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KING'S ISLAND
FLOOD RELIEF SCHEME

**King's Island Flood Relief Scheme
Environmental Impact Assessment Report
Volume 3 - Figures**

Final Report

December 2019



OPW

Oifig na
nOibreacha Poiblí
Office of Public Works



JBA Project Manager

Declan White
24 Grove Island
Corbally
Limerick
Ireland

Revision History

Revision Ref / Date Issued	Amendments	Issued to
Draft V1.0 02/08/2019	Draft Issue for initial review	Arup/LCCC
Final V2.0 18/12/2019	Final Issue for Planning	Arup/LCCC

Contract

This report describes work commissioned by Limerick City & County Council. The Limerick City & County Council's representative for this work is Mr. Kieran O'Gorman.

Prepared byEmily Rick BSc (Env)
Environmental Scientist

Reviewed byBernadette O'Connell BA (Hons) MSc CMLI
Environmental Consultant

Reviewed byKen Leahy BE DipConLaw CEng MIEI MICE
Associate Director, Arup

Purpose

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List of Figures

4 Description of proposed development

Figure 4-1 Site Location Map

7 Population Human Health

Figure 6-1 Electoral Districts

Figure 6-2 Census Settlements

7 Material Assets incl Traffic, Utilities and Waste Management

Figure 7-1 Regional & Local street network

Figure 7-2 Traffic Survey Locations

8 Biodiversity

Figure 8-1 Fisheries Study Area

Figure 8-2 Natura 2000 Site Location

Figure 8-3 Natura 2000 Site Locations relative to Site Boundary

Figure 8-4 Nationally Protected Sites

