

The background features a large orange field. At the top, there are horizontal bands of blue and dark blue. On the right side, there is a vertical green bar with a blue rounded rectangle overlapping it, containing two white circles. In the bottom-left corner, there is a dark blue curved shape with an orange circle containing a white circle.

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





# BUSCONNECTS DUBLIN CORE BUS CORRIDORS INFRASTRUCTURE WORKS

## LUCAN TO CITY CENTRE CORE BUS CORRIDOR SCHEME

DRAWING SERIES NUMBER(S)	DRAWING SERIES DESCRIPTION
BCIDA-ACM-DNG_IX-0006_XX_00-DR-CD-0001	LUCAN TO CITY CENTRE CORE BUS CORRIDOR SCHEME. PROPOSED SURFACE WATER DRAINAGE WORKS. COVER SHEET
BCIDA-ACM-DNG_KP-0006_XX_00-DR-CD-0001	LUCAN TO CITY CENTRE CORE BUS CORRIDOR SCHEME. PROPOSED SURFACE WATER DRAINAGE WORKS. KEY PLAN
BCIDA-ACM-DNG_RD-0006_XX_00-DR-CD-1001 to 1003	LUCAN TO CITY CENTRE CORE BUS CORRIDOR SCHEME. OVERALL CATCHMENT AREAS
BCIDA-ACM-DNG_RD-0006_XX_00-DR-CD-0001 to 0031	LUCAN TO CITY CENTRE CORE BUS CORRIDOR SCHEME. PROPOSED SURFACE WATER DRAINAGE WORKS

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M01	30/09/22	AF	AD	CA	ISSUE FOR PHASE 4: PLANNING

Client

Date: 30/09/22  
Scale: N/A @ A1 @ A3  
Project Code: BCIDA  
Originator Code: ACM

Engineering Designer

Drawn: AFLEMING  
Checked: A.T.DALE  
Approved: C.ACTON

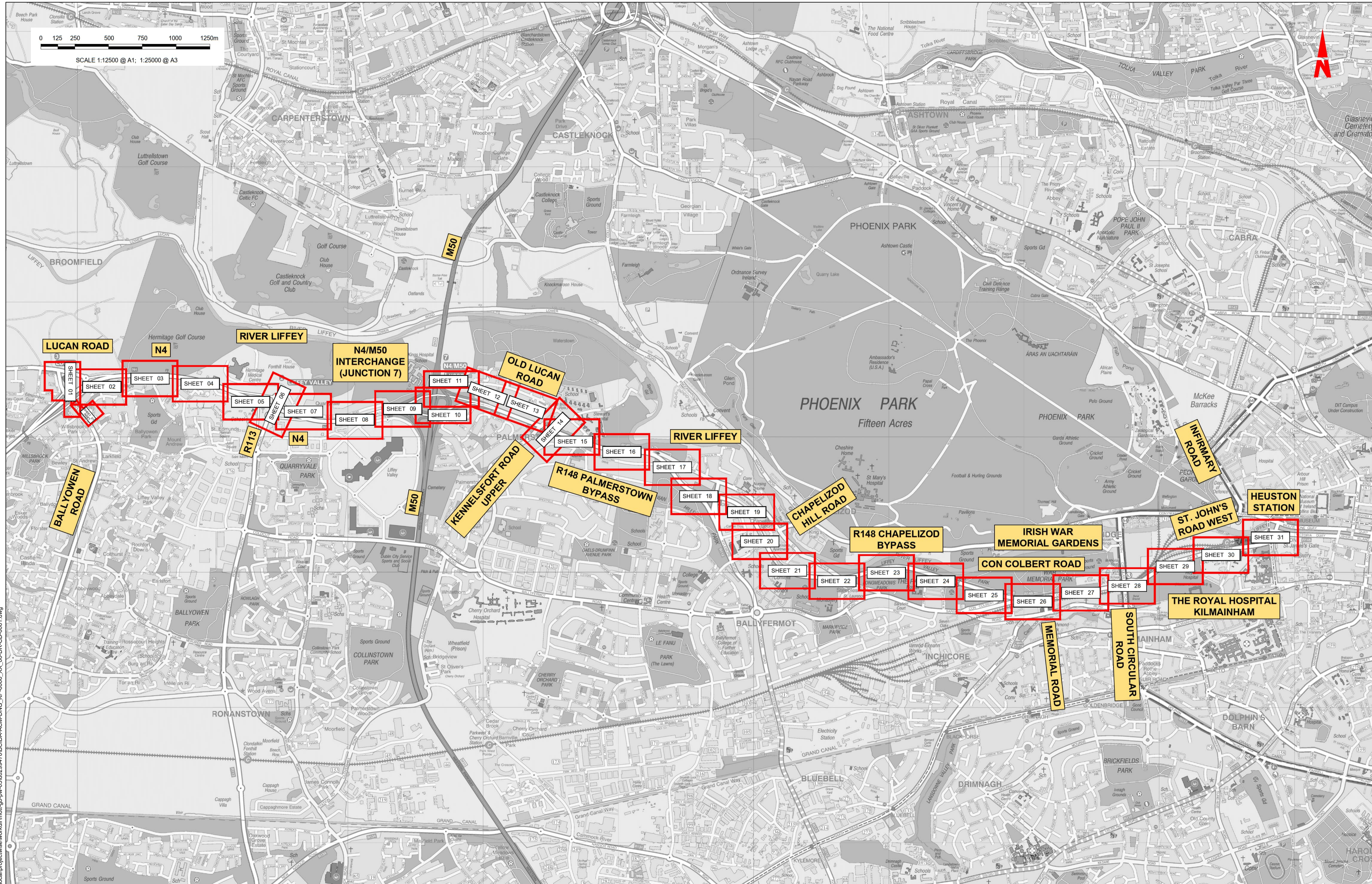
QMS Code

Programme Title <b>BUSCONNECTS DUBLIN CORE BUS CORRIDORS INFRASTRUCTURE WORKS</b>			
Drawing Title LUCAN TO CITY CENTRE CORE BUS CORRIDOR SCHEME PROPOSED SURFACE WATER DRAINAGE WORKS COVER SHEET			
Drawing File Name BCIDA-ACM-DNG_IX-0006_XX_00-DR-CD-0001	Sheet Number 01 of 01	Status A	Rev M01

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0 125 250 500 750 1000 1250m  
 SCALE 1:12500 @ A1; 1:25000 @ A3



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

Engineering Designer: **AECOM** **MOTT MACDONALD**

Date: 30/09/22  
 Scale: 1:12500 @ A1  
 1:25000 @ A3

Drawn: A.FLEMING  
 Checked: A.T.DALE  
 Approved: C.ACTON

Project Code: BCIDA  
 Originator Code: ACM

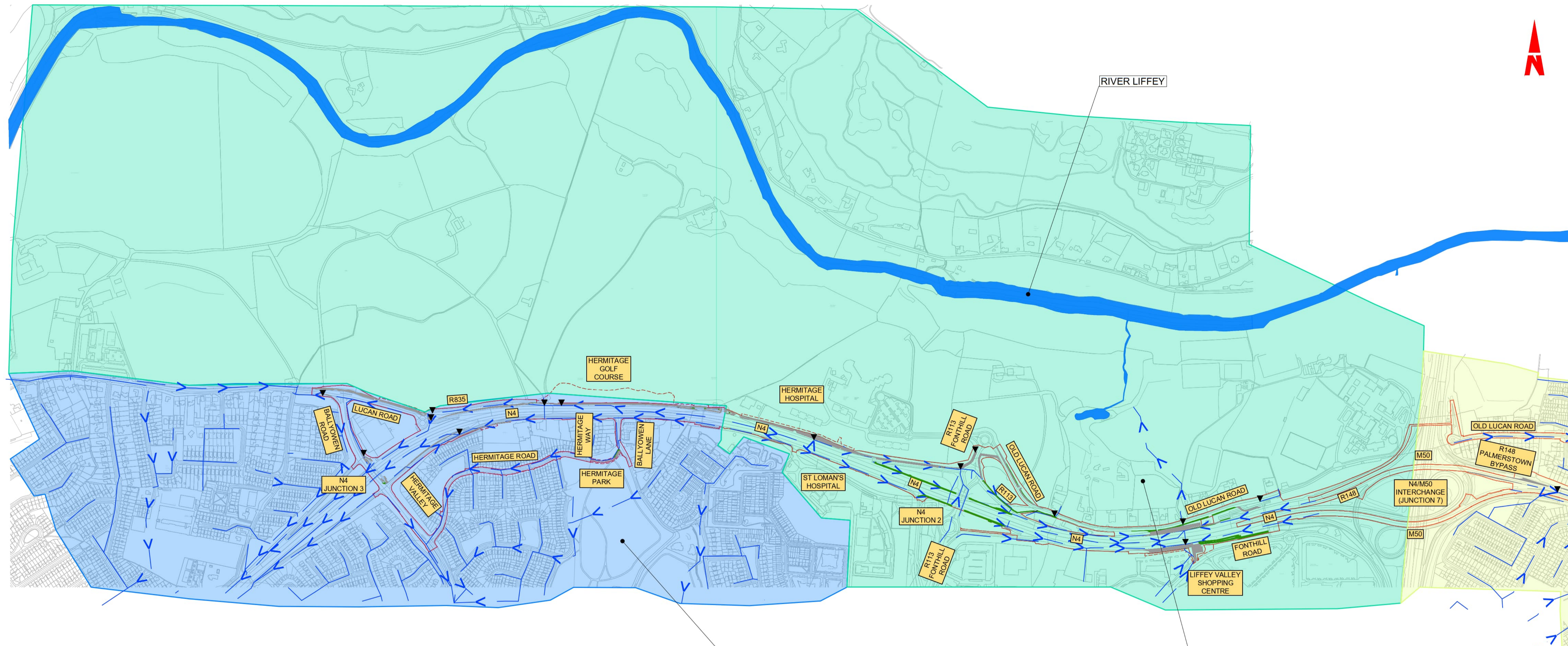
QMS Code:

Programme Title: <b>BUSCONNECTS DUBLIN CORE BUS CORRIDORS INFRASTRUCTURE WORKS</b>			
Drawing Title: <b>LUCAN TO CITY CENTRE CORE BUS CORRIDOR SCHEME PROPOSED SURFACE WATER DRAINAGE WORKS KEY PLAN</b>			
Drawing File Name: BCIDA-ACM-DNG_KP-0006_XX_00-DR-CD-0001	Sheet Number: 1 of 1	Status: A	Rev: M01

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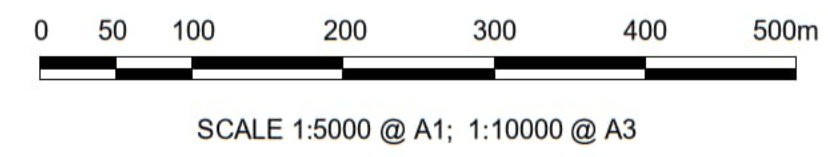
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	CATCHMENT AREA 6.1		CATCHMENT AREA 6.4		CATCHMENT AREA 6.7		CATCHMENT AREA 6.10
	CATCHMENT AREA 6.2		CATCHMENT AREA 6.5		CATCHMENT AREA 6.8		CATCHMENT AREA 6.11
	CATCHMENT AREA 6.3		CATCHMENT AREA 6.6		CATCHMENT AREA 6.9		DISCHARGE POINT

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

CATCHMENT AREA 6.1  
DRAINAGE NETWORK DISCHARGING TO CANAL IN GRIFFEE VALLEY PARK (RIVER LIFFEY)

CATCHMENT AREA 6.2  
DRAINAGE NETWORK DISCHARGING TO RIVER LIFFEY



NOTE: WHERE NO SPECIFIC INFORMATION ABOUT NETWORK IS AVAILABLE, THE DISCHARGE LOCATIONS HAVE BEEN ASSUMED BASED ON TERRAIN SLOPE

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National Transport Authority

Engineering Designer: **AECOM** **MOTT MACDONALD**

Date: 30/09/22  
Scale: 1:5000 @ A1, 1:10000 @ A3

Project Code: BCIDA  
Originator Code: ACM

Drawn: A.FLEMING  
Checked: A.T.DALE  
Approved: C.ACTON

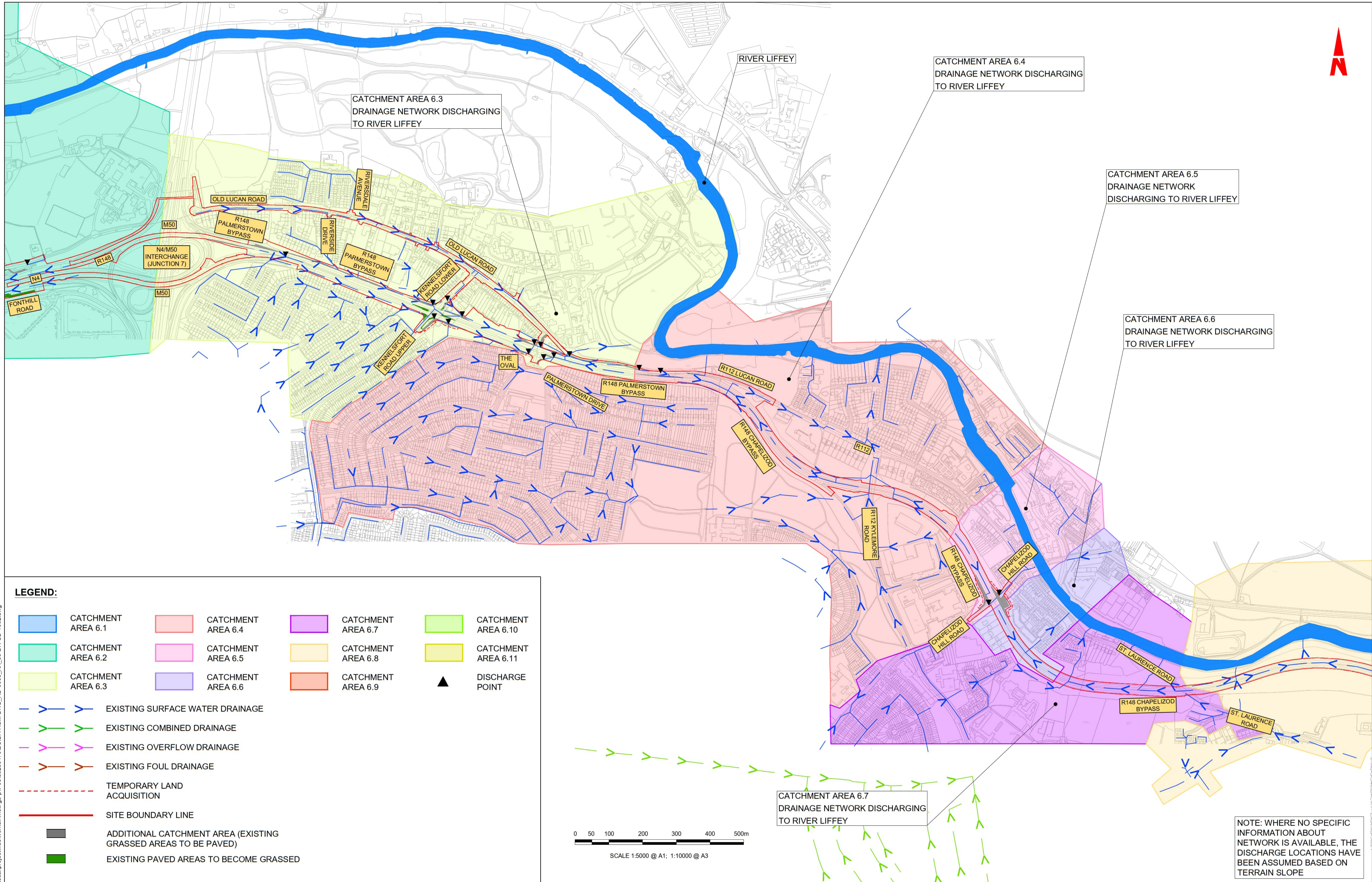
QMS Code:

Programme Title: <b>BUSCONNECTS DUBLIN CORE BUS CORRIDORS INFRASTRUCTURE WORKS</b>			
Drawing Title: <b>LUCAN TO CITY CENTRE CORE BUS CORRIDOR SCHEME OVERALL CATCHMENT AREAS SHEET 1 OF 3</b>			
Drawing File Name: BCIDA-ACM-DNG_RD-0006_XX_00-DR-CD-1001	Sheet Number: 1 of 3	Status: A	Rev: M01

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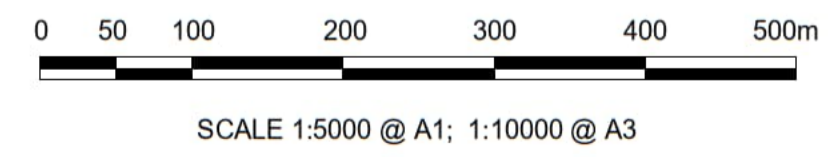
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**LEGEND:**

- CATCHMENT AREA 6.1
- CATCHMENT AREA 6.2
- CATCHMENT AREA 6.3
- CATCHMENT AREA 6.4
- CATCHMENT AREA 6.5
- CATCHMENT AREA 6.6
- CATCHMENT AREA 6.7
- CATCHMENT AREA 6.8
- CATCHMENT AREA 6.9
- CATCHMENT AREA 6.10
- CATCHMENT AREA 6.11
- DISCHARGE POINT
- EXISTING SURFACE WATER DRAINAGE
- EXISTING COMBINED DRAINAGE
- EXISTING OVERFLOW DRAINAGE
- EXISTING FOUL DRAINAGE
- TEMPORARY LAND ACQUISITION
- SITE BOUNDARY LINE
- ADDITIONAL CATCHMENT AREA (EXISTING GRASSED AREAS TO BE PAVED)
- EXISTING PAVED AREAS TO BECOME GRASSED



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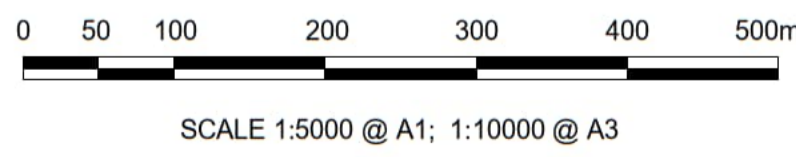
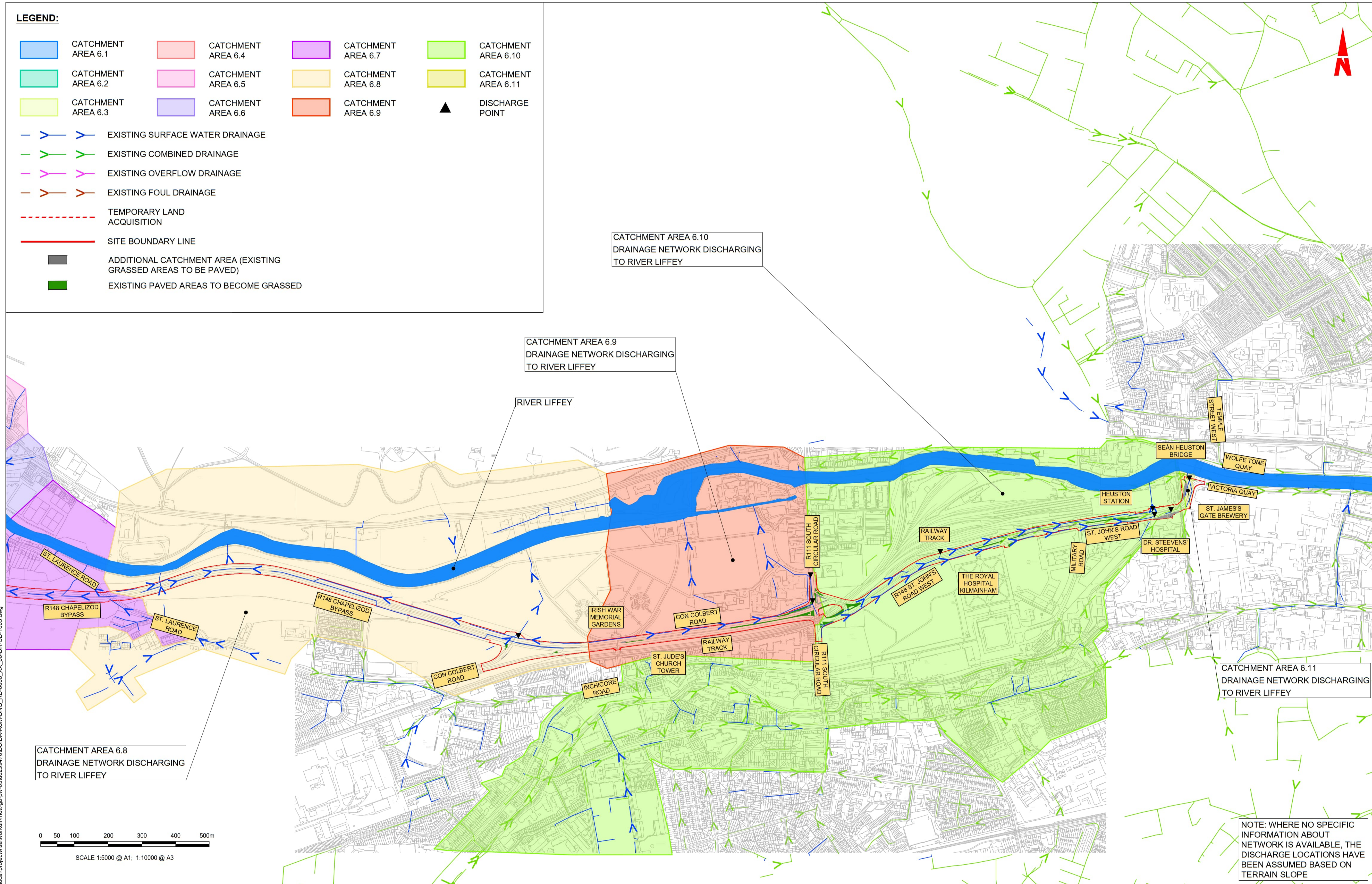
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Drawing Title: <b>LUCAN TO CITY CENTRE CORE BUS CORRIDOR SCHEME OVERALL CATCHMENT AREAS SHEET 2 OF 3</b>			
Drawing File Name: BCIDA-ACM-DNG_RD-0006_XX_00-DR-CD-1002	Sheet Number: 2 of 3	Status: A	Rev: M01

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**LEGEND:**

- CATCHMENT AREA 6.1
- CATCHMENT AREA 6.2
- CATCHMENT AREA 6.3
- CATCHMENT AREA 6.4
- CATCHMENT AREA 6.5
- CATCHMENT AREA 6.6
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- CATCHMENT AREA 6.10
- CATCHMENT AREA 6.11
- DISCHARGE POINT
- EXISTING SURFACE WATER DRAINAGE
- EXISTING COMBINED DRAINAGE
- EXISTING OVERFLOW DRAINAGE
- EXISTING FOUL DRAINAGE
- TEMPORARY LAND ACQUISITION
- SITE BOUNDARY LINE
- ADDITIONAL CATCHMENT AREA (EXISTING GRASSED AREAS TO BE PAVED)
- EXISTING PAVED AREAS TO BECOME GRASSED



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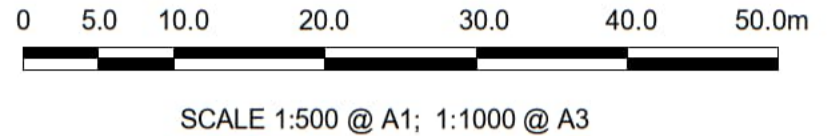
Date: 30/09/22  
 Scale: 1:5000 @ A1, 1:10000 @ A3

Project Code: BCIDA  
 Originator Code: ACM

Drawn: A.FLEMING  
 Checked: A.T.DALE  
 Approved: C.ACTON

Programme Title: <b>BUSCONNECTS DUBLIN CORE BUS CORRIDORS INFRASTRUCTURE WORKS</b>			
Drawing Title: <b>LUCAN TO CITY CENTRE CORE BUS CORRIDOR SCHEME OVERALL CATCHMENT AREAS SHEET 3 OF 3</b>			
Drawing File Name: BCIDA-ACM-DNG_RD-0006_XX_00-DR-CD-1003	Sheet Number: 3 of 3	Status: A	Rev: M01





**Chainage C0-C225 (continued to C270- see sheet 2)**

- Carriageway falls towards the right.
- Additional impermeable area = 1049m<sup>2</sup>
- Additional grassed (permeable) area = 0m<sup>2</sup>
- Net impermeable area to be attenuated = 1049m<sup>2</sup>
- New linear gullies to drain new footway and cycleway.
- New surface water pipe network, including oversized pipes with flow control, to convey drainage to existing surface water drainage network DN375.
- A near surface drainage solution equivalent of DN225 pipe should be considered between chainage C170-C270 to reduce impact on existing tree root protection areas e.g. combined kerb and drainage units, slot drains, linear drains. Pipework and chambers shown indicatively.
- ADR: 10.1 l/s
- Vol<sub>att</sub>: 12.26 m<sup>3</sup>

**Chainage B0-B50**

- Carriageway falls towards the right.
- Additional impermeable area = 63m<sup>2</sup>
- Additional grassed (permeable) area = 11m<sup>2</sup>
- Impermeable area to be attenuated = 52m<sup>2</sup>
- Existing side entry gullies replaced with new side entry gullies (combined kerb and drainage units to match existing) and relocated beside the new kerblines and road surface where necessary. New surface water pipe to convey runoff from bridge to outfall.
- Utilise existing drainage pipework and connections to existing storm drainage network where possible.

**Chainage B50-B225**

- Carriageway falls towards the right.
- Additional impermeable area = 117m<sup>2</sup>
- Additional grassed (permeable) area = 0m<sup>2</sup>
- Impermeable area to be attenuated = 117m<sup>2</sup>
- Existing side entry gullies replaced with new side entry gullies (combined kerb and drainage units to match existing) and relocated beside the new kerblines and road surface where necessary. New pipe with flow control to outfall to existing network DN225.
- Utilise existing drainage pipework and connections to existing storm drainage network where possible.
- ADR: 3.6 l/s
- Vol<sub>att</sub>: 1.3-4.4m

**Chainage B225-C0**

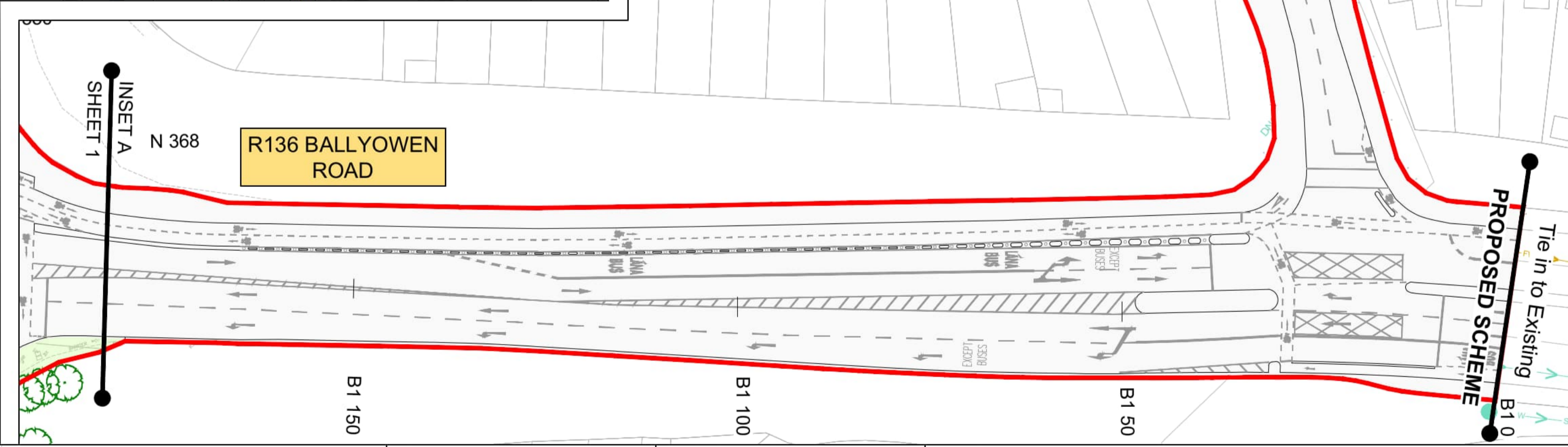
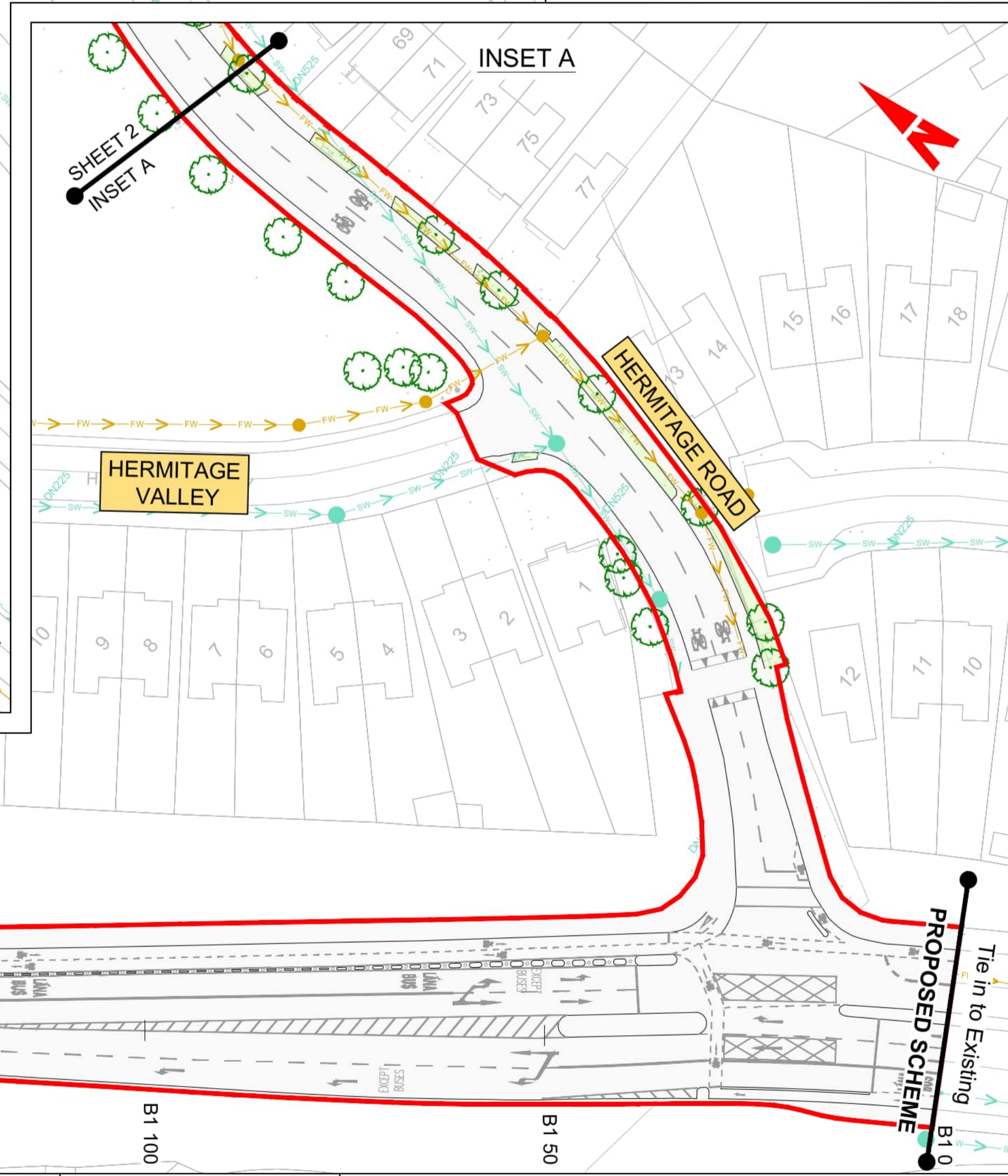
- Negligible increase in impermeable area
- Existing side entry gullies replaced with new side entry gullies (combined kerb and drainage units to match existing) and relocated beside the new kerblines and road surface where necessary. New side entry gullies to be sized appropriately to provide storage requirements. Utilise existing drainage pipework and connections to existing storm drainage network where possible.

