensated Ch A5+070 to Ch A5+450 left hand side)
- The surface water pipe on the other side of the road will provide attenuation to compensate for this additional impermeable area
- Existing gullies are connected to existing 225mmØ surface water network (cover 0.7m), thus new drainage system to be connected to the same.
- If additional narrow profile gullies and connections are required, they should connect to the existing surface water network.

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		ARCH.

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



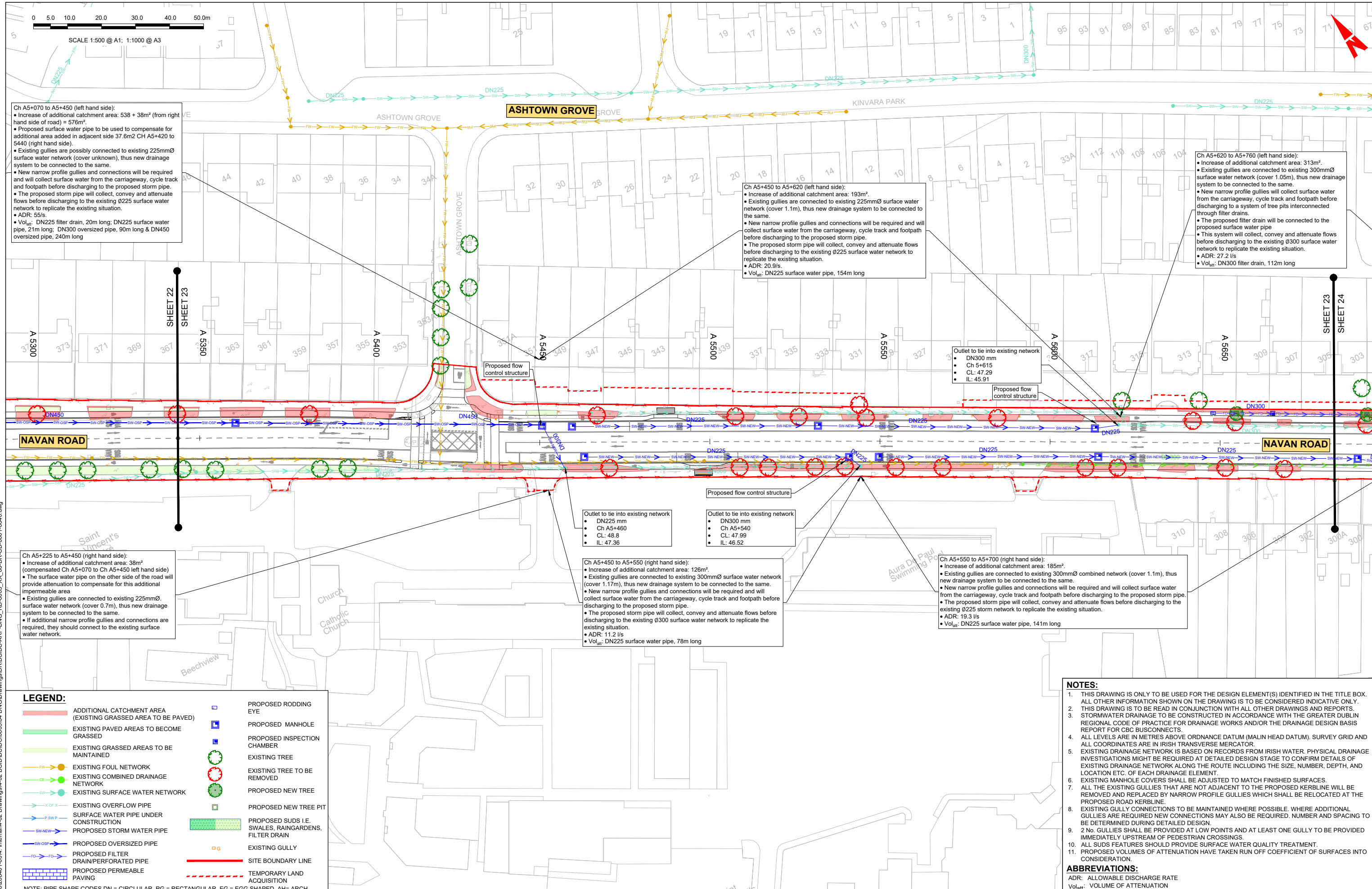
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ABBREVIATIONS:

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

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<p>Project Ireland 2040 Building Ireland's Future</p>				<p>Scale 1:500 @ A1; 1:1000 @ A3</p>		<p>Checked MR</p> <p>Approved BD</p>		<p>Sheet Number 22 of 40</p> <p>Status A</p> <p>Rev M01</p>	



Ch A5+070 to A5+450 (left hand side):

- Increase of additional catchment area: 538 + 38m² (from right hand side of road) = 576m².
- Proposed surface water pipe to be used to compensate for additional area added in adjacent side 37.6m² Ch A5+420 to 5440 (right hand side).
- Existing gullies are possibly connected to existing 225mm \varnothing surface water network (cover unknown), thus new drainage system to be connected to the same.
- New narrow profile gullies and connections will be required and will collect surface water from the carriageway, cycle track and footpath before discharging to the proposed storm pipe.
- The proposed storm pipe will collect, convey and attenuate flows before discharging to the existing \varnothing 225 surface water network to replicate the existing situation.
- ADR: 55/s.
- Vol_{att}: DN225 filter drain, 20m long; DN225 surface water pipe, 21m long; DN300 oversized pipe, 90m long & DN450 oversized pipe, 240m long

Ch A5+450 to A5+620 (left hand side):

- Increase of additional catchment area: 193m².
- Existing gullies are connected to existing 225mm \varnothing surface water network (cover 1.1m), thus new drainage system to be connected to the same.
- New narrow profile gullies and connections will be required and will collect surface water from the carriageway, cycle track and footpath before discharging to the proposed storm pipe.
- The proposed storm pipe will collect, convey and attenuate flows before discharging to the existing \varnothing 225 surface water network to replicate the existing situation.
- ADR: 20.9/s.
- Vol_{att}: DN225 surface water pipe, 154m long

Ch A5+620 to A5+760 (left hand side):

- Increase of additional catchment area: 313m².
- Existing gullies are connected to existing 300mm \varnothing surface water network (cover 1.05m), thus new drainage system to be connected to the same.
- New narrow profile gullies will collect surface water from the carriageway, cycle track and footpath before discharging to a system of tree pits interconnected through filter drains.
- The proposed filter drain will be connected to the proposed surface water pipe
- This system will collect, convey and attenuate flows before discharging to the existing \varnothing 300 surface water network to replicate the existing situation.
- ADR: 27.2 /s
- Vol_{att}: DN300 filter drain, 112m long

Ch A5+225 to A5+450 (right hand side):

- Increase of additional catchment area: 38m² (compensated Ch A5+070 to Ch A5+450 left hand side)
- The surface water pipe on the other side of the road will provide attenuation to compensate for this additional impermeable area
- Existing gullies are connected to existing 225mm \varnothing surface water network (cover 0.7m), thus new drainage system to be connected to the same.
- If additional narrow profile gullies and connections are required, they should connect to the existing surface water network.

Outlet to tie into existing network

- DN225 mm
- Ch A5+460
- CL: 48.8
- IL: 47.36

Outlet to tie into existing network

- DN300 mm
- Ch A5+540
- CL: 47.99
- IL: 46.52

Ch A5+450 to A5+550 (right hand side):

- Increase of additional catchment area: 126m².
- Existing gullies are connected to existing 300mm \varnothing surface water network (cover 1.17m), thus new drainage system to be connected to the same.
- New narrow profile gullies and connections will be required and will collect surface water from the carriageway, cycle track and footpath before discharging to the proposed storm pipe.
- The proposed storm pipe will collect, convey and attenuate flows before discharging to the existing \varnothing 300 surface water network to replicate the existing situation.
- ADR: 11.2 /s
- Vol_{att}: DN225 surface water pipe, 78m long

Ch A5+550 to A5+700 (right hand side):

- Increase of additional catchment area: 185m².
- Existing gullies are connected to existing 300mm \varnothing combined network (cover 1.1m), thus new drainage system to be connected to the same.
- New narrow profile gullies and connections will be required and will collect surface water from the carriageway, cycle track and footpath before discharging to the proposed storm pipe.
- The proposed storm pipe will collect, convey and attenuate flows before discharging to the existing \varnothing 225 storm network to replicate the existing situation.
- ADR: 19.3 /s
- Vol_{att}: DN225 surface water pipe, 141m long

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		TEMPORARY LAND ACQUISITION

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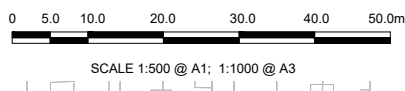
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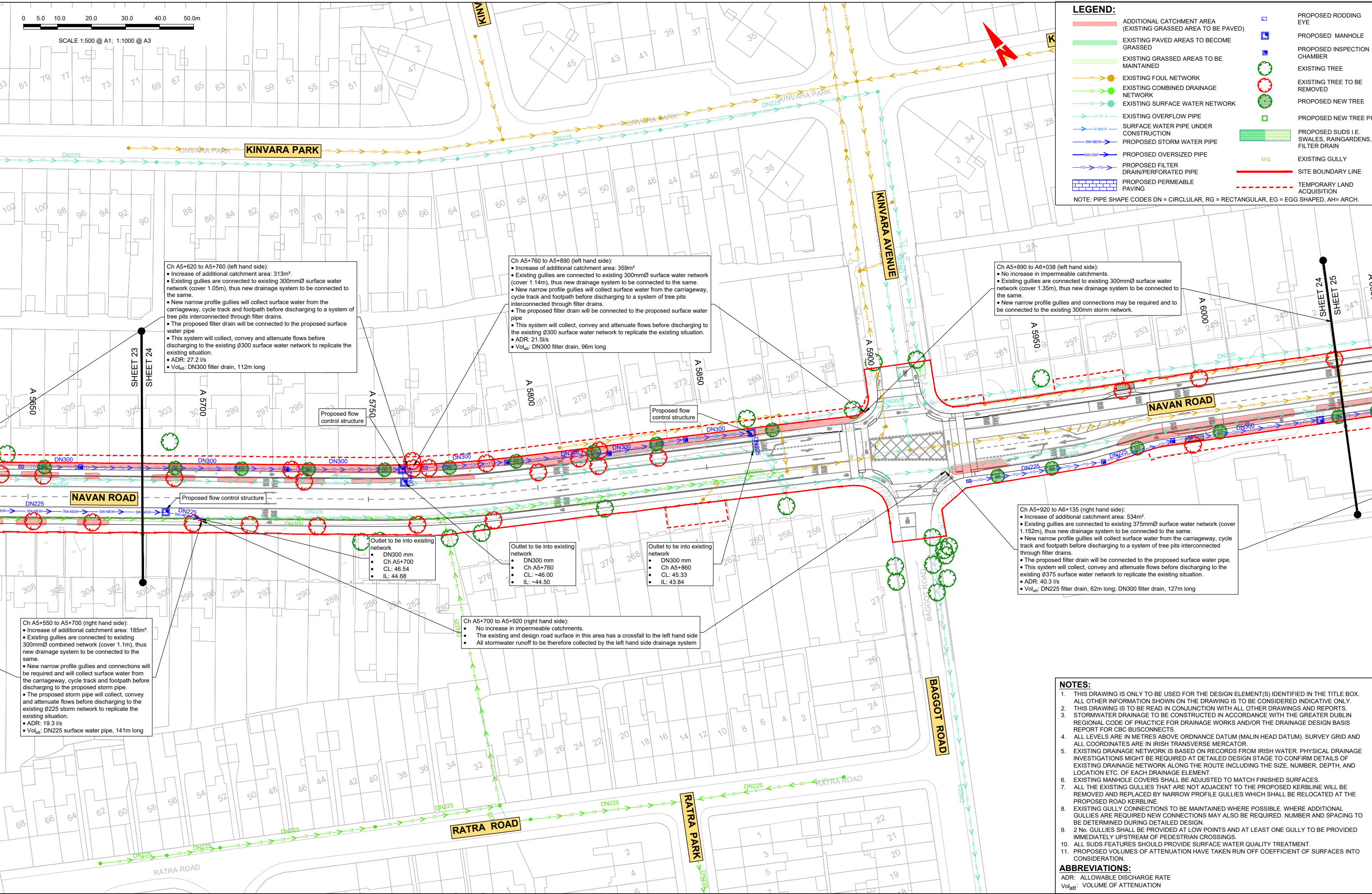
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<p>Date 04/04/2022</p> <p>Scale 1:500 @ A1</p> <p>1:1000 @ A3</p> <p>Project Code BCIDC</p> <p>Originator Code ARP</p> <p>OMS Code</p> <p>268401-00</p>	<p>Drawn AG</p> <p>Checked MR</p> <p>Approved BD</p>	<p>Drawing File Name</p> <p>BCIDC-ARP-DNG_RD-0005_XX_00-DR-CD-0023</p> <p>Sheet Number 23 of 40</p> <p>Status A</p> <p>Rev M01</p>			



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 = CIRCULAR, RG = RECTANGULAR, EG = EGG SHAPED, AH = ARCH.