Figure 8-5 Habitat Map

Figure 8-6 Opposite-leaved Pondweed Location

Figure 8-7 National grid- 2km reference

Figure 8-8 Fisheries Habitat Map north

Figure 8-9 Fisheries Habitat Map south

Figure 8-10 Fisheries Indicative Substrate

Figure 8-11 Invasive Map and Info

Figure 8-12 Jack-up ring Location

Figure 8-13 Launch Sites

Figure 8.14-Groenlandia densa Enhancement Sites



9 Surface and Groundwater

Figure 9-1 Existing Open Drains

Figure 9-2 Groundwater bodies

Figure 9-3 Aquifer Vulnerability

Figure 9-4 Surface Waterbodies

Figure 9-5 Tidal 0.5% AEP Flood Extend

Figure 9-6 Site Investigation Testing Locations

10 Soil and geology

Figure 10-1 Bedrock Geology

Figure 10-2 Limerick City Development Plan

Figure 10-3 Subsoils

11 Noise & Vibration

Figure 11-1 Noise Monitoring Locations

13 Landscape and Visual

Figure 13-Visually Sensitive Receivers

14 Cultural Heritage

Figure 14-1 Archeologic Heritage

Figure 14-2 Archeologic Heritage Detail

Figure 14-3 Archaeological Heritage Detail on Google 1 of 3

Figure 14-4 Archaeological Heritage Detail on Google 2 of 3

Figure 14-5 Archaeological Heritage Detail on Google 3 of 3

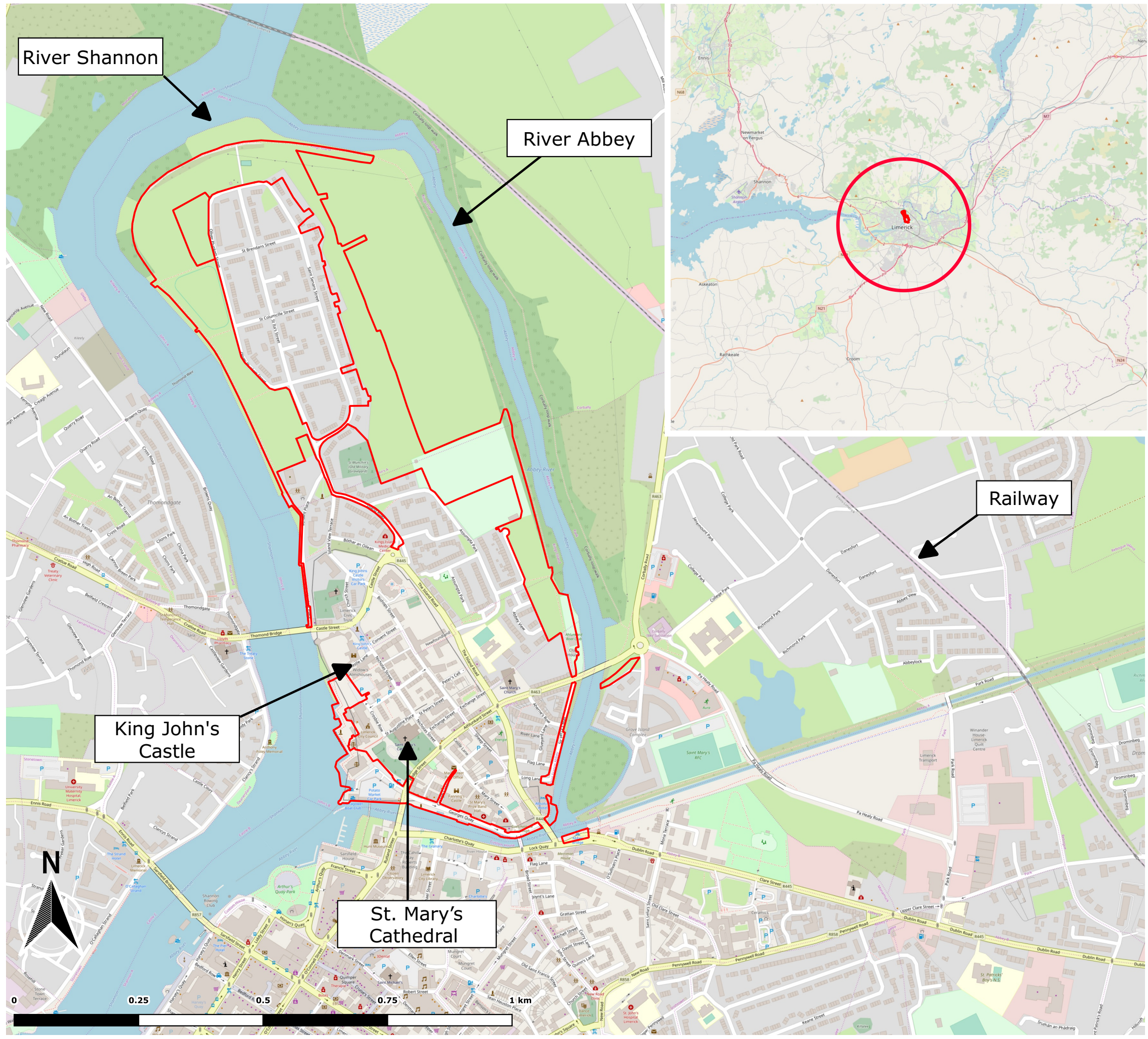
Figure 14-6 Architectural Heritage

Figure 14-7 Architectural Heritage Detail

Figure 14-8 Architectural Heritage Detail Google

16 Cumulative Impacts

Figure 16-1 Cumulative Impacts



Legend

— Site boundary

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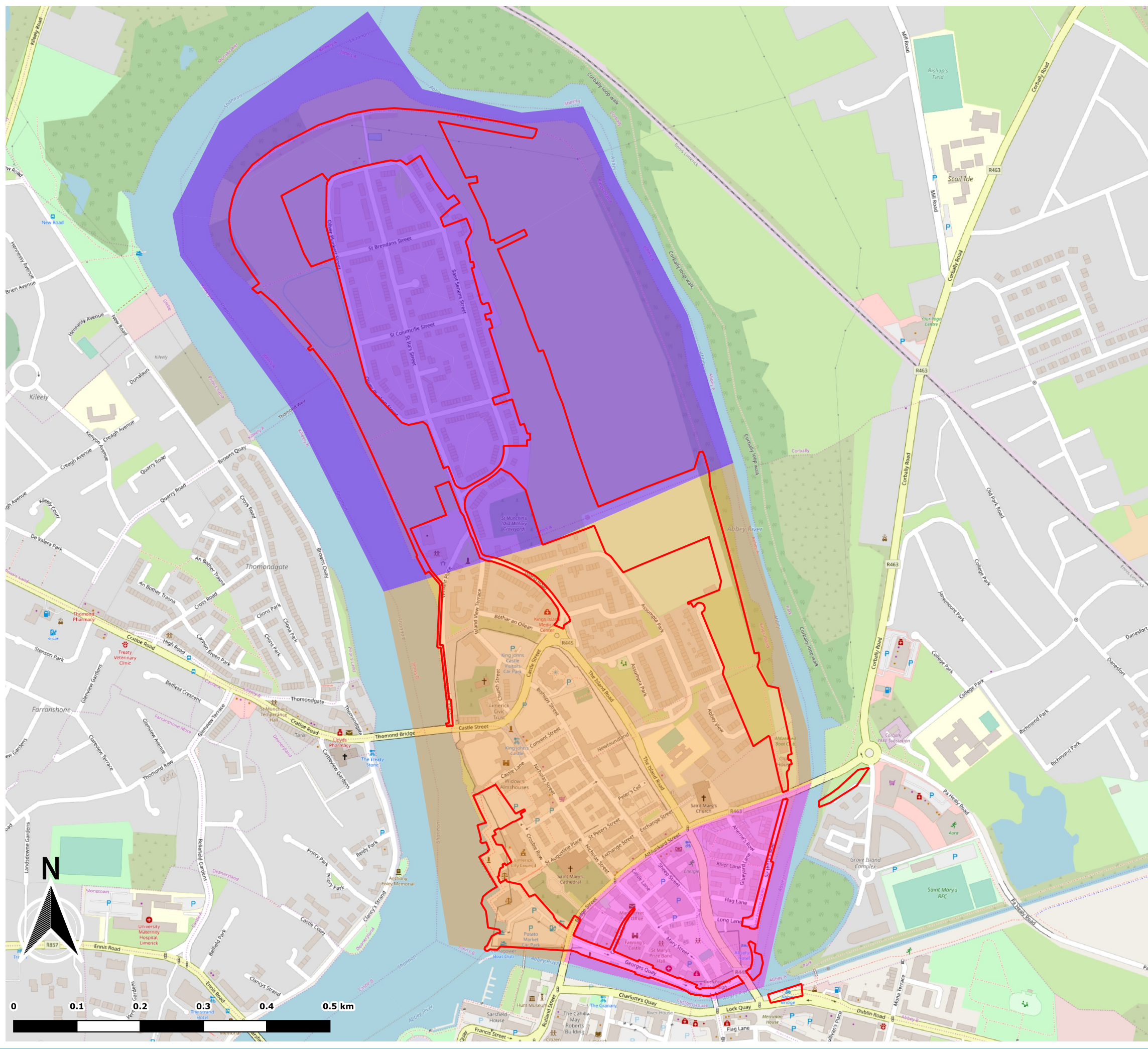