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

**LEGEND:**

- ADDITIONAL CATCHMENT AREA (EXISTING GRASSED AREA TO BE PAVED)
- EXISTING PAVED AREAS TO BECOME GRASSED
- EXISTING GRASSED AREAS TO BE MAINTAINED
- EXISTING FOUL NETWORK
- EXISTING COMBINED NETWORK
- EXISTING SURFACE WATER NETWORK
- EXISTING OVERFLOW PIPE
- PLANNED SURFACE WATER PIPE
- PROPOSED STORM WATER PIPE
- PROPOSED OVERSIZED PIPE
- PROPOSED FILTER DRAIN/PERFORATED PIPE
- 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
- PROPOSED PERMEABLE PAVING

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



**Outlet to existing drainage network (River Liffey)**

- DS Pipe: DN375mm
- Ch C25
- CL: 47.30m
- IL: 46.12m

**Outlet to existing drainage network (River Liffey)**

- DS Pipe: DN225mm
- Ch B75
- CL: 54.29m
- IL: 52.56m

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Rev	Date	Dr	Chk'd	App'd	Description
M01	30/09/22	JM	AD	CA	ISSUE FOR PHASE 4: PLANNING

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

**Engineering Designer:** AECOM, MOTT MACDONALD

**Date:** 30/09/22

**Scale:** 1:500 @ A1, 1:1000 @ A3

**Drawn:** JMCLHINNEY

**Checked:** A.T.DALE

**Approved:** C.ACTON

**Project Code:** BCIDA

**Originator Code:** ACM

**QMS Code:**

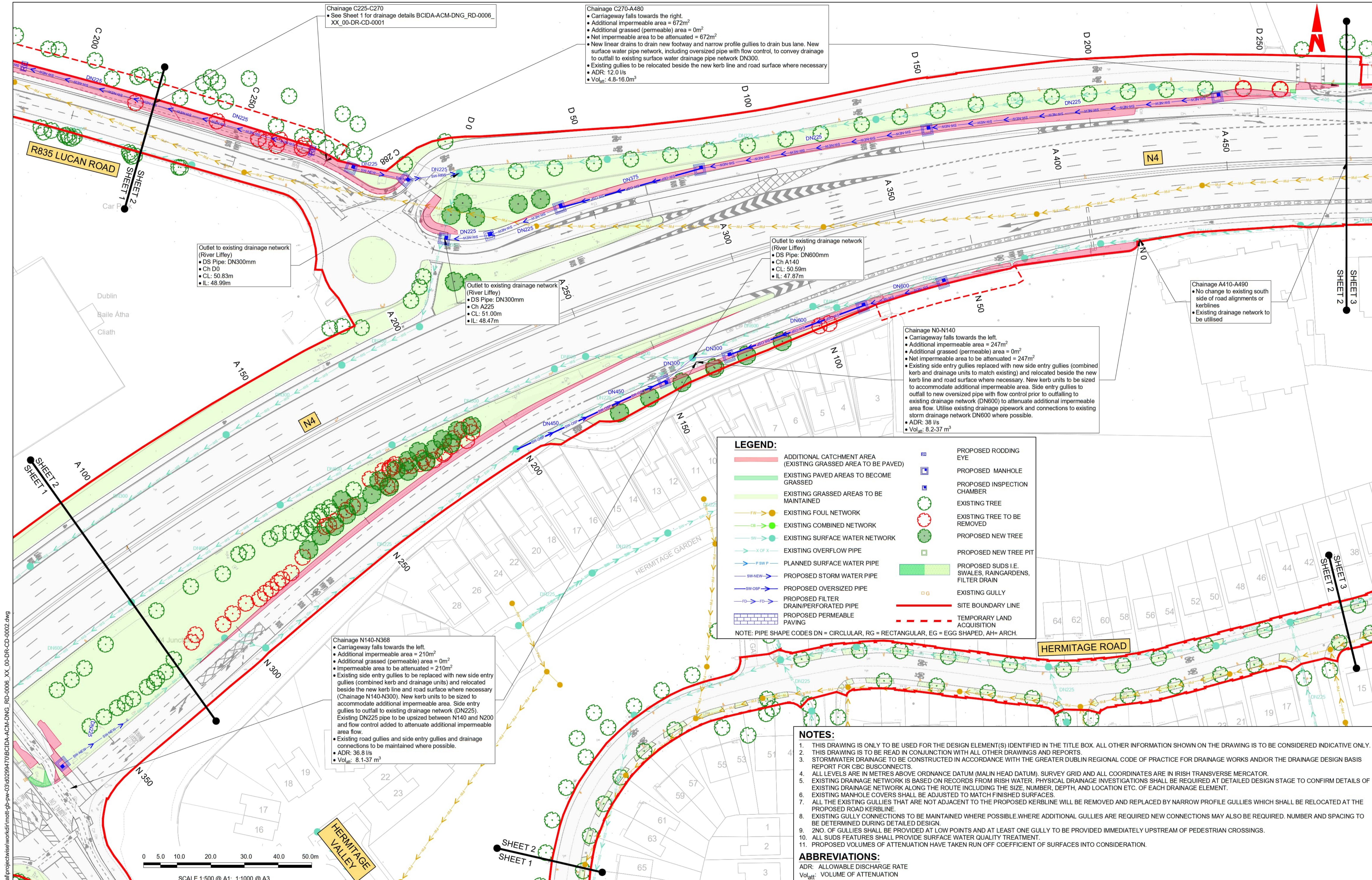
**Programme Title:** BUSCONNECTS DUBLIN CORE BUS CORRIDORS INFRASTRUCTURE WORKS

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

Drawing File Name	BCIDA-ACM-DNG_RD-0006_XX_00-DR-CD-0001	Sheet Number	01 of 31	Status	A	Rev	M01
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DO NOT SCALE USE FIGURED DIMENSIONS ONLY





Chainage C225-C270  
 • See Sheet 1 for drainage details BCIDA-ACM-DNG\_RD-0006\_XX\_00-DR-CD-0001

Chainage C270-A480  
 • Carriageway falls towards the right.  
 • Additional impermeable area = 672m<sup>2</sup>  
 • Additional grassed (permeable) area = 0m<sup>2</sup>  
 • Net impermeable area to be attenuated = 672m<sup>2</sup>  
 • New linear drains to drain new footway and narrow profile gullies to drain bus lane. New surface water pipe network, including oversized pipe with flow control, to convey drainage to outfall to existing surface water drainage pipe network DN300.  
 • Existing gullies to be relocated beside the new kerb line and road surface where necessary.  
 • ADR: 12.0 l/s  
 • Vol<sub>att</sub>: 4.8-16.0m<sup>3</sup>

Outlet to existing drainage network (River Liffey)  
 • DS Pipe: DN300mm  
 • Ch D0  
 • CL: 50.83m  
 • IL: 48.99m

Outlet to existing drainage network (River Liffey)  
 • DS Pipe: DN300mm  
 • Ch A225  
 • CL: 51.00m  
 • IL: 48.47m

Outlet to existing drainage network (River Liffey)  
 • DS Pipe: DN600mm  
 • Ch A140  
 • CL: 50.59m  
 • IL: 47.87m

Chainage A410-A490  
 • No change to existing south side of road alignments or kerblines  
 • Existing drainage network to be utilised

Chainage N0-N140  
 • Carriageway falls towards the left.  
 • Additional impermeable area = 247m<sup>2</sup>  
 • Additional grassed (permeable) area = 0m<sup>2</sup>  
 • Net impermeable area to be attenuated = 247m<sup>2</sup>  
 • Existing side entry gullies replaced with new side entry gullies (combined kerb and drainage units to match existing) and relocated beside the new kerb line and road surface where necessary. New kerb units to be sized to accommodate additional impermeable area. Side entry gullies to outfall to new oversized pipe with flow control prior to outfalling to existing drainage network (DN600) to attenuate additional impermeable area flow. Utilise existing drainage pipework and connections to existing storm drainage network DN600 where possible.  
 • ADR: 38 l/s  
 • Vol<sub>att</sub>: 8.2-37 m<sup>3</sup>

**LEGEND:**

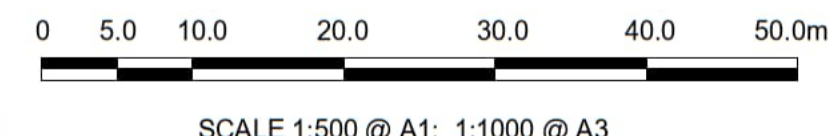
	ADDITIONAL CATCHMENT AREA (EXISTING GRASSED AREA TO BE PAVED)		PROPOSED RODDING EYE
	EXISTING PAVED AREAS TO BECOME GRASSED		PROPOSED MANHOLE
	EXISTING GRASSED AREAS TO BE MAINTAINED		PROPOSED INSPECTION CHAMBER
	EXISTING FOUL NETWORK		EXISTING TREE
	EXISTING COMBINED NETWORK		EXISTING TREE TO BE REMOVED
	EXISTING SURFACE WATER NETWORK		PROPOSED NEW TREE
	EXISTING OVERFLOW PIPE		PROPOSED NEW TREE PIT
	PLANNED SURFACE WATER PIPE		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.

Chainage N140-N368  
 • Carriageway falls towards the left.  
 • Additional impermeable area = 210m<sup>2</sup>  
 • Additional grassed (permeable) area = 0m<sup>2</sup>  
 • Impermeable area to be attenuated = 210m<sup>2</sup>  
 • Existing side entry gullies to be replaced with new side entry gullies (combined kerb and drainage units) and relocated beside the new kerb line and road surface where necessary (Chainage N140-N300). New kerb units to be sized to accommodate additional impermeable area. Side entry gullies to outfall to existing drainage network (DN225). Existing DN225 pipe to be upsized between N140 and N200 and flow control added to attenuate additional impermeable area flow.  
 • Existing road gullies and side entry gullies and drainage connections to be maintained where possible.  
 • ADR: 36.8 l/s  
 • Vol<sub>att</sub>: 8.1-37 m<sup>3</sup>

- NOTES:**
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  - THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER DRAWINGS AND REPORTS.
  - STORMWATER DRAINAGE TO BE CONSTRUCTED IN ACCORDANCE WITH THE GREATER DUBLIN REGIONAL CODE OF PRACTICE FOR DRAINAGE WORKS AND/OR THE DRAINAGE DESIGN BASIS REPORT FOR CBC BUSCONNECTS.
  - ALL LEVELS ARE IN METRES ABOVE ORDNANCE DATUM (MALIN HEAD DATUM). SURVEY GRID AND ALL COORDINATES ARE IN IRISH TRANSVERSE MERCATOR.
  - EXISTING DRAINAGE NETWORKS BASED ON RECORDS FROM IRISH WATER. PHYSICAL DRAINAGE INVESTIGATIONS SHALL BE REQUIRED AT DETAILED DESIGN STAGE TO CONFIRM DETAILS OF EXISTING DRAINAGE NETWORK ALONG THE ROUTE INCLUDING THE SIZE, NUMBER, DEPTH, AND LOCATION ETC. OF EACH DRAINAGE ELEMENT.
  - 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.
  - 2NO. OF GULLIES SHALL BE PROVIDED AT LOW POINTS AND AT LEAST ONE GULLY TO BE PROVIDED IMMEDIATELY UPSTREAM OF PEDESTRIAN CROSSINGS.
  - ALL SUDS FEATURES SHALL PROVIDE SURFACE WATER QUALITY TREATMENT.
  - PROPOSED VOLUMES OF ATTENUATION HAVE TAKEN RUN OFF COEFFICIENT OF SURFACES INTO CONSIDERATION.

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



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Rev	Date	Dr	Chk'd	App'd	Description
M01	30/09/22	JM	AD	CA	ISSUE FOR PHASE 4: PLANNING

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

Engineering Designer: **AECOM** MOTT MACDONALD

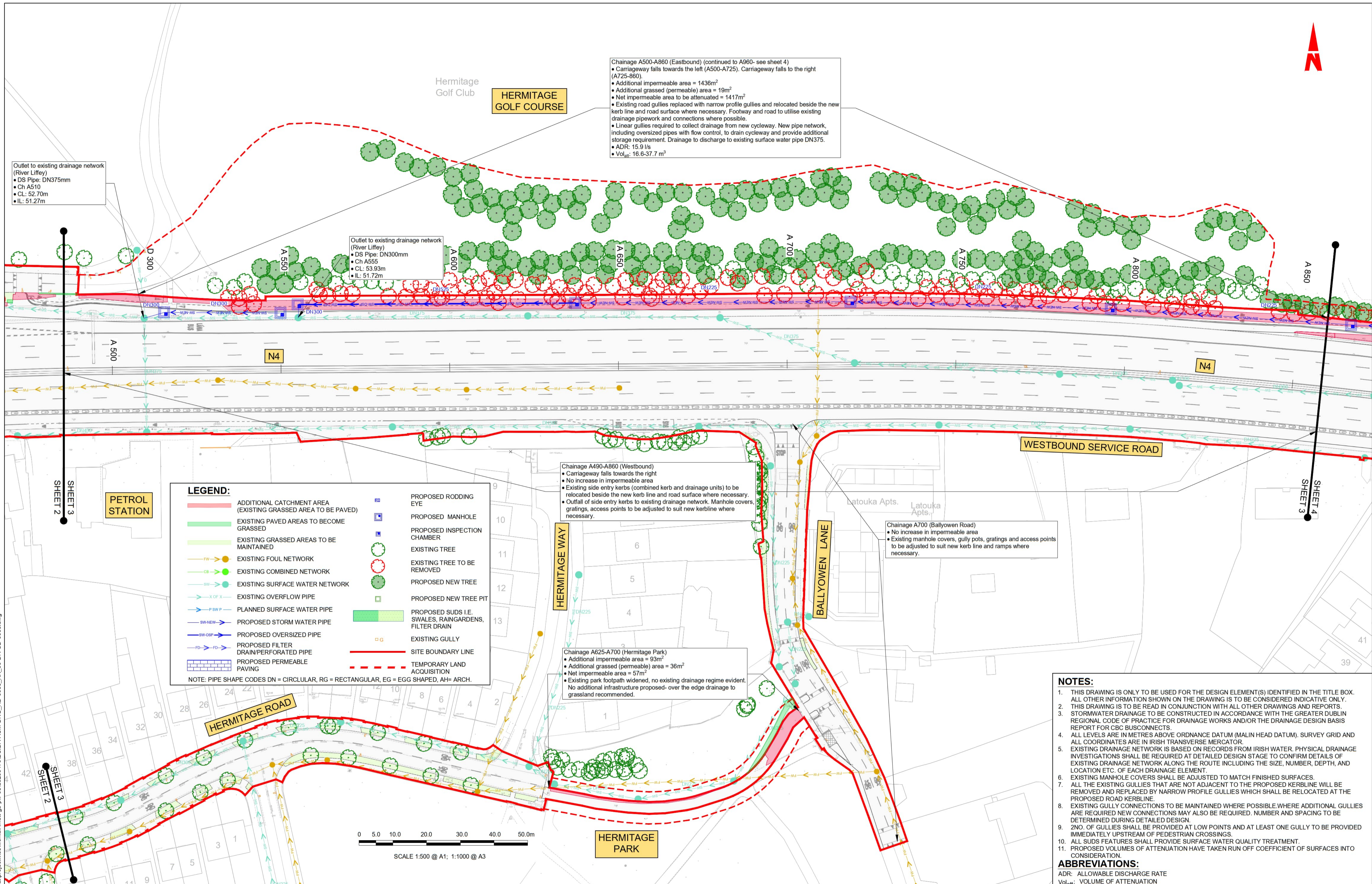
Date: 30/09/22  
 Scale: 1:500 @ A1, 1:1000 @ A3

Project Code: BCIDA  
 Originator Code: ACM

Drawn: J.MCILHINNEY  
 Checked: A.T.DALE  
 Approved: C.ACTON

Programme Title: <b>BUSCONNECTS DUBLIN CORE BUS CORRIDORS INFRASTRUCTURE WORKS</b>			
Drawing Title: <b>LUCAN TO CITY CENTRE CORE BUS CORRIDOR SCHEME PROPOSED SURFACE WATER DRAINAGE WORKS</b>			
Drawing File Name: BCIDA-ACM-DNG_RD-0006_XX_00-DR-CD-0002	Sheet Number: 02 of 31	Status: A	Rev: M01





Chainage A500-A860 (Eastbound) (continued to A960- see sheet 4)

- Carriageway falls towards the left (A500-A725). Carriageway falls to the right (A725-860)
- Additional impermeable area = 1436m<sup>2</sup>
- Additional grassed (permeable) area = 19m<sup>2</sup>
- Net impermeable area to be attenuated = 1417m<sup>2</sup>
- Existing road gullies replaced with narrow profile gullies and relocated beside the new kerb line and road surface where necessary. Footway and road to utilise existing drainage pipework and connections where possible.
- Linear gullies required to collect drainage from new cycleway. New pipe network, including oversized pipes with flow control, to drain cycleway and provide additional storage requirement. Drainage to discharge to existing surface water pipe DN375.
- ADR: 15.9 l/s
- Vol<sub>att</sub>: 16.6-37.7 m<sup>3</sup>

Outlet to existing drainage network (River Liffey)

- DS Pipe: DN375mm
- Ch A510
- CL: 52.70m
- IL: 51.27m

Outlet to existing drainage network (River Liffey)

- DS Pipe: DN300mm
- Ch A555
- CL: 53.93m
- IL: 51.72m

Chainage A490-A860 (Westbound)

- Carriageway falls towards the right
- No increase in impermeable area
- Existing side entry kerbs (combined kerb and drainage units) to be relocated beside the new kerb line and road surface where necessary.
- Outfall of side entry kerbs to existing drainage network. Manhole covers, gratings, access points to be adjusted to suit new kerblines where necessary.

Chainage A700 (Ballyowen Road)

- No increase in impermeable area
- Existing manhole covers, gully pots, gratings and access points to be adjusted to suit new kerb line and ramps where necessary.

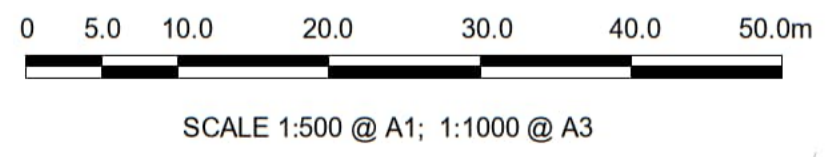
Chainage A625-A700 (Hermitage Park)

- Additional impermeable area = 93m<sup>2</sup>
- Additional grassed (permeable) area = 36m<sup>2</sup>
- Net impermeable area = 57m<sup>2</sup>
- Existing park footpath widened, no existing drainage regime evident.
- No additional infrastructure proposed- over the edge drainage to grassland recommended.

**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 NETWORK		EXISTING TREE TO BE REMOVED
	EXISTING SURFACE WATER NETWORK		PROPOSED NEW TREE
	EXISTING OVERFLOW PIPE		PROPOSED NEW TREE PIT
	PLANNED SURFACE WATER PIPE		PROPOSED SUDS I.E. SWALES, RAINGARDENS, FILTER DRAIN
	PROPOSED SURFACE 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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6. EXISTING MANHOLE COVERS SHALL BE ADJUSTED TO MATCH FINISHED SURFACES.
7. ALL THE EXISTING GULLIES THAT ARE NOT ADJACENT TO THE PROPOSED KERBLINE WILL BE REMOVED AND REPLACED BY NARROW PROFILE GULLIES WHICH SHALL BE RELOCATED AT THE PROPOSED ROAD KERBLINE.
8. EXISTING GULLY CONNECTIONS TO BE MAINTAINED WHERE POSSIBLE WHERE ADDITIONAL GULLIES ARE REQUIRED NEW CONNECTIONS MAY ALSO BE REQUIRED. NUMBER AND SPACING TO BE DETERMINED DURING DETAILED DESIGN.
9. 2NO. OF GULLIES SHALL BE PROVIDED AT LOW POINTS AND AT LEAST ONE GULLY TO BE PROVIDED IMMEDIATELY UPSTREAM OF PEDESTRIAN CROSSINGS.
10. ALL SUDS FEATURES SHALL PROVIDE SURFACE WATER QUALITY TREATMENT.
11. PROPOSED VOLUMES OF ATTENUATION HAVE TAKEN RUN OFF COEFFICIENT OF SURFACES INTO CONSIDERATION.

**ABBREVIATIONS:**

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

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Rev	Date	Dm	Chk'd	App'd	Description
M01	30/09/22	JM	AD	CA	ISSUE FOR PHASE 4: PLANNING

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

Engineering Designer: **AECOM** MOTT MACDONALD

Date: 30/09/22  
Scale: 1:500 @ A1, 1:1000 @ A3

Drawn: J.MCILHINNEY  
Checked: A.T.DALE  
Approved: C.ACTON

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

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

Drawing File Name: BCIDA-ACM-DNG\_RD-0006\_XX\_00-DR-CD-0003

Sheet Number: 03 of 31  
Status: A  
Rev: M01

DO NOT SCALE USE FIGURED DIMENSIONS ONLY



Chainage A860-A960  
 • See Sheet 3 for drainage details BCIDA-ACM-DNG\_RD-0006\_XX\_00-DR-CD-0003  
 • Carriageway falls towards the right.

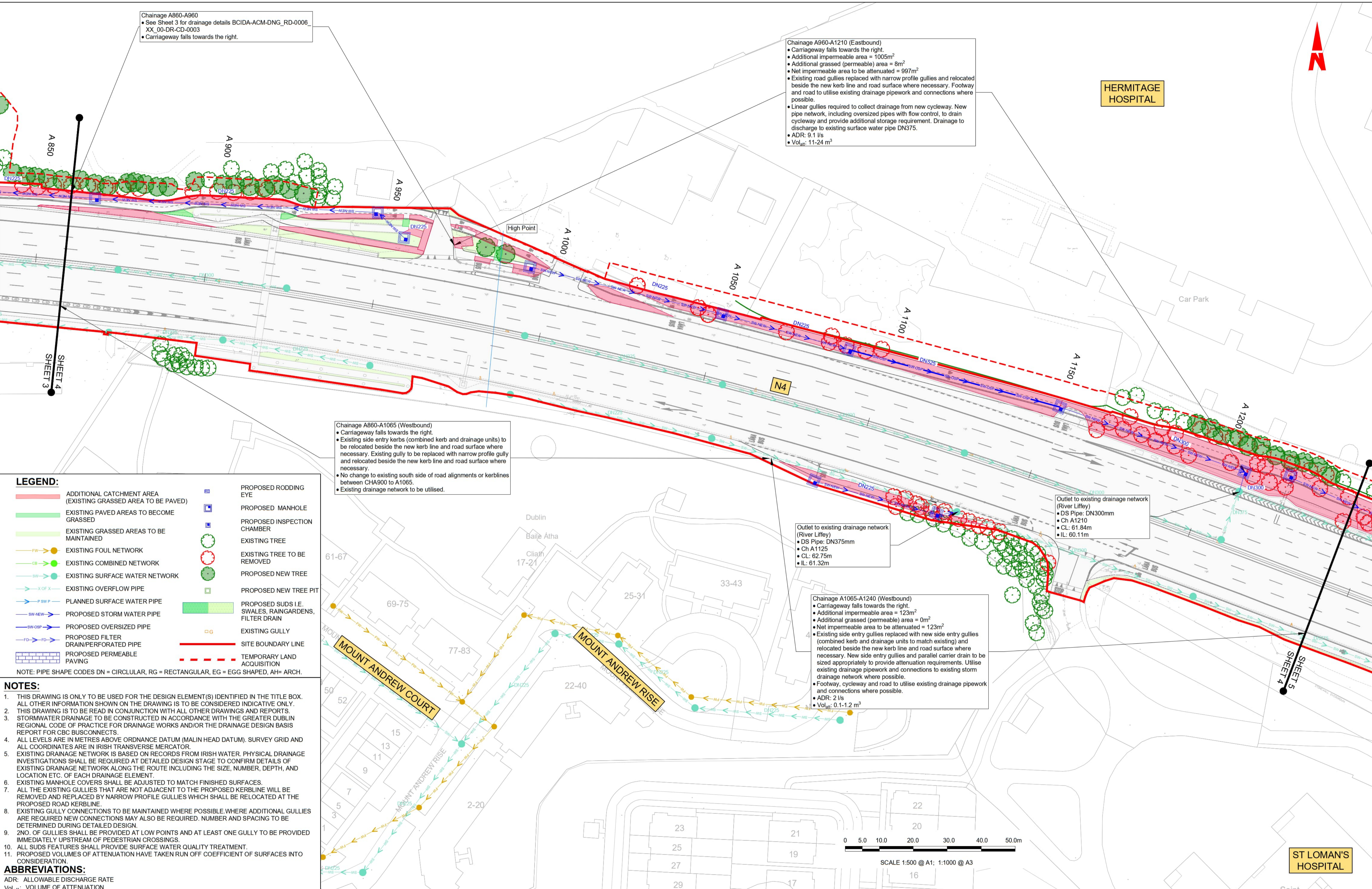
Chainage A960-A1210 (Eastbound)  
 • Carriageway falls towards the right.  
 • Additional impermeable area = 1005m<sup>2</sup>  
 • Additional grassed (permeable) area = 8m<sup>2</sup>  
 • Net impermeable area to be attenuated = 997m<sup>2</sup>  
 • Existing road gullies replaced with narrow profile gullies and relocated beside the new kerb line and road surface where necessary. Footway and road to utilise existing drainage pipework and connections where possible.  
 • Linear gullies required to collect drainage from new cycleway. New pipe network, including oversized pipes with flow control, to drain cycleway and provide additional storage requirement. Drainage to discharge to existing surface water pipe DN375.  
 • ADR: 9.1 l/s  
 • Vol<sub>att</sub>: 11-24 m<sup>3</sup>

Chainage A860-A1065 (Westbound)  
 • Carriageway falls towards the right.  
 • Existing side entry kerbs (combined kerb and drainage units) to be relocated beside the new kerb line and road surface where necessary. Existing gully to be replaced with narrow profile gully and relocated beside the new kerb line and road surface where necessary.  
 • No change to existing south side of road alignments or kerblines between CHA900 to A1065.  
 • Existing drainage network to be utilised.

Outlet to existing drainage network (River Liffey)  
 • DS Pipe: DN375mm  
 • Ch A1125  
 • CL: 62.75m  
 • IL: 61.32m

Outlet to existing drainage network (River Liffey)  
 • DS Pipe: DN300mm  
 • Ch A1210  
 • CL: 61.84m  
 • IL: 60.11m

Chainage A1065-A1240 (Westbound)  
 • Carriageway falls towards the right.  
 • Additional impermeable area = 123m<sup>2</sup>  
 • Additional grassed (permeable) area = 0m<sup>2</sup>  
 • Net impermeable area to be attenuated = 123m<sup>2</sup>  
 • Existing side entry gullies replaced with new side entry gullies (combined kerb and drainage units to match existing) and relocated beside the new kerb line and road surface where necessary. New side entry gullies and parallel carrier drain to be sized appropriately to provide attenuation requirements. Utilise existing drainage pipework and connections to existing storm drainage network where possible.  
 • Footway, cycleway and road to utilise existing drainage pipework and connections where possible.  
 • ADR: 2 l/s  
 • Vol<sub>att</sub>: 0.1-1.2 m<sup>3</sup>



**LEGEND:**

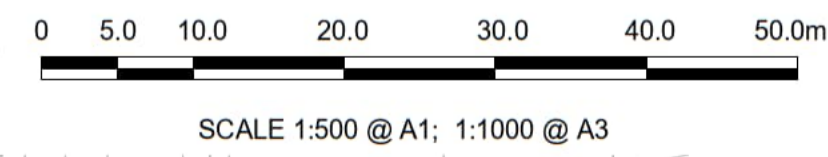
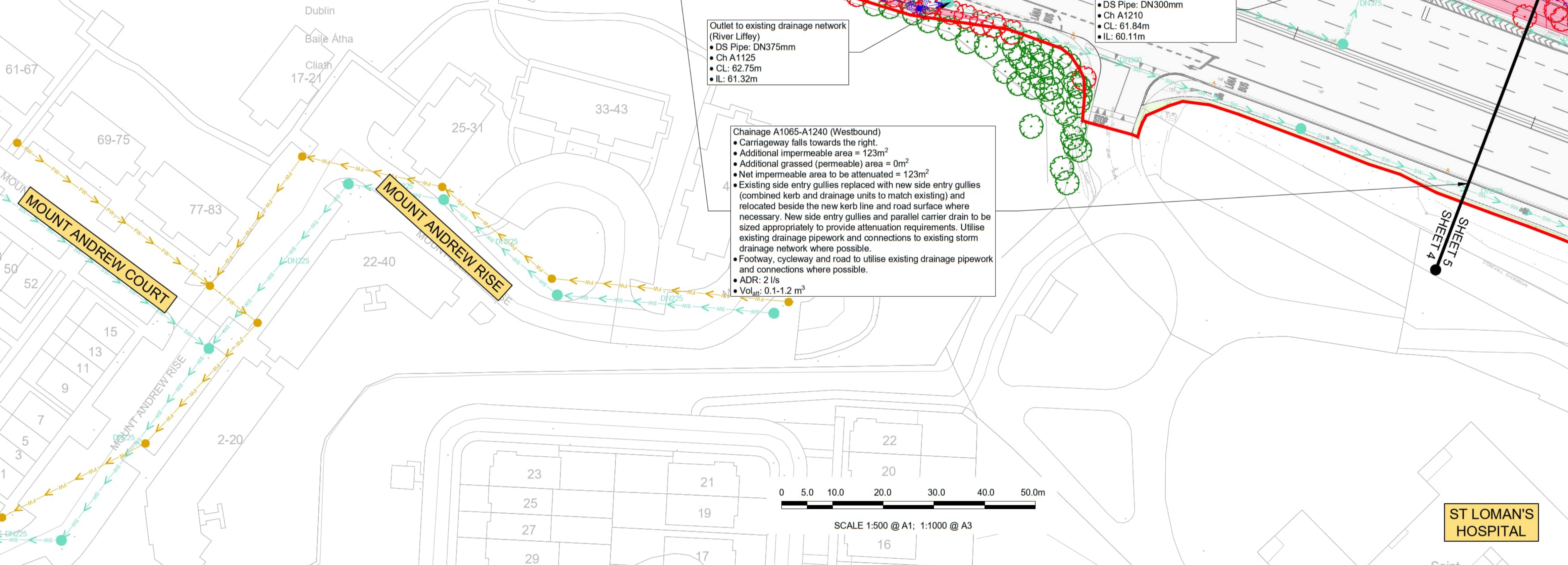
	ADDITIONAL CATCHMENT AREA (EXISTING GRASSED AREA TO BE PAVED)		PROPOSED RODDING EYE
	EXISTING PAVED AREAS TO BECOME GRASSED		PROPOSED MANHOLE
	EXISTING GRASSED AREAS TO BE MAINTAINED		PROPOSED INSPECTION CHAMBER
	EXISTING FOUL NETWORK		EXISTING TREE
	EXISTING COMBINED NETWORK		EXISTING TREE TO BE REMOVED
	EXISTING SURFACE WATER NETWORK		PROPOSED NEW TREE
	EXISTING OVERFLOW PIPE		PROPOSED NEW TREE PIT
	PLANNED SURFACE WATER PIPE		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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**ABBREVIATIONS:**  
 ADR: ALLOWABLE ATTENUATION RATE  
 Vol<sub>att</sub>: VOLUME OF DISCHARGE