Ch A5+620 to A5+760 (left hand side):

- Increase of additional catchment area: 313m².
- Existing gullies are connected to existing 300mmØ surface water network (cover 1.05m), thus new drainage system to be connected to the same.
- New narrow profile gullies will collect surface water from the carriageway, cycle track and footpath before discharging to a system of tree pits interconnected through filter drains.
- The proposed filter drain will be connected to the proposed surface water pipe
- This system will collect, convey and attenuate flows before discharging to the existing Ø300 surface water network to replicate the existing situation.
- ADR: 27.2 l/s
- Vol_{att}: DN300 filter drain, 112m long

Ch A5+760 to A5+890 (left hand side):

- Increase of additional catchment area: 359m²
- Existing gullies are connected to existing 300mmØ surface water network (cover 1.14m), thus new drainage system to be connected to the same.
- New narrow profile gullies will collect surface water from the carriageway, cycle track and footpath before discharging to a system of tree pits interconnected through filter drains.
- The proposed filter drain will be connected to the proposed surface water pipe
- This system will collect, convey and attenuate flows before discharging to the existing Ø300 surface water network to replicate the existing situation.
- ADR: 21.5 l/s
- Vol_{att}: DN300 filter drain, 96m long

Ch A5+890 to A6+038 (left hand side):

- No increase in impermeable catchments.
- Existing gullies are connected to existing 300mmØ surface water network (cover 1.35m), thus new drainage system to be connected to the same.
- New narrow profile gullies and connections may be required and to be connected to the existing 300mm storm network.

Ch A5+920 to A6+135 (right hand side):

- Increase of additional catchment area: 534m².
- Existing gullies are connected to existing 375mmØ surface water network (cover 1.152m), thus new drainage system to be connected to the same.
- New narrow profile gullies will collect surface water from the carriageway, cycle track and footpath before discharging to a system of tree pits interconnected through filter drains.
- The proposed filter drain will be connected to the proposed surface water pipe.
- This system will collect, convey and attenuate flows before discharging to the existing Ø375 surface water network to replicate the existing situation.
- ADR: 40.3 l/s
- Vol_{att}: DN225 filter drain, 62m long; DN300 filter drain, 127m long

Ch A5+550 to A5+700 (right hand side):

- Increase of additional catchment area: 185m².
- Existing gullies are connected to existing 300mmØ combined network (cover 1.1m), thus new drainage system to be connected to the same.
- New narrow profile gullies and connections will be required and will collect surface water from the carriageway, cycle track and footpath before discharging to the proposed storm pipe.
- The proposed storm pipe will collect, convey and attenuate flows before discharging to the existing Ø225 storm network to replicate the existing situation.
- ADR: 19.3 l/s
- Vol_{att}: DN225 surface water pipe, 141m long

Ch A5+700 to A5+920 (right hand side):

- No increase in impermeable catchments.
- The existing and design road surface in this area has a crossfall to the left hand side
- All stormwater runoff to be therefore collected by the left hand side drainage system

Outlet to tie into existing network

- DN300 mm
- Ch A5+700
- CL: 46.54
- IL: 44.68

Outlet to tie into existing network

- DN300 mm
- Ch A5+760
- CL: -46.00
- IL: -44.50

Outlet to tie into existing network

- DN300 mm
- Ch A5+860
- CL: 45.33
- IL: 43.84

- 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 ORDINANCE 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_{att}: VOLUME OF ATTENUATION

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d. Information concerning the position of apparatus shown on this drawing is based on drawings supplied by the utility owners and/or the utility works contractor, whilst every care has been taken in the preparation of this drawing, positions should be taken as approximate and are intended for general guidance only and no representation is made by the NTA as to the accuracy, completeness, sufficiency or otherwise of this drawing and the position of the apparatus. The information contained herein does not purport to be comprehensive or final as the apparatus is subject to being altered and/or superseded. Recipients should not rely on this information. Any liabilities are hereby expressly disclaimed.

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Project Ireland 2040
Building Ireland's Future

Rev	Date	Drn	Chk'd	App'd	Description
M01	04/04/2022	AG	MR	BD	ISSUE FOR PHASE 4: PLANNING

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

Engineering Designer: **ARUP**

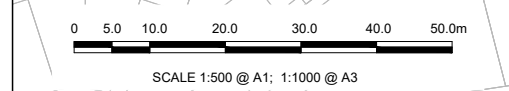
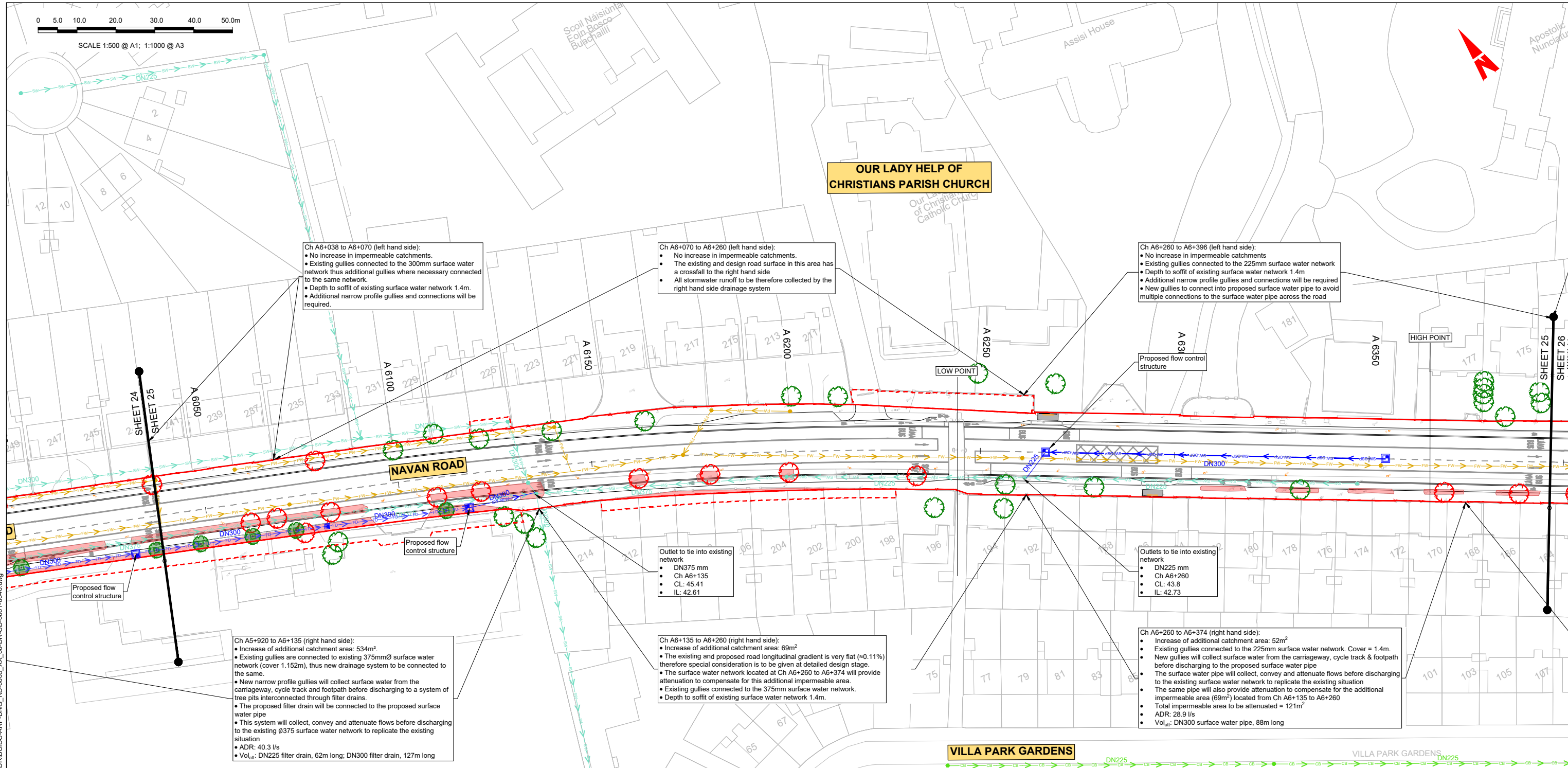
Date: 04/04/2022 Scale: 1:500 @ A1; 1:1000 @ A3

Project Code: BCIDC Originator Code: ARP

Drawn: AG Checked: MR Approved: BD

OMS Code: 268401-00

Programme Title: BUSCONNECTS DUBLIN CORE BUS CORRIDORS INFRASTRUCTURE WORKS	Sheet Number: 24 of 40	Status: A	Rev: M01
Drawing Title: BLANCHARDSTOWN TO CITY CENTRE CORE BUS CORRIDOR SCHEME PROPOSED SURFACE WATER DRAINAGE WORKS	Drawing File Name: BCIDC-ARP-DNG_RD-0005_XX_00-DR-CD-0024		



Ch A6+038 to A6+070 (left hand side):

- No increase in impermeable catchments.
- Existing gullies connected to the 300mm surface water network thus additional gullies where necessary connected to the same network.
- Depth to soffit of existing surface water network 1.4m.
- Additional narrow profile gullies and connections will be required.

Ch A6+070 to A6+260 (left hand side):

- No increase in impermeable catchments.
- The existing and design road surface in this area has a crossfall to the right hand side.
- All stormwater runoff to be therefore collected by the right hand side drainage system.

Ch A6+260 to A6+396 (left hand side):

- No increase in impermeable catchments.
- Existing gullies connected to the 225mm surface water network.
- Depth to soffit of existing surface water network 1.4m.
- Additional narrow profile gullies and connections will be required.
- New gullies to connect into proposed surface water pipe to avoid multiple connections to the surface water pipe across the road.

Ch A5+920 to A6+135 (right hand side):

- Increase of additional catchment area: 534m².
- Existing gullies are connected to existing 375mmØ surface water network (cover 1.152m), thus new drainage system to be connected to the same.
- New narrow profile gullies will collect surface water from the carriageway, cycle track and footpath before discharging to a system of tree pits interconnected through filter drains.
- The proposed filter drain will be connected to the proposed surface water pipe.
- This system will collect, convey and attenuate flows before discharging to the existing Ø375 surface water network to replicate the existing situation.
- ADR: 40.3 l/s
- Vol_{att}: DN225 filter drain, 62m long; DN300 filter drain, 127m long

Ch A6+135 to A6+260 (right hand side):

- Increase of additional catchment area: 69m².
- The existing and proposed road longitudinal gradient is very flat (±0.11%) therefore special consideration is to be given at detailed design stage.
- The surface water network located at Ch A6+260 to A6+374 will provide attenuation to compensate for this additional impermeable area.
- Existing gullies connected to the 375mm surface water network.
- Depth to soffit of existing surface water network 1.4m.

Ch A6+260 to A6+374 (right hand side):

- Increase of additional catchment area: 52m².
- Existing gullies connected to the 225mm surface water network. Cover = 1.4m.
- New gullies will collect surface water from the carriageway, cycle track & footpath before discharging to the proposed surface water pipe.
- The surface water pipe will collect, convey and attenuate flows before discharging to the existing surface water network to replicate the existing situation.
- The same pipe will also provide attenuation to compensate for the additional impermeable area (69m²) located from Ch A6+135 to A6+260.
- Total impermeable area to be attenuated = 121m²
- ADR: 28.9 l/s
- Vol_{att}: DN300 surface water pipe, 88m long

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
	PROPOSED PERMEABLE PAVING		

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

ABBREVIATIONS:

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

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Rev	Date	Drm	Chk'd	App'd	Description
M01	04/04/2022	AG	MR	BD	ISSUE FOR PHASE 4: PLANNING

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

Engineering Designer: **ARUP**

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

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

Drawn: AG Checked: MR Approved: BD

Programme Title	BUSCONNECTS DUBLIN CORE BUS CORRIDORS INFRASTRUCTURE WORKS		
Drawing Title	BLANCHARDSTOWN TO CITY CENTRE CORE BUS CORRIDOR SCHEME PROPOSED SURFACE WATER DRAINAGE WORKS		
Drawing File Name	BCIDC-ARP-DNG_RD-0005_XX_00-DR-CD-0025	Sheet Number	25 of 40
Status	A	Rev	M01

DO NOT SCALE USE FIGURED DIMENSIONS ONLY

0 5.0 10.0 20.0 30.0 40.0 50.0m

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



Ch A6+396 to A6+465 (left hand side):

- Increase of additional catchment area: 38m²
- The proposed surface water pipe on the other side of the road will provide attenuation to compensate for the additional impermeable area.
- Existing gullies connected to the 225mm surface water network.
- Depth to soffit of existing surface water network 1.60m.
- All gullies to be connected to the existing surface water network