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Environmental Impact Assessment Report
Figure No.4-1 -Site location map

Drawn by: ES
Checked by: BOC
Approved by: BOC
File Name: 2015s3353 - Site location plan
Status: Current



Legend

- Site boundary
- Electoral District
 - John's A
 - John's B
 - John's C

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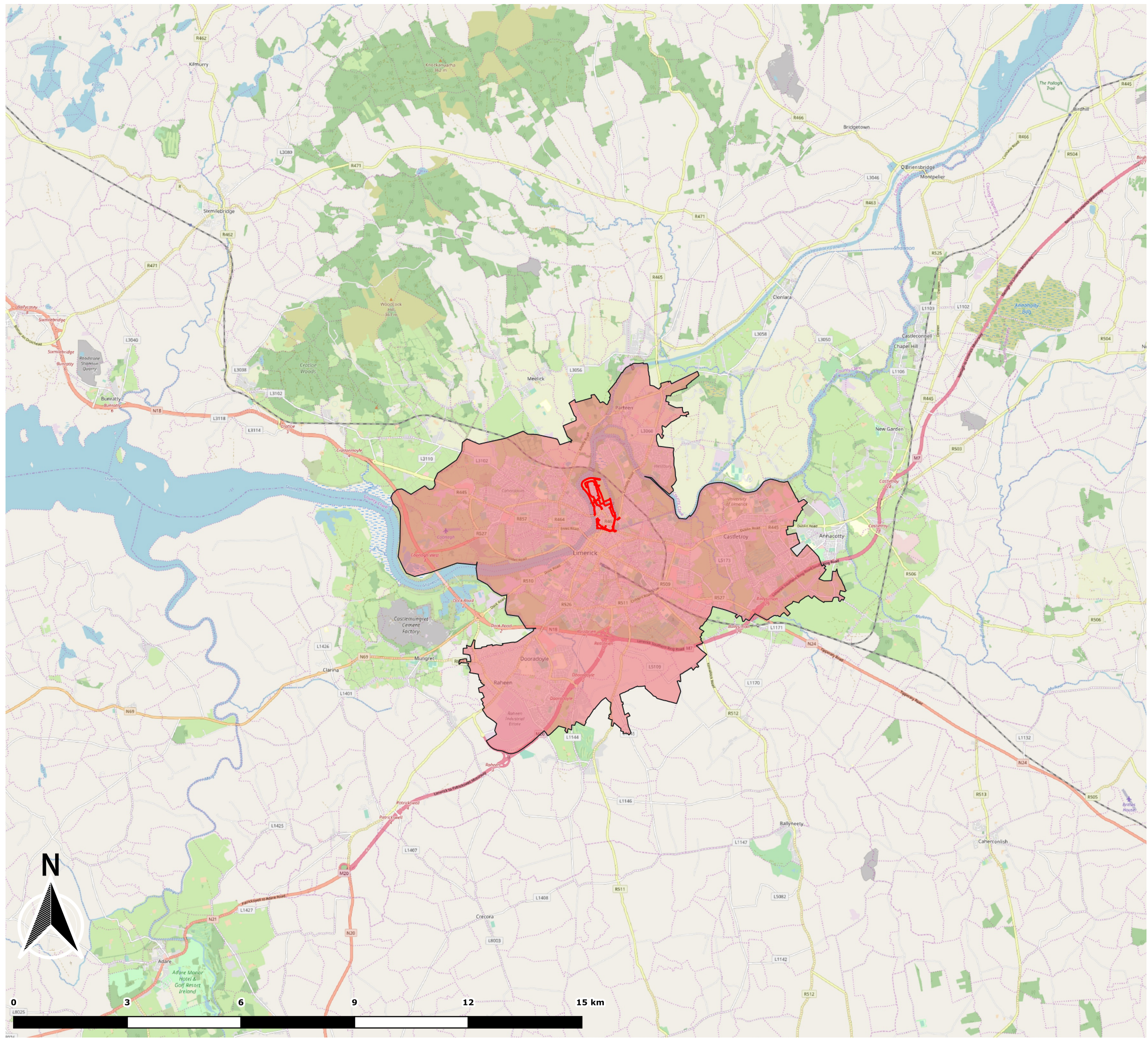


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**Environmental Impact Assessment Report
Figure No.6-1 - King's Island Electoral
Districts**

Drawn by: ELR	Scale:
Checked by: BOC	1:6000
Approved by: BOC	
File Name: 2015s3353_censusED_20190607	
Status: Current	