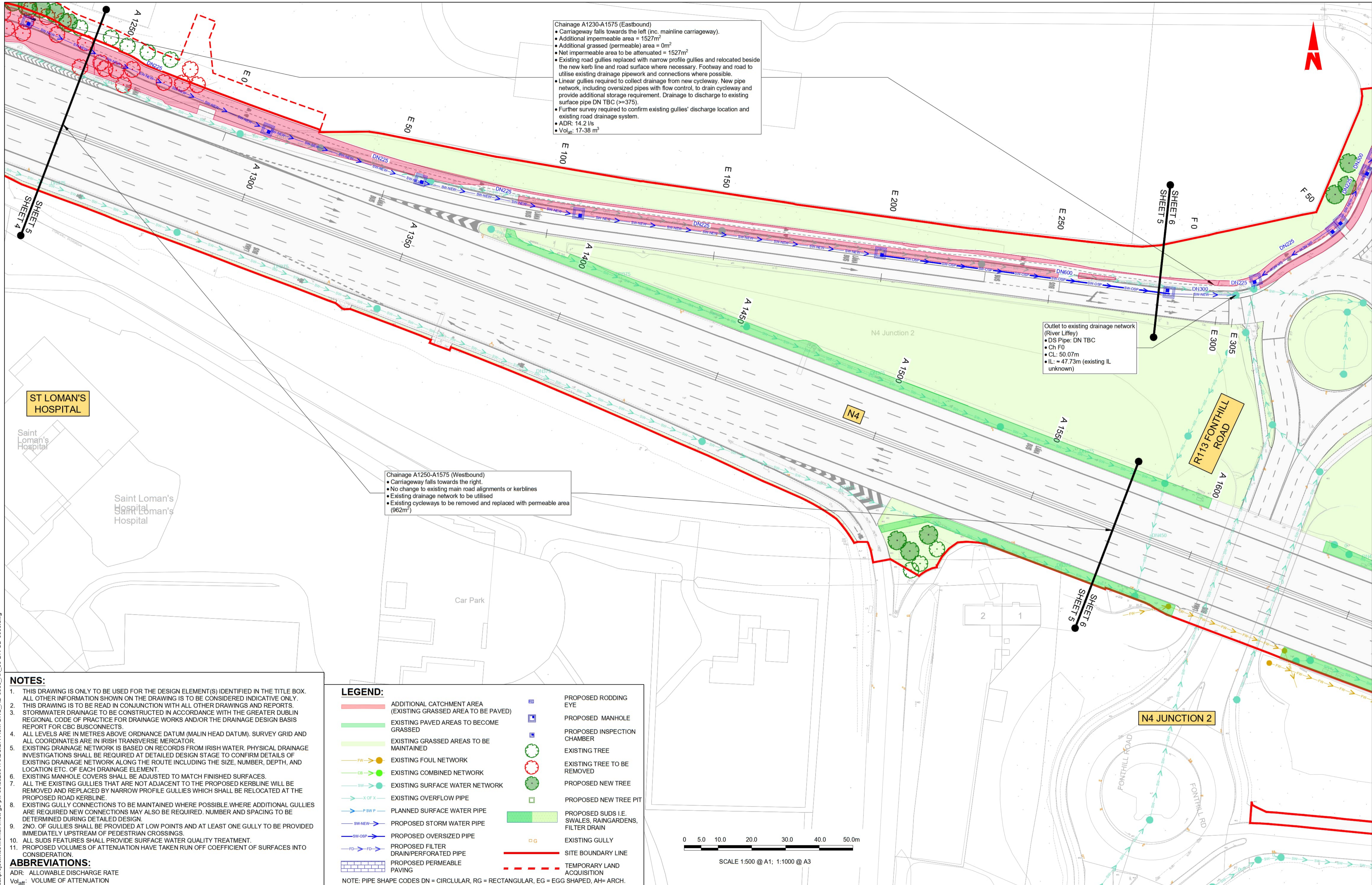
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	Rev	Date	Drn	Chk'd	App'd	Description	 Údarás Náisiúnta Iompair National Transport Authority	 	Engineering Designer J.MCILHINNEY / A.T.DALE / C.ACTON			Programme Title <b>BUSCONNECTS DUBLIN          CORE BUS CORRIDORS INFRASTRUCTURE WORKS</b>				
	M01	30/09/22	JM	AD	CA	ISSUE FOR PHASE 4: PLANNING			Date	Scale	Drawn	Checked	Approved	Drawing Title	Drawing File Name	Sheet Number
							30/09/22	1:500 @ A1 1:1000 @ A3	J.MCILHINNEY	A.T.DALE	C.ACTON	LUCAN TO CITY CENTRE CORE BUS CORRIDOR SCHEME PROPOSED SURFACE WATER DRAINAGE WORKS	BCIDA-ACM-DNG_RD-0006_XX_00-DR-CD-0004	04 of 31	A	M01

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**Chainage A1230-A1575 (Eastbound)**

- Carriageway falls towards the left (inc. mainline carriageway).
- Additional impermeable area = 1527m<sup>2</sup>
- Additional grassed (permeable) area = 0m<sup>2</sup>
- Net impermeable area to be attenuated = 1527m<sup>2</sup>
- Existing road gullies replaced with narrow profile gullies and relocated beside the new kerb line and road surface where necessary. Footway and road to utilise existing drainage pipework and connections where possible.
- Linear gullies required to collect drainage from new cycleway. New pipe network, including oversized pipes with flow control, to drain cycleway and provide additional storage requirement. Drainage to discharge to existing surface pipe DN TBC (>=375).
- Further survey required to confirm existing gullies' discharge location and existing road drainage system.
- ADR: 14.2 l/s
- Vol<sub>att</sub>: 17.38 m<sup>3</sup>

**Chainage A1250-A1575 (Westbound)**

- Carriageway falls towards the right.
- No change to existing main road alignments or kerblines
- Existing drainage network to be utilised
- Existing cycleways to be removed and replaced with permeable area (962m<sup>2</sup>)

**Outlet to existing drainage network (River Liffey)**

- DS Pipe: DN TBC
- Ch F0
- CL: 50.07m
- IL: = 47.73m (existing IL unknown)

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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 SHALL BE REQUIRED AT DETAILED DESIGN STAGE TO CONFIRM DETAILS OF EXISTING DRAINAGE NETWORK ALONG THE ROUTE INCLUDING THE SIZE, NUMBER, DEPTH, AND LOCATION ETC. OF EACH DRAINAGE ELEMENT.
  6. EXISTING MANHOLE COVERS SHALL BE ADJUSTED TO MATCH FINISHED SURFACES.
  7. ALL THE EXISTING GULLIES THAT ARE NOT ADJACENT TO THE PROPOSED KERBLINE WILL BE REMOVED AND REPLACED BY NARROW PROFILE GULLIES WHICH SHALL BE RELOCATED AT THE PROPOSED ROAD KERBLINE.
  8. EXISTING GULLY CONNECTIONS TO BE MAINTAINED WHERE POSSIBLE. WHERE ADDITIONAL GULLIES ARE REQUIRED NEW CONNECTIONS MAY ALSO BE REQUIRED. NUMBER AND SPACING TO BE DETERMINED DURING DETAILED DESIGN.
  9. 2NO. OF GULLIES SHALL BE PROVIDED AT LOW POINTS AND AT LEAST ONE GULLY TO BE PROVIDED IMMEDIATELY UPSTREAM OF PEDESTRIAN CROSSINGS.
  10. ALL SUDS FEATURES SHALL PROVIDE SURFACE WATER QUALITY TREATMENT.
  11. PROPOSED VOLUMES OF ATTENUATION HAVE TAKEN RUN OFF COEFFICIENT OF SURFACES INTO CONSIDERATION.

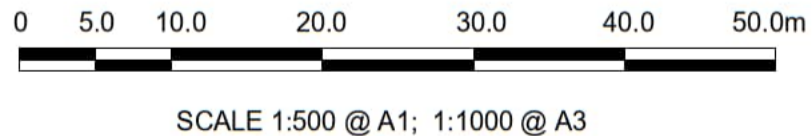
**ABBREVIATIONS:**

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

**LEGEND:**

	ADDITIONAL CATCHMENT AREA (EXISTING GRASSED AREA TO BE PAVED)		PROPOSED RODDING EYE
	EXISTING PAVED AREAS TO BECOME GRASSED		PROPOSED MANHOLE
	EXISTING GRASSED AREAS TO BE MAINTAINED		PROPOSED INSPECTION CHAMBER
	EXISTING FOUL NETWORK		EXISTING TREE
	EXISTING COMBINED NETWORK		EXISTING TREE TO BE REMOVED
	EXISTING SURFACE WATER NETWORK		PROPOSED NEW TREE
	EXISTING OVERFLOW PIPE		PROPOSED NEW TREE PIT
	PLANNED SURFACE WATER PIPE		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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Rev	Date	Dm	Chk'd	App'd	Description
M01	30/09/22	JM	AD	CA	ISSUE FOR PHASE 4: PLANNING

<p>Údarás Náisiúnta Iompair National Transport Authority</p>		<p>MOTT MACDONALD</p>		
Date	Scale	Drawn	Checked	Approved
30/09/22	1:500 @ A1 1:1000 @ A3	J.McILHINNEY	A.T.DALE	C.ACTON
Project Code	Originator Code	QMS Code		
BCIDA	ACM			

<p>Client</p> <p>Programme Title</p> <p><b>BUSCONNECTS DUBLIN CORE BUS CORRIDORS INFRASTRUCTURE WORKS</b></p>			
<p>Drawing Title</p> <p><b>LUCAN TO CITY CENTRE CORE BUS CORRIDOR SCHEME PROPOSED SURFACE WATER DRAINAGE WORKS</b></p>			
Drawing File Name	Sheet Number	Status	Rev
BCIDA-ACM-DNG_RD-0006_XX_00-DR-CD-0005	05 of 31	A	M01

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- ALL SUDS FEATURES SHALL PROVIDE SURFACE WATER QUALITY TREATMENT.
- PROPOSED VOLUMES OF ATTENUATION HAVE TAKEN RUN OFF COEFFICIENT OF SURFACES INTO CONSIDERATION.

**ABBREVIATIONS:**

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

**Chainage A1575-A1750 (Mainline)**

- Carriageway in camber- road falls to both sides.
- Additional impermeable area= 40m<sup>2</sup>
- Additional grassed (permeable) area= 844m<sup>2</sup>
- Net permeable area (no additional attenuation required)= 804m<sup>2</sup>
- Existing drainage network to be utilised
- Existing cycleways removed and replaced with permeable area

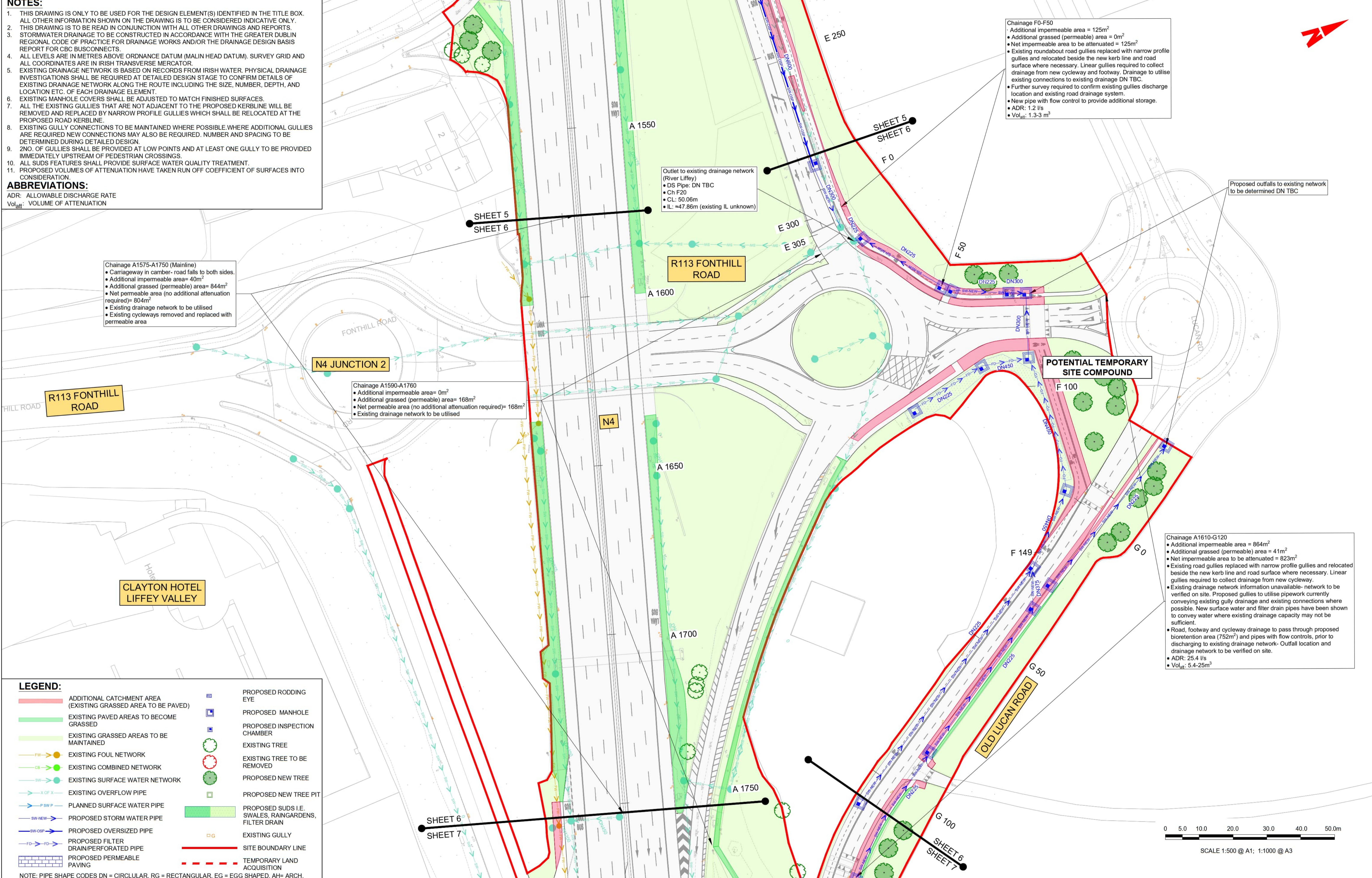
**Chainage A1590-A1760**

- Additional impermeable area= 0m<sup>2</sup>
- Additional grassed (permeable) area= 168m<sup>2</sup>
- Net permeable area (no additional attenuation required)= 168m<sup>2</sup>
- Existing drainage network to be utilised

**Chainage F0-F50**

- Additional impermeable area = 125m<sup>2</sup>
- Additional grassed (permeable) area = 0m<sup>2</sup>
- Net impermeable area to be attenuated = 125m<sup>2</sup>
- Existing roundabout road gullies replaced with narrow profile gullies and relocated beside the new kerb line and road surface where necessary. Linear gullies required to collect drainage from new cycleway and footway. Drainage to utilise existing connections to existing drainage DN TBC.
- Further survey required to confirm existing gullies discharge location and existing road drainage system.
- New pipe with flow control to provide additional storage.
- ADR: 1.2 l/s
- Vol<sub>att</sub>: 1.3-3 m<sup>3</sup>

Proposed outfalls to existing network to be determined DN TBC



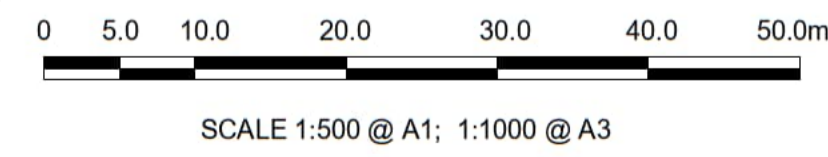
**Chainage A1610-G120**

- Additional impermeable area = 864m<sup>2</sup>
- Additional grassed (permeable) area = 41m<sup>2</sup>
- Net impermeable area to be attenuated = 823m<sup>2</sup>
- Existing road gullies replaced with narrow profile gullies and relocated beside the new kerb line and road surface where necessary. Linear gullies required to collect drainage from new cycleway.
- Existing drainage network information unavailable- network to be verified on site. Proposed gullies to utilise pipework currently conveying existing gully drainage and existing connections where possible. New surface water and filter drain pipes have been shown to convey water where existing drainage capacity may not be sufficient.
- Road, footway and cycleway drainage to pass through proposed bioretention area (752m<sup>2</sup>) and pipes with flow controls, prior to discharging to existing drainage network- Outfall location and drainage network to be verified on site.
- ADR: 25.4 l/s
- Vol<sub>att</sub>: 5.4-25m<sup>3</sup>

**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 NETWORK                                     | EXISTING TREE TO BE REMOVED                          |
| EXISTING SURFACE WATER NETWORK                                | PROPOSED NEW TREE                                    |
| EXISTING OVERFLOW PIPE  | PROPOSED NEW TREE PIT                                |
| PLANNED SURFACE WATER PIPE                                    | 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                                     |  |

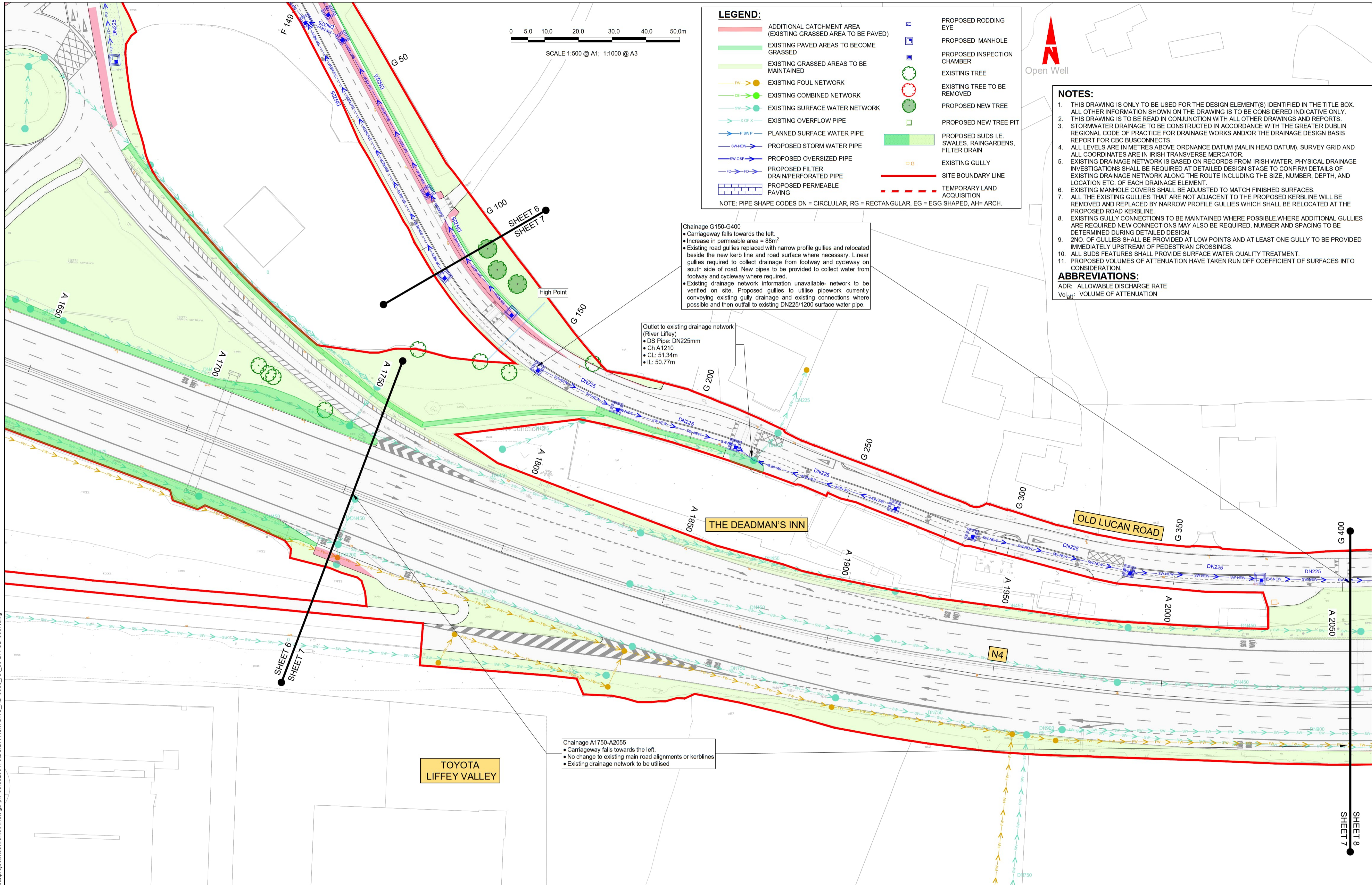
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<p><b>Project Ireland 2040</b> Building Ireland's Future</p>		<p>Rev M01 Date 30/09/22 Dm JM Chk'd AD App'd CA Description ISSUE FOR PHASE 4: PLANNING</p>		<p>Client <b>NTA</b> Údarás Náisiúnta Iompair National Transport Authority</p>		<p>Engineering Designer <b>AECOM</b> <b>MOTT MACDONALD</b></p>		<p>Programme Title <b>BUSCONNECTS DUBLIN CORE BUS CORRIDORS INFRASTRUCTURE WORKS</b></p>	
<p>Date 30/09/22 Scale 1:500 @ A1 1:1000 @ A3</p>		<p>Drawn J.MCILHINEY Checked A.T.DALE Approved C.ACTON</p>		<p>Project Code BCIDA Originator Code ACM QMS Code</p>		<p>Drawing File Name BCIDA-ACM-DNG_RD-0006_XX_00-DR-CD-0006</p>		<p>Drawing Title <b>LUCAN TO CITY CENTRE CORE BUS CORRIDOR SCHEME PROPOSED SURFACE WATER DRAINAGE WORKS</b></p>	
<p>Sheet Number 06 of 31</p>		<p>Status A</p>		<p>Rev M01</p>		<p>Scale 1:500 @ A1; 1:1000 @ A3</p>		<p>Scale 1:500 @ A1; 1:1000 @ A3</p>	

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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 NETWORK
- EXISTING SURFACE WATER NETWORK
- EXISTING OVERFLOW PIPE
- PLANNED SURFACE WATER PIPE
- 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
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- PROPOSED NEW TREE PIT
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  - PROPOSED VOLUMES OF ATTENUATION HAVE TAKEN RUN OFF COEFFICIENT OF SURFACES INTO CONSIDERATION.
- ABBREVIATIONS:**  
 ADR: ALLOWABLE DISCHARGE RATE  
 Vol<sub>at</sub>: VOLUME OF ATTENUATION

Chainage G150-G400

- Carriageway falls towards the left.
- Increase in permeable area = 88m<sup>2</sup>
- Existing road gullies replaced with narrow profile gullies and relocated beside the new kerb line and road surface where necessary. Linear gullies required to collect drainage from footway and cycleway on south side of road. New pipes to be provided to collect water from footway and cycleway where required.
- Existing drainage network information unavailable- network to be verified on site. Proposed gullies to utilise pipework currently conveying existing gully drainage and existing connections where possible and then outfall to existing DN225/1200 surface water pipe.

Outlet to existing drainage network (River Liffey)

- DS Pipe: DN225mm
- Ch A1210
- CL: 51.34m
- IL: 50.77m

Chainage A1750-A2055

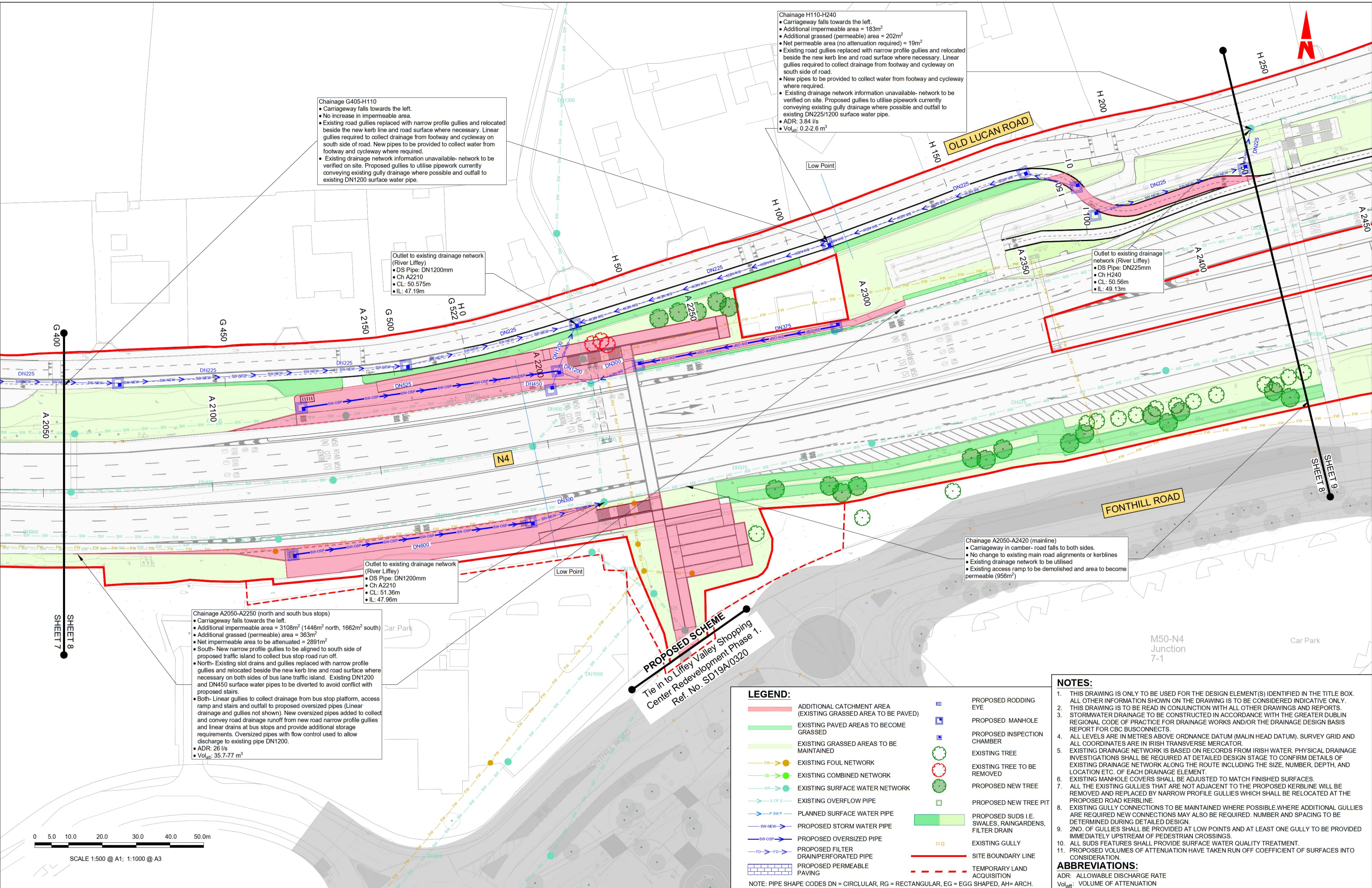
- Carriageway falls towards the left.
- No change to existing main road alignments or kerblines
- Existing drainage network to be utilised

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<p>Date 30/09/22 Scale 1:500 @ A1 1:1000 @ A3</p>		<p>Drawn J.MCILHINNEY Checked A.T.DALE Approved C.ACTON</p>		<p>Project Code BCIDA Originator Code ACM QMS Code</p>		<p>Drawing File Name BCIDA-ACM-DNG_RD-0006_XX_00-DR-CD-0007</p>		<p>Sheet Number 07 of 31 Status A Rev M01</p>	

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**Chainage G405-H110**

- Carriageway falls towards the left.
- No increase in impermeable area.
- Existing road gullies replaced with narrow profile gullies and relocated beside the new kerb line and road surface where necessary. Linear gullies required to collect drainage from footway and cycleway on south side of road. New pipes to be provided to collect water from footway and cycleway where required.
- Existing drainage network information unavailable- network to be verified on site. Proposed gullies to utilise pipework currently conveying existing gully drainage where possible and outfall to existing DN1200 surface water pipe.