Ch A6+465 to A6+642 (left hand side):

- Additional impermeable catchment area = 274m²
- Additional grassed (permeable area) = 14m² (from the other side of the road)
- Net impermeable area to be attenuated = 260m²
- Existing gullies connected to the Ø300mm surface water network (cover = 1.60m)
- New narrow profile gullies will collect surface water from the carriageway, footpaths and cycle track before discharging to a system of tree pits interconnected through filter drains
- Filter drains will be connected to surface water pipes
- This system will collect, convey and attenuate flows before discharging to the existing surface water network to replicate the existing situation
- ADR: 18.5 l/s
- Vol_{att}: DN225 filter drain, 128 m long & DN300 surface water pipe, 5m long

Ch A6+642 to A6+745 (left hand side):

- Increase of additional catchment area: 108m²
- Existing gullies connected to the 150mm surface water network.
- Depth to soffit of existing surface water network varies from 1.48m to 0.50m.
- New narrow profile gullies will collect surface water from the carriageway, footpaths and cycle track before discharging to the proposed surface water pipe.
- This system will collect, convey and attenuate flows before discharging to the existing surface water network to replicate the existing situation.
- ADR: 27.4 l/s
- Vol_{att}: DN225 surface water pipe, 50 m long

CABRA GARDA STATION

Outlet to tie into existing network

- DN300 mm
- Ch A6+562
- CL: 42.48
- IL: 40.85

Proposed flow control structure

Ch A6+374 to A6+488 (right hand side):

- Increase of additional catchment area: 39m² + 38m² (from the other side of the road) = 77m²
- Additional grassed (permeable area) = 14m²
- Net impermeable area to be attenuated = 63m²
- Existing gullies connected to the 225mm surface water network.
- Depth to soffit of existing surface water network 1.60m.
- New gullies will collect surface water from the carriageway, cycle track & footpath before discharging to the proposed surface water pipe
- The surface water pipe will collect, convey and attenuate flows before discharging to the existing surface water network to replicate the existing situation
- ADR: 15.1 l/s
- Vol_{att}: DN225 surface water pipe, 52m long

Outlet to tie into existing network

- DN225 mm
- Ch A6+488
- CL: 42.9
- IL: 41.08

Outlet to tie into existing network

- DN375 mm
- Ch A6+575
- CL: 41.29
- IL: unknown

Ch A6+488 to A6+575 (right hand side):

- No increase in impermeable catchment area.
- Additional narrow profile gullies and connections will be required.
- Existing gullies connected to the Ø225mm surface water network. All gullies to be therefore connected to the existing surface water network.
- Depth to soffit of existing surface water network 1.60m.

Ch A6+575 to A6+642 (right hand side):

- No increase in impermeable catchment area.
- Additional narrow profile gullies and connections will be required.
- Existing gullies connected to the Ø300mm surface water network. All gullies to be therefore connected to the existing surface water network.
- Depth to soffit of existing surface water network 1.55m.

Ch A6+642 to A6+745 (right hand side):

- No increase in impermeable catchment area.
- Additional narrow profile gullies and connections will be required.
- Existing gullies connected to the Ø150mm surface water network.
- Depth to soffit of existing surface water network varies from 1.48m to 0.50m.
- New gullies to connect into new network to avoid multiple connections to the surface water network across the road.

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		

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- ALL SUDS FEATURES SHOULD PROVIDE SURFACE WATER QUALITY TREATMENT.
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ABBREVIATIONS:

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

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0 5.0 10.0 20.0 30.0 40.0 50.0m

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



Ch A6+745 to A6+900 (left hand side):

- Increase of additional catchment area: 38m² + 74m² (from Ch A6+900 to A7+040 - left hand side) = 112m²
- Existing gullies connected to the 525mm surface water network.
- Depth to soffit of existing surface water network varies from 1.56m to 1.47m.
- New narrow profile gullies will collect surface water from the carriageway, footpaths and cycle track before discharging to the proposed surface water pipe
- This system will collect, convey and attenuate flows before discharging to the existing surface water network to replicate the existing situation
- ADR: 17.8 l/s
- Vol_{att}: DN225 surface water pipe, 121 m long

Outlets to tie into existing network

- DN525 mm
- Ch A6+900
- CL: 41.21
- IL: 39.13

Ch A6+900 to A7+040 (left hand side):

- Increase of additional catchment area: 74m²
- Existing gullies connected to the 525mm surface water network.
- Depth to soffit of existing surface water network varies from 1.47m to 1.88m.
- New narrow profile gullies will collect surface water from the carriageway, footpaths and cycle track before discharging to the existing surface water pipe
- The proposed surface water pipe located at Ch A6+745 to A6+900 - left hand side will provide attenuation to compensate for the additional impermeable area

Ch A7+040 to A7+132 (left hand side):

- No increase in impermeable catchments.
- Existing gullies connected to the 225mm surface water network thus additional gullies where necessary connected to the same network.
- Depth to soffit of existing surface water network varies from 2.19m to 1.31m.

Ch A6+745 to A6+900 (right hand side):

- No increase in impermeable catchment area.
- Additional narrow profile gullies and connections will be required.
- Existing gullies connected to the 525mm surface water network. Further investigation to be carried out on-site to confirm if the gullies are connected to the surface water network. If the gullies are connected to the combined network, the new pipe might not be necessary and the new gullies should be connected to the combined network instead. Coordination with DCC should be carried out to confirm the possible connection from the other side of the road.
- Depth to soffit of existing surface water network varies from 1.73m to 1.56m.
- New gullies to connect into new network to avoid multiple connections to the surface water network across the road.

Ch A6+900 to A7+075 (right hand side):

- No increase in impermeable catchments.
- Additional narrow profile gullies and connections will be required.
- Existing gullies connected to the 375mm combined network thus additional gullies where necessary connected to the same network.
- Sealed gullies connection to be provided.

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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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_{att}: VOLUME OF ATTENUATION

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Rev	Date	Dm	Chk'd	App'd	Description
M01	04/04/2022	AG	MR	BD	ISSUE FOR PHASE 4: PLANNING

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

Engineering Designer: **ARUP**

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

Project Code: BCIDC Originator Code: ARP

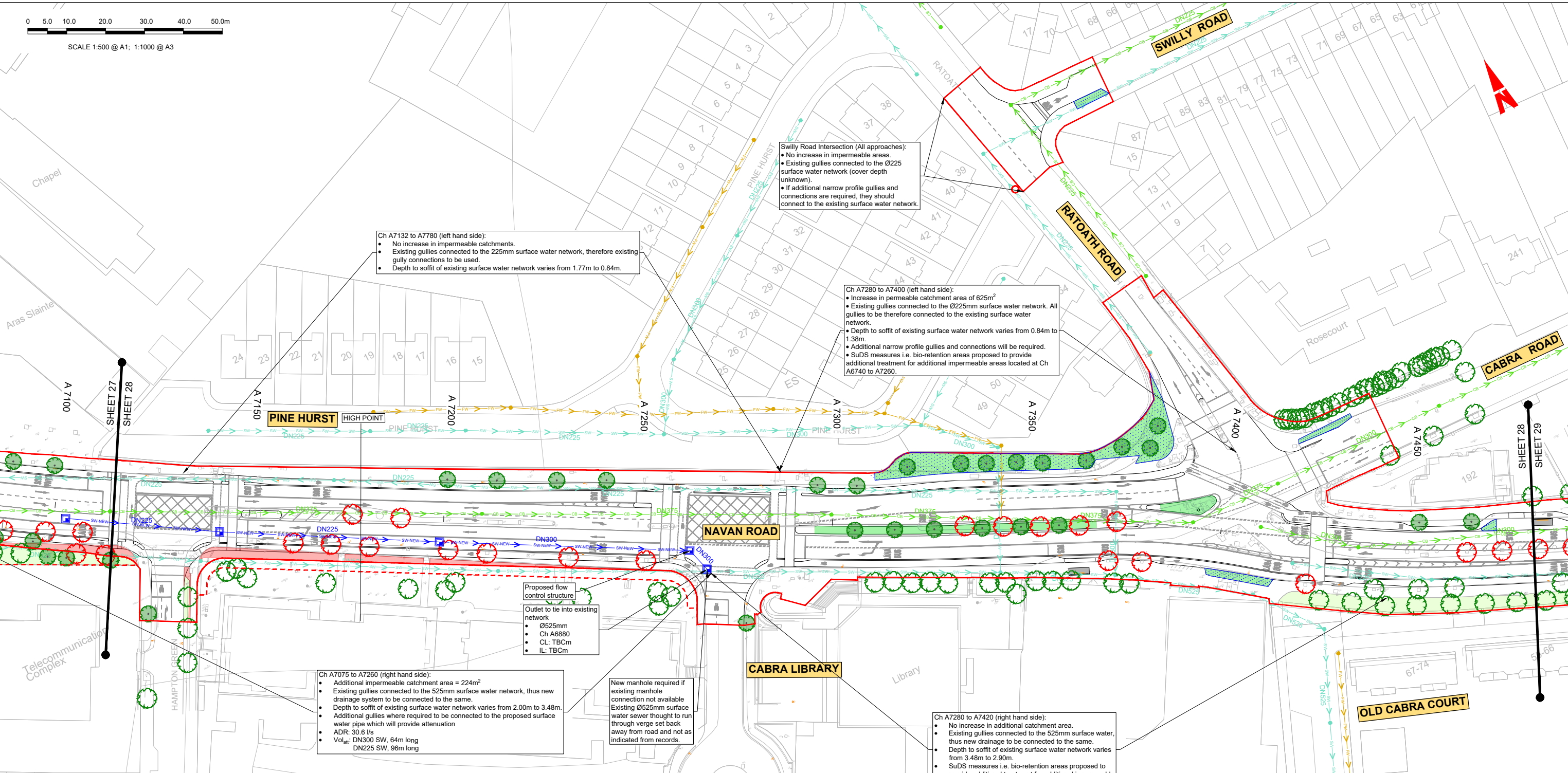
Drawn: AG Checked: MR Approved: BD

OMS Code: 268401-00

Programme Title	BUSCONNECTS DUBLIN CORE BUS CORRIDORS INFRASTRUCTURE WORKS		
Drawing Title	BLANCHARDSTOWN TO CITY CENTRE CORE BUS CORRIDOR SCHEME PROPOSED SURFACE WATER DRAINAGE WORKS		
Drawing File Name	Sheet Number	Status	Rev
BCIDC-ARP-DNG_RD-0005_XX_00-DR-CD-0027	27 of 40	A	M01

0 5.0 10.0 20.0 30.0 40.0 50.0m

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



Ch A7132 to A7780 (left hand side):

- No increase in impermeable catchments.
- Existing gullies connected to the 225mm surface water network, therefore existing gully connections to be used.
- Depth to soffit of existing surface water network varies from 1.77m to 0.84m.

Swilly Road Intersection (All approaches):

- No increase in impermeable areas.
- Existing gullies connected to the Ø225 surface water network (cover depth unknown).
- If additional narrow profile gullies and connections are required, they should connect to the existing surface water network.

Ch A7280 to A7400 (left hand side):

- Increase in permeable catchment area of 625m²
- Existing gullies connected to the Ø225mm surface water network. All gullies to be therefore connected to the existing surface water network.
- Depth to soffit of existing surface water network varies from 0.84m to 1.38m.
- Additional narrow profile gullies and connections will be required.
- SuDS measures i.e. bio-retention areas proposed to provide additional treatment for additional impermeable areas located at Ch A6740 to A7260.

Proposed flow control structure

- Outlet to tie into existing network
- Ø525mm
- Ch A6880
- CL: TBCm
- IL: TBCm

Ch A7075 to A7260 (right hand side):

- Additional impermeable catchment area = 224m²
- Existing gullies connected to the 525mm surface water network, thus new drainage system to be connected to the same.
- Depth to soffit of existing surface water network varies from 2.00m to 3.48m.
- Additional gullies where required to be connected to the proposed surface water pipe which will provide attenuation
- ADR: 30.6 l/s
- Vol_{att}: DN300 SW, 64m long
- DN225 SW, 96m long

New manhole required if existing manhole connection not available

Existing Ø525mm surface water sewer thought to run through verge set back away from road and not as indicated from records.

Ch A7280 to A7420 (right hand side):

- No increase in additional catchment area.
- Existing gullies connected to the 525mm surface water, thus new drainage to be connected to the same.
- Depth to soffit of existing surface water network varies from 3.48m to 2.90m.
- SuDS measures i.e. bio-retention areas proposed to provide additional treatment for additional impermeable areas.