Legend

- Site boundary
- Settlements (Census 2011)
- Limerick City and Suburbs

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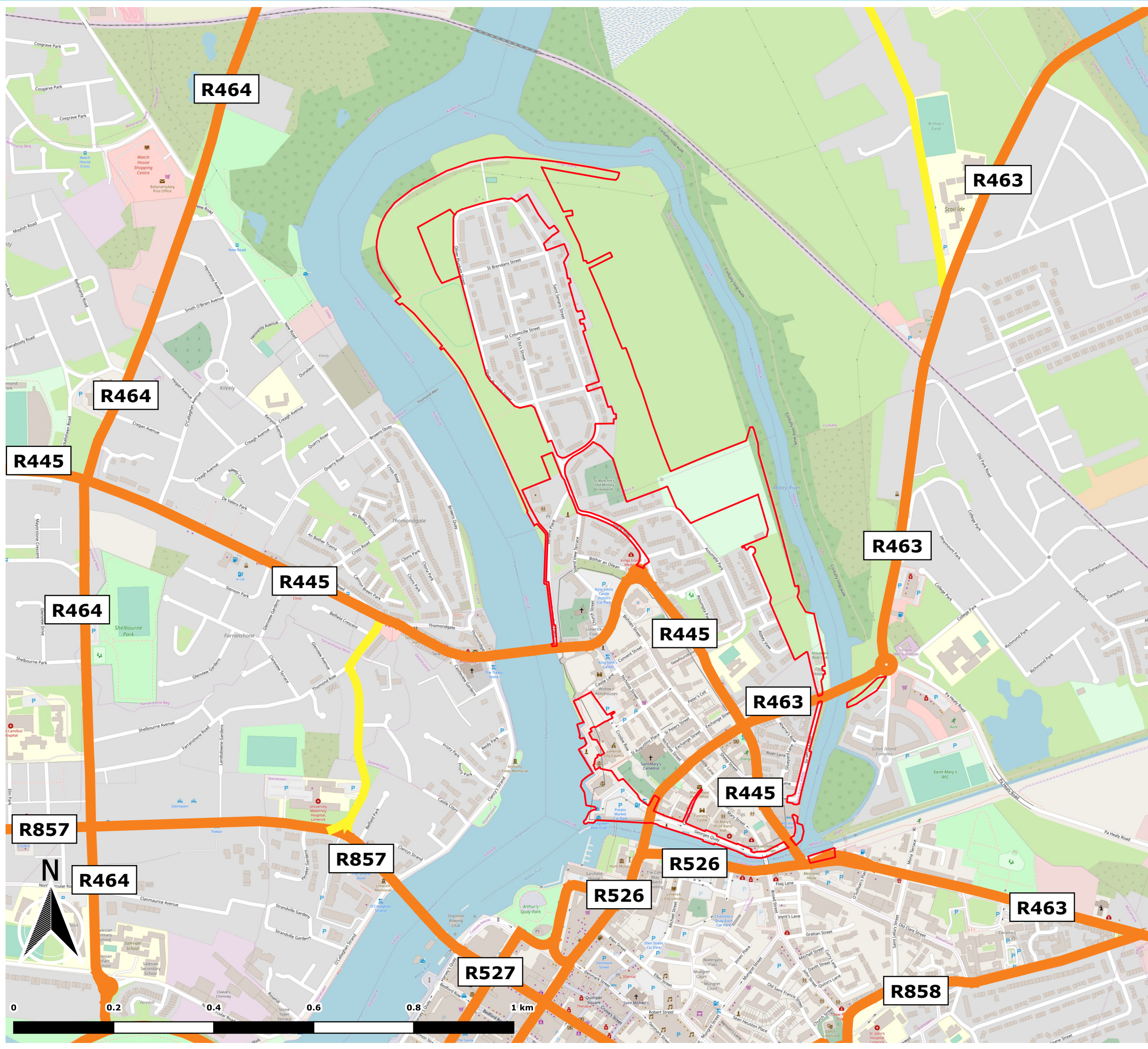


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**Environmental Impact Assessment Report
Figure 6-2 - Census 2011 Settlement
Areas**

Drawn by: ELR	Scale:
Checked by: BOC	1:100000
Approved by: BOC	
File Name:2015s3353_census_settlements_20190618	
Status: Current	