**Chainage H110-H240**

- Carriageway falls towards the left.
- Additional impermeable area = 183m<sup>2</sup>
- Additional grassed (permeable) area = 202m<sup>2</sup>
- Net permeable area (no attenuation required) = 19m<sup>2</sup>
- Existing road gullies replaced with narrow profile gullies and relocated beside the new kerb line and road surface where necessary. Linear gullies required to collect drainage from footway and cycleway on south side of road.
- New pipes to be provided to collect water from footway and cycleway where required.
- Existing drainage network information unavailable- network to be verified on site. Proposed gullies to utilise pipework currently conveying existing gully drainage where possible and outfall to existing DN225/1200 surface water pipe.
- ADR: 3.84 l/s
- Vol<sub>att</sub>: 0.2-2.6 m<sup>3</sup>

**Outlet to existing drainage network (River Liffey)**

- DS Pipe: DN1200mm
- Ch A2210
- CL: 50.575m
- IL: 47.19m

**Outlet to existing drainage network (River Liffey)**

- DS Pipe: DN225mm
- Ch H240
- CL: 50.56m
- IL: 49.13m

**Outlet to existing drainage network (River Liffey)**

- DS Pipe: DN1200mm
- Ch A2210
- CL: 51.36m
- IL: 47.96m

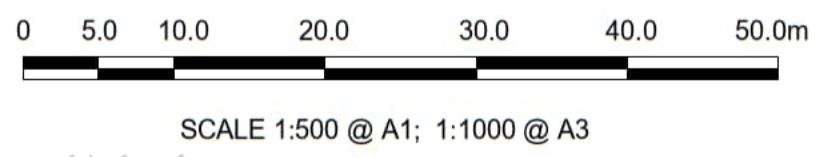
**Chainage A2050-A2250 (north and south bus stops)**

- Carriageway falls towards the left.
- Additional impermeable area = 3108m<sup>2</sup> (1446m<sup>2</sup> north, 1662m<sup>2</sup> south)
- Additional grassed (permeable) area = 363m<sup>2</sup>
- Net impermeable area to be attenuated = 2891m<sup>2</sup>
- South- New narrow profile gullies to be aligned to south side of proposed traffic island to collect bus stop road runoff.
- North- Existing slot drains and gullies replaced with narrow profile gullies and relocated beside the new kerb line and road surface where necessary on both sides of bus lane traffic island. Existing DN1200 and DN450 surface water pipes to be diverted to avoid conflict with proposed stairs.
- Both- Linear gullies to collect drainage from bus stop platform, access ramp and stairs and outfall to proposed oversized pipes (Linear drainage and gullies not shown). New oversized pipes added to collect and convey road drainage runoff from new road narrow profile gullies and linear drains at bus stops and provide additional storage requirements. Oversized pipes with flow control used to allow discharge to existing pipe DN1200.
- ADR: 26 l/s
- Vol<sub>att</sub>: 35.7-77 m<sup>3</sup>

**Chainage A2050-A2420 (mainline)**

- Carriageway in camber- road falls to both sides.
- No change to existing main road alignments or kerblines
- Existing drainage network to be utilised
- Existing access ramp to be demolished and area to become permeable (956m<sup>2</sup>)

**PROPOSED SCHEME**  
Tie in to Liffey Valley Shopping Center Redevelopment Phase 1.  
Ref. No. SD19A/0320



**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 NETWORK		EXISTING TREE TO BE REMOVED
	EXISTING SURFACE WATER NETWORK		PROPOSED NEW TREE
	EXISTING OVERFLOW PIPE		PROPOSED NEW TREE PIT
	PLANNED SURFACE WATER PIPE		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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- 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<sub>att</sub>: VOLUME OF ATTENUATION

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

Rev	Date	Dm	Chk'd	App'd	Description
M01	30/09/22	JM	AD	CA	ISSUE FOR PHASE 4: PLANNING

**NTA**  
Údarás Náisiúnta Iompair  
National Transport Authority

**AECOM** **MOTT MACDONALD**

Date: 30/09/22 | Scale: 1:500 @ A1, 1:1000 @ A3 | Drawn: J.MCILHINNEY | Checked: A.T.DALE | Approved: C.ACTON

Programme Title <b>BUSCONNECTS DUBLIN CORE BUS CORRIDORS INFRASTRUCTURE WORKS</b>			
Drawing Title <b>LUCAN TO CITY CENTRE CORE BUS CORRIDOR SCHEME PROPOSED SURFACE WATER DRAINAGE WORKS</b>			
Drawing File Name BCIDA-ACM-DNG_RD-0006_XX_00-DR-CD-0008	Sheet Number 08 of 31	Status A	Rev M01

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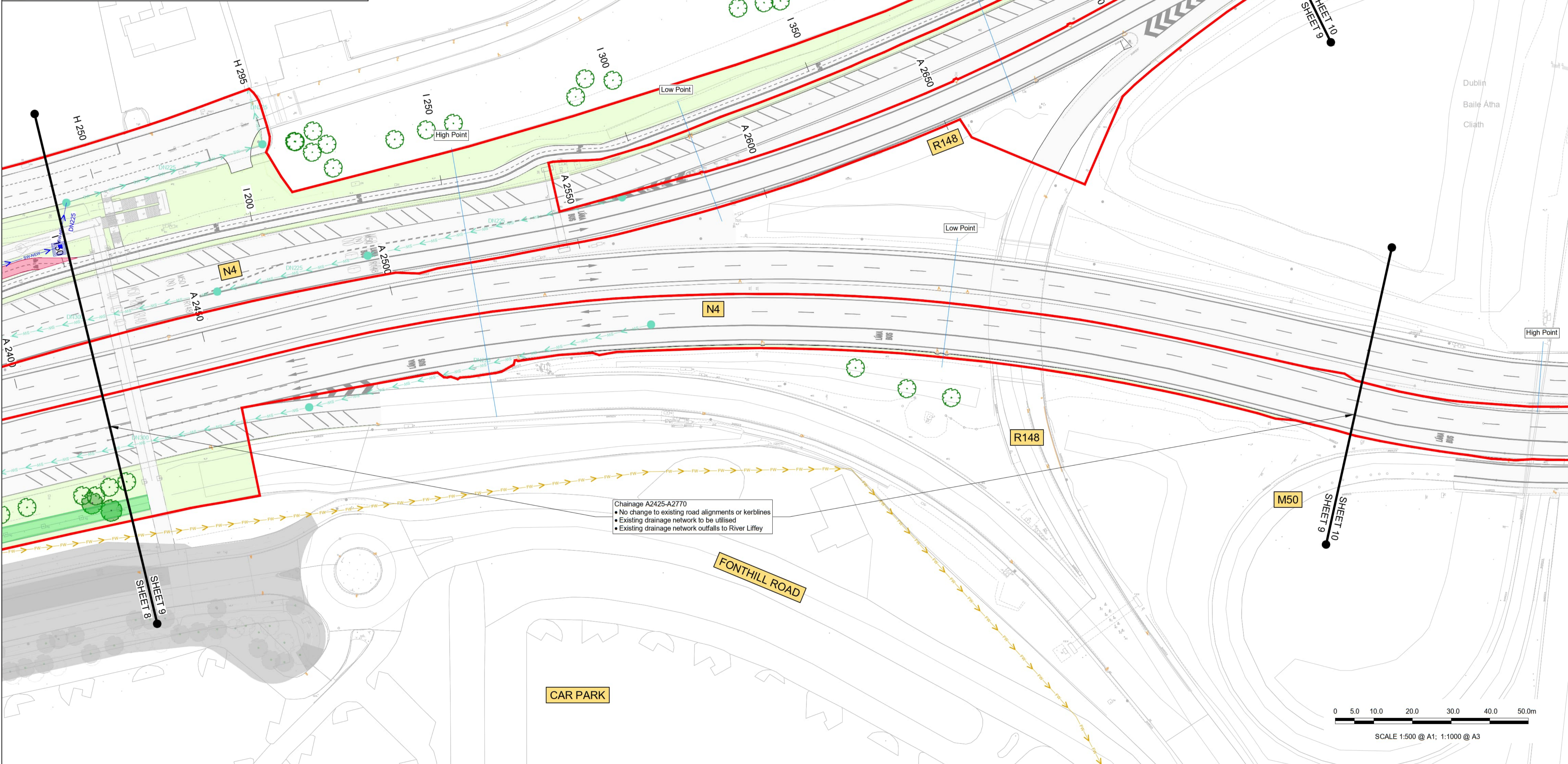
**ABBREVIATIONS:**

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

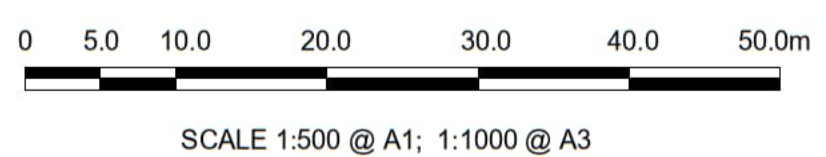
**LEGEND:**

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

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Chainage A2425-A2770  
 • No change to existing road alignments or kerblines  
 • Existing drainage network to be utilised  
 • Existing drainage network outfalls to River Liffey



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Rev	Date	Dm	Chk'd	App'd	Description
M01	30/09/22	JM	AD	CA	ISSUE FOR PHASE 4: PLANNING

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

Engineering Designer: **AECOM** **MOTT MACDONALD**

Date: 30/09/22  
Scale: 1:500 @ A1, 1:1000 @ A3

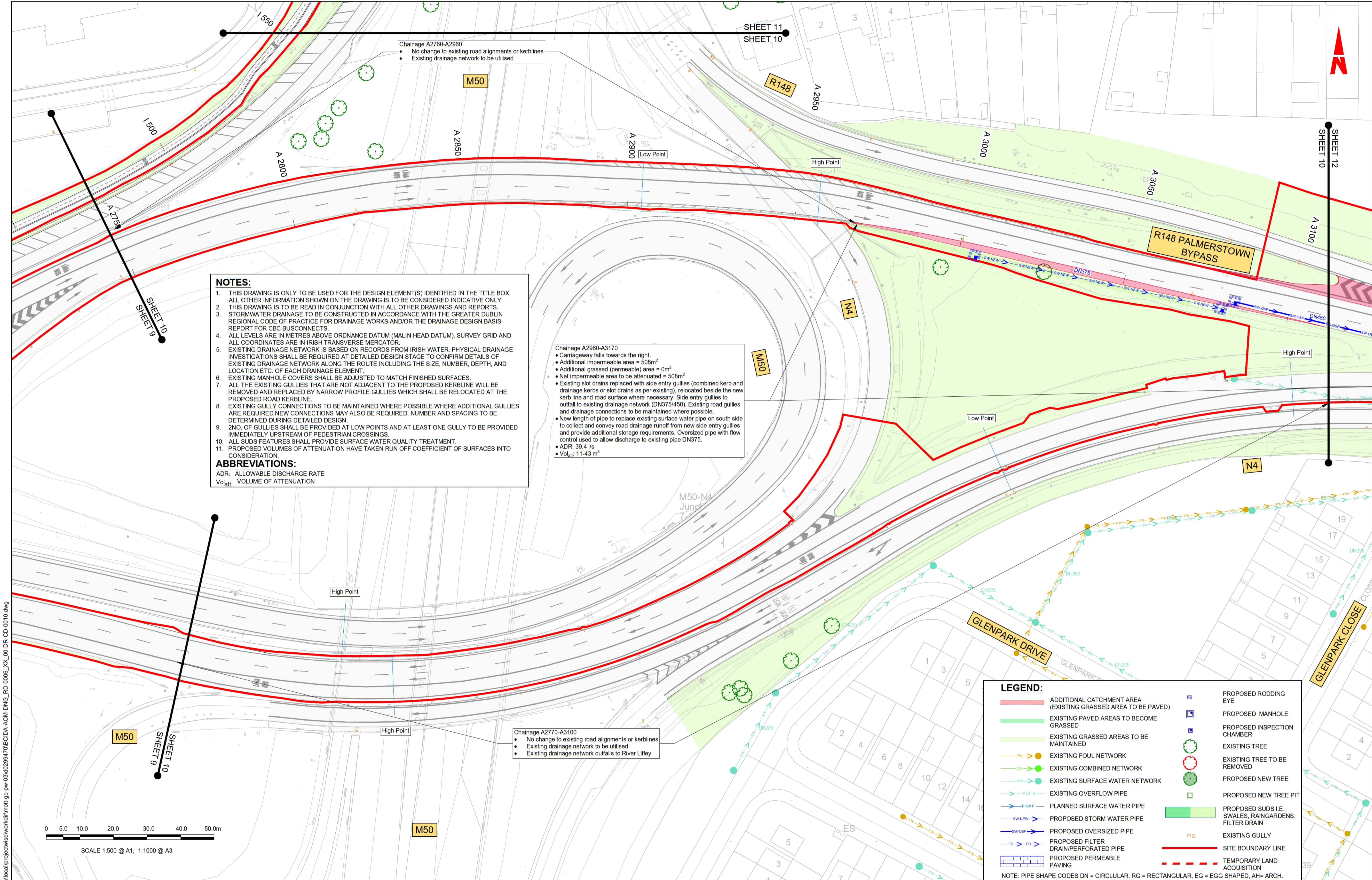
Project Code: BCIDA  
Originator Code: ACM

Drawn: J.McILHINNEY  
Checked: A.T.DALE  
Approved: C.ACTON

Programme Title: <b>BUSCONNECTS DUBLIN CORE BUS CORRIDORS INFRASTRUCTURE WORKS</b>			
Drawing Title: <b>LUCAN TO CITY CENTRE CORE BUS CORRIDOR SCHEME PROPOSED SURFACE WATER DRAINAGE WORKS</b>			
Drawing File Name: BCIDA-ACM-DNG_RD-0006_XX_00-DR-CD-0009	Sheet Number: 09 of 31	Status: A	Rev: M01

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

Chainage A2960-A3170

- Carriageway falls towards the right.
- Additional impermeable area = 508m<sup>2</sup>
- Additional grassed (permeable) area = 0m<sup>2</sup>
- Net impermeable area to be attenuated = 508m<sup>2</sup>
- Existing slot drains replaced with side entry gullies (combined kerb and drainage kerbs or slot drains as per existing), relocated beside the new kerb line and road surface where necessary. Side entry gullies to outfall to existing drainage network (DN375/450). Existing road gullies and drainage connections to be maintained where possible.
- New length of pipe to replace existing surface water pipe on south side to collect and convey road drainage runoff from new side entry gullies and provide additional storage requirements. Oversized pipe with flow control used to allow discharge to existing pipe DN375.
- ADR: 39.4 l/s
- Vol<sub>att</sub>: 11.43 m<sup>3</sup>

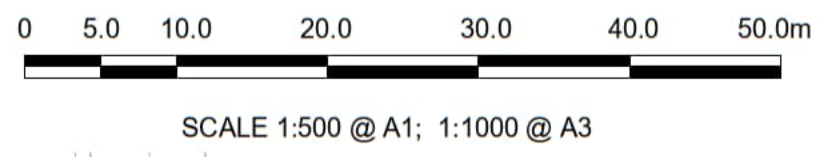
Chainage A2770-A3100

- No change to existing road alignments or kerblines
- Existing drainage network to be utilised
- Existing drainage network outfalls to River Liffey

**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 NETWORK		EXISTING TREE TO BE REMOVED
	EXISTING SURFACE WATER NETWORK		PROPOSED NEW TREE
	EXISTING OVERFLOW PIPE		PROPOSED NEW TREE PIT
	PLANNED SURFACE WATER PIPE		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 = CIRCLULAR, RG = RECTANGULAR, EG = EGG SHAPED, AH= ARCH.



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Rev	Date	Dr	Chk'd	App'd	Description
M01	30/09/22	JM	AD	CA	ISSUE FOR PHASE 4: PLANNING

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

Engineering Designer: **AECOM**, **MOTT MACDONALD**

Date: 30/09/22 | Scale: 1:500 @ A1, 1:1000 @ A3 | Drawn: JMCLINHNEY | Checked: A.T.DALE | Approved: C.ACTON

Project Code: BCIDA | Originator Code: ACM | QMS Code:

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

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

Drawing File Name: BCIDA-ACM-DNG_RD-0006_XX_00-DR-CD-0010	Sheet Number: 10 of 31	Status: A	Rev: M01
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**ABBREVIATIONS:**

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

Chainage J0-J205

- Carriageway in camber- road falls to both sides.
- No increase in impermeable area.
- Existing road gullies replaced with narrow profile gullies and relocated beside the new kerb line and road surface where necessary. Linear gullies required to collect drainage from footway and cycleway on north side of road. Utilise existing drainage connections to surface water drainage pipe network DN225.
- Existing manhole covers, gully pots, gratings and access points to be adjusted to suit new kerb line and ramps where necessary.
- Utilise existing drainage pipework and connections where possible.

Chainage A2760-A2960

- No change to existing road alignments or kerblines
- Existing drainage network to be utilised
- Existing drainage network outfalls to River Liffey

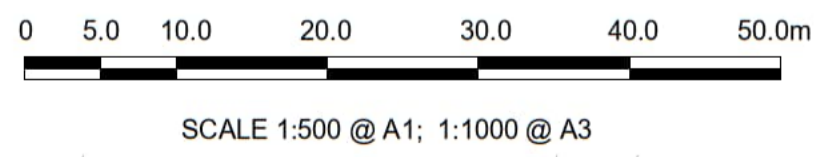
Chainage A2960-A3170

- Carriageway falls towards the right.
- Additional impermeable area = 508m<sup>2</sup>
- Additional grassed (permeable) area = 0m<sup>2</sup>
- Net impermeable area to be attenuated = 508m<sup>2</sup>
- Existing slot drains replaced with side entry gullies (combined kerb and drainage kerbs or slot drains as per existing), relocated beside the new kerb line and road surface where necessary. Side entry gullies to outfall to existing drainage network (DN375/450). Existing road gullies and drainage connections to be maintained where possible.
- New length of pipe to replace existing surface water pipe on south side to collect and convey road drainage runoff from new side entry gullies and provide additional storage requirements. Oversized pipe with flow control used to allow discharge to existing pipe DN375.
- ADR: 39.4 l/s
- Vol<sub>att</sub>: 11.43 m<sup>3</sup>

**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 NETWORK		EXISTING TREE TO BE REMOVED
	EXISTING SURFACE WATER NETWORK		PROPOSED NEW TREE
	EXISTING OVERFLOW PIPE		PROPOSED NEW TREE PIT
	PLANNED SURFACE WATER PIPE		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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<p>Date: 30/09/22</p> <p>Scale: 1:500 @ A1, 1:1000 @ A3</p> <p>Project Code: BCIDA</p> <p>Originator Code: ACM</p> <p>QMS Code:</p>		<p>Date: 30/09/22</p> <p>Scale: 1:500 @ A1, 1:1000 @ A3</p> <p>Project Code: BCIDA</p> <p>Originator Code: ACM</p> <p>QMS Code:</p>	<p>Drawn: A.FLEMING</p> <p>Checked: A.T.DALE</p> <p>Approved: C.ACTON</p>	<p>Drawing Title: <b>LUCAN TO CITY CENTRE CORE BUS CORRIDOR SCHEME PROPOSED SURFACE WATER DRAINAGE WORKS</b></p>	
<p>Drawing File Name: BCIDA-ACM-DNG_RD-0006_XX_00-DR-CD-0011</p>		<p>Sheet Number: 11 of 31</p> <p>Status: A</p> <p>Rev: M01</p>			

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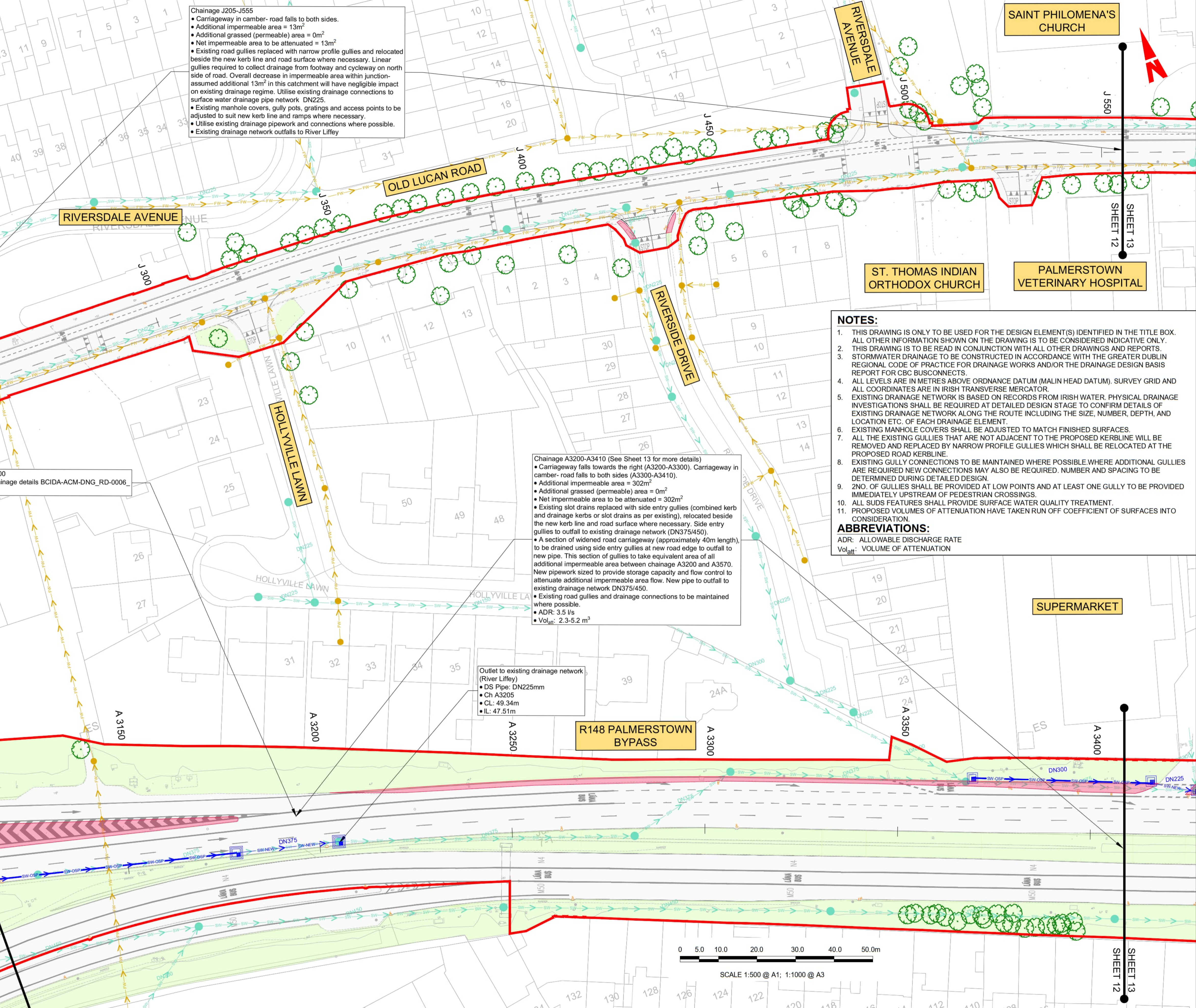
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**LEGEND:**

- ADDITIONAL CATCHMENT AREA (EXISTING GRASSED AREA TO BE PAVED)
- EXISTING PAVED AREAS TO BECOME GRASSED
- EXISTING GRASSED AREAS TO BE MAINTAINED
- EXISTING FOUL NETWORK
- EXISTING COMBINED NETWORK
- EXISTING SURFACE WATER NETWORK
- EXISTING OVERFLOW PIPE
- PLANNED SURFACE WATER PIPE
- 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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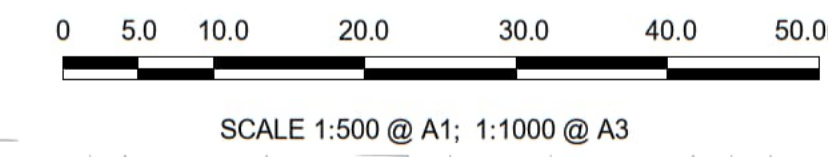


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- EXISTING DRAINAGE NETWORK IS BASED ON RECORDS FROM IRISH WATER. PHYSICAL DRAINAGE INVESTIGATIONS SHALL BE REQUIRED AT DETAILED DESIGN STAGE TO CONFIRM DETAILS OF EXISTING DRAINAGE NETWORK ALONG THE ROUTE INCLUDING THE SIZE, NUMBER, DEPTH, AND LOCATION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

**ABBREVIATIONS:**

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



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

Rev	Date	Drn	Chk'd	App'd	Description
M01	30/09/22	AF	AD	CA	ISSUE FOR PHASE 4: PLANNING

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

Engineering Designer: **AECOM** **MOTT MACDONALD**

Date: 30/09/22  
Scale: 1:500 @ A1, 1:1000 @ A3

Project Code: BCIDA  
Originator Code: ACM

Drawn: A.FLEMING  
Checked: A.T.DALE  
Approved: C.ACTON

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

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

Drawing File Name: BCIDA-ACM-DNG\_RD-0006\_XX\_00-DR-CD-0012

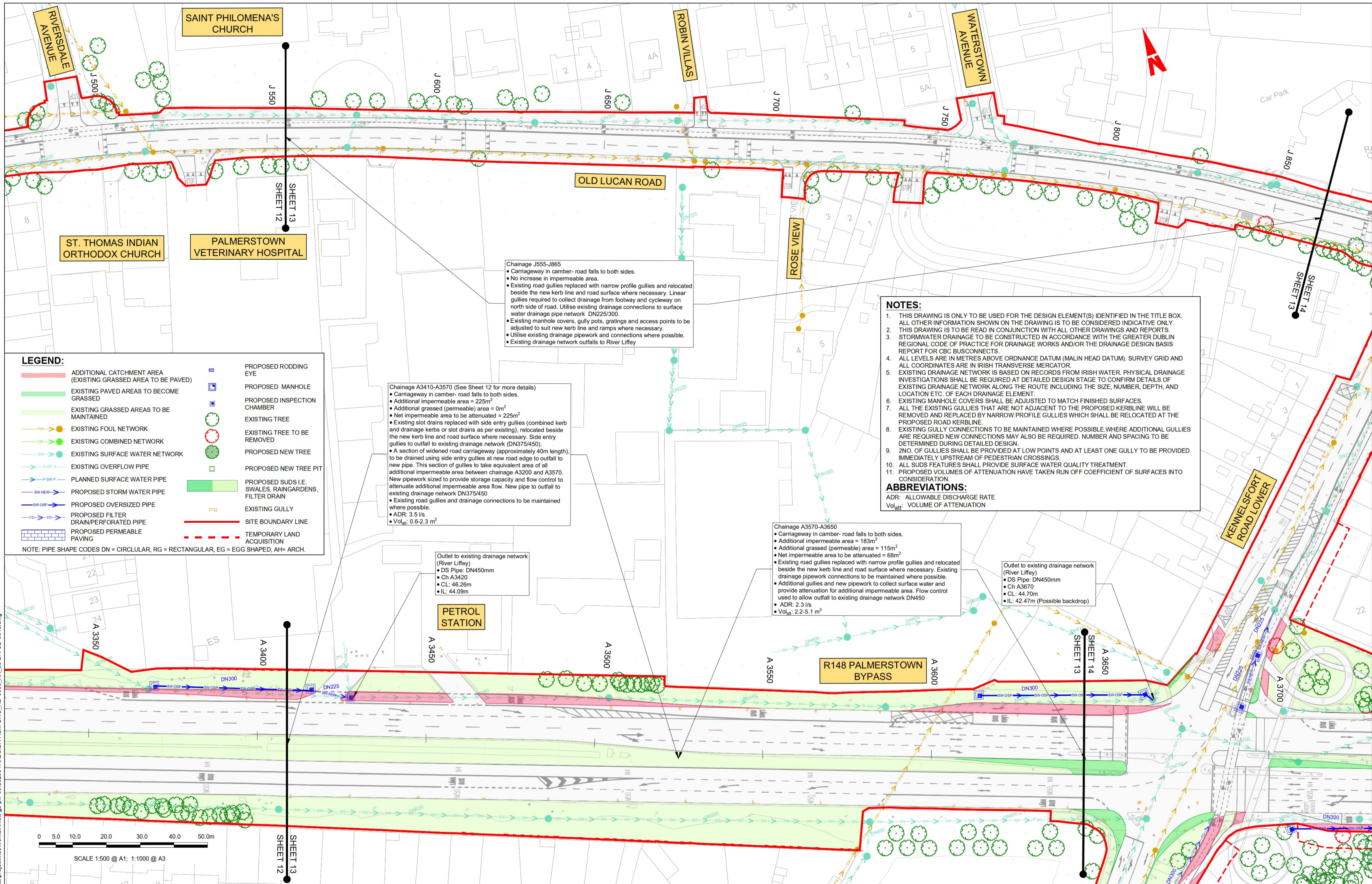
Sheet Number: 12 of 31

Status: A

Rev: 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 NETWORK
- EXISTING SURFACE WATER NETWORK
- EXISTING OVERFLOW PIPE
- PLANNED SURFACE WATER PIPE
- PROPOSED STORM WATER PIPE
- PROPOSED OVERSIZED PIPE
- PROPOSED FILTER DRAIN/PERFORATED PIPE
- PROPOSED PERMEABLE PAVING
- PROPOSED RODDING EYE
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- PROPOSED INSPECTION CHAMBER
- EXISTING TREE
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- 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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Chainage J555-J665

- Carriageway in camber- road falls to both sides.
- No increase in impermeable area.
- Existing road gullies replaced with narrow profile gullies and relocated beside the new kerb line and road surface where necessary. Linear gullies required to collect drainage from footway and cycleway on north side of road. Utilise existing drainage connections to surface water drainage pipe network DN225/300.
- Existing manhole covers, gully pots, gratings and access points to be adjusted to suit new kerb line and ramps where necessary.
- Utilise existing drainage pipework and connections where possible.
- Existing drainage network outfalls to River Liffey

Chainage A3410-A3570 (See Sheet 12 for more details)

- Carriageway in camber- road falls to both sides.
- Additional impermeable area = 225m<sup>2</sup>
- Additional grassed (permeable) area = 0m<sup>2</sup>
- Net impermeable area to be attenuated = 225m<sup>2</sup>
- Existing slot drains replaced with side entry gullies (combined kerb and drainage kerbs or slot drains as per existing), relocated beside the new kerb line and road surface where necessary. Side entry gullies to outfall to existing drainage network (DN375/450).
- A section of widened road carriageway (approximately 40m length), to be drained using side entry gullies at new road edge to outfall to new pipe. This section of gullies to take equivalent area of all additional impermeable area between chainage A3200 and A3570. New pipework sized to provide storage capacity and flow control to attenuate additional impermeable area flow. New pipe to outfall to existing drainage network DN375/450
- Existing road gullies and drainage connections to be maintained where possible.
- ADR: 3.5 l/s
- Vol<sub>att</sub>: 0.6-2.3 m<sup>3</sup>

Chainage A3570-A3650

- Carriageway in camber- road falls to both sides.
- Additional impermeable area = 193m<sup>2</sup>
- Additional grassed (permeable) area = 115m<sup>2</sup>
- Net impermeable area to be attenuated = 68m<sup>2</sup>
- Existing road gullies replaced with narrow profile gullies and relocated beside the new kerb line and road surface where necessary. Existing drainage pipework connections to be maintained where possible.
- Additional gullies and new pipework to collect surface water and provide attenuation for additional impermeable area. Flow control used to allow outfall to existing drainage network DN450
- ADR: 2.3 l/s
- Vol<sub>att</sub>: 2.2-5.1 m<sup>3</sup>

Outlet to existing drainage network (River Liffey)

- DS Pipe: DN450mm
- Ch A3670
- CL: 44.70m
- IL: 42.47m (Possible backdrop)

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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. ZNO OF GULLIES SHALL BE PROVIDED AT LOW POINTS AND AT LEAST ONE GULLY TO BE PROVIDED IMMEDIATELY UPSTREAM OF PEDESTRIAN CROSSINGS.
10. ALL SUDS FEATURES SHALL PROVIDE SURFACE WATER QUALITY TREATMENT.
11. PROPOSED VOLUMES OF ATTENUATION HAVE TAKEN RUN OFF COEFFICIENT OF SURFACES INTO CONSIDERATION.