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

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ABBREVIATIONS:

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

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Rev	Date	Drn	Chk'd	App'd	Description
M01	04/04/2022	AG	MR	BD	ISSUE FOR PHASE 4: PLANNING

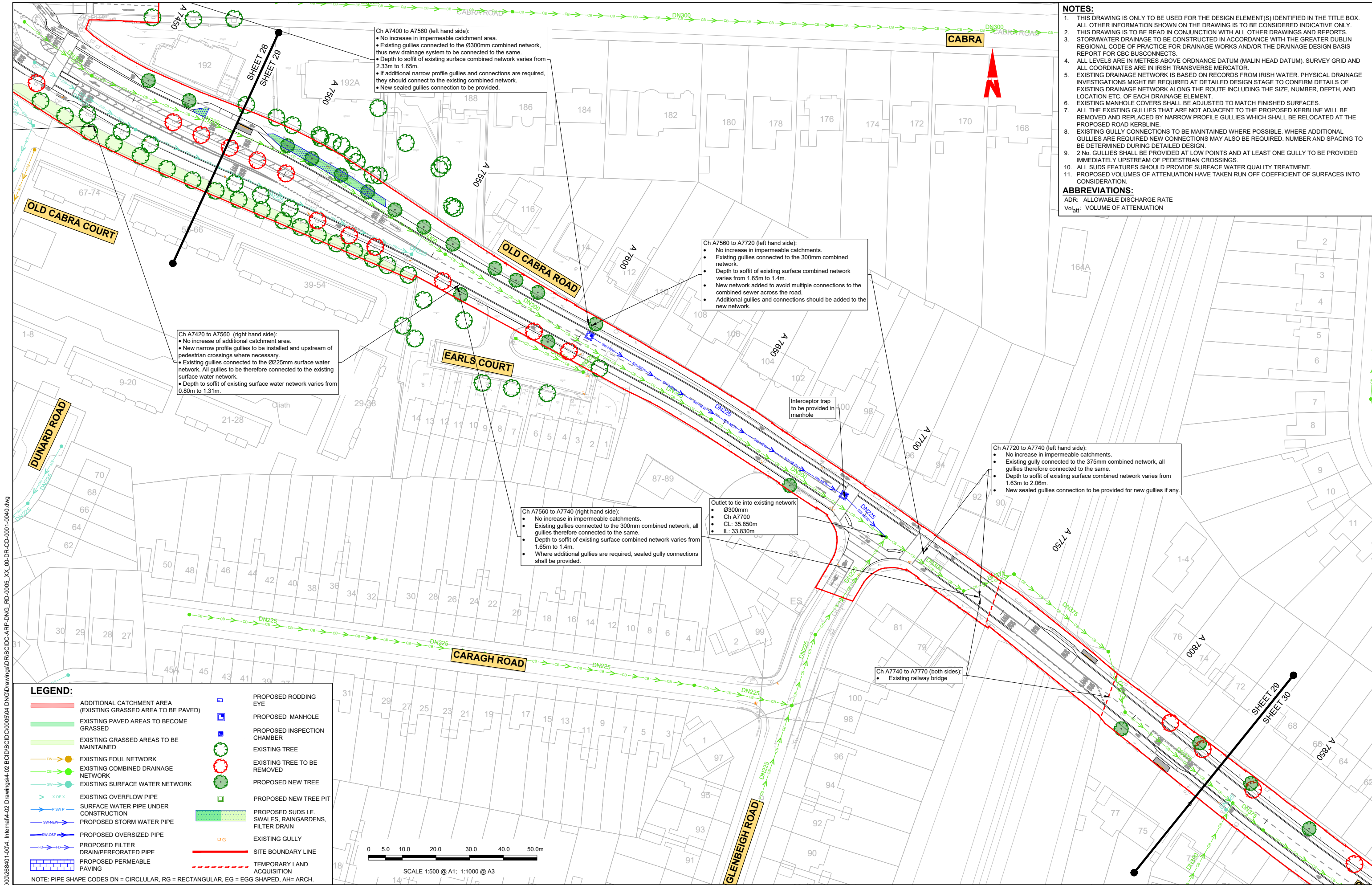
Client

Udarás Náisiúnta Iompair
National Transport Authority

Engineering Designer

Drawn AG
Checked MR
Approved BD

Programme Title BUSCONNECTS DUBLIN CORE BUS CORRIDORS INFRASTRUCTURE WORKS			
Drawing Title BLANCHARDSTOWN TO CITY CENTRE CORE BUS CORRIDOR SCHEME PROPOSED SURFACE WATER DRAINAGE WORKS			
Drawing File Name BCIDC-ARP-DNG_RD-0005_XX_00-DR-CD-0028	Sheet Number 28 of 40	Status A	Rev M01



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

Ch A7400 to A7560 (left hand side):

- No increase in impermeable catchment area.
- Existing gullies connected to the Ø300mm combined network, thus new drainage system to be connected to the same.
- Depth to soffit of existing surface combined network varies from 2.33m to 1.65m.
- If additional narrow profile gullies and connections are required, they should connect to the existing combined network.
- New sealed gullies connection to be provided.

Ch A7560 to A7720 (left hand side):

- No increase in impermeable catchments.
- Existing gullies connected to the 300mm combined network.
- Depth to soffit of existing surface combined network varies from 1.65m to 1.4m.
- New network added to avoid multiple connections to the combined sewer across the road.
- Additional gullies and connections should be added to the new network.

Ch A7420 to A7560 (right hand side):

- No increase of additional catchment area.
- New narrow profile gullies to be installed and upstream of pedestrian crossings where necessary.
- Existing gullies connected to the Ø225mm surface water network. All gullies to be therefore connected to the existing surface water network.
- Depth to soffit of existing surface water network varies from 0.80m to 1.31m.

Ch A7560 to A7740 (right hand side):

- No increase in impermeable catchments.
- Existing gullies connected to the 300mm combined network, all gullies therefore connected to the same.
- Depth to soffit of existing surface combined network varies from 1.65m to 1.4m.
- Where additional gullies are required, sealed gully connections shall be provided.

Ch A7720 to A7740 (left hand side):

- No increase in impermeable catchments.
- Existing gully connected to the 375mm combined network, all gullies therefore connected to the same.
- Depth to soffit of existing surface combined network varies from 1.63m to 2.06m.
- New sealed gullies connection to be provided for new gullies if any.

Outlet to tie into existing network

- Ø300mm
- Ch A7700
- CL: 35.850m
- IL: 33.830m

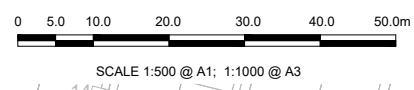
Ch A7740 to A7770 (both sides):

- Existing railway bridge

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		

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Rev	Date	Drn	Chk'd	App'd	Description																
M01	04/04/2022	AG	MR	BD	ISSUE FOR PHASE 4: PLANNING																

DO NOT SCALE USE FIGURED DIMENSIONS ONLY

0 5.0 10.0 20.0 30.0 40.0 50.0m

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

SHEET 29
SHEET 30
SHEET 31

Ch A7800 to A7920 (left hand side):

- No increase in impermeable catchments.
- Existing gullies are connected to existing 375mmØ combined network (cover 1.5m), thus new drainage system to be connected to the same.
- If additional narrow profile gullies and connections are required, they should connect to the existing combined network.
- New sealed gullies connection to be provided.

Ch A7920 to A8040 (left hand side):

- No increase in impermeable catchments.
- Existing gullies are connected to existing 225mmØ storm network (cover 0.6m), thus new drainage system to be connected to the same.
- If additional narrow profile gullies and connections are required, they should connect to the existing surface water network.

Ch A8040 to A8080 (left hand side):

- No increase in impermeable catchments.
- Existing gullies are connected to existing 375mmØ combined network (cover 2.5m), thus new drainage system to be connected to the same.
- New network added to avoid multiple connections to the combined sewer.
- Additional gullies and connections to be added and connected to new storm network.

Ch A7800 to A8160 (right hand side):

- No increase in impermeable catchments.
- Existing gullies are connected to existing 375mm combined network (cover 2m), thus new drainage system to be connected to the same.
- If additional narrow profile gullies and connections are required, they should connect to the existing combined network.
- New sealed gullies connection to be provided.

Ch A8080 to A8160 (left hand side):

- No increase of additional catchment area
- Existing gullies are connected to existing 300mmØ combined network (cover 2.0m), thus new drainage system to be connected to the same.
- If additional narrow profile gullies and connections are required, they should connect to the existing combined network.
- New sealed gullies connection to be provided.

Interceptor trap to be provided in manhole

Outlets to tie into existing network

- Ø375mm
- Ch A8080
- CL: TBCm
- IL: 29.330m

Annacree Intersection (All approaches):

- No increase in impermeable areas.
- Existing gullies connected to the Ø300 combined network (cover depth unknown).
- If additional narrow profile gullies and connections are required, they should connect to the existing combined network.
- New gullies should be sealed.

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
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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
VolAtt: VOLUME OF ATTENUATION

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Project Ireland 2040
Building Ireland's Future

Rev	Date	Drn	Chk'd	App'd	Description
M01	04/04/2022	AG	MR	BD	ISSUE FOR PHASE 4: PLANNING

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

Engineering Designer: **ARUP**

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

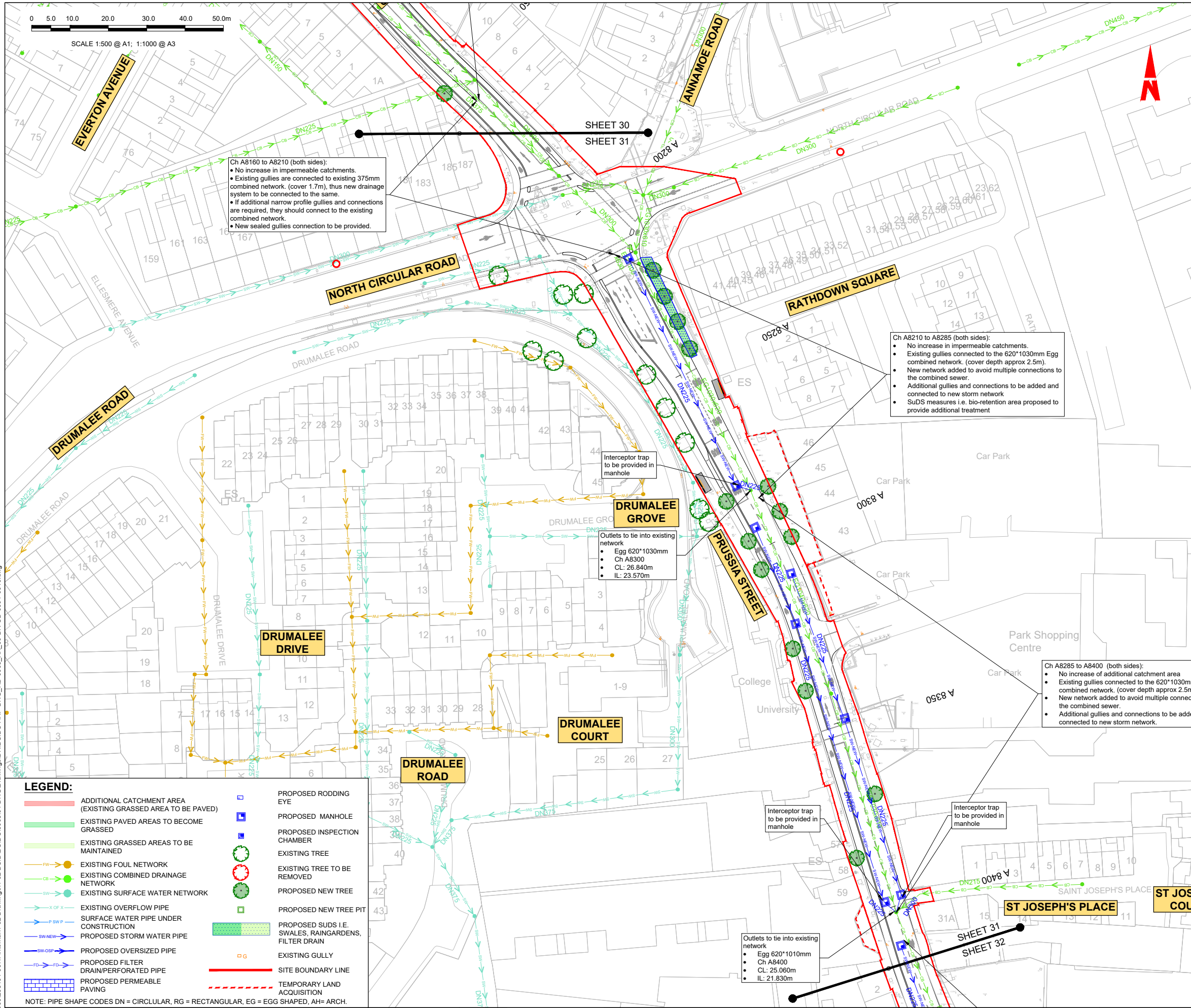
Project Code: BCIDC Originator Code: ARP

Drawn: AG Checked: MR Approved: BD

OMS Code: 268401-00

Programme Title: BUSCONNECTS DUBLIN CORE BUS CORRIDORS INFRASTRUCTURE WORKS			
Drawing Title: BLANCHARDSTOWN TO CITY CENTRE CORE BUS CORRIDOR SCHEME PROPOSED SURFACE WATER DRAINAGE WORKS			
Drawing File Name: BCIDC-ARP-DNG_RD-0005_XX_00-DR-CD-0030	Sheet Number: 30 of 40	Status: A	Rev: M01

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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_{att}: VOLUME OF ATTENUATION

Ch A8160 to A8210 (both sides):

- No increase in impermeable catchments.
- Existing gullies are connected to existing 375mm combined network. (cover 1.7m), thus new drainage system to be connected to the same.
- If additional narrow profile gullies and connections are required, they should connect to the existing combined network.
- New sealed gullies connection to be provided.