Legend

- Site Boundary
- Limerick Street Network
- Regional
- Local

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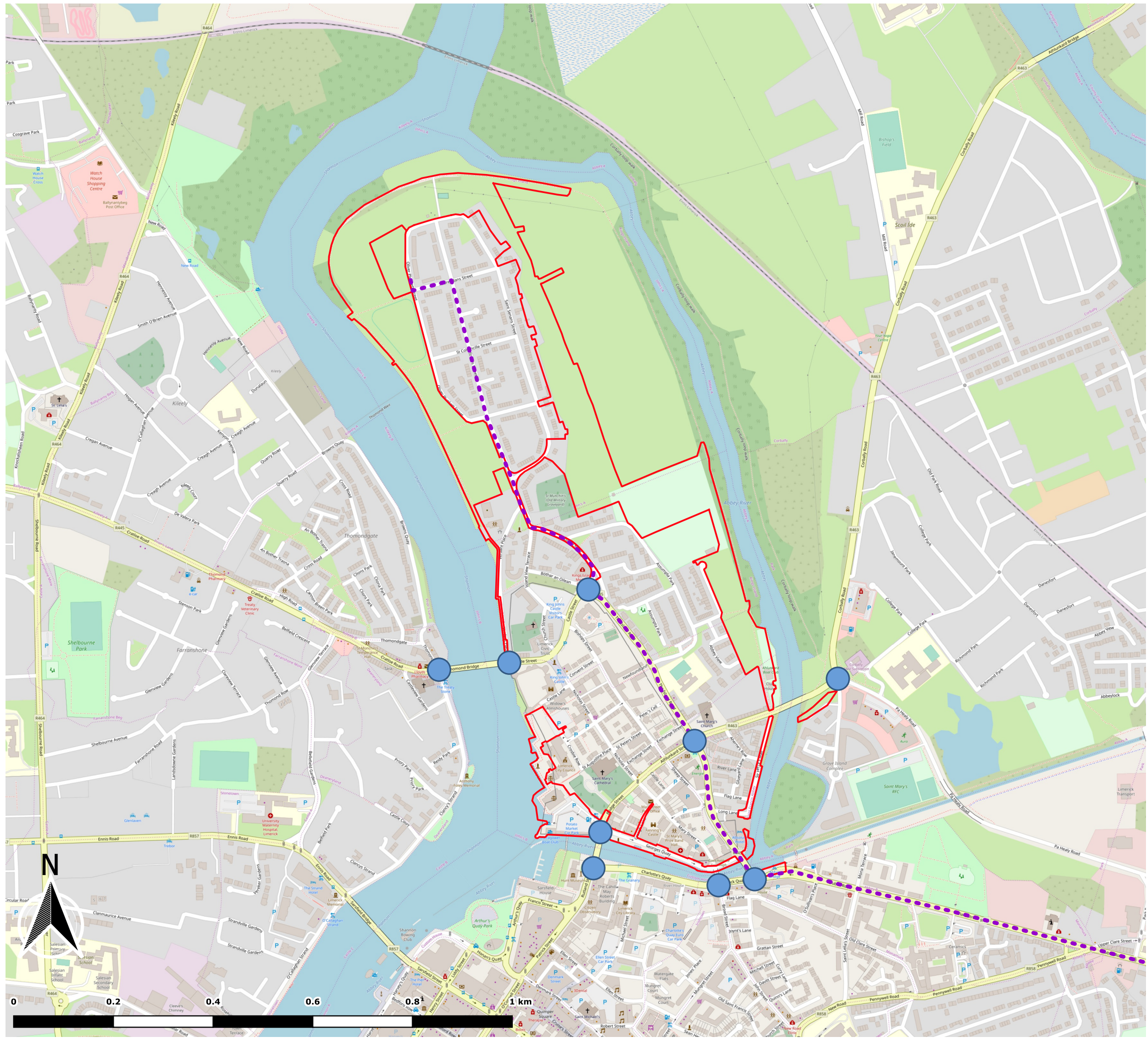


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**Environmental Impact Assessment Report
Figure No.7-1 - Regional & Local Street Network**

Drawn by: WM	Scale:
Checked by: NOR (ARUP)	1:12500
Approved by: BOC	
File Name:King's Island Traffic and Transportation - Regional & Local Street Network	
Status: Current	



Legend

- Site Boundary
- Traffic Survey Locations
- HGV Delivery Route

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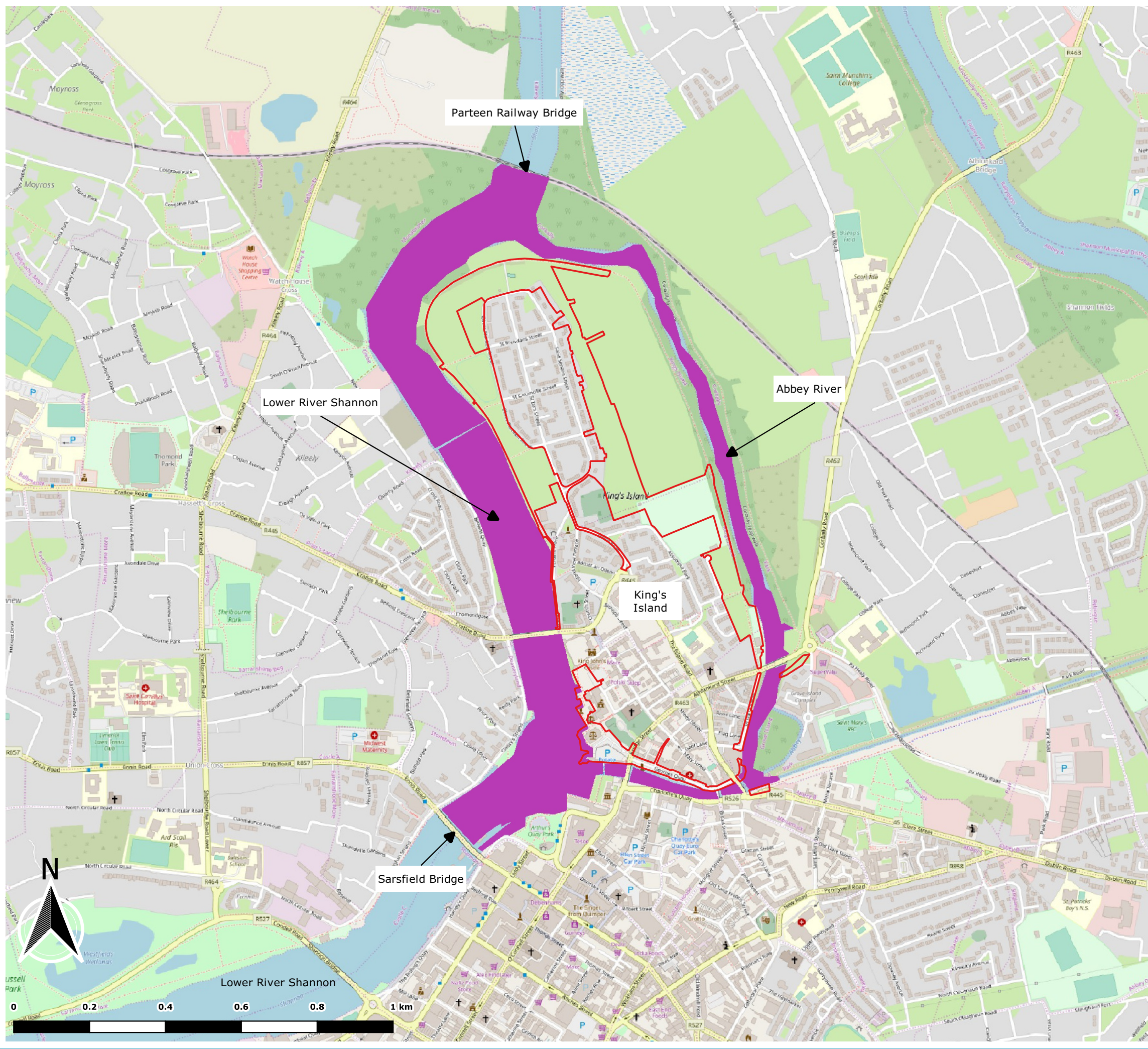