**ABBREVIATIONS:**

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

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Rev	Date	Dm	Chk'd	App'd	Description
M01	30/09/22	AF	AD	CA	ISSUE FOR PHASE 4: PLANNING

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

Engineering Designer: **AECOM** **MOTT MACDONALD**

Date: 30/09/22  
Scale: 1:500 @ A1, 1:1000 @ A3

Project Code: BCIDA  
Originator Code: ACM

Drawn: A.FLEMING  
Checked: A.T.DALE  
Approved: C.ACTON

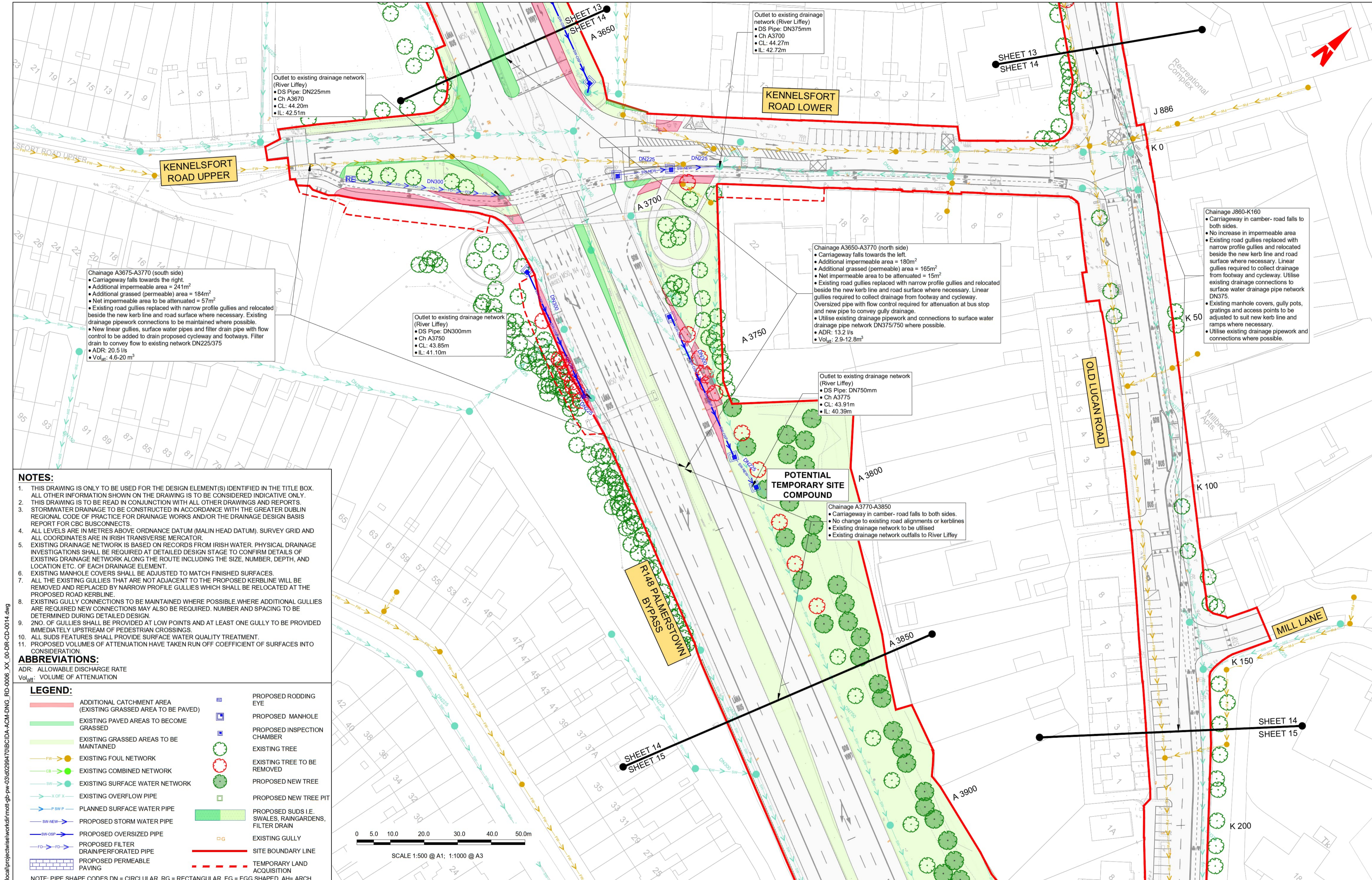
Programme Title: **BUSCONNECTS DUBLIN CORE BUS CORRIDORS INFRASTRUCTURE WORKS**

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

Drawing File Name: BCIDA-ACM-DNG_RD-0006_XX_00-DR-CD-0013	Sheet Number: 13 of 31	Status: A	Rev: M01
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**ABBREVIATIONS:**  
 ADR: ALLOWABLE DISCHARGE RATE  
 Vol<sub>att</sub>: VOLUME OF ATTENUATION

**LEGEND:**

	ADDITIONAL CATCHMENT AREA (EXISTING GRASSED AREA TO BE PAVED)		PROPOSED RODDING EYE
	EXISTING PAVED AREAS TO BECOME GRASSED		PROPOSED MANHOLE
	EXISTING GRASSED AREAS TO BE MAINTAINED		PROPOSED INSPECTION CHAMBER
	EXISTING FOUL NETWORK		EXISTING TREE
	EXISTING COMBINED NETWORK		EXISTING TREE TO BE REMOVED
	EXISTING SURFACE WATER NETWORK		PROPOSED NEW TREE
	EXISTING OVERFLOW PIPE		PROPOSED NEW TREE PIT
	PLANNED SURFACE WATER PIPE		PROPOSED SLUDS 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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Building Ireland's Future

Rev	Date	Dm	Chk'd	App'd	Description
M01	30/09/22	AF	AD	CA	ISSUE FOR PHASE 4: PLANNING

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

Engineering Designer: **AECOM** MOTT MACDONALD

Date: 30/09/22  
Scale: 1:500 @ A1, 1:1000 @ A3

Project Code: BCIDA  
Originator Code: ACM

Drawn: A.FLEMING  
Checked: A.T.DALE  
Approved: C.ACTON

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

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

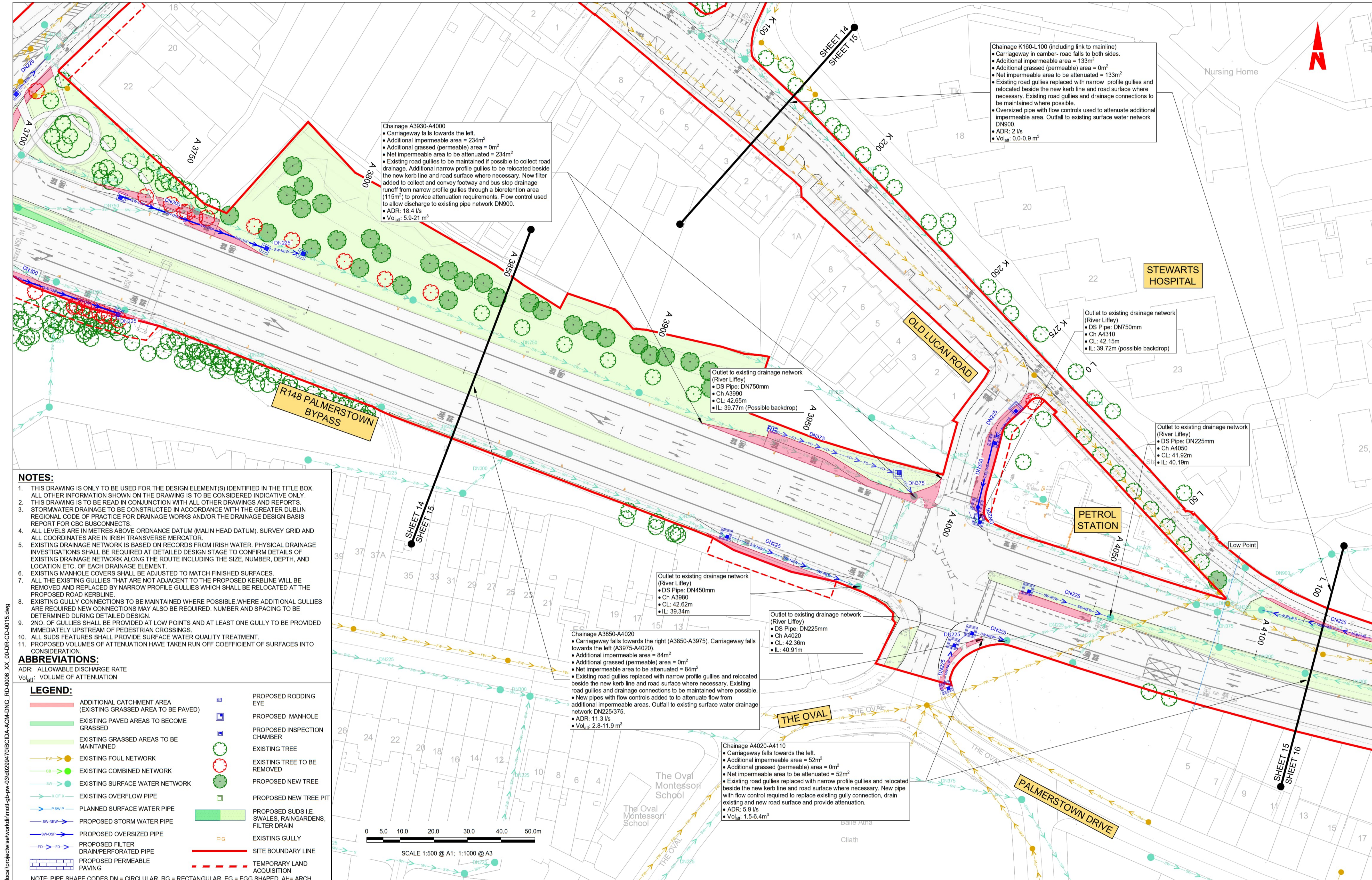
Drawing File Name: BCIDA-ACM-DNG\_RD-0006\_XX\_00-DR-CD-0014

Sheet Number: 14 of 31

Status: A

Rev: M01





Chainage K160-L100 (including link to mainline)

- Carriageway in camber - road falls to both sides.
- Additional impermeable area = 133m<sup>2</sup>
- Additional grassed (permeable) area = 0m<sup>2</sup>
- Net impermeable area to be attenuated = 133m<sup>2</sup>
- Existing road gullies replaced with narrow profile gullies and relocated beside the new kerb line and road surface where necessary. Existing road gullies and drainage connections to be maintained where possible.
- Oversized pipe with flow controls used to attenuate additional impermeable area. Outfall to existing surface water network DN900.
- ADR: 2 l/s
- Vol<sub>att</sub>: 0.0-0.9 m<sup>3</sup>

Chainage A3930-A4000

- Carriageway falls towards the left.
- Additional impermeable area = 234m<sup>2</sup>
- Additional grassed (permeable) area = 0m<sup>2</sup>
- Net impermeable area to be attenuated = 234m<sup>2</sup>
- Existing road gullies to be maintained if possible to collect road drainage. Additional narrow profile gullies to be relocated beside the new kerb line and road surface where necessary. New filter added to collect and convey footway and bus stop drainage runoff from narrow profile gullies through a bioretention area (115m<sup>2</sup>) to provide attenuation requirements. Flow control used to allow discharge to existing pipe network DN900.
- ADR: 18.4 l/s
- Vol<sub>att</sub>: 5.9-21 m<sup>3</sup>

Outlet to existing drainage network (River Liffey)

- DS Pipe: DN750mm
- Ch A3990
- CL: 42.65m
- IL: 39.77m (Possible backdrop)

Outlet to existing drainage network (River Liffey)

- DS Pipe: DN750mm
- Ch A4310
- CL: 42.15m
- IL: 39.72m (possible backdrop)

Outlet to existing drainage network (River Liffey)

- DS Pipe: DN225mm
- Ch A4050
- CL: 41.92m
- IL: 40.19m

Outlet to existing drainage network (River Liffey)

- DS Pipe: DN450mm
- Ch A3980
- CL: 42.62m
- IL: 39.34m

Outlet to existing drainage network (River Liffey)

- DS Pipe: DN225mm
- Ch A4020
- CL: 42.36m
- IL: 40.91m

Chainage A3850-A4020

- Carriageway falls towards the right (A3850-A3975). Carriageway falls towards the left (A3975-A4020).
- Additional impermeable area = 84m<sup>2</sup>
- Additional grassed (permeable) area = 0m<sup>2</sup>
- Net impermeable area to be attenuated = 84m<sup>2</sup>
- Existing road gullies replaced with narrow profile gullies and relocated beside the new kerb line and road surface where necessary. Existing road gullies and drainage connections to be maintained where possible.
- New pipes with flow controls added to attenuate flow from additional impermeable areas. Outfall to existing surface water drainage network DN225/375.
- ADR: 11.3 l/s
- Vol<sub>att</sub>: 2.8-11.9 m<sup>3</sup>

Chainage A4020-A4110

- Carriageway falls towards the left.
- Additional impermeable area = 52m<sup>2</sup>
- Additional grassed (permeable) area = 0m<sup>2</sup>
- Net impermeable area to be attenuated = 52m<sup>2</sup>
- Existing road gullies replaced with narrow profile gullies and relocated beside the new kerb line and road surface where necessary. New pipe with flow control required to replace existing gully connection, drain existing and new road surface and provide attenuation.
- ADR: 5.9 l/s
- Vol<sub>att</sub>: 1.5-6.4m<sup>3</sup>

**NOTES:**

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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 SHALL BE REQUIRED AT DETAILED DESIGN STAGE TO CONFIRM DETAILS OF EXISTING DRAINAGE NETWORK ALONG THE ROUTE INCLUDING THE SIZE, NUMBER, DEPTH, AND LOCATION ETC. OF EACH DRAINAGE ELEMENT.
6. EXISTING MANHOLE COVERS SHALL BE ADJUSTED TO MATCH FINISHED SURFACES.
7. ALL THE EXISTING GULLIES THAT ARE NOT ADJACENT TO THE PROPOSED KERBLINE WILL BE REMOVED AND REPLACED BY NARROW PROFILE GULLIES WHICH SHALL BE RELOCATED AT THE PROPOSED ROAD KERBLINE.
8. EXISTING GULLY CONNECTIONS TO BE MAINTAINED WHERE POSSIBLE. WHERE ADDITIONAL GULLIES ARE REQUIRED NEW CONNECTIONS MAY ALSO BE REQUIRED. NUMBER AND SPACING TO BE DETERMINED DURING DETAILED DESIGN.
9. 2NO. OF GULLIES SHALL BE PROVIDED AT LOW POINTS AND AT LEAST ONE GULLY TO BE PROVIDED IMMEDIATELY UPSTREAM OF PEDESTRIAN CROSSINGS.
10. ALL SUDS FEATURES SHALL PROVIDE SURFACE WATER QUALITY TREATMENT.
11. PROPOSED VOLUMES OF ATTENUATION HAVE TAKEN RUN OFF COEFFICIENT OF SURFACES INTO CONSIDERATION.

**ABBREVIATIONS:**

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

**LEGEND:**

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

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

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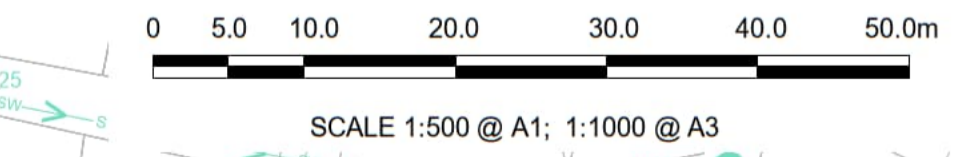
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d. Information concerning the position of apparatus shown on this drawing is based on drawings supplied by the utility owners and/or the utility works contractor, whilst every care has been taken in the preparation of this drawing, positions should 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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Rev	Date	Dm	Chk'd	App'd	Description	Client	Engineering Designer	Programme Title				
M01	30/09/22	AF	AD	CA	ISSUE FOR PHASE 4: PLANNING	NTA Údaráis Náisiúnta Iompair National Transport Authority	AECOM MOTT MACDONALD	BUSCONNECTS DUBLIN CORE BUS CORRIDORS INFRASTRUCTURE WORKS				
						Date: 30/09/22	Scale: 1:500 @ A1, 1:1000 @ A3	Drawn: A.FLEMING	Checked: A.T.DALE	Approved: C.ACTON	Drawing Title: LUCAN TO CITY CENTRE CORE BUS CORRIDOR SCHEME PROPOSED SURFACE WATER DRAINAGE WORKS	
						Project Code: BCIDA	Originator Code: ACM	QMS Code:	Drawing File Name: BCIDA-ACM-DNG_RD-0006_XX_00-DR-CD-0015	Sheet Number: 15 of 31	Status: A	Rev: M01

DO NOT SCALE USE FIGURED DIMENSIONS ONLY





Outlet to existing drainage network (River Liffey)  
 • DS Pipe: DN300mm  
 • Ch A4100  
 • CL: 41.38m  
 • IL: 38.79m

Chainage A4100-A4215  
 • Carriageway falls towards the left.  
 • Additional impermeable area = 108m<sup>2</sup>  
 • Additional grassed (permeable) area = 0m<sup>2</sup>  
 • Net impermeable area to be attenuated = 108m<sup>2</sup>  
 • New pipes added to collect and convey footpath and cycleway runoff from new linear gullies. Flow control used to allow discharge to existing pipes DN300.  
 • Utilise existing connections to surface water pipe network DN300 where possible.  
 • ADR: 9.2 l/s  
 • Vol<sub>att</sub>: 3.7-12 m<sup>3</sup>

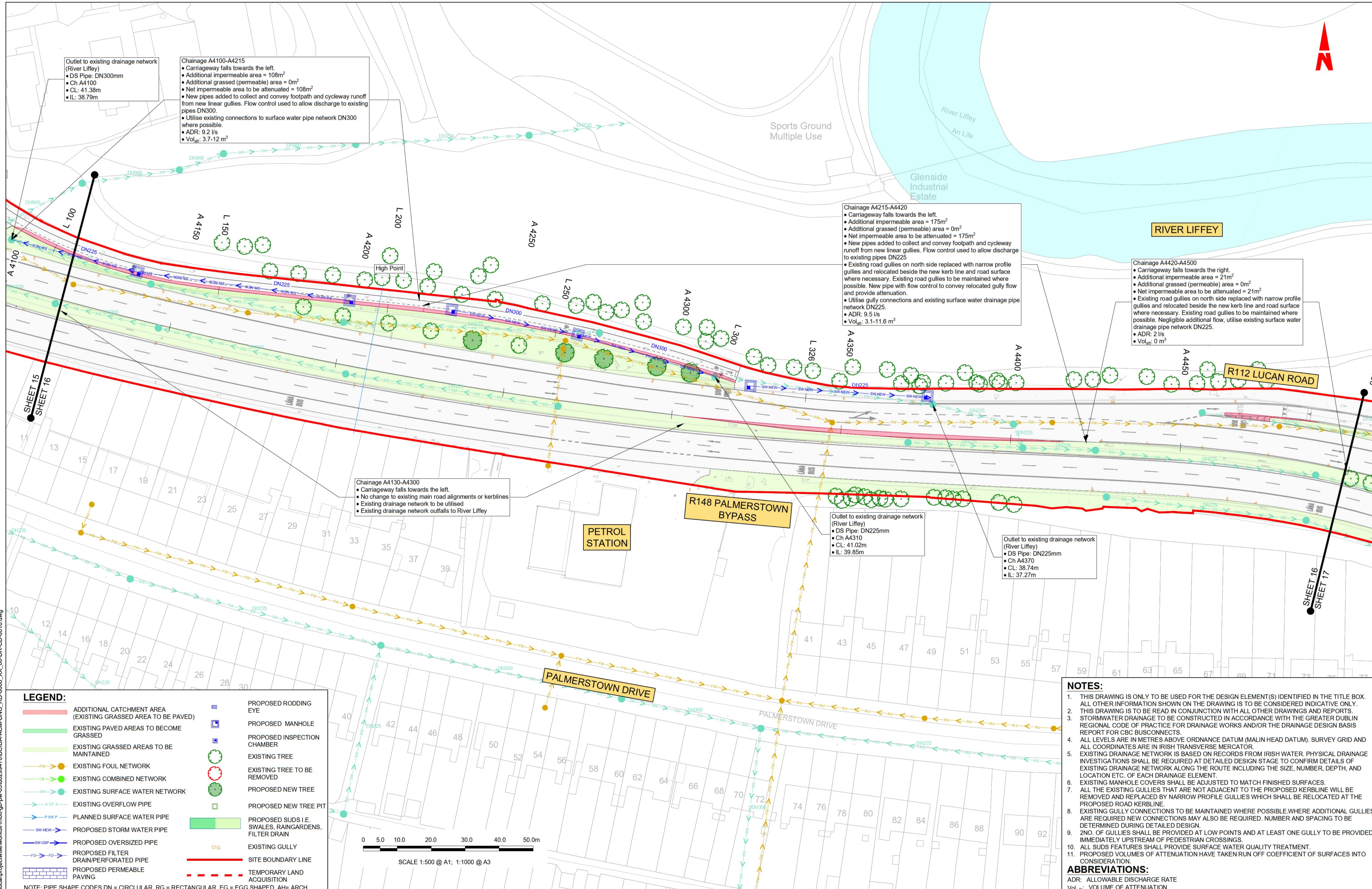
Chainage A4215-A4420  
 • Carriageway falls towards the left.  
 • Additional impermeable area = 175m<sup>2</sup>  
 • Additional grassed (permeable) area = 0m<sup>2</sup>  
 • Net impermeable area to be attenuated = 175m<sup>2</sup>  
 • New pipes added to collect and convey footpath and cycleway runoff from new linear gullies. Flow control used to allow discharge to existing pipes DN225  
 • Existing road gullies on north side replaced with narrow profile gullies and relocated beside the new kerb line and road surface where necessary. Existing road gullies to be maintained where possible. New pipe with flow control to convey relocated gully flow and provide attenuation.  
 • Utilise gully connections and existing surface water drainage pipe network DN225.  
 • ADR: 9.5 l/s  
 • Vol<sub>att</sub>: 3.1-11.6 m<sup>3</sup>

Chainage A4420-A4500  
 • Carriageway falls towards the right.  
 • Additional impermeable area = 21m<sup>2</sup>  
 • Additional grassed (permeable) area = 0m<sup>2</sup>  
 • Net impermeable area to be attenuated = 21m<sup>2</sup>  
 • Existing road gullies on north side replaced with narrow profile gullies and relocated beside the new kerb line and road surface where necessary. Existing road gullies to be maintained where possible. Negligible additional flow, utilise existing surface water drainage pipe network DN225.  
 • ADR: 2 l/s  
 • Vol<sub>att</sub>: 0 m<sup>3</sup>

Chainage A4130-A4300  
 • Carriageway falls towards the left.  
 • No change to existing main road alignments or kerblines  
 • Existing drainage network to be utilised  
 • Existing drainage network outfalls to River Liffey

Outlet to existing drainage network (River Liffey)  
 • DS Pipe: DN225mm  
 • Ch A4310  
 • CL: 41.02m  
 • IL: 39.85m

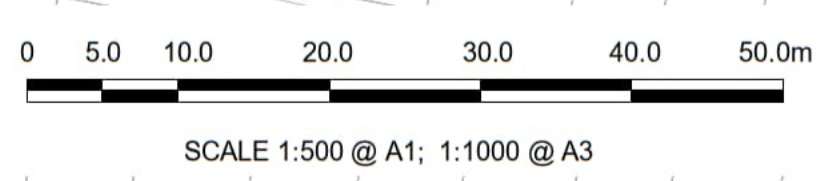
Outlet to existing drainage network (River Liffey)  
 • DS Pipe: DN225mm  
 • Ch A4370  
 • CL: 38.74m  
 • IL: 37.27m



**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 NETWORK		EXISTING TREE TO BE REMOVED
	EXISTING SURFACE WATER NETWORK		PROPOSED NEW TREE
	EXISTING OVERFLOW PIPE		PROPOSED NEW TREE PIT
	PLANNED SURFACE WATER PIPE		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.



**NOTES:**

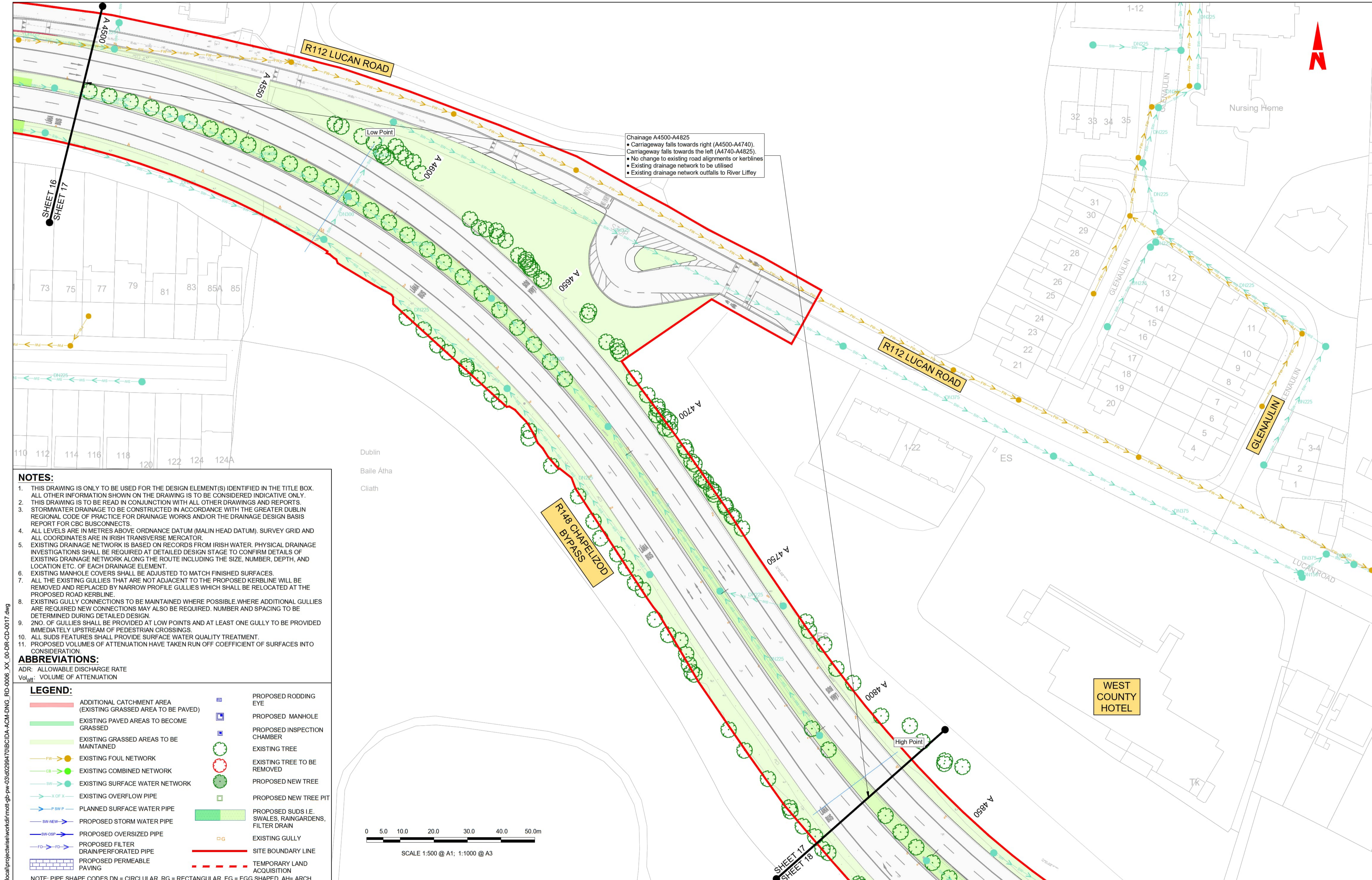
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- EXISTING GULLY CONNECTIONS TO BE MAINTAINED WHERE POSSIBLE. WHERE ADDITIONAL GULLIES ARE REQUIRED NEW CONNECTIONS MAY ALSO BE REQUIRED. NUMBER AND SPACING TO BE DETERMINED DURING DETAILED DESIGN.
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- ALL SUDS FEATURES SHALL PROVIDE SURFACE WATER QUALITY TREATMENT.
- PROPOSED VOLUMES OF ATTENUATION HAVE TAKEN RUN OFF COEFFICIENT OF SURFACES INTO CONSIDERATION.

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

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<p>Date 30/09/22 Scale 1:500 @ A1 1:1000 @ A3 Drawn A.FLEMING Checked A.T.DALE Approved C.ACTON</p>		<p>Project Code BCIDA Originator Code ACM QMS Code</p>		<p>Drawing File Name BCIDA-ACM-DNG_RD-0006_XX_00-DR-CD-0016</p>		<p>Sheet Number 16 of 31 Status A Rev M01</p>		<p>Drawing Title <b>LUCAN TO CITY CENTRE CORE BUS CORRIDOR SCHEME PROPOSED SURFACE WATER DRAINAGE WORKS</b></p>	

DO NOT SCALE USE FIGURED DIMENSIONS ONLY





Chainage A4500-A4825  
 • Carriageway falls towards right (A4500-A4740).  
 • Carriageway falls towards the left (A4740-A4825).  
 • No change to existing road alignments or kerblines  
 • Existing drainage network to be utilised  
 • Existing drainage network outfalls to River Liffey

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  - ALL SUDS FEATURES SHALL PROVIDE SURFACE WATER QUALITY TREATMENT.
  - PROPOSED VOLUMES OF ATTENUATION HAVE TAKEN RUN OFF COEFFICIENT OF SURFACES INTO CONSIDERATION.

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

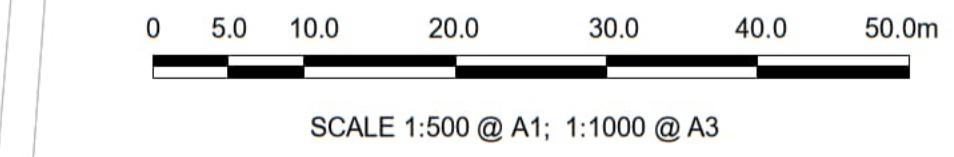
**LEGEND:**

	ADDITIONAL CATCHMENT AREA (EXISTING GRASSED AREA TO BE PAVED)		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 NETWORK		EXISTING TREE TO BE REMOVED
	EXISTING SURFACE WATER NETWORK		PROPOSED NEW TREE
	EXISTING OVERFLOW PIPE		PROPOSED NEW TREE PIT
	PLANNED SURFACE WATER PIPE		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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**Project Ireland 2040**  
Building Ireland's Future

Rev	Date	Dm	Chk'd	App'd	Description
M01	30/09/22	AF	AD	CA	ISSUE FOR PHASE 4: PLANNING

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

Engineering Designer: **AECOM** **MOTT MACDONALD**

Date: 30/09/22 | Scale: 1:500 @ A1, 1:1000 @ A3  
 Drawn: A.FLEMING | Checked: A.T.DALE | Approved: C.ACTON

Project Code: BCIDA | Originator Code: ACM | QMS Code:

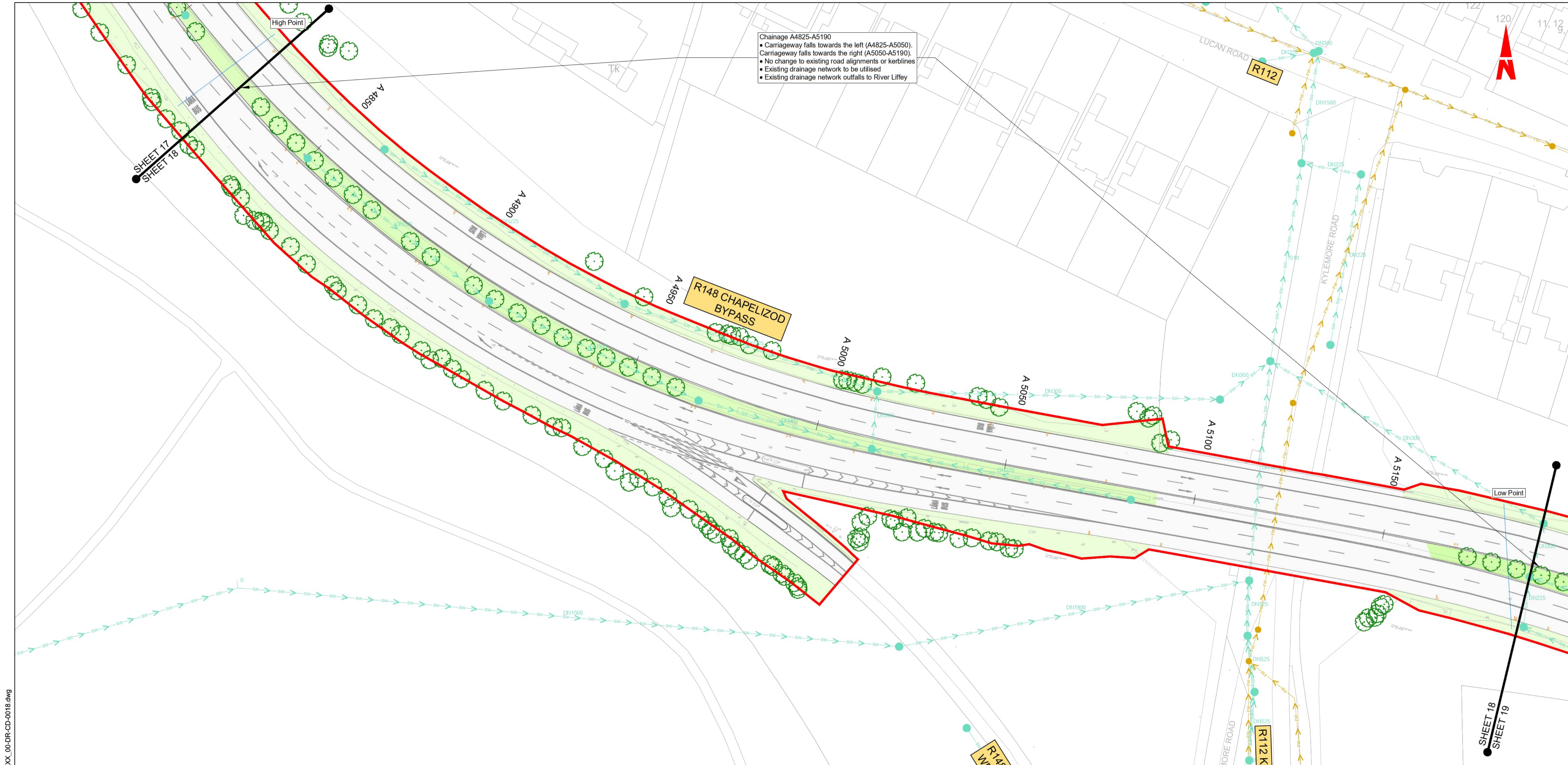
Programme Title: **BUSCONNECTS DUBLIN CORE BUS CORRIDORS INFRASTRUCTURE WORKS**

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

Drawing File Name: BCIDA-ACM-DNG\_RD-0006\_XX\_00-DR-CD-0017 | Sheet Number: 17 of 31 | Status: A | Rev: M01

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Chainage A4825-A5190  
 • Carriageway falls towards the left (A4825-A5050).  
 • Carriageway falls towards the right (A5050-A5190).  
 • No change to existing road alignments or kerblines  
 • Existing drainage network to be utilised  
 • Existing drainage network outfalls to River Liffey