Ch A8210 to A8285 (both sides):

- No increase in impermeable catchments.
- Existing gullies connected to the 620*1030mm Egg combined network. (cover depth approx 2.5m).
- New network added to avoid multiple connections to the combined sewer.
- Additional gullies and connections to be added and connected to new storm network
- SuDS measures i.e. bio-retention area proposed to provide additional treatment

Ch A8285 to A8400 (both sides):

- No increase of additional catchment area
- Existing gullies connected to the 620*1030mm Egg combined network. (cover depth approx 2.5m).
- New network added to avoid multiple connections to the combined sewer.
- Additional gullies and connections to be added and connected to new storm network.

Outlets to tie into existing network:

- Egg 620*1030mm
- Ch A8300
- CL: 26.840m
- IL: 23.570m

Outlets to tie into existing network:

- Egg 620*1010mm
- Ch A8400
- CL: 25.060m
- IL: 21.830m

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

Engineering Designer: **ARUP**

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

Project Code: BCIDC Originator Code: ARP

Drawn: AG Checked: MR Approved: BD

OMS Code: 268401-00

Programme Title	BUSCONNECTS DUBLIN CORE BUS CORRIDORS INFRASTRUCTURE WORKS		
Drawing Title	BLANCHARDSTOWN TO CITY CENTRE CORE BUS CORRIDOR SCHEME PROPOSED SURFACE WATER DRAINAGE WORKS		
Drawing File Name	BCIDC-ARP-DNG_RD-0005_XX_00-DR-CD-0031	Sheet Number	31 of 40
Status	A	Rev	M01

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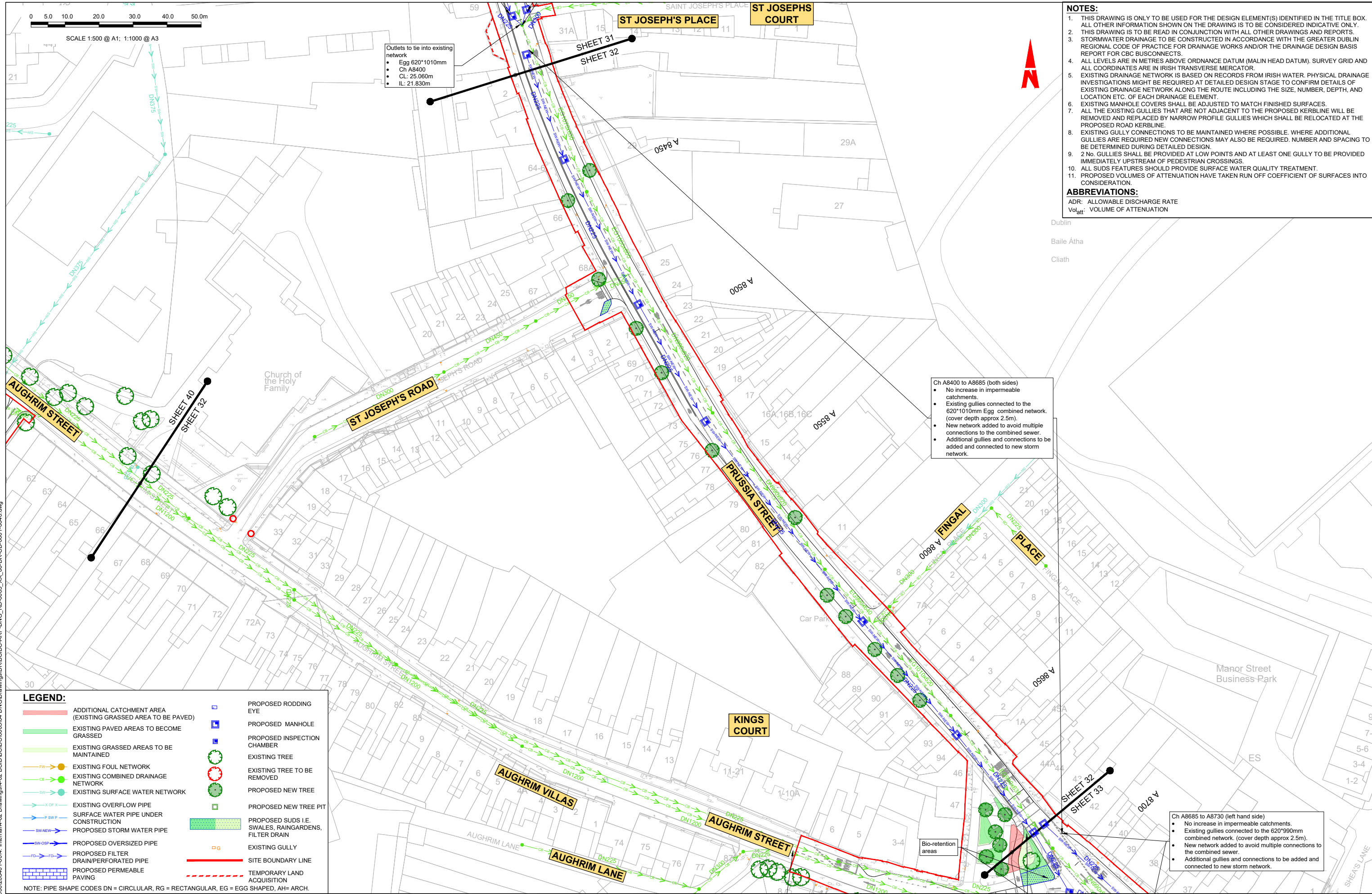
SCALE 1:500 @ A1; 1:1000 @ A3

- Outlets to tie into existing network
- Egg 620*1010mm
 - Ch A8400
 - CL: 25.060m
 - IL: 21.830m

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



Dublin
Baile Átha
Cliath



- Ch A8400 to A8685 (both sides)
- No increase in impermeable catchments.
 - Existing gullies connected to the 620*1010mm Egg combined network. (cover depth approx 2.5m).
 - New network added to avoid multiple connections to the combined sewer.
 - Additional gullies and connections to be added and connected to new storm network.

- Ch A8685 to A8730 (left hand side)
- No increase in impermeable catchments.
 - Existing gullies connected to the 620*990mm combined network. (cover depth approx 2.5m).
 - New network added to avoid multiple connections to the combined sewer.
 - Additional gullies and connections to be added and connected to new storm network.

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		

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National Transport Authority

Engineering Designer: **ARUP**

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

Project Code: BCIDC Originator Code: ARP

QMS Code: 268401-00

Drawn: AG Checked: MR Approved: BD

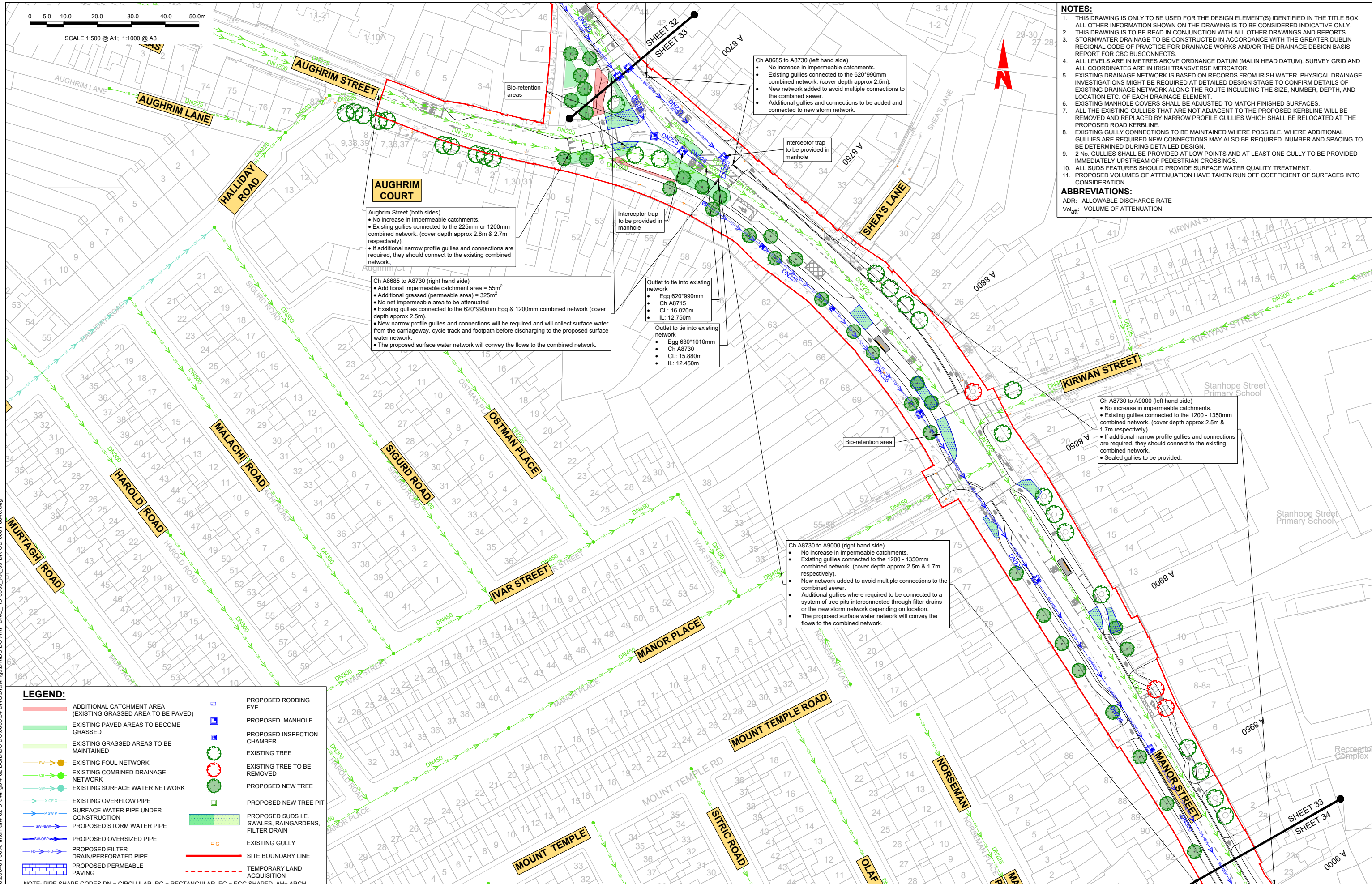
Programme Title: BUSCONNECTS DUBLIN CORE BUS CORRIDORS INFRASTRUCTURE WORKS			
Drawing Title: BLANCHARDSTOWN TO CITY CENTRE CORE BUS CORRIDOR SCHEME PROPOSED SURFACE WATER DRAINAGE WORKS			
Drawing File Name: BCIDC-ARP-DNG_RD-0005_XX_00-DR-CD-0032	Sheet Number: 32 of 40	Status: A	Rev: M01

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

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



AUGHRIM STREET (both sides)

- No increase in impermeable catchments.
- Existing gullies connected to the 225mm or 1200mm combined network. (cover depth approx 2.6m & 2.7m respectively).
- If additional narrow profile gullies and connections are required, they should connect to the existing combined network.

Ch A8685 to A8730 (right hand side)

- Additional impermeable catchment area = 55m²
- Additional grassed (permeable area) = 325m²
- No net impermeable area to be attenuated
- Existing gullies connected to the 620*990mm Egg & 1200mm combined network (cover depth approx 2.5m).
- New narrow profile gullies and connections will be required and will collect surface water from the carriageway, cycle track and footpath before discharging to the proposed surface water network.
- The proposed surface water network will convey the flows to the combined network.

Outlet to tie into existing network

- Egg 620*990mm
- Ch A8715
- CL: 16.020m
- IL: 12.750m

Outlet to tie into existing network

- Egg 630*1010mm
- Ch A8730
- CL: 15.880m
- IL: 12.450m

Ch A8730 to A9000 (right hand side)

- No increase in impermeable catchments.
- Existing gullies connected to the 1200 - 1350mm combined network. (cover depth approx 2.5m & 1.7m respectively).
- New network added to avoid multiple connections to the combined sewer.
- Additional gullies where required to be connected to a system of tree pits interconnected through filter drains or the new storm network depending on location.
- The proposed surface water network will convey the flows to the combined network.