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**Environmental Impact Assessment Report
Fig No.7-2 - Traffic Survey Locations &
HGV Delivery Route**

Drawn by: WM	Scale:
Checked by: NOR (ARUP)	1:12500
Approved by: BOC	
File Name:King's Island Traffic and Transportation - Traffic Survey Locations & HGV Delivery Route	
Status:	



Legend

-  Site Boundary
-  Fisheries Study Area

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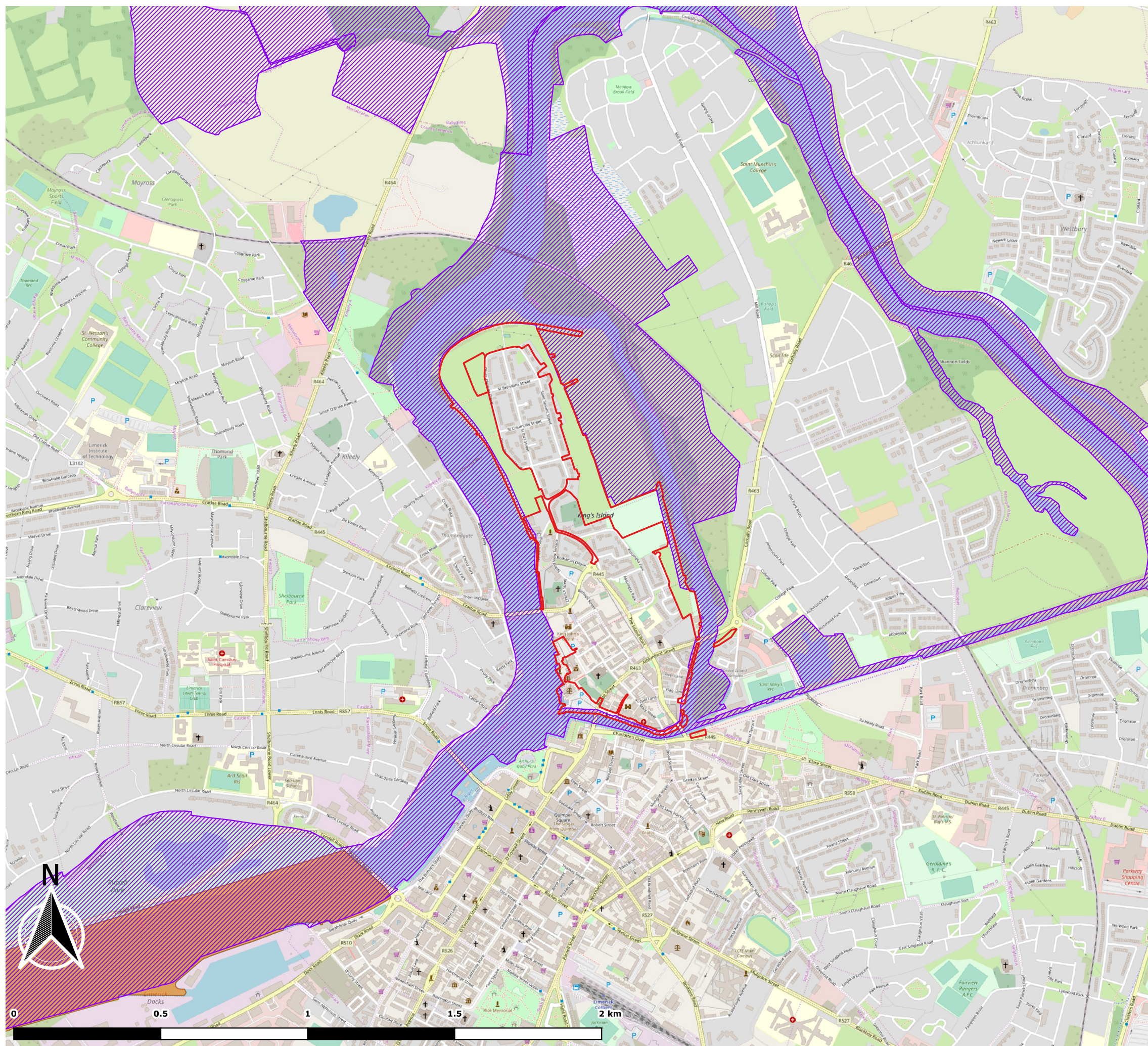