**NOTES:**

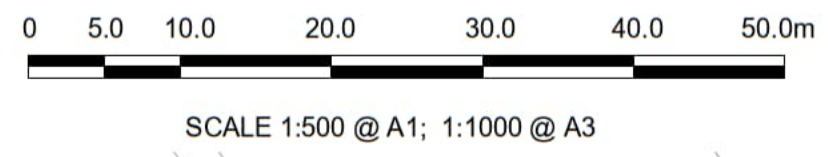
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 Vol<sub>att</sub>: VOLUME OF ATTENUATION

**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 NETWORK		EXISTING TREE TO BE REMOVED
	EXISTING SURFACE WATER NETWORK		PROPOSED NEW TREE
	EXISTING OVERFLOW PIPE		PROPOSED NEW TREE PIT
	PLANNED SURFACE WATER PIPE		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		PROPOSED PERMEABLE PAVING

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

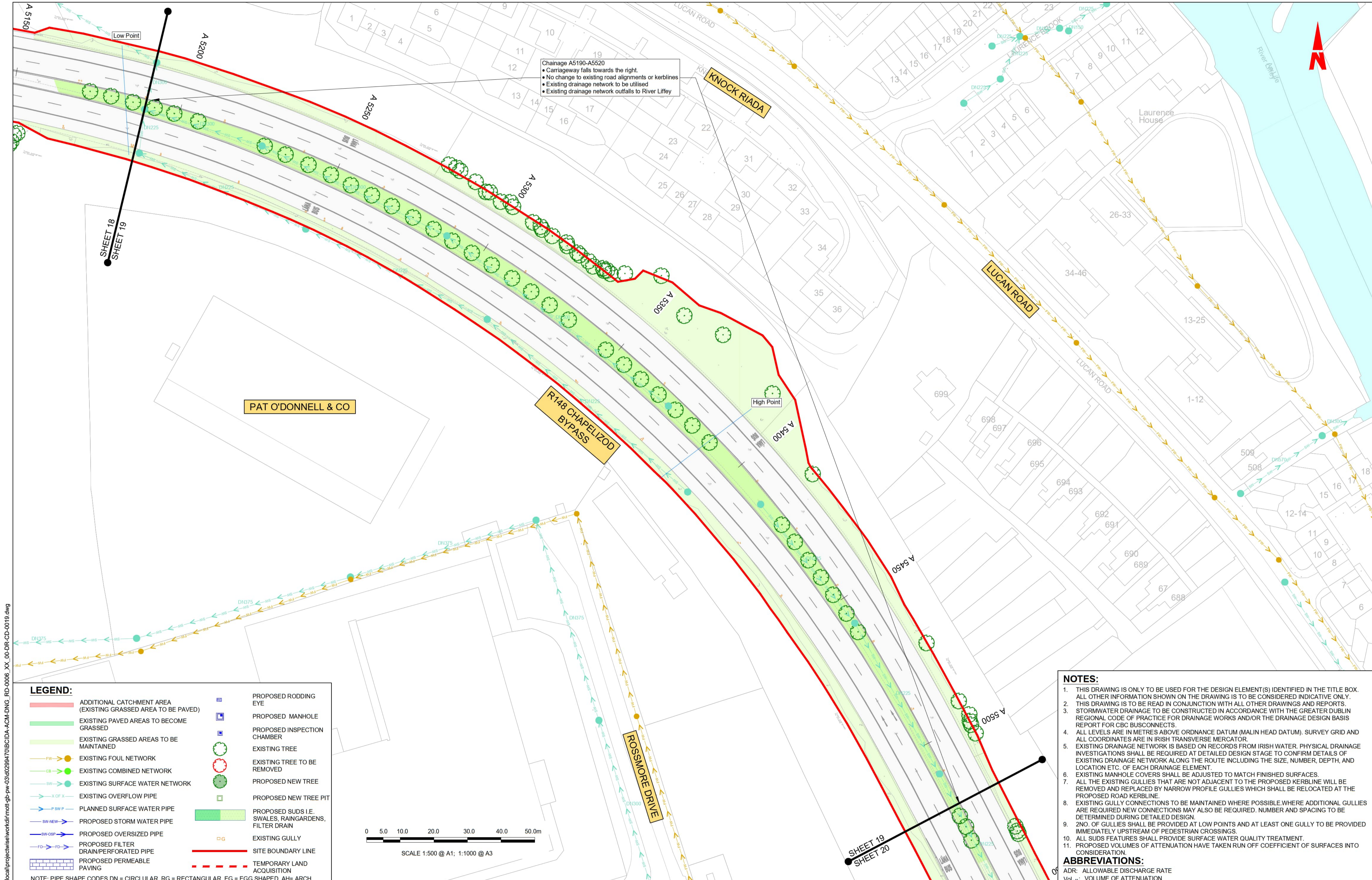


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Rev	Date	Dm	Chk'd	App'd	Description												
M01	30/09/22	AF	AD	CA	ISSUE FOR PHASE 4: PLANNING												
<p>Date</p> <p>30/09/22</p> <p>Scale 1:500 @ A1          1:1000 @ A3</p> <p>Project Code</p> <p>BCIDA</p> <p>Originator Code</p> <p>ACM</p> <p>QMS Code</p>		<p>Drawn</p> <p>A.FLEMING</p> <p>Checked</p> <p>A.T.DALE</p> <p>Approved</p> <p>C.ACTON</p>	<p>Drawing Title</p> <p>LUCAN TO CITY CENTRE CORE BUS CORRIDOR SCHEME          PROPOSED SURFACE WATER DRAINAGE WORKS</p>														
<p>Drawing File Name</p> <p>BCIDA-ACM-DNG_RD-0006_XX_00-DR-CD-0018</p>		<p>Sheet Number</p> <p>18 of 31</p>	<p>Status</p> <p>A</p>	<p>Rev</p> <p>M01</p>													

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Chainage A5190-A5520  
 • Carriageway falls towards the right.  
 • No change to existing road alignments or kerblines  
 • Existing drainage network to be utilised  
 • Existing drainage network outfalls to River Liffey

PAT O'DONNELL & CO

R148 CHAPELIZOD BYPASS

ROSSMORE DRIVE

LUCAN ROAD

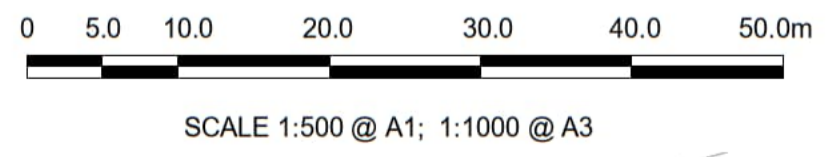
KNOCK RIADA

Laurence House

**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 NETWORK		EXISTING TREE TO BE REMOVED
	EXISTING SURFACE WATER NETWORK		PROPOSED NEW TREE
	EXISTING OVERFLOW PIPE		PROPOSED NEW TREE PIT
	PLANNED SURFACE WATER PIPE		PROPOSED SUDS I.E. SWALES, RAINGARDENS, FILTER DRAIN
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	PROPOSED PERMEABLE PAVING		

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



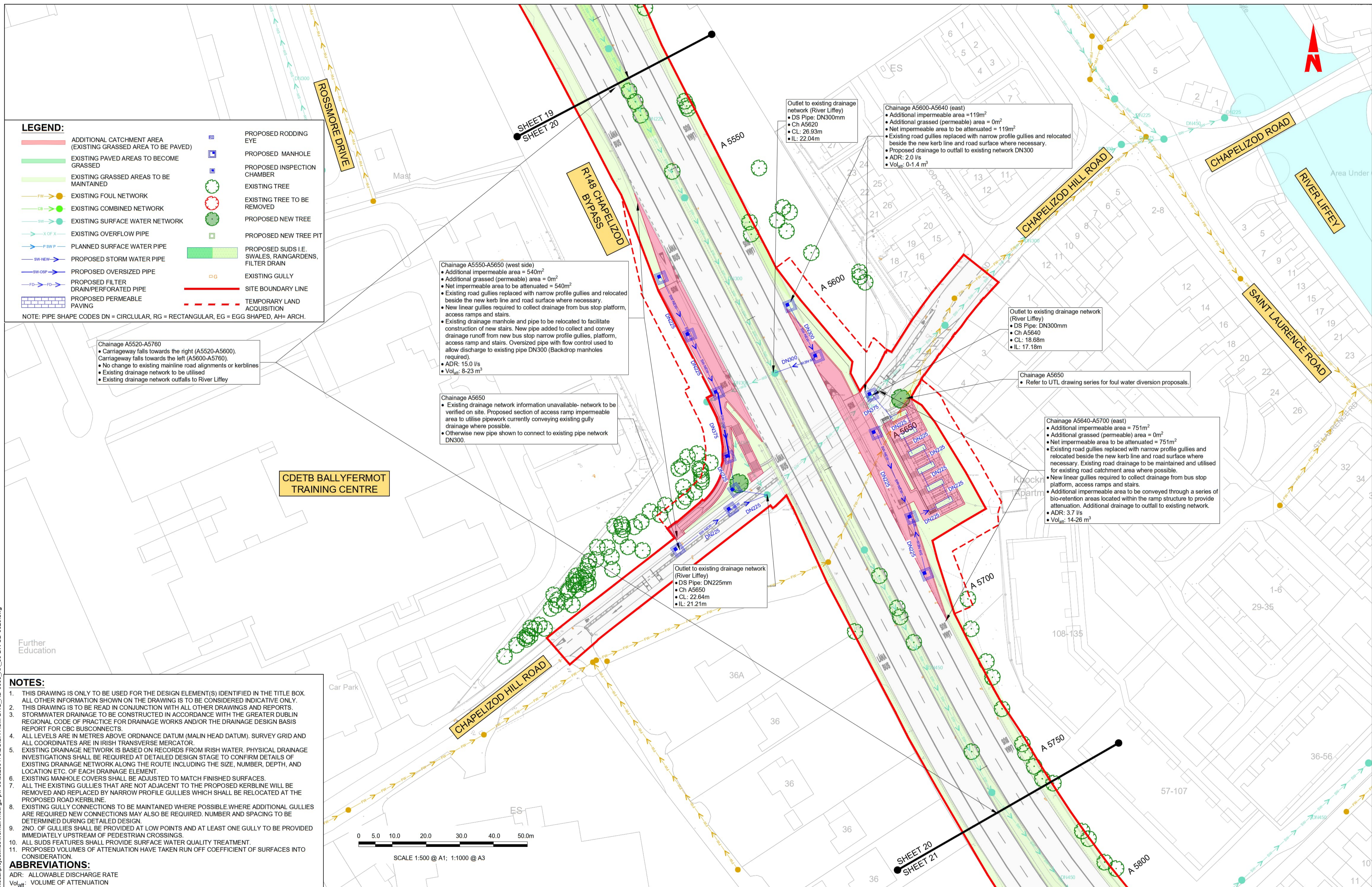
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**ABBREVIATIONS:**  
 ADR: ALLOWABLE DISCHARGE RATE  
 Vol<sub>att</sub>: VOLUME OF ATTENUATION

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<p>Date 30/09/22 Scale 1:500 @ A1 1:1000 @ A3 Drawn A.FLEMING Checked A.T.DALE Approved C.ACTON</p>		<p>Project Code BCIDA Originator Code ACM QMS Code</p>		<p>Drawing File Name BCIDA-ACM-DNG_RD-0006_XX_00-DR-CD-0019</p>		<p>Sheet Number 19 of 31 Status A Rev M01</p>		<p>DO NOT SCALE USE FIGURED DIMENSIONS ONLY</p>	





**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 NETWORK	EXISTING TREE TO BE REMOVED
EXISTING SURFACE WATER NETWORK	PROPOSED NEW TREE
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PLANNED SURFACE WATER PIPE	PROPOSED SUDS I.E. SWALES, RAINGARDENS, FILTER DRAIN
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PROPOSED PERMEABLE PAVING	

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

Chainage A5520-A5780  
 • Carriageway falls towards the right (A5520-A5600). Carriageway falls towards the left (A5600-A5780).  
 • No change to existing mainline road alignments or kerblines  
 • Existing drainage network to be utilised  
 • Existing drainage network outfalls to River Liffey

Chainage A5550-A5650 (west side)  
 • Additional impermeable area = 540m<sup>2</sup>  
 • Additional grassed (permeable) area = 0m<sup>2</sup>  
 • Net impermeable area to be attenuated = 540m<sup>2</sup>  
 • Existing road gullies replaced with narrow profile gullies and relocated beside the new kerb line and road surface where necessary.  
 • New linear gullies required to collect drainage from bus stop platform, access ramps and stairs.  
 • Existing drainage manhole and pipe to be relocated to facilitate construction of new stairs. New pipe added to collect and convey drainage runoff from new bus stop narrow profile gullies, platform, access ramp and stairs. Oversized pipe with flow control used to allow discharge to existing pipe DN300 (Backdrop manholes required).  
 • ADR: 15.0 l/s  
 • Vol<sub>att</sub>: 8-23 m<sup>3</sup>

Chainage A5650  
 • Existing drainage network information unavailable- network to be verified on site. Proposed section of access ramp impermeable area to utilise pipework currently conveying existing gully drainage where possible.  
 • Otherwise new pipe shown to connect to existing pipe network DN300.

Outlet to existing drainage network (River Liffey)  
 • DS Pipe: DN300mm  
 • Ch A5620  
 • CL: 26.93m  
 • IL: 22.04m

Chainage A5600-A5640 (east)  
 • Additional impermeable area = 119m<sup>2</sup>  
 • Additional grassed (permeable) area = 0m<sup>2</sup>  
 • Net impermeable area to be attenuated = 119m<sup>2</sup>  
 • Existing road gullies replaced with narrow profile gullies and relocated beside the new kerb line and road surface where necessary.  
 • Proposed drainage to outfall to existing network DN300  
 • ADR: 2.0 l/s  
 • Vol<sub>att</sub>: 0-1.4 m<sup>3</sup>

Outlet to existing drainage network (River Liffey)  
 • DS Pipe: DN300mm  
 • Ch A5640  
 • CL: 18.68m  
 • IL: 17.18m

Chainage A5650  
 • Refer to UTL drawing series for foul water diversion proposals.

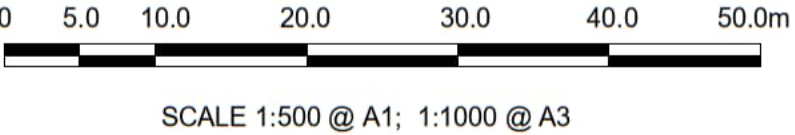
Chainage A5640-A5700 (east)  
 • Additional impermeable area = 751m<sup>2</sup>  
 • Additional grassed (permeable) area = 0m<sup>2</sup>  
 • Net impermeable area to be attenuated = 751m<sup>2</sup>  
 • Existing road gullies replaced with narrow profile gullies and relocated beside the new kerb line and road surface where necessary. Existing road drainage to be maintained and utilised for existing road catchment area where possible.  
 • New linear gullies required to collect drainage from bus stop platform, access ramps and stairs.  
 • Additional impermeable area to be conveyed through a series of bio-retention areas located within the ramp structure to provide attenuation. Additional drainage to outfall to existing network.  
 • ADR: 3.7 l/s  
 • Vol<sub>att</sub>: 14-26 m<sup>3</sup>

Outlet to existing drainage network (River Liffey)  
 • DS Pipe: DN225mm  
 • Ch A5650  
 • CL: 22.64m  
 • IL: 21.21m

CDETB BALLYFERMOT TRAINING CENTRE

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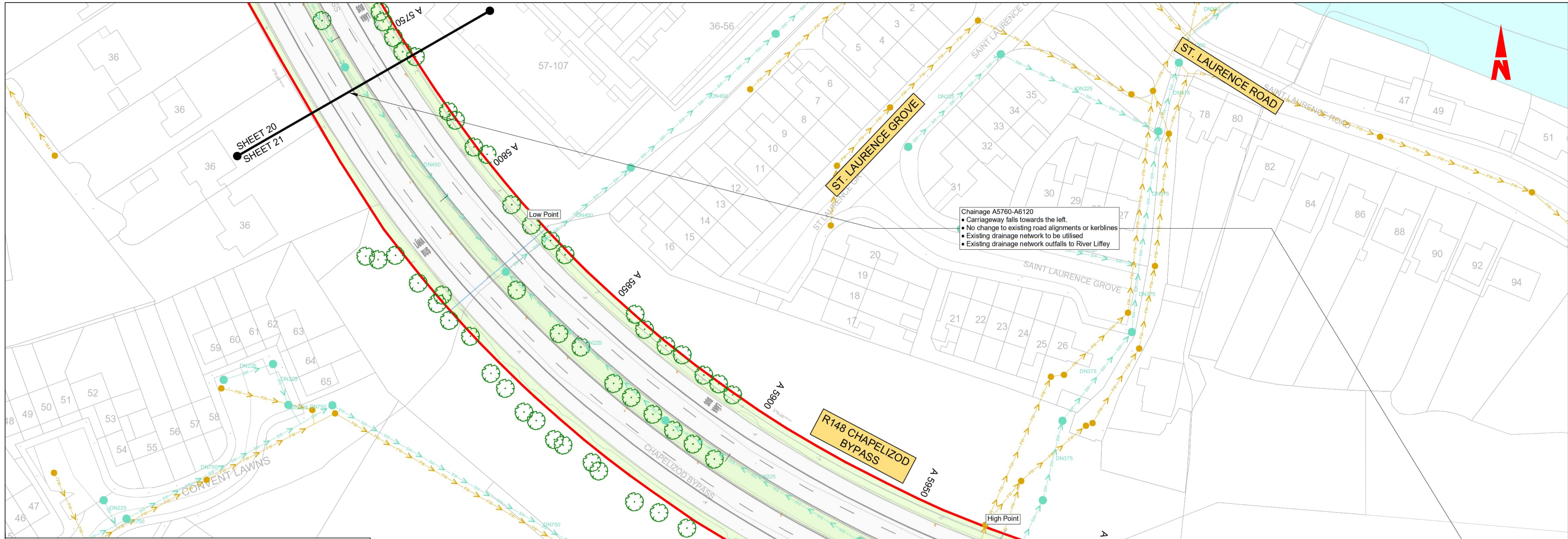
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	Rev	Date	Dm	Chk'd	App'd	Description	 Údarás Náisiúnta Iompair National Transport Authority	 	Engineering Designer		Programme Title <b>BUSCONNECTS DUBLIN          CORE BUS CORRIDORS INFRASTRUCTURE WORKS</b>					
	M01	30/09/22	AF	AD	CA	ISSUE FOR PHASE 4: PLANNING			Date	Scale		Drawn	Checked	Approved		
							 Údarás Náisiúnta Iompair National Transport Authority	 	30/09/22	1:500 @ A1 1:1000 @ A3	A.FLEMING	A.T.DALE	C.ACTON	Drawing Title <b>LUCAN TO CITY CENTRE CORE BUS CORRIDOR SCHEME          PROPOSED SURFACE WATER DRAINAGE WORKS</b>		
							Project Code	Originator Code	QMS Code				Drawing File Name	Sheet Number	Status	Rev
							BCIDA	ACM					BCIDA-ACM-DNG_RD-0006_XX_00-DR-CD-0020	20 of 31	A	M01

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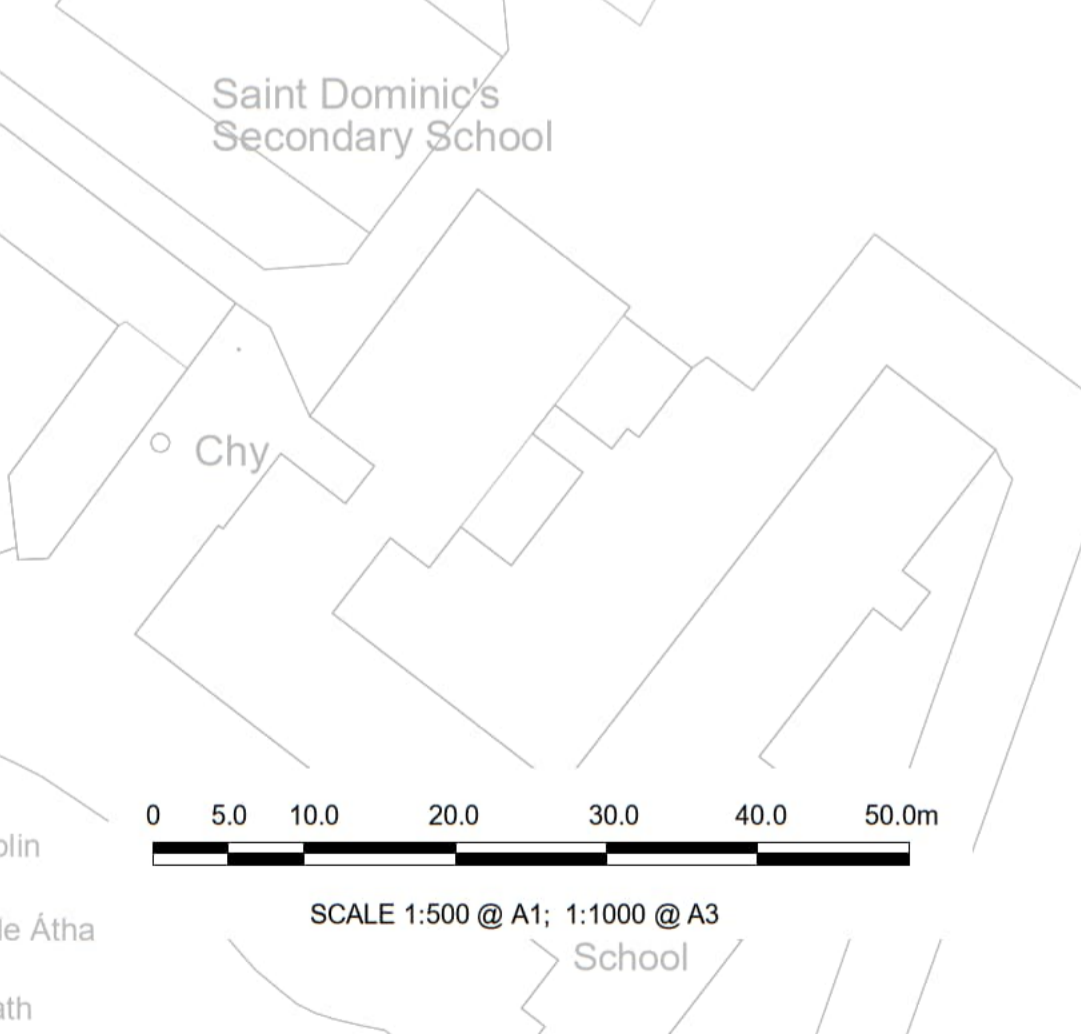
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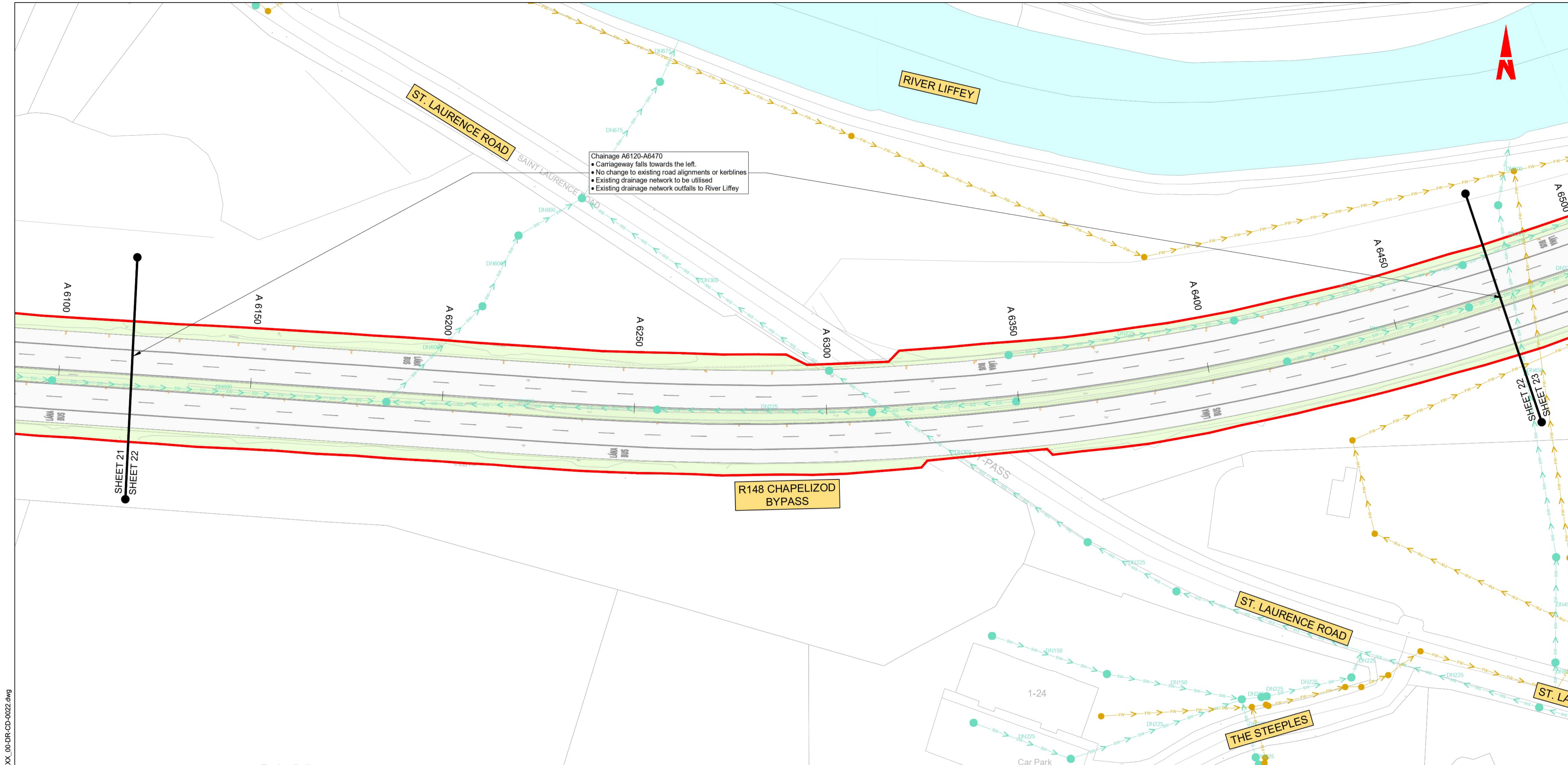
Chainage A5760-A6120  
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<p>Rev M01 Date 30/09/22 Dm AF Chk'd AD App'd CA Description ISSUE FOR PHASE 4: PLANNING</p>		<p>Client <b>NTA</b>          Údarás Náisiúnta Iompair          National Transport Authority</p>		<p>Engineering Designer <b>AECOM</b> <b>MOTT MACDONALD</b></p>		<p>Programme Title <b>BUSCONNECTS DUBLIN CORE BUS CORRIDORS INFRASTRUCTURE WORKS</b></p>	
<p>Date 30/09/22 Scale 1:500 @ A1 1:1000 @ A3 Drawn A.FLEMING Checked A.T.DALE Approved C.ACTON</p>		<p>Project Code BCIDA Originator Code ACM QMS Code</p>		<p>Drawing File Name BCIDA-ACM-DNG_RD-0006_XX_00-DR-CD-0021 Sheet Number 21 of 31 Status A Rev M01</p>		<p>Drawing Title <b>LUCAN TO CITY CENTRE CORE BUS CORRIDOR SCHEME PROPOSED SURFACE WATER DRAINAGE WORKS</b></p>	

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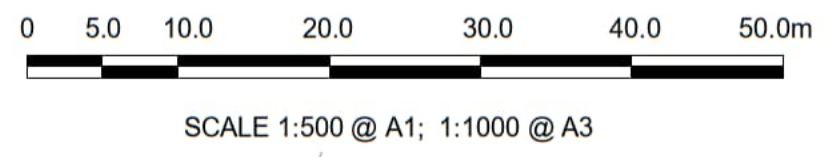


Chainage A6120-A6470  
 • Carriageway falls towards the left.  
 • No change to existing road alignments or kerblines  
 • Existing drainage network to be utilised  
 • Existing drainage network outfalls to River Liffey

**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 NETWORK		EXISTING TREE TO BE REMOVED
	EXISTING SURFACE WATER NETWORK		PROPOSED NEW TREE
	EXISTING OVERFLOW PIPE		PROPOSED NEW TREE PIT
	PLANNED SURFACE WATER PIPE		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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- PROPOSED VOLUMES OF ATTENUATION HAVE TAKEN RUN OFF COEFFICIENT OF SURFACES INTO CONSIDERATION.