Ch A8730 to A9000 (left hand side)

- No increase in impermeable catchments.
- Existing gullies connected to the 1200 - 1350mm combined network. (cover depth approx 2.5m & 1.7m respectively).
- If additional narrow profile gullies and connections are required, they should connect to the existing combined network.
- Sealed gullies to be provided.

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		ACQUISITION

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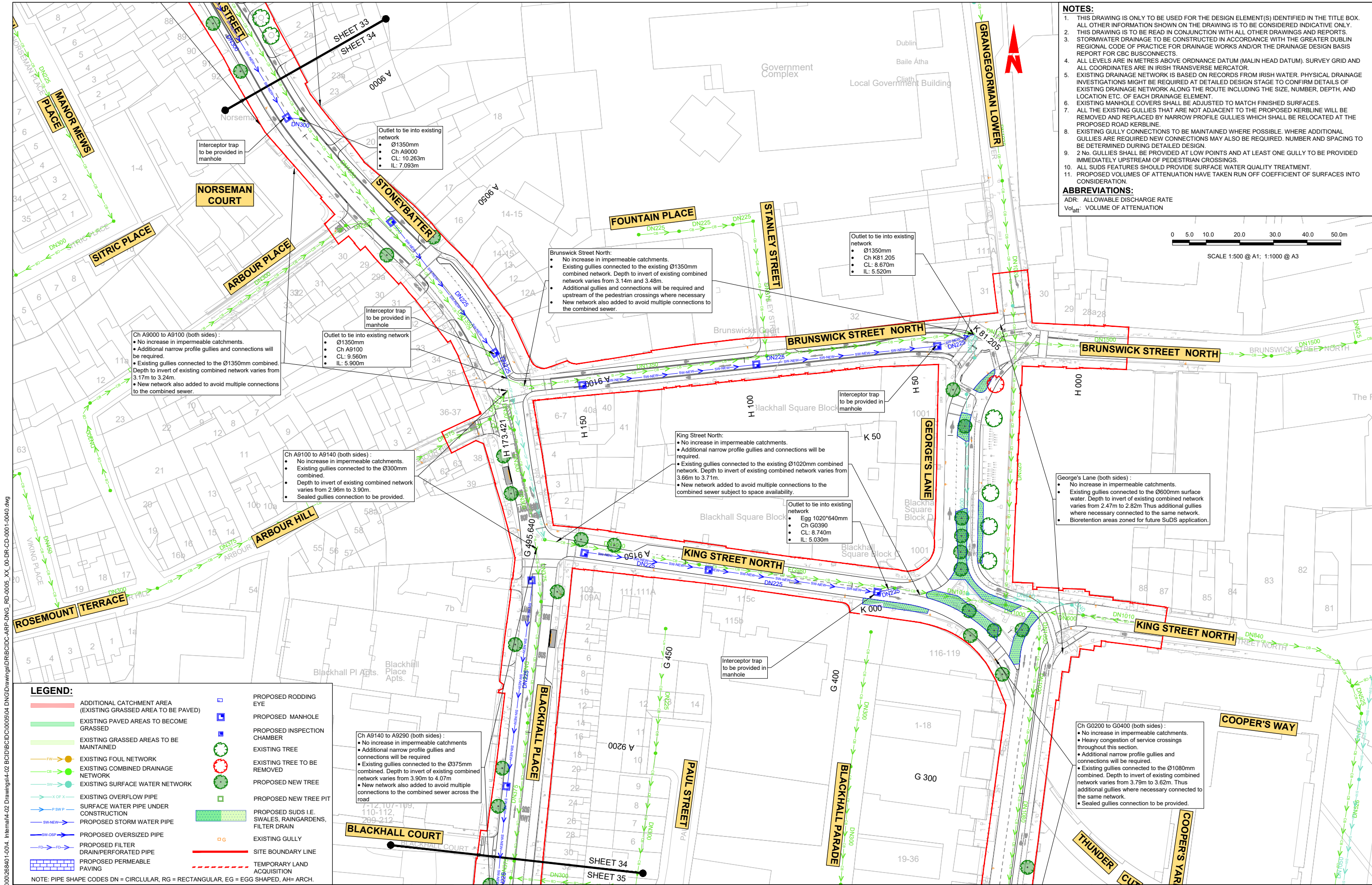
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Drawn: AG Checked: MR Approved: BD

OMS Code: 268401-00

Programme Title	BUSCONNECTS DUBLIN CORE BUS CORRIDORS INFRASTRUCTURE WORKS		
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Drawing File Name	BCIDC-ARP-DNG_RD-0005_XX_00-DR-CD-0033	Sheet Number	33 of 40
Status	A	Rev	M01

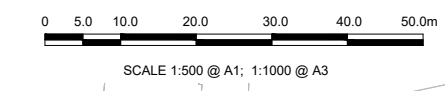
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- ALL LEVELS ARE IN METRES ABOVE ORDNANCE DATUM (MALIN HEAD DATUM), SURVEY GRID AND ALL COORDINATES ARE IN IRISH TRANSVERSE MERCATOR.
- EXISTING DRAINAGE NETWORK IS BASED ON RECORDS FROM IRISH WATER. PHYSICAL DRAINAGE INVESTIGATIONS MIGHT BE REQUIRED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

ABBREVIATIONS:
 ADR: ALLOWABLE DISCHARGE RATE
 Vol_{att}: 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		AH= ARCH.

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

Ch A9140 to A9290 (both sides):

- No increase in impermeable catchments.
- Additional narrow profile gullies and connections will be required.
- Existing gullies connected to the Ø375mm combined. Depth to invert of existing combined network varies from 3.90m to 4.07m.
- New network also added to avoid multiple connections to the combined sewer across the road.

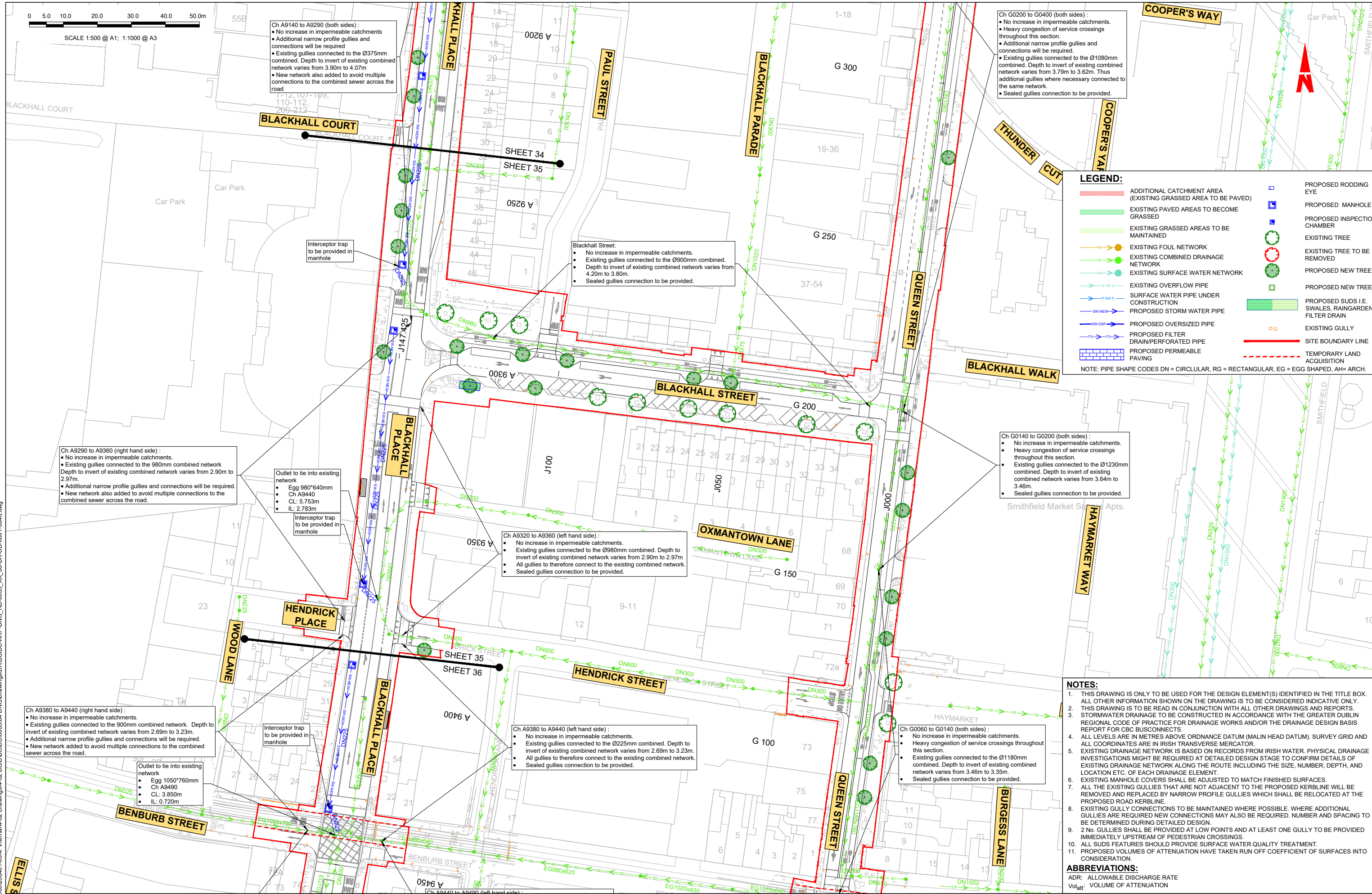
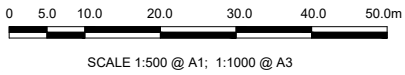
Ch A9100 to A9140 (both sides):

- No increase in impermeable catchments.
- Existing gullies connected to the Ø300mm combined.
- Depth to invert of existing combined network varies from 2.96m to 3.90m.
- Sealed gullies connection to be provided.

Ch A9000 to A9100 (both sides):

- No increase in impermeable catchments.
- Additional narrow profile gullies and connections will be required.
- Existing gullies connected to the Ø1350mm combined. Depth to invert of existing combined network varies from 3.17m to 3.24m.
- New network also added to avoid multiple connections to the combined sewer.

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Rev	Date	Drn	Chk'd	App'd	Description												
M01	04/04/2022	AG	MR	BD	ISSUE FOR PHASE 4: PLANNING												
<p>Date</p> <p>04/04/2022</p> <p>Scale</p> <p>1:500 @ A1 1:1000 @ A3</p>		<p>Drawn</p> <p>AG</p> <p>Checked</p> <p>MR</p> <p>Approved</p> <p>BD</p>	<p>Drawing File Name</p> <p>BCIDC-ARP-DNG RD-0005_XX_00-DR-CD-0034</p>	<p>Sheet Number</p> <p>34 of 40</p>	<p>Status</p> <p>A</p>	<p>Rev</p> <p>M01</p>											
<p>DO NOT SCALE USE FIGURED DIMENSIONS ONLY</p>																	



Ch A9140 to A9290 (both sides):

- No increase in impermeable catchments
- Additional narrow profile gullies and connections will be required
- Existing gullies connected to the Ø375mm combined. Depth to invert of existing combined network varies from 3.90m to 4.07m
- New network also added to avoid multiple connections to the combined sewer across the road

Blackhall Street:

- No increase in impermeable catchments.
- Existing gullies connected to the Ø900mm combined.
- Depth to invert of existing combined network varies from 4.20m to 3.80m.
- Sealed gullies connection to be provided.

Ch G0200 to G0400 (both sides):

- No increase in impermeable catchments.
- Heavy congestion of service crossings throughout this section.
- Additional narrow profile gullies and connections will be required.
- Existing gullies connected to the Ø1080mm combined. Depth to invert of existing combined network varies from 3.79m to 3.62m. Thus additional gullies where necessary connected to the same network.
- Sealed gullies connection to be provided.

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.

Ch A9290 to A9360 (right hand side):

- No increase in impermeable catchments.
- Existing gullies connected to the 980mm combined network. Depth to invert of existing combined network varies from 2.90m to 2.97m.
- Additional narrow profile gullies and connections will be required.
- New network also added to avoid multiple connections to the combined sewer across the road.

Outlet to tie into existing network

- Egg 980x640mm
- Ch A9440
- CL: 5.753m
- IL: 2.783m

Ch G0140 to G0200 (both sides):

- No increase in impermeable catchments.
- Heavy congestion of service crossings throughout this section.
- Existing gullies connected to the Ø1230mm combined. Depth to invert of existing combined network varies from 3.64m to 3.46m.
- Sealed gullies connection to be provided.

Ch A9320 to A9360 (left hand side):

- No increase in impermeable catchments.
- Existing gullies connected to the Ø980mm combined. Depth to invert of existing combined network varies from 2.90m to 2.97m.
- All gullies to therefore connect to the existing combined network.
- Sealed gullies connection to be provided.

Ch A9380 to A9440 (right hand side):

- No increase in impermeable catchments.
- Existing gullies connected to the 900mm combined network. Depth to invert of existing combined network varies from 2.69m to 3.23m.
- Additional narrow profile gullies and connections will be required.
- New network added to avoid multiple connections to the combined sewer across the road.