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**Environmental Impact Assessment Report
Figure No.8-1 - Fisheries Study Area**

Drawn by: RM Tritus Environmental Ltd.	Scale:
Checked by: PB	1:10000
Approved by: BOC	
File Name: 2015s3353_fisheries_study_area	
Status: Current	



Legend

-  Site Boundary
 Special Area of Conservation
 Special Protection Area

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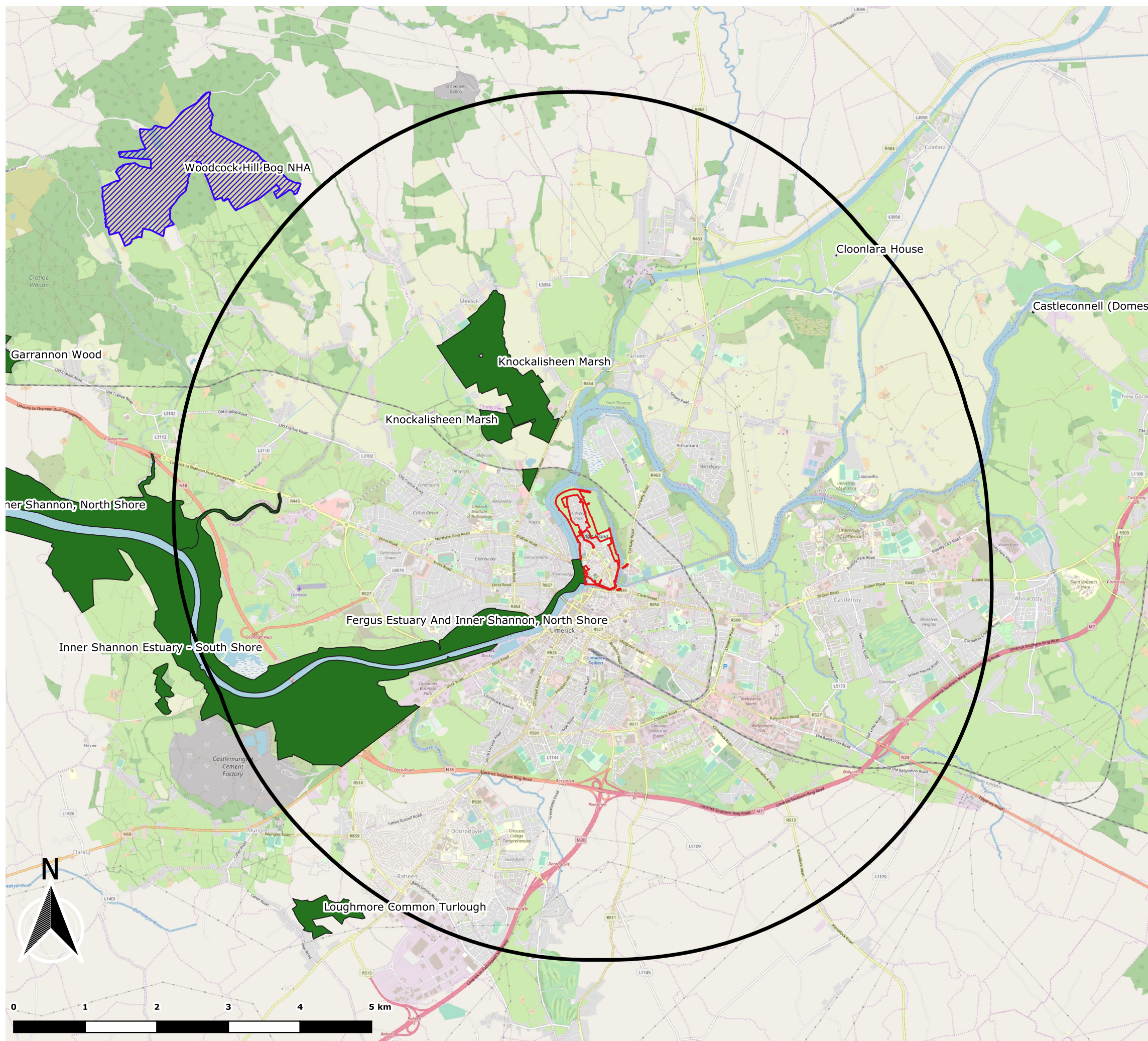


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Figure No.8-3 - Natura 2000 site locations
relative to site boundary