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

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Building Ireland's Future

Rev	Date	Dm	Chk'd	App'd	Description
M01	30/09/22	AF	AD	CA	ISSUE FOR PHASE 4: PLANNING

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

Engineering Designer: **AECOM** MOTT MACDONALD

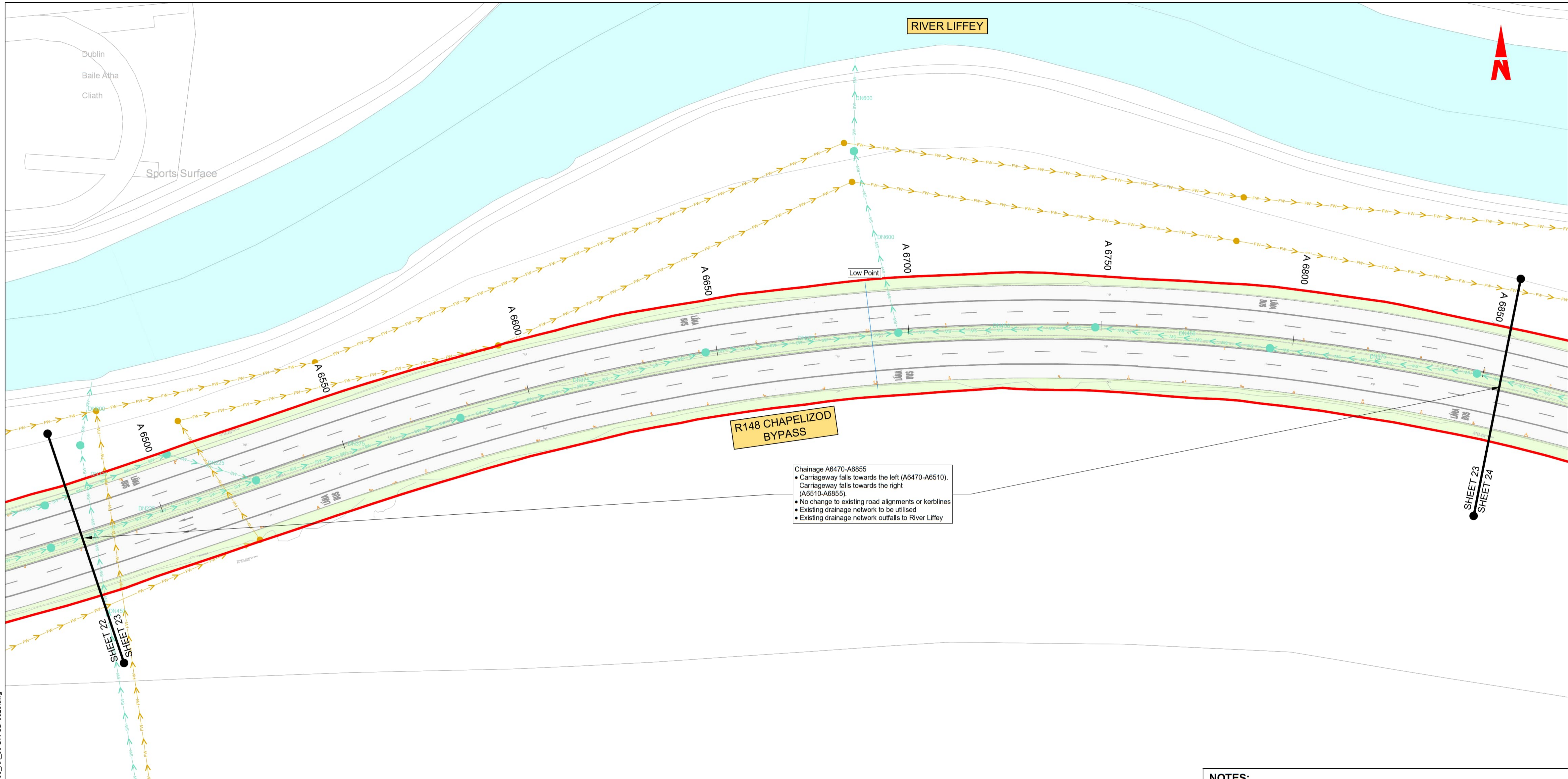
Date: 30/09/22  
 Scale: 1:500 @ A1, 1:1000 @ A3  
 Drawn: A.FLEMING, Checked: A.T.DALE, Approved: C.ACTON

Project Code: BCIDA, Originator Code: ACM, QMS Code:

Programme Title: <b>BUSCONNECTS DUBLIN CORE BUS CORRIDORS INFRASTRUCTURE WORKS</b>			
Drawing Title: <b>LUCAN TO CITY CENTRE CORE BUS CORRIDOR SCHEME PROPOSED SURFACE WATER DRAINAGE WORKS</b>			
Drawing File Name: BCIDA-ACM-DNG_RD-0006_XX_00-DR-CD-0022	Sheet Number: 22 of 31	Status: A	Rev: M01

DO NOT SCALE USE FIGURED DIMENSIONS ONLY



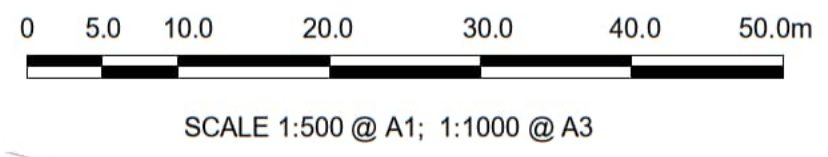


Chainage A6470-A6855  
 • Carriageway falls towards the left (A6470-A6510).  
 • Carriageway falls towards the right (A6510-A6855).  
 • No change to existing road alignments or kerblines  
 • Existing drainage network to be utilised  
 • Existing drainage network outfalls to River Liffey

**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 NETWORK
- EXISTING SURFACE WATER NETWORK
- EXISTING OVERFLOW PIPE
- PLANNED SURFACE WATER PIPE
- PROPOSED STORM WATER PIPE
- PROPOSED OVERSIZED PIPE
- PROPOSED FILTER DRAIN/PERFORATED PIPE
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- EXISTING TREE TO BE REMOVED
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- PROPOSED NEW TREE PIT
- PROPOSED SUDS I.E. SWALES, RAINGARDENS, FILTER DRAIN
- EXISTING GULLY
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**ABBREVIATIONS:**

ADR: ALLOWABLE DISCHARGE RATE  
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Rev	Date	Dm	Chk'd	App'd	Description
M01	30/09/22	AF	AD	CA	ISSUE FOR PHASE 4: PLANNING

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

Engineering Designer: **AECOM** **MOTT MACDONALD**

Date: 30/09/22  
 Scale: 1:500 @ A1, 1:1000 @ A3  
 Drawn: A.FLEMING, Checked: A.T.DALE, Approved: C.ACTON

Project Code: BCIDA, Originator Code: ACM, QMS Code:

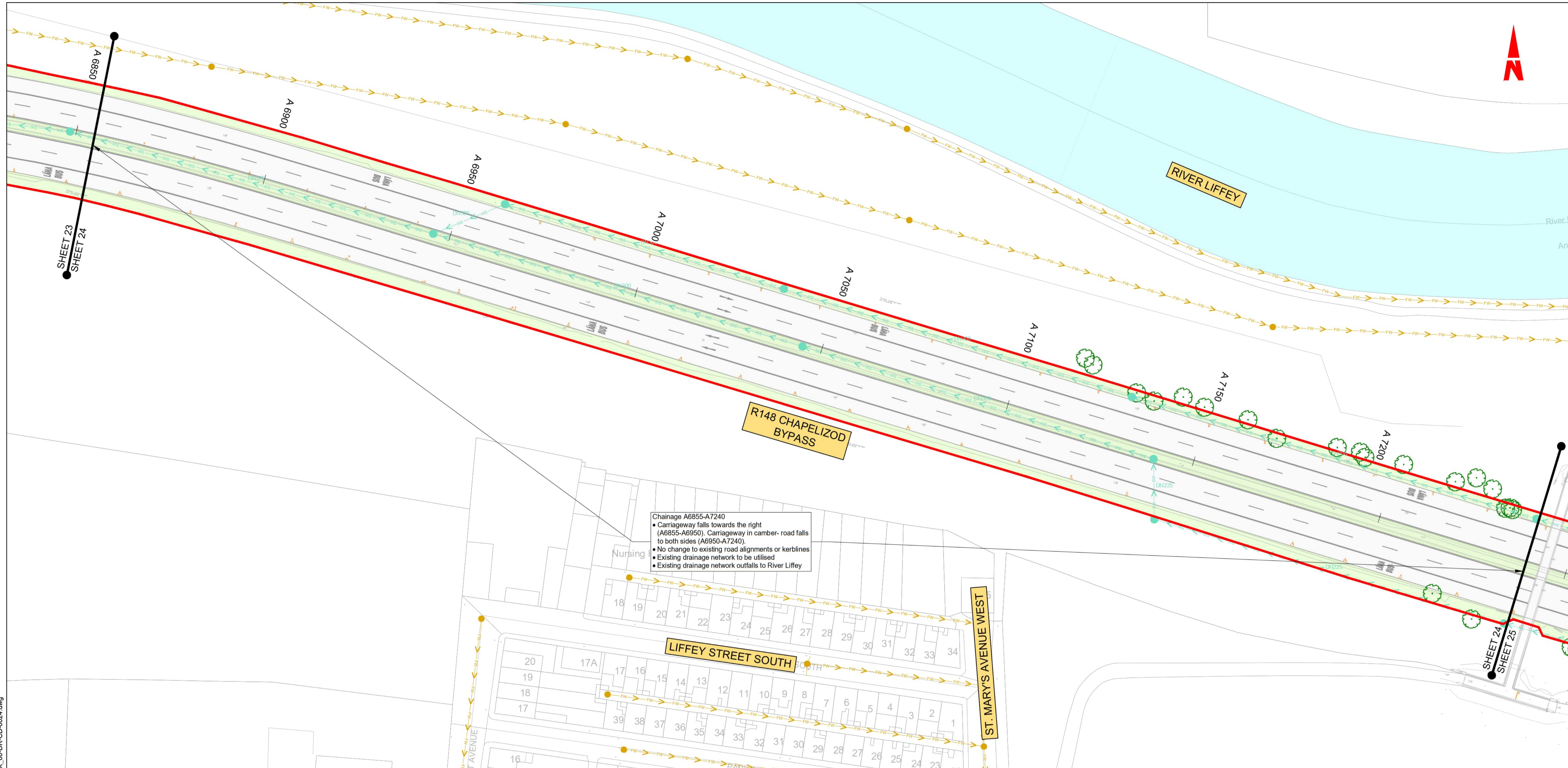
Programme Title: **BUSCONNECTS DUBLIN CORE BUS CORRIDORS INFRASTRUCTURE WORKS**

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

Drawing File Name: BCIDA-ACM-DNG\_RD-0006\_XX\_00-DR-CD-0023, Sheet Number: 23 of 31, Status: A, Rev: M01

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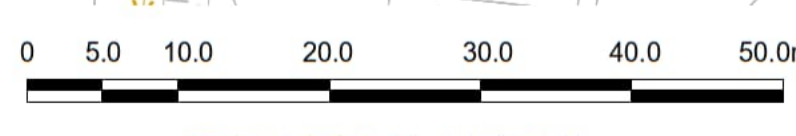
Chainage A6855-A7240

- Carriageway falls towards the right (A6855-A6950). Carriageway in camber-road falls to both sides (A6950-A7240).
- No change to existing road alignments or kerblines
- Existing drainage network to be utilised
- Existing drainage network outfalls to River Liffey

**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
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	EXISTING OVERFLOW PIPE		PROPOSED NEW TREE PIT
	PLANNED SURFACE WATER PIPE		PROPOSED SUDS I.E. SWALES, RAINGARDENS, FILTER DRAIN
	PROPOSED STORM WATER PIPE		EXISTING GULLY
	PROPOSED OVERSIZED PIPE		SITE BOUNDARY LINE
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**ABBREVIATIONS:**

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Rev	Date	Dm	Chk'd	App'd	Description
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Client: **NTA** (Udaráis Náisiúnta Iompair National Transport Authority)

Engineering Designer: **AECOM** and **MOTT MACDONALD**

Date: 30/09/22 | Scale: 1:500 @ A1, 1:1000 @ A3

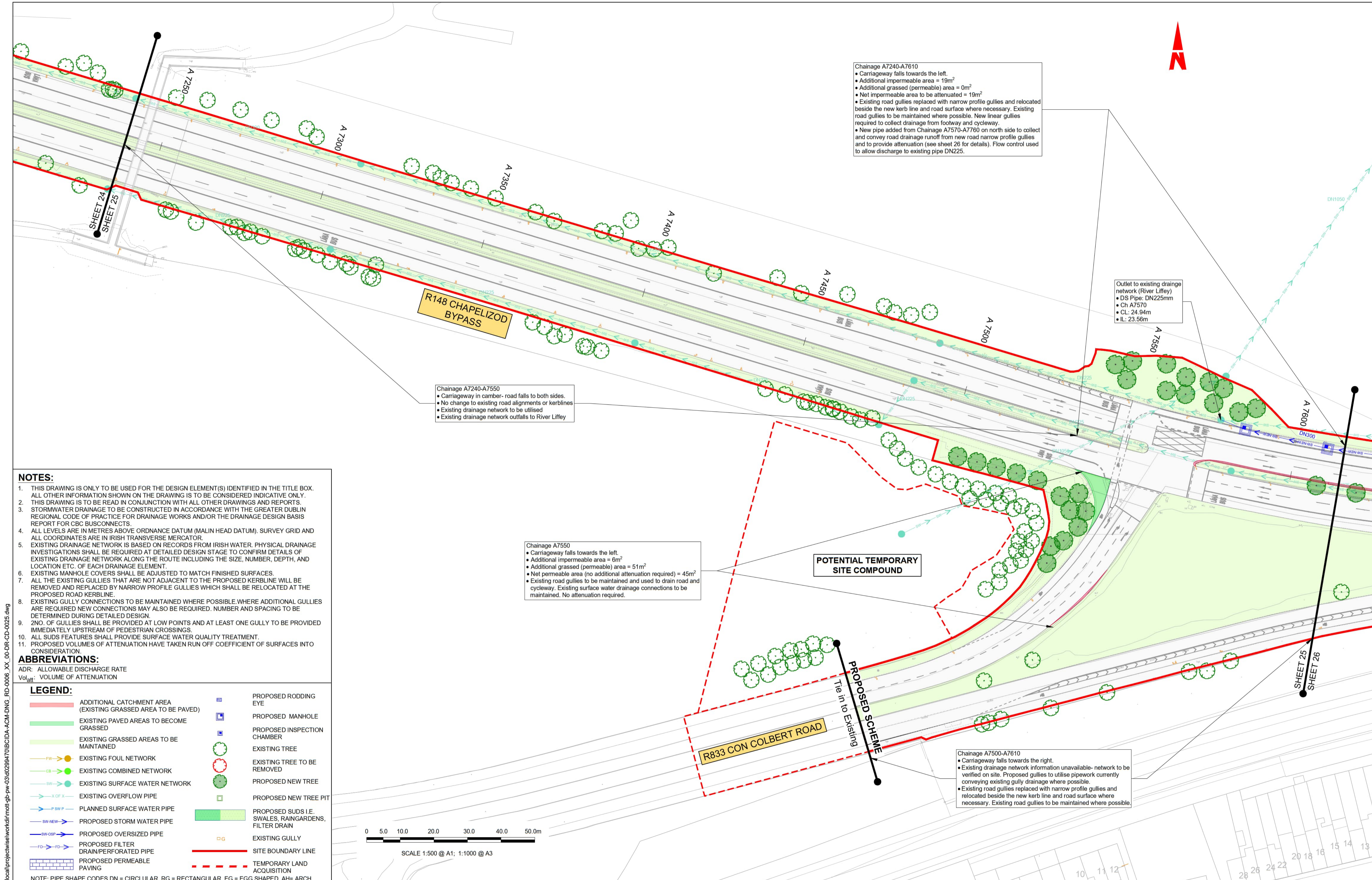
Project Code: BCIDA | Originator Code: ACM

Drawn: A.FLEMING | Checked: A.T.DALE | Approved: C.ACTON

Programme Title: <b>BUSCONNECTS DUBLIN CORE BUS CORRIDORS INFRASTRUCTURE WORKS</b>			
Drawing Title: <b>LUCAN TO CITY CENTRE CORE BUS CORRIDOR SCHEME PROPOSED SURFACE WATER DRAINAGE WORKS</b>			
Drawing File Name: BCIDA-ACM-DNG_RD-0006_XX_00-DR-CD-0024	Sheet Number: 24 of 31	Status: A	Rev: M01

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**Chainage A7240-A7610**

- Carriageway falls towards the left.
- Additional impermeable area = 19m<sup>2</sup>
- Additional grassed (permeable) area = 0m<sup>2</sup>
- Net impermeable area to be attenuated = 19m<sup>2</sup>
- Existing road gullies replaced with narrow profile gullies and relocated beside the new kerb line and road surface where necessary. Existing road gullies to be maintained where possible. New linear gullies required to collect drainage from footway and cycleway.
- New pipe added from Chainage A7570-A7600 on north side to collect and convey road drainage runoff from new road narrow profile gullies and to provide attenuation (see sheet 26 for details). Flow control used to allow discharge to existing pipe DN225.

**Chainage A7240-A7550**

- Carriageway in camber- road falls to both sides.
- No change to existing road alignments or kerblines
- Existing drainage network to be utilised
- Existing drainage network outfalls to River Liffey

**Chainage A7550**

- Carriageway falls towards the left.
- Additional impermeable area = 6m<sup>2</sup>
- Additional grassed (permeable) area = 51m<sup>2</sup>
- Net permeable area (no additional attenuation required) = 45m<sup>2</sup>
- Existing road gullies to be maintained and used to drain road and cycleway. Existing surface water drainage connections to be maintained. No attenuation required.

**Chainage A7500-A7610**

- Carriageway falls towards the right.
- Existing drainage network information unavailable-network to be verified on site. Proposed gullies to utilise pipework currently conveying existing gully drainage where possible.
- Existing road gullies replaced with narrow profile gullies and relocated beside the new kerb line and road surface where necessary. Existing road gullies to be maintained where possible.

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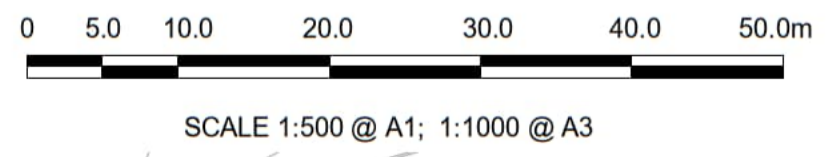
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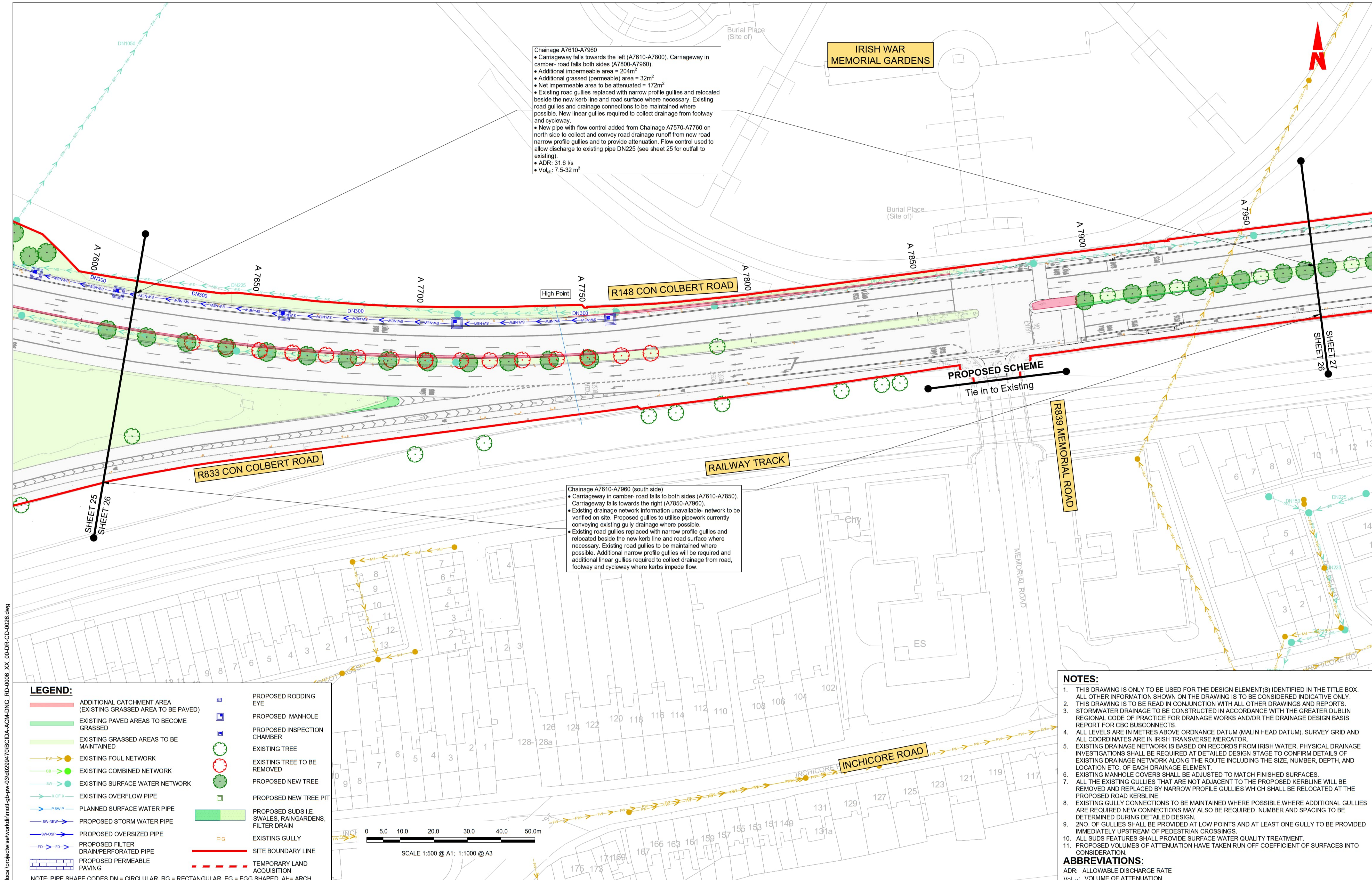


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<p>Date 30/09/22 Scale 1:500 @ A1 1:1000 @ A3 Drawn A.FLEMING Checked A.T.DALE Approved C.ACTON</p>		<p>Project Code BCIDA Originator Code ACM QMS Code</p>		<p>Drawing File Name BCIDA-ACM-DNG_RD-0006_XX_00-DR-CD-0025</p>		<p>Drawing Title <b>LUCAN TO CITY CENTRE CORE BUS CORRIDOR SCHEME PROPOSED SURFACE WATER DRAINAGE WORKS</b></p>		<p>Sheet Number 25 of 31 Status A Rev M01</p>	

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**Chainage A7610-A7960**

- Carriageway falls towards the left (A7610-A7800). Carriageway in camber- road falls both sides (A7800-A7960).
- Additional impermeable area = 204m<sup>2</sup>
- Additional grassed (permeable) area = 32m<sup>2</sup>
- Net impermeable area to be attenuated = 172m<sup>2</sup>
- Existing road gullies replaced with narrow profile gullies and relocated beside the new kerb line and road surface where necessary. Existing road gullies and drainage connections to be maintained where possible. New linear gullies required to collect drainage from footway and cycleway.
- New pipe with flow control added from Chainage A7570-A7760 on north side to collect and convey road drainage runoff from new road narrow profile gullies and to provide attenuation. Flow control used to allow discharge to existing pipe DN225 (see sheet 25 for outfall to existing).
- ADR: 31.6 l/s
- Vol<sub>att</sub>: 7.5-32 m<sup>3</sup>

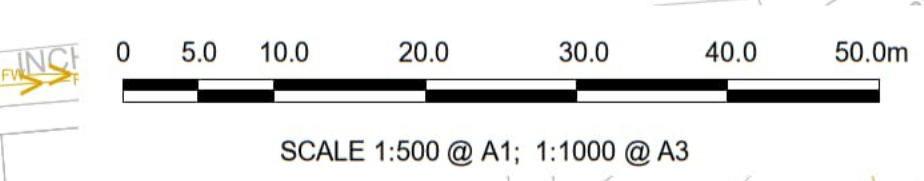
**Chainage A7610-A7960 (south side)**

- Carriageway in camber- road falls to both sides (A7610-A7850). Carriageway falls towards the right (A7850-A7960).
- Existing drainage network information unavailable- network to be verified on site. Proposed gullies to utilise pipework currently conveying existing gully drainage where possible.
- Existing road gullies replaced with narrow profile gullies and relocated beside the new kerb line and road surface where necessary. Existing road gullies to be maintained where possible. Additional narrow profile gullies will be required and additional linear gullies required to collect drainage from road, footway and cycleway where kerbs impede flow.

**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 NETWORK		EXISTING TREE TO BE REMOVED
	EXISTING SURFACE WATER NETWORK		PROPOSED NEW TREE
	EXISTING OVERFLOW PIPE		PROPOSED NEW TREE PIT
	PLANNED SURFACE WATER PIPE		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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4. ALL LEVELS ARE IN METRES ABOVE ORDNANCE DATUM (MALIN HEAD DATUM), SURVEY GRID AND ALL COORDINATES ARE IN IRISH TRANSVERSE MERCATOR.
5. EXISTING DRAINAGE NETWORK IS BASED ON RECORDS FROM IRISH WATER. PHYSICAL DRAINAGE INVESTIGATIONS SHALL BE REQUIRED AT DETAILED DESIGN STAGE TO CONFIRM DETAILS OF EXISTING DRAINAGE NETWORK ALONG THE ROUTE INCLUDING THE SIZE, NUMBER, DEPTH, AND LOCATION ETC. OF EACH DRAINAGE ELEMENT.
6. EXISTING MANHOLE COVERS SHALL BE ADJUSTED TO MATCH FINISHED SURFACES.
7. ALL THE EXISTING GULLIES THAT ARE NOT ADJACENT TO THE PROPOSED KERBLINE WILL BE REMOVED AND REPLACED BY NARROW PROFILE GULLIES WHICH SHALL BE RELOCATED AT THE PROPOSED ROAD KERBLINE.
8. EXISTING GULLY CONNECTIONS TO BE MAINTAINED WHERE POSSIBLE WHERE ADDITIONAL GULLIES ARE REQUIRED NEW CONNECTIONS MAY ALSO BE REQUIRED. NUMBER AND SPACING TO BE DETERMINED DURING DETAILED DESIGN.
9. 2NO. OF GULLIES SHALL BE PROVIDED AT LOW POINTS AND AT LEAST ONE GULLY TO BE PROVIDED IMMEDIATELY UPSTREAM OF PEDESTRIAN CROSSINGS.
10. ALL SUDS FEATURES SHALL PROVIDE SURFACE WATER QUALITY TREATMENT.
11. PROPOSED VOLUMES OF ATTENUATION HAVE TAKEN RUN OFF COEFFICIENT OF SURFACES INTO CONSIDERATION.

**ABBREVIATIONS:**

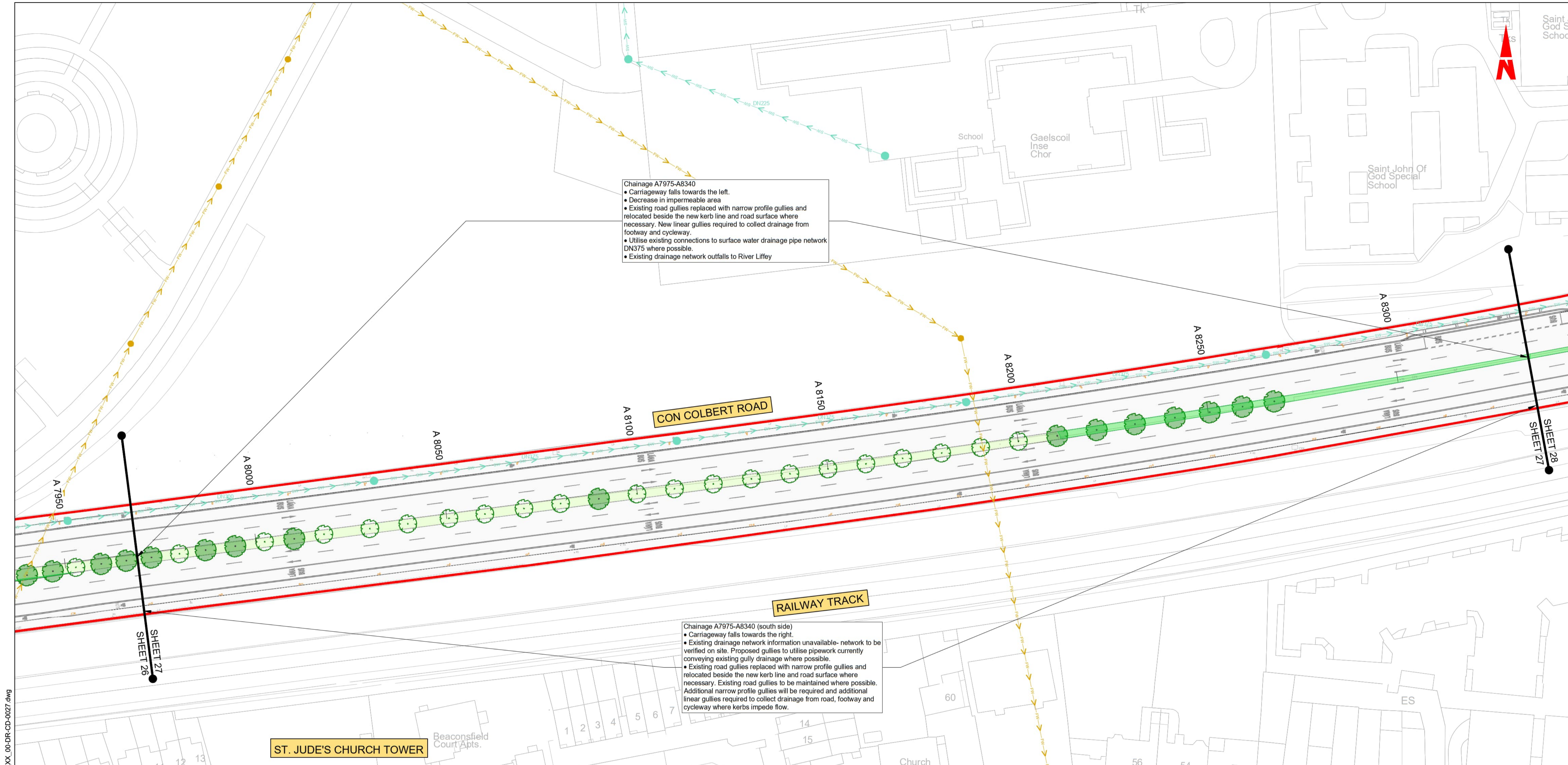
ADR: ALLOWABLE DISCHARGE RATE  
Vol<sub>att</sub>: VOLUME OF ATTENUATION

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<p>Date: 30/09/22 Scale: 1:500 @ A1, 1:1000 @ A3</p>		<p>Drawn: A.FLEMING Checked: A.T.DALE Approved: C.ACTON</p>		<p>Project Code: BCIDA Originator Code: ACM</p>		<p>QMS Code:</p>		<p>Drawing File Name: BCIDA-ACM-DNG_RD-0006_XX_00-DR-CD-0026</p>	
<p>Project Ireland 2040 Building Ireland's Future</p>		<p>Scale: 1:500 @ A1, 1:1000 @ A3</p>		<p>Sheet Number: 26 of 31</p>		<p>Status: A</p>		<p>Rev: M01</p>	

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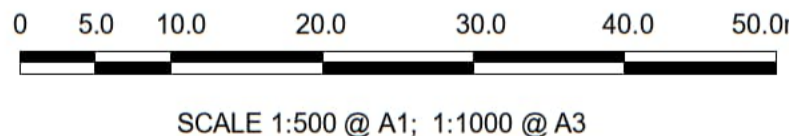
Chainage A7975-A8340

- Carriageway falls towards the left.
- Decrease in impermeable area
- Existing road gullies replaced with narrow profile gullies and relocated beside the new kerb line and road surface where necessary. New linear gullies required to collect drainage from footway and cycleway.
- Utilise existing connections to surface water drainage pipe network DN375 where possible.
- Existing drainage network outfalls to River Liffey

Chainage A7975-A8340 (south side)

- Carriageway falls towards the right.
- Existing drainage network information unavailable- network to be verified on site. Proposed gullies to utilise pipework currently conveying existing gully drainage where possible.
- Existing road gullies replaced with narrow profile gullies and relocated beside the new kerb line and road surface where necessary. Existing road gullies to be maintained where possible. Additional narrow profile gullies will be required and additional linear gullies required to collect drainage from road, footway and cycleway where kerbs impede flow.

- 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 NETWORK
  - EXISTING SURFACE WATER NETWORK
  - EXISTING OVERFLOW PIPE
  - PLANNED SURFACE WATER PIPE
  - 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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5. EXISTING DRAINAGE NETWORK IS BASED ON RECORDS FROM IRISH WATER. PHYSICAL DRAINAGE INVESTIGATIONS SHALL BE REQUIRED AT DETAILED DESIGN STAGE TO CONFIRM DETAILS OF EXISTING DRAINAGE NETWORK ALONG THE ROUTE INCLUDING THE SIZE, NUMBER, DEPTH, AND LOCATION ETC. OF EACH DRAINAGE ELEMENT.
6. EXISTING MANHOLE COVERS SHALL BE ADJUSTED TO MATCH FINISHED SURFACES.
7. ALL THE EXISTING GULLIES THAT ARE NOT ADJACENT TO THE PROPOSED KERBLINE WILL BE REMOVED AND REPLACED BY NARROW PROFILE GULLIES WHICH SHALL BE RELOCATED AT THE PROPOSED ROAD KERBLINE.
8. EXISTING GULLY CONNECTIONS TO BE MAINTAINED WHERE POSSIBLE. WHERE ADDITIONAL GULLIES ARE REQUIRED NEW CONNECTIONS MAY ALSO BE REQUIRED. NUMBER AND SPACING TO BE DETERMINED DURING DETAILED DESIGN.
9. 2NO. OF GULLIES SHALL BE PROVIDED AT LOW POINTS AND AT LEAST ONE GULLY TO BE PROVIDED IMMEDIATELY UPSTREAM OF PEDESTRIAN CROSSINGS.
10. ALL SUDS FEATURES SHALL PROVIDE SURFACE WATER QUALITY TREATMENT.
11. PROPOSED VOLUMES OF ATTENUATION HAVE TAKEN RUN OFF COEFFICIENT OF SURFACES INTO CONSIDERATION.