Outlet to tie into existing network

- Egg 1050x760mm
- Ch A9490
- CL: 3.850m
- IL: 0.720m

Ch A9380 to A9440 (left hand side):

- No increase in impermeable catchments.
- Existing gullies connected to the Ø225mm combined. Depth to invert of existing combined network varies from 2.69m to 3.23m.
- All gullies to therefore connect to the existing combined network.
- Sealed gullies connection to be provided.

Ch G0060 to G0140 (both sides):

- No increase in impermeable catchments.
- Heavy congestion of service crossings throughout this section.
- Existing gullies connected to the Ø1180mm combined. Depth to invert of existing combined network varies from 3.46m to 3.35m.
- Sealed gullies connection to be provided.

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- ABBREVIATIONS:**
- ADR: ALLOWABLE DISCHARGE RATE
Volatt: VOLUME OF ATTENUATION

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Rev	Date	Drn	Chkd	App'd	Description
M01	04/04/2022	AG	MR	BD	ISSUE FOR PHASE 4: PLANNING

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

Engineering Designer: **ARUP**

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

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

Drawn: AG Checked: MR Approved: BD

Programme Title	BUSCONNECTS DUBLIN CORE BUS CORRIDORS INFRASTRUCTURE WORKS		
Drawing Title	BLANCHARDSTOWN TO CITY CENTRE CORE BUS CORRIDOR SCHEME PROPOSED SURFACE WATER DRAINAGE WORKS		
Drawing File Name	BCIDC-ARP-DNG_RD-0005_XX_00-DR-CD-0035	Sheet Number	35 of 40
Status	A	Rev	M01

DO NOT SCALE USE FIGURED DIMENSIONS ONLY

0 5.0 10.0 20.0 30.0 40.0 50.0m

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

Ch A9380 to A9440 (right hand side):

- No increase in impermeable catchments.
- Existing gullies connected to the 900mm combined network. Depth to invert of existing combined network varies from 2.69m to 3.23m.
- Additional narrow profile gullies and connections will be required.
- New network added to avoid multiple connections to the combined sewer across the road.

Interceptor trap to be provided in manhole

Outlet to tie into existing network

- Egg 1050*760mm
- Ch A9490
- CL: 3.850m
- IL: 0.720m

Ch A9380 to A9440 (left hand side):

- No increase in impermeable catchments.
- Existing gullies connected to the Ø225mm combined. Depth to invert of existing combined network varies from 2.69m to 3.23m.
- All gullies to therefore connect to the existing combined network.
- Sealed gullies connection to be provided.

Ch G0060 to G0140 (both sides):

- No increase in impermeable catchments.
- Heavy congestion of service crossings throughout this section.
- Existing gullies connected to the Ø1180mm combined. Depth to invert of existing combined network varies from 3.46m to 3.35m.
- Sealed gullies connection to be provided.

Ch A9440 to A9490 (right hand side):

- No increase in impermeable catchments.
- Existing gullies connect to the existing combined network which is egg shaped (Ø1 = 1020, Ø2 = 630). Depth to invert varies from 2.92m to 3.23m.
- All gullies to therefore connect to the existing combined network.
- Sealed gullies connection to be provided.

Ch A9440 to A9490 (left hand side):

- No increase in impermeable catchments.
- Existing gullies connect to the existing combined network which is a Ø450mm pipe. Depth to invert varies from 1.65m to 3.13m.
- All gullies to therefore connect to the existing combined network.
- Sealed gullies connection to be provided.

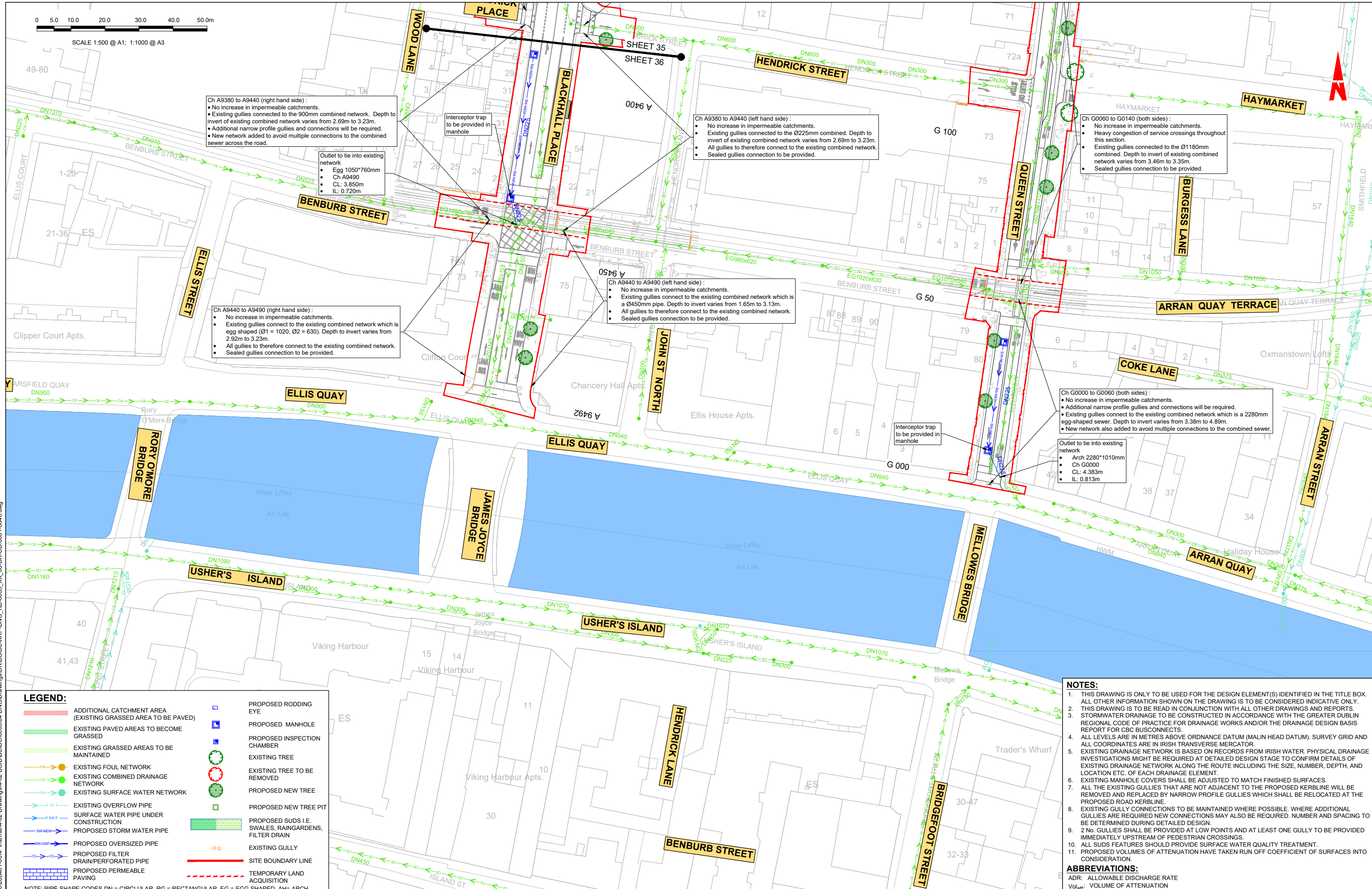
Ch G0000 to G0060 (both sides):

- No increase in impermeable catchments.
- Additional narrow profile gullies and connections will be required.
- Existing gullies connect to the existing combined network which is a 2280mm egg-shaped sewer. Depth to invert varies from 3.38m to 4.89m.
- New network also added to avoid multiple connections to the combined sewer.

Outlet to tie into existing network

- Arch 2280*1010mm
- Ch G0000
- CL: 4.383m
- IL: 0.813m

Interceptor trap to be provided in manhole



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		

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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
Volatt: VOLUME OF ATTENUATION

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0 5.0 10.0 20.0 30.0 40.0 50.0m

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

1-53

CEDARHURST ROAD

Car Park

Bellville

61-70

71-80

81-90

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Phoenix Park

The IW records information does not show any existing combined or surface water pipe here. Additional survey will be required in this area to determine where existing gullies are connected to.

Castleknock Road (both sides):
• No increase in impermeable catchments.
• No existing gullies shown in topographical survey.
• Existing drainage elements to be maintained.

Blackhorse Avenue (both sides):
• No increase in impermeable catchments.
• Existing gullies connected to the 225mm surface water network (cover depth approx 0.875m).
• If additional narrow profile gullies and connections are required, they should connect to the existing surface water network.

Blackhorse Avenue (both sides):
• No increase in impermeable catchments.
• Existing gullies connected to the 225mm surface water network (cover depth approx 0.6m).
• Existing drainage connections to be maintained.

The IW records information does not show any existing combined or surface water pipe here. Additional survey will be required in this area to determine where existing gullies are connected to.

Ashtown Gate Road (both sides):
• No increase in impermeable catchments.
• Existing gullies shown in topographical survey.
• Existing drainage elements to be maintained.

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 = CIRCULAR, RG = RECTANGULAR, EG = EGG SHAPED, AH= ARCH.

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6. EXISTING MANHOLE COVERS SHALL BE ADJUSTED TO MATCH FINISHED SURFACES.
7. ALL THE EXISTING GULLIES THAT ARE NOT ADJACENT TO THE PROPOSED KERBLINE WILL BE REMOVED AND REPLACED BY NARROW PROFILE GULLIES WHICH SHALL BE RELOCATED AT THE PROPOSED ROAD KERBLINE.
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10. ALL SUDS FEATURES 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
- VolAtt: VOLUME OF ATTENUATION

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Rev	Date	Drn	Chk'd	App'd	Description
M01	04/04/2022	AG	MR	BD	ISSUE FOR PHASE 4: PLANNING

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

Engineering Designer: **ARUP**

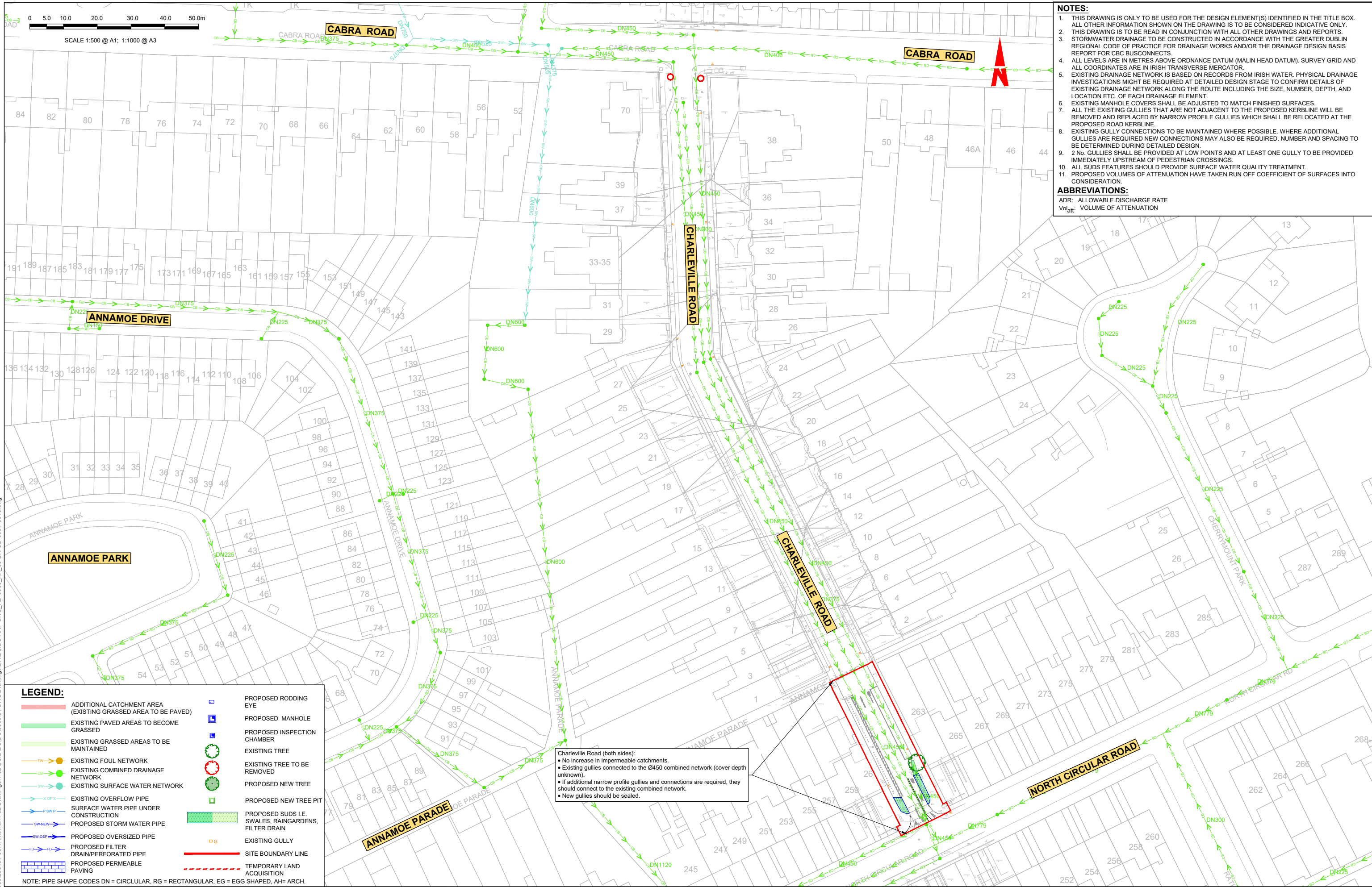
Date: 04/04/2022 Scale: 1:500 @ A1, 1:1000 @ A3

Project Code: BCIDC Originator Code: ARP

Drawn: AG Checked: MR Approved: BD

QMS Code: 268401-00

Programme Title: BUSCONNECTS DUBLIN CORE BUS CORRIDORS INFRASTRUCTURE WORKS	Sheet Number: 37 of 40	Status: A	Rev: M01
Drawing Title: BLANCHARDSTOWN TO CITY CENTRE CORE BUS CORRIDOR SCHEME PROPOSED SURFACE WATER DRAINAGE WORKS	Drawing File Name: BCIDC-ARP-DNG_RD-0005_XX_00-DR-CD-0037		



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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.
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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_{att}: 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.