**ABBREVIATIONS:**

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

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Rev	Date	Dm	Chk'd	App'd	Description
M01	30/09/22	AF	AD	CA	ISSUE FOR PHASE 4: PLANNING

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

Engineering Designer: **AECOM** (MOTT MACDONALD)

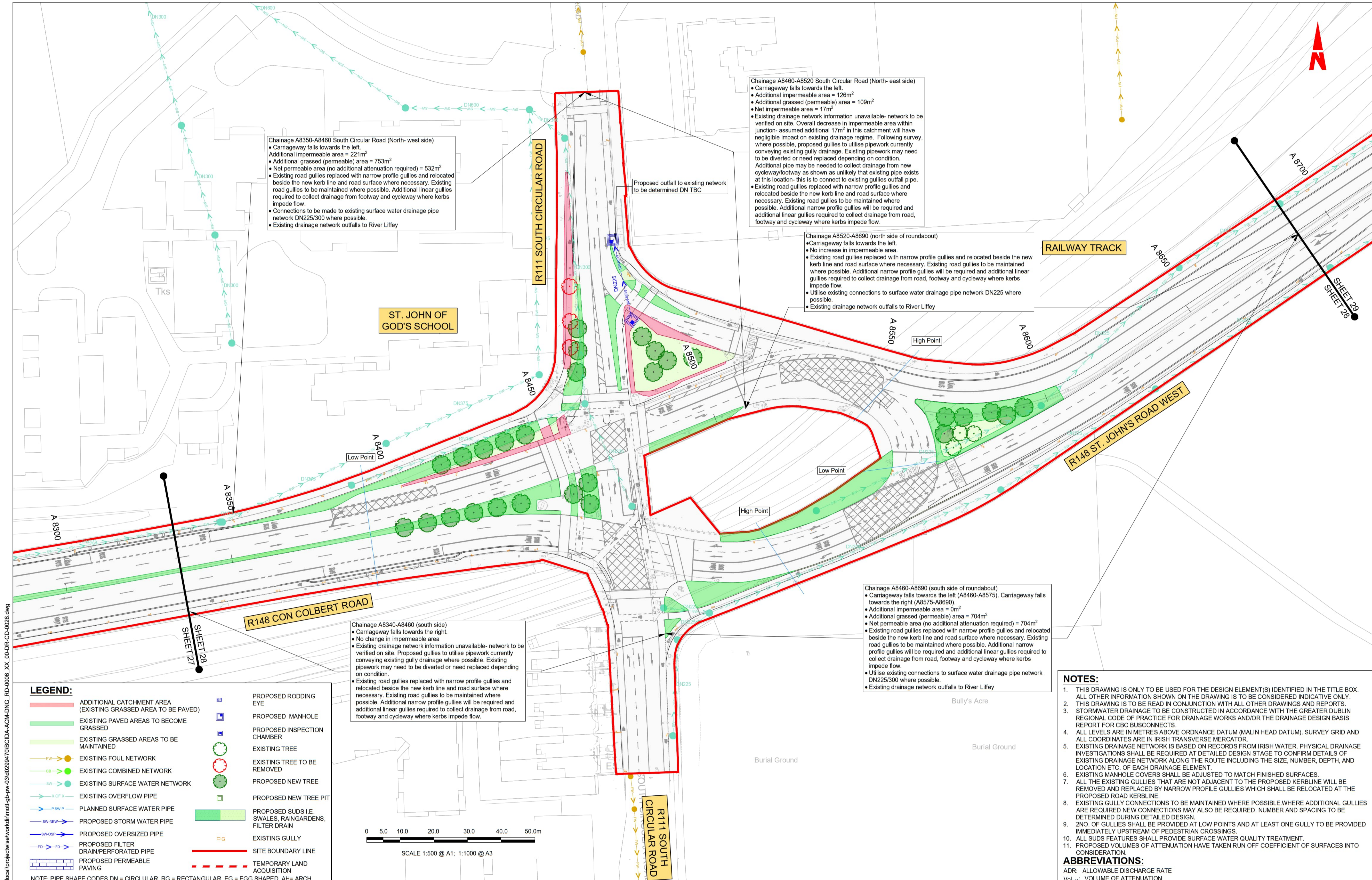
Date: 30/09/22 | Scale: 1:500 @ A1, 1:1000 @ A3

Project Code: BCIDA | Originator Code: ACM

Drawn: A.FLEMING | Checked: A.T.DALE | Approved: C.ACTON

Programme Title: <b>BUSCONNECTS DUBLIN CORE BUS CORRIDORS INFRASTRUCTURE WORKS</b>			
Drawing Title: <b>LUCAN TO CITY CENTRE CORE BUS CORRIDOR SCHEME PROPOSED SURFACE WATER DRAINAGE WORKS</b>			
Drawing File Name: BCIDA-ACM-DNG_RD-0006_XX_00-DR-CD-0027	Sheet Number: 27 of 31	Status: A	Rev: M01





**Chainage A8350-A8460 South Circular Road (North-west side)**

- Carriageway falls towards the left.
- Additional impermeable area = 221m<sup>2</sup>
- Additional grassed (permeable) area = 753m<sup>2</sup>
- Net permeable area (no additional attenuation required) = 532m<sup>2</sup>
- Existing road gullies replaced with narrow profile gullies and relocated beside the new kerb line and road surface where necessary. Existing road gullies to be maintained where possible. Additional linear gullies required to collect drainage from footway and cycleway where kerbs impede flow.
- Connections to be made to existing surface water drainage pipe network DN225/300 where possible.
- Existing drainage network outfalls to River Liffey

**Chainage A8460-A8520 South Circular Road (North-east side)**

- Carriageway falls towards the left.
- Additional impermeable area = 126m<sup>2</sup>
- Additional grassed (permeable) area = 109m<sup>2</sup>
- Net impermeable area = 17m<sup>2</sup>
- Existing drainage network information unavailable- network to be verified on site. Overall decrease in impermeable area within junction- assumed additional 17m<sup>2</sup> in this catchment will have negligible impact on existing drainage regime. Following survey, where possible, proposed gullies to utilise pipework currently conveying existing gully drainage. Existing pipework may need to be diverted or need replaced depending on condition. Additional pipe may be needed to collect drainage from new cycleway/footway as shown as unlikely that existing pipe exists at this location- this is to connect to existing gullies outfall pipe.
- Existing road gullies replaced with narrow profile gullies and relocated beside the new kerb line and road surface where necessary. Existing road gullies to be maintained where possible. Additional narrow profile gullies will be required and additional linear gullies required to collect drainage from road, footway and cycleway where kerbs impede flow.

**Chainage A8520-A8690 (north side of roundabout)**

- Carriageway falls towards the left.
- No increase in impermeable area.
- Existing road gullies replaced with narrow profile gullies and relocated beside the new kerb line and road surface where necessary. Existing road gullies to be maintained where possible. Additional narrow profile gullies will be required and additional linear gullies required to collect drainage from road, footway and cycleway where kerbs impede flow.
- Utilise existing connections to surface water drainage pipe network DN225 where possible.
- Existing drainage network outfalls to River Liffey

**Chainage A8460-A8690 (south side of roundabout)**

- Carriageway falls towards the left (A8460-A8575). Carriageway falls towards the right (A8575-A8690).
- Additional impermeable area = 0m<sup>2</sup>
- Additional grassed (permeable) area = 704m<sup>2</sup>
- Net permeable area (no additional attenuation required) = 704m<sup>2</sup>
- Existing road gullies replaced with narrow profile gullies and relocated beside the new kerb line and road surface where necessary. Existing road gullies to be maintained where possible. Additional narrow profile gullies will be required and additional linear gullies required to collect drainage from road, footway and cycleway where kerbs impede flow.
- Utilise existing connections to surface water drainage pipe network DN225/300 where possible.
- Existing drainage network outfalls to River Liffey

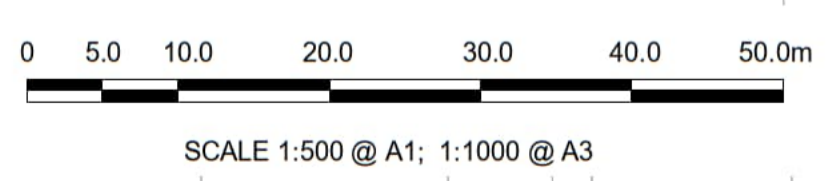
**Chainage A8340-A8460 (south side)**

- Carriageway falls towards the right.
- No change in impermeable area
- Existing drainage network information unavailable- network to be verified on site. Proposed gullies to utilise pipework currently conveying existing gully drainage where possible. Existing pipework may need to be diverted or need replaced depending on condition.
- Existing road gullies replaced with narrow profile gullies and relocated beside the new kerb line and road surface where necessary. Existing road gullies to be maintained where possible. Additional narrow profile gullies will be required and additional linear gullies required to collect drainage from road, footway and cycleway where kerbs impede flow.

**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 NETWORK		EXISTING TREE TO BE REMOVED
	EXISTING SURFACE WATER NETWORK		PROPOSED NEW TREE
	EXISTING OVERFLOW PIPE		PROPOSED NEW TREE PIT
	PLANNED SURFACE WATER PIPE		PROPOSED SUDS I.E. SWALES, RAINGARDENS, FILTER DRAIN
	PROPOSED STORM WATER PIPE		EXISTING GULLY
	PROPOSED OVERSIZED PIPE		SITE BOUNDARY LINE
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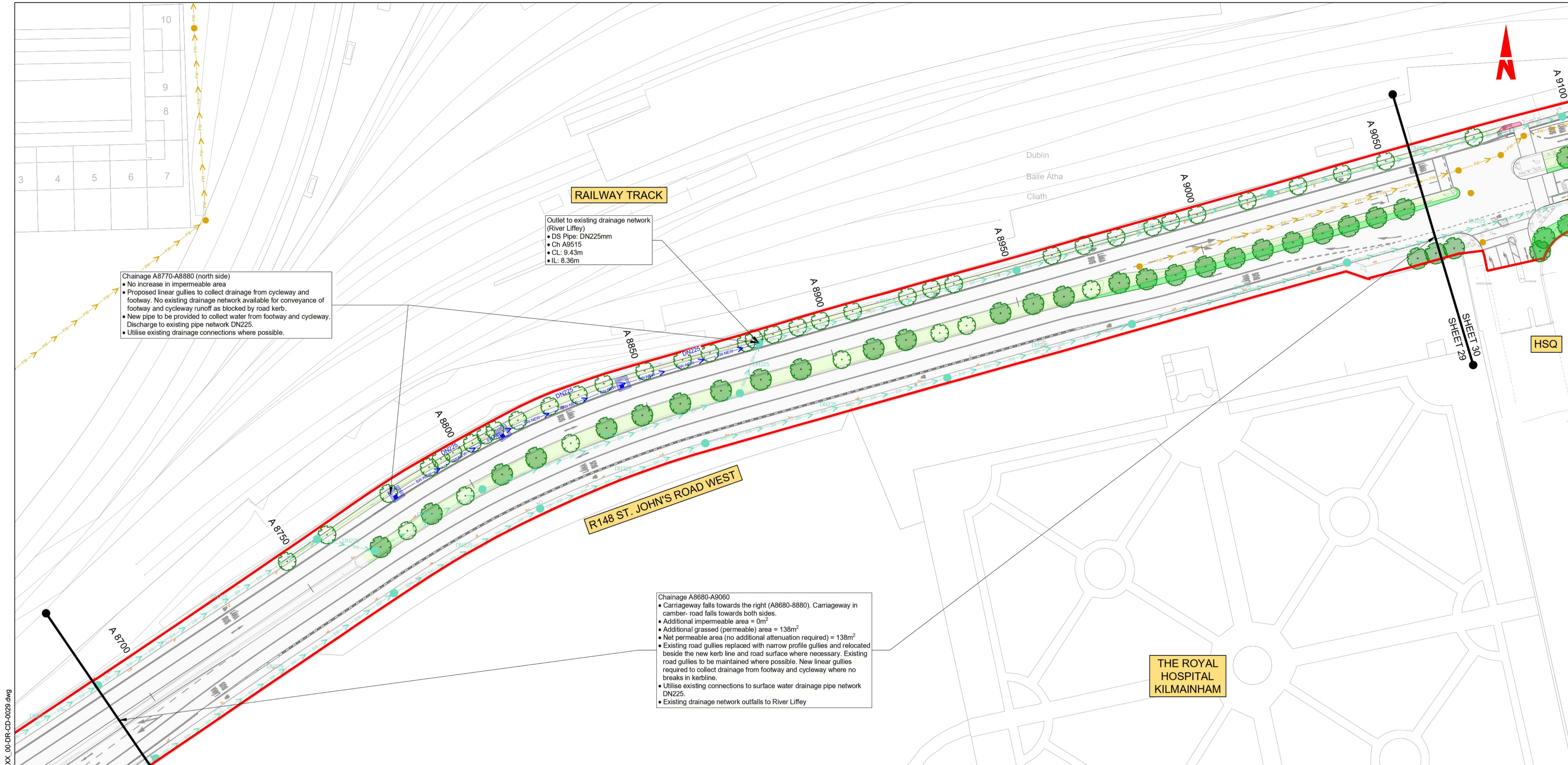
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ADR: ALLOWABLE DISCHARGE RATE  
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		Rev	Date	Dm	Chk'd	App'd	Description										
M01	30/09/22	AF	AD	CA	ISSUE FOR PHASE 4: PLANNING												
<p>Date</p> <p>30/09/22</p> <p>Scale 1:500 @ A1 1:1000 @ A3</p> <p>Project Code</p> <p>BCIDA</p> <p>Originator Code</p> <p>ACM</p> <p>QMS Code</p>	<p>Drawn</p> <p>A.FLEMING</p> <p>Checked</p> <p>A.T.DALE</p> <p>Approved</p> <p>C.ACTON</p>	<p>Drawing Title</p> <p>LUCAN TO CITY CENTRE CORE BUS CORRIDOR SCHEME PROPOSED SURFACE WATER DRAINAGE WORKS</p>															

DO NOT SCALE USE FIGURED DIMENSIONS ONLY





Chainage A8770-A8880 (north side)

- No increase in impermeable area
- Proposed linear gullies to collect drainage from cycleway and footway. No existing drainage network available for conveyance of footway and cycleway runoff as blocked by road kerb.
- New pipe to be provided to collect water from footway and cycleway. Discharge to existing pipe network DN225.
- Utilise existing drainage connections where possible.

RAILWAY TRACK

Outlet to existing drainage network (River Liffey)

- DS Pipe: DN225mm
- Ch A9515
- CL: 9.43m
- IL: 8.36m

Chainage A8680-A9060

- Carriageway falls towards the right (A8680-8880). Carriageway in camber- road falls towards both sides.
- Additional impermeable area = 0m<sup>2</sup>
- Additional grassed (permeable) area = 138m<sup>2</sup>
- Net permeable area (no additional attenuation required) = 138m<sup>2</sup>
- Existing road gullies replaced with narrow profile gullies and relocated beside the new kerb line and road surface where necessary. Existing road gullies to be maintained where possible. New linear gullies required to collect drainage from footway and cycleway where no breaks in kerblines.
- Utilise existing connections to surface water drainage pipe network DN225.
- Existing drainage network outfalls to River Liffey

**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 NETWORK		EXISTING TREE TO BE REMOVED
	EXISTING SURFACE WATER NETWORK		PROPOSED NEW TREE
	EXISTING OVERFLOW PIPE		PROPOSED NEW TREE PIT
	PLANNED SURFACE WATER PIPE		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.

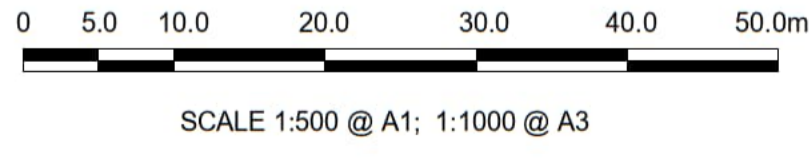
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- EXISTING DRAINAGE NETWORK IS BASED ON RECORDS FROM IRISH WATER. PHYSICAL DRAINAGE INVESTIGATIONS SHALL BE REQUIRED AT DETAILED DESIGN STAGE TO CONFIRM DETAILS OF EXISTING DRAINAGE NETWORK ALONG THE ROUTE INCLUDING THE SIZE, NUMBER, DEPTH, AND LOCATION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

**ABBREVIATIONS:**

ADR: ALLOWABLE DISCHARGE RATE  
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Rev	Date	Dm	Chk'd	App'd	Description
M01	30/09/22	AF	AD	CA	ISSUE FOR PHASE 4: PLANNING

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

Engineering Designer: **AECOM** **MOTT MACDONALD**

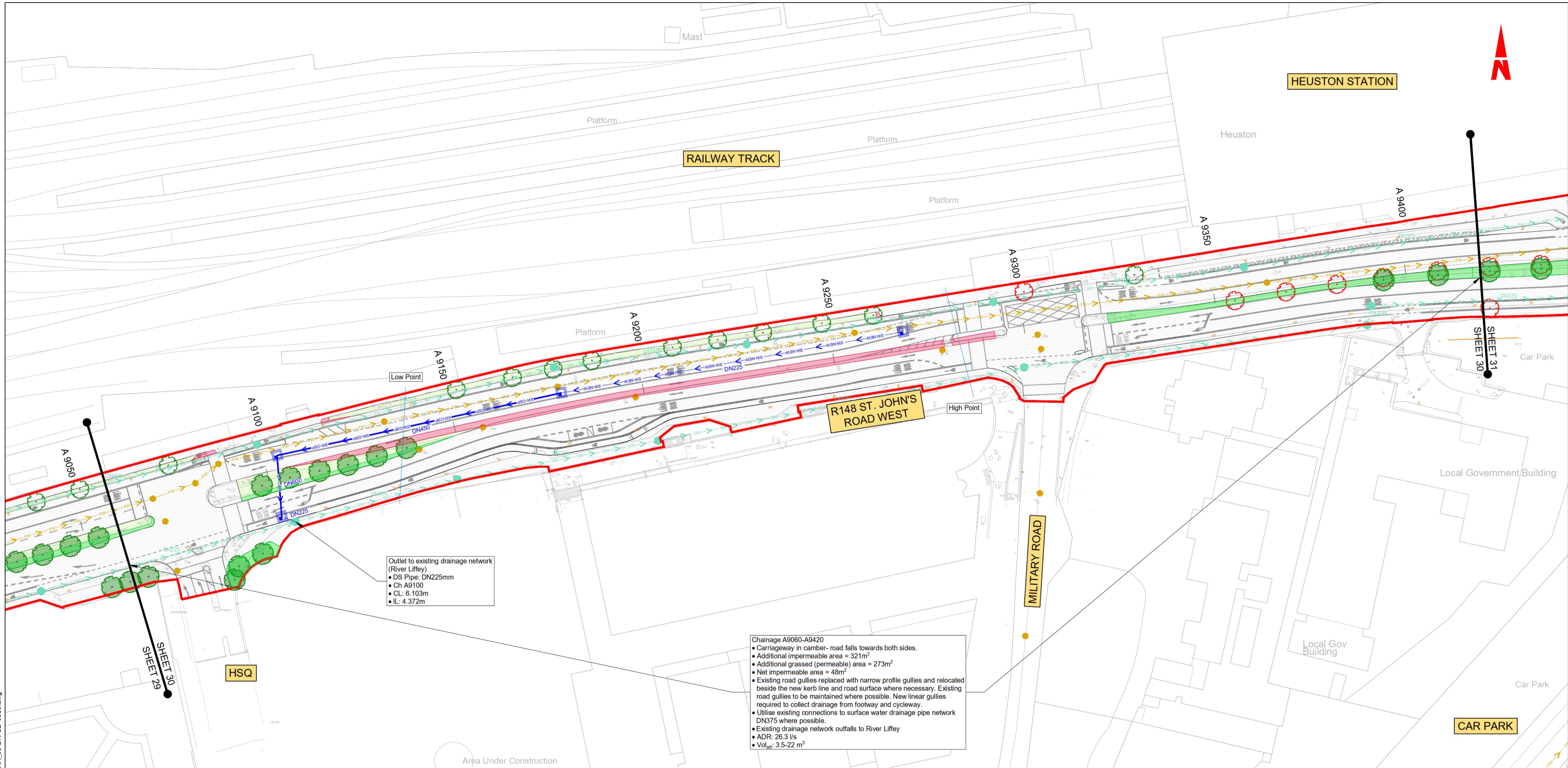
Date: 30/09/22  
Scale: 1:500 @ A1, 1:1000 @ A3  
Drawn: A.FLEMING  
Checked: A.T.DALE  
Approved: C.ACTON

Project Code: BCIDA  
Originator Code: ACM  
QMS Code:

Programme Title: <b>BUSCONNECTS DUBLIN CORE BUS CORRIDORS INFRASTRUCTURE WORKS</b>			
Drawing Title: <b>LUCAN TO CITY CENTRE CORE BUS CORRIDOR SCHEME PROPOSED SURFACE WATER DRAINAGE WORKS</b>			
Drawing File Name: BCIDA-ACM-DNG_RD-0006_XX_00-DR-CD-0029	Sheet Number: 29 of 31	Status: A	Rev: M01

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Outlet to existing drainage network (River Liffey)

- DS Pipe: DN225mm
- Ch A9100
- CL: 6.103m
- IL: 4.372m

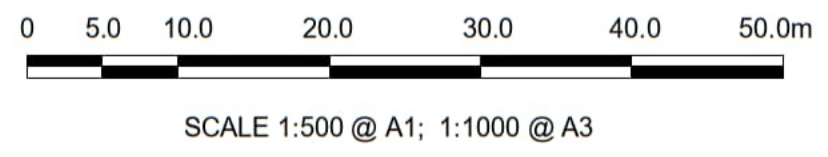
Chainage A9060-A9420

- Carriageway in camber- road falls towards both sides.
- Additional impermeable area = 321m<sup>2</sup>
- Additional grassed (permeable) area = 273m<sup>2</sup>
- Net impermeable area = 48m<sup>2</sup>
- Existing road gullies replaced with narrow profile gullies and relocated beside the new kerb line and road surface where necessary. Existing road gullies to be maintained where possible. New linear gullies required to collect drainage from footway and cycleway.
- Utilise existing connections to surface water drainage pipe network DN375 where possible.
- Existing drainage network outfalls to River Liffey
- ADR: 26.3 l/s
- Vol<sub>att</sub>: 3.5-22 m<sup>3</sup>

**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 NETWORK                                     |  | EXISTING TREE TO BE REMOVED                          |
|  | EXISTING SURFACE WATER NETWORK                                |  | PROPOSED NEW TREE                                    |
|  | EXISTING OVERFLOW PIPE  |  | PROPOSED NEW TREE PIT                                |
|  | PLANNED SURFACE WATER PIPE                                    |  | 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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6. EXISTING MANHOLE COVERS SHALL BE ADJUSTED TO MATCH FINISHED SURFACES.
7. ALL THE EXISTING GULLIES THAT ARE NOT ADJACENT TO THE PROPOSED KERBLINE WILL BE REMOVED AND REPLACED BY NARROW PROFILE GULLIES WHICH SHALL BE RELOCATED AT THE PROPOSED ROAD KERBLINE.
8. EXISTING GULLY CONNECTIONS TO BE MAINTAINED WHERE POSSIBLE. WHERE ADDITIONAL GULLIES ARE REQUIRED NEW CONNECTIONS MAY ALSO BE REQUIRED. NUMBER AND SPACING TO BE DETERMINED DURING DETAILED DESIGN.
9. 2NO. OF GULLIES SHALL BE PROVIDED AT LOW POINTS AND AT LEAST ONE GULLY TO BE PROVIDED IMMEDIATELY UPSTREAM OF PEDESTRIAN CROSSINGS.
10. ALL SUDS FEATURES SHALL PROVIDE SURFACE WATER QUALITY TREATMENT.
11. PROPOSED VOLUMES OF ATTENUATION HAVE TAKEN RUN OFF COEFFICIENT OF SURFACES INTO CONSIDERATION.

**ABBREVIATIONS:**

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

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Údarás Náisiúnta Iompair  
National Transport Authority

Engineering Designer: **AECOM**, **MOTT MACDONALD**

Date: 30/09/22  
Scale: 1:500 @ A1, 1:1000 @ A3

Project Code: BCIDA  
Originator Code: ACM

Drawn: A.FLEMING  
Checked: A.T.DALE  
Approved: C.ACTON

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

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

Drawing File Name: BCIDA-ACM-DNG\_RD-0006\_XX\_00-DR-CD-0030

Sheet Number: 30 of 31

Status: A

Rev: M01

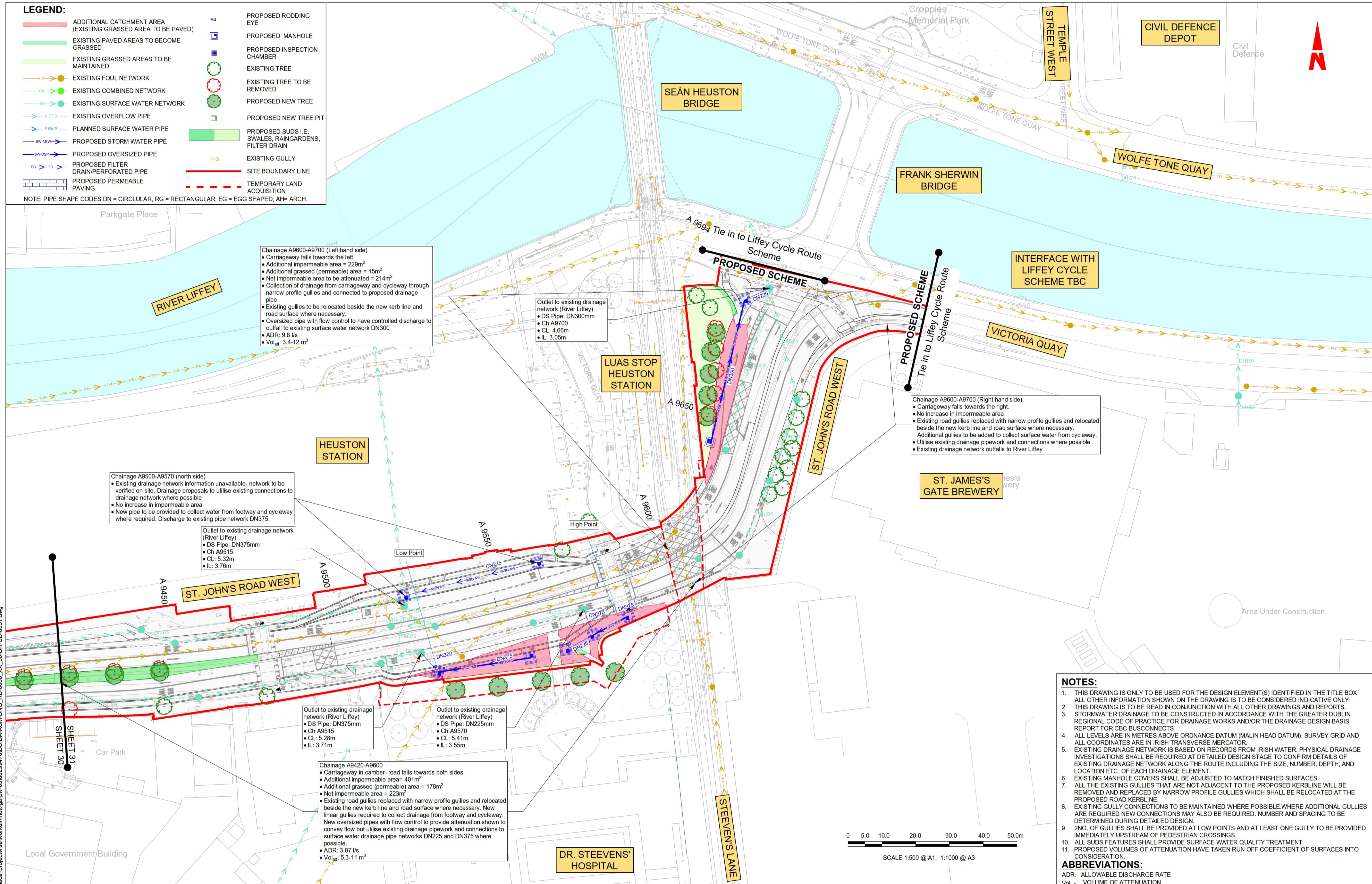
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**LEGEND:**

- 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 NETWORK
- EXISTING SURFACE WATER NETWORK
- EXISTING OVERFLOW PIPE
- PLANNED SURFACE WATER PIPE
- PROPOSED STORM WATER PIPE
- PROPOSED OVERSIZED PIPE
- PROPOSED FILTER DRAIN/PERFORATED PIPE
- PROPOSED PERMEABLE PAVING
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- PROPOSED SUDS I.E. SWALES, RAINGARDENS, FILTER DRAIN
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- SITE BOUNDARY LINE
- TEMPORARY LAND ACQUISITION

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Chainage A9600-A9700 (Left hand side)

- Carriageway falls towards the left.
- Additional impermeable area = 229m<sup>2</sup>
- Additional grassed (permeable) area = 15m<sup>2</sup>
- Net impermeable area to be attenuated = 214m<sup>2</sup>
- Collection of drainage from carriageway and cycleway through narrow profile gullies and connected to proposed drainage pipe.
- Existing gullies to be relocated beside the new kerb line and road surface where necessary.
- Oversized pipe with flow control to have controlled discharge to outfall to existing surface water network DN300
- ADR: 9.8 l/s
- Vol<sub>att</sub>: 3.4-12 m<sup>3</sup>

Outlet to existing drainage network (River Liffey)

- DS Pipe: DN300mm
- Ch A9700
- CL: 4.66m
- IL: 3.05m

Chainage A9600-A9700 (Right hand side)

- Carriageway falls towards the right.
- No increase in impermeable area
- Existing road gullies replaced with narrow profile gullies and relocated beside the new kerb line and road surface where necessary.
- Additional gullies to be added to collect surface water from cycleway.
- Utilise existing drainage pipework and connections where possible.
- Existing drainage network outfalls to River Liffey

Chainage A9500-A9570 (north side)

- Existing drainage network information unavailable- network to be verified on site. Drainage proposals to utilise existing connections to drainage network where possible
- No increase in impermeable area
- New pipe to be provided to collect water from footway and cycleway where required. Discharge to existing pipe network DN375.

Outlet to existing drainage network (River Liffey)

- DS Pipe: DN375mm
- Ch A9515
- CL: 5.32m
- IL: 3.76m

Outlet to existing drainage network (River Liffey)

- DS Pipe: DN375mm
- Ch A9515
- CL: 5.28m
- IL: 3.71m

Outlet to existing drainage network (River Liffey)

- DS Pipe: DN225mm
- Ch A9570
- CL: 5.41m
- IL: 3.55m

Chainage A9420-A9600

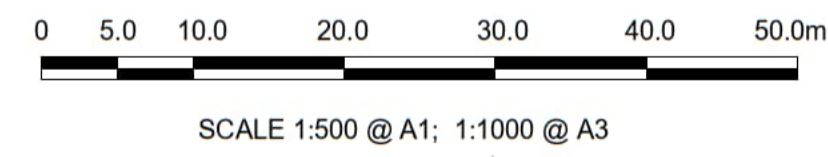
- Carriageway in camber- road falls towards both sides.
- Additional impermeable area= 401m<sup>2</sup>
- Additional grassed (permeable) area = 178m<sup>2</sup>
- Net impermeable area = 223m<sup>2</sup>
- Existing road gullies replaced with narrow profile gullies and relocated beside the new kerb line and road surface where necessary. New linear gullies required to collect drainage from footway and cycleway. New oversized pipes with flow control to provide attenuation shown to convey flow but utilise existing drainage pipework and connections to surface water drainage pipe networks DN225 and DN375 where possible.
- ADR: 3.87 l/s
- Vol<sub>att</sub>: 5.3-11 m<sup>3</sup>

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Engineering Designer: **AECOM** MOTT MACDONALD

Date: 30/09/22 Scale: 1:500 @ A1, 1:1000 @ A3

Project Code: BCIDA Originator Code: ACM

Drawn: A.FLEMING Checked: A.T.DALE Approved: C.ACTON

Programme Title: <b>BUSCONNECTS DUBLIN CORE BUS CORRIDORS INFRASTRUCTURE WORKS</b>			
Drawing Title: <b>LUCAN TO CITY CENTRE CORE BUS CORRIDOR SCHEME PROPOSED SURFACE WATER DRAINAGE WORKS</b>			
Drawing File Name: BCIDA-ACM-DNG_RD-0006_XX_00-DR-CD-0031	Sheet Number: 31 of 31	Status: A	Rev: M01

DO NOT SCALE USE FIGURED DIMENSIONS ONLY