Charleville Road (both sides):

- No increase in impermeable catchments.
- Existing gullies connected to the Ø450 combined network (cover depth unknown).
- If additional narrow profile gullies and connections are required, they should connect to the existing combined network.
- New gullies should be sealed.

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<p>Project Ireland 2040 Building Ireland's Future</p>					<p>Description ISSUE FOR PHASE 4: PLANNING</p>		<p>Drawn AG Checked MR Approved BD</p>		<p>Drawing Title BLANCHARDSTOWN TO CITY CENTRE CORE BUS CORRIDOR SCHEME PROPOSED SURFACE WATER DRAINAGE WORKS</p>		<p>Drawing File Name BCIDC-ARP-DNG_RD-0005_XX_00-DR-CD-0038 Sheet Number 38 of 40 Status A Rev M01</p>			

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0 5.0 10.0 20.0 30.0 40.0 50.0m

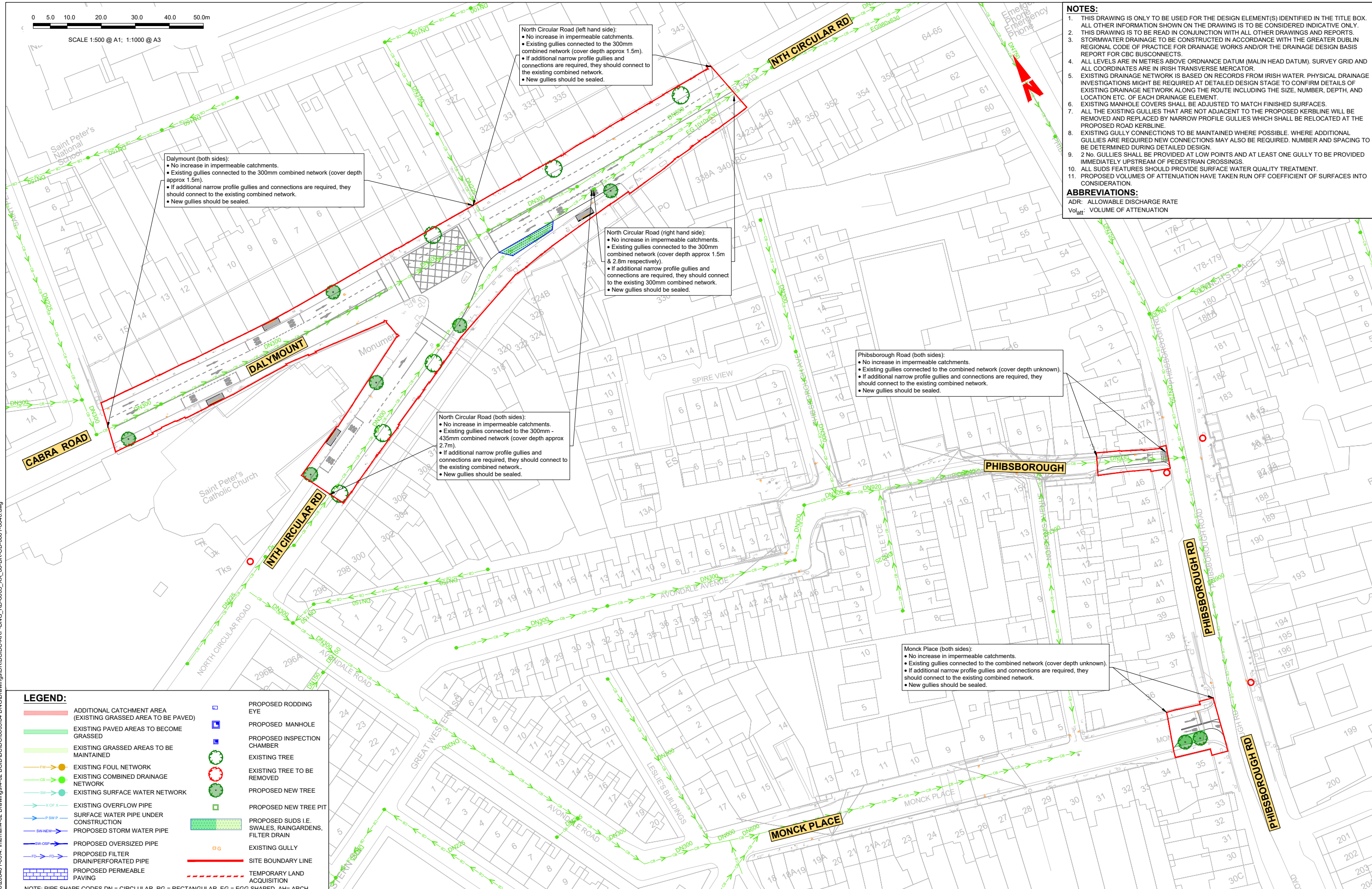
SCALE 1:500 @ A1; 1:1000 @ A3

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ABBREVIATIONS:

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



Dalymount (both sides):

- No increase in impermeable catchments.
- Existing gullies connected to the 300mm combined network (cover depth approx 1.5m).
- If additional narrow profile gullies and connections are required, they should connect to the existing combined network.
- New gullies should be sealed.

North Circular Road (left hand side):

- No increase in impermeable catchments.
- Existing gullies connected to the 300mm combined network (cover depth approx 1.5m).
- If additional narrow profile gullies and connections are required, they should connect to the existing combined network.
- New gullies should be sealed.

North Circular Road (right hand side):

- No increase in impermeable catchments.
- Existing gullies connected to the 300mm combined network (cover depth approx 1.5m & 2.8m respectively).
- If additional narrow profile gullies and connections are required, they should connect to the existing 300mm combined network.
- New gullies should be sealed.

North Circular Road (both sides):

- No increase in impermeable catchments.
- Existing gullies connected to the 300mm - 435mm combined network (cover depth approx 2.7m).
- If additional narrow profile gullies and connections are required, they should connect to the existing combined network.
- New gullies should be sealed.

Phibsborough Road (both sides):

- No increase in impermeable catchments.
- Existing gullies connected to the combined network (cover depth unknown).
- If additional narrow profile gullies and connections are required, they should connect to the existing combined network.
- New gullies should be sealed.

Monck Place (both sides):

- No increase in impermeable catchments.
- Existing gullies connected to the combined network (cover depth unknown).
- If additional narrow profile gullies and connections are required, they should connect to the existing combined network.
- New gullies should be sealed.

LEGEND:

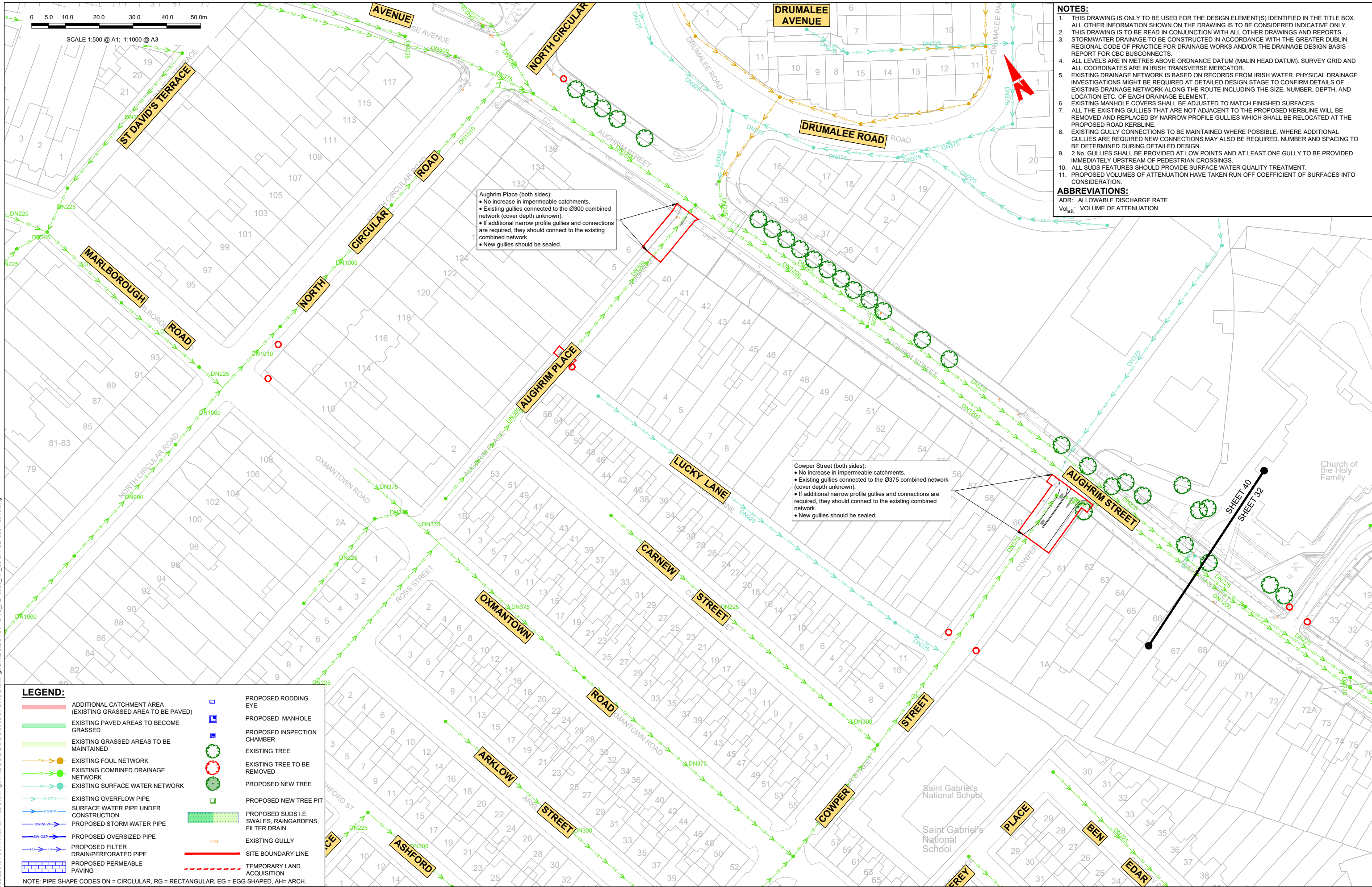
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	EXISTING PAVED AREAS TO BECOME GRASSED		PROPOSED MANHOLE
	EXISTING GRASSED AREAS TO BE MAINTAINED		PROPOSED INSPECTION CHAMBER
	EXISTING FOUL NETWORK		EXISTING TREE
	EXISTING COMBINED DRAINAGE NETWORK		EXISTING TREE TO BE REMOVED
	EXISTING SURFACE 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 CODING DN = CIRCULAR, RG = RECTANGULAR, EG = EGG SHAPED, AH= ARCH.

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<p>Drawing File Name: BCIDC-ARP-DNG_RD-0005_XX_00-DR-CD-0039</p>						<p>Sheet Number: 39 of 40</p>		<p>Status: A</p>		<p>Rev: M01</p>															

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

Aughrim Place (both sides):

- No increase in impermeable catchments.
- Existing gullies connected to the Ø300 combined network (cover depth unknown).
- If additional narrow profile gullies and connections are required, they should connect to the existing combined network.
- New gullies should be sealed.

Cowper Street (both sides):

- No increase in impermeable catchments.
- Existing gullies connected to the Ø375 combined network (cover depth unknown).
- If additional narrow profile gullies and connections are required, they should connect to the existing combined network.
- New gullies should be sealed.

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		

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