Drawn by: ML	Scale: 1:13000
Checked by: PB	
Approved by: BOC	
File Name: 2015s3353_N2000_site_location_20190419	
Status: Current	



Legend

- Site Boundary
- 5km buffer around site boundary
- Natural Heritage Area
- proposed Natural Heritage Area

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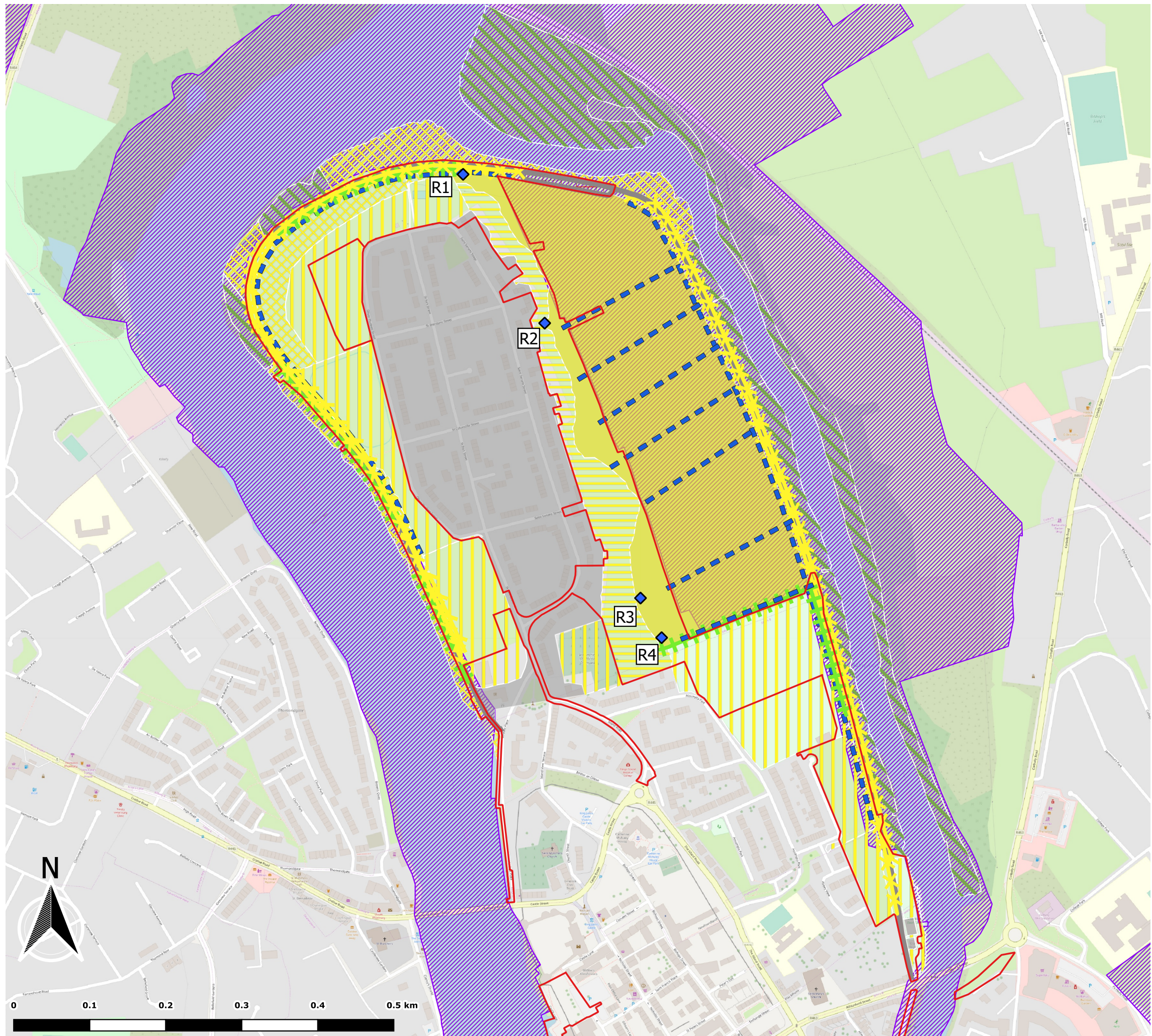


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**Environmental Impact Assessment Report
Figure No.8-4 - Nationally Protected Sites**

Drawn by: ML	Scale: 1:53000
Checked by: PB	
Approved by: BOC	
File Name: 2015s3353_pNHA_site_location_20190419	
Status: Current	



Legend

- Site Boundary
- Lower Shannon SAC
- Releve points
- BL3- buildings and artificial surfaces
- FW4- drainage ditches
- WL2- treelines
- GS2- dry meadows and grassy verges
- BL3- buildings and artificial surfaces
- ED3- recolonising bare ground
- GA1- improved agricultural grassland
- GA2- amenity grassland
- GM1- marsh
- GS4- wet grassland
- WN5- riparian woodland

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Environmental Impact Assessment Report Figure No.8-5 - Habitat Map

Drawn by: ML/HM	Scale: 1:5000
Checked by: PB	
Approved by: BOC	
File Name: 2015s3353-Habitat map	
Status: Current	



Legend

-  Site Boundary
-  Dense and frequent *Groenlandia densa*
-  *Groenlandia densa* GPS points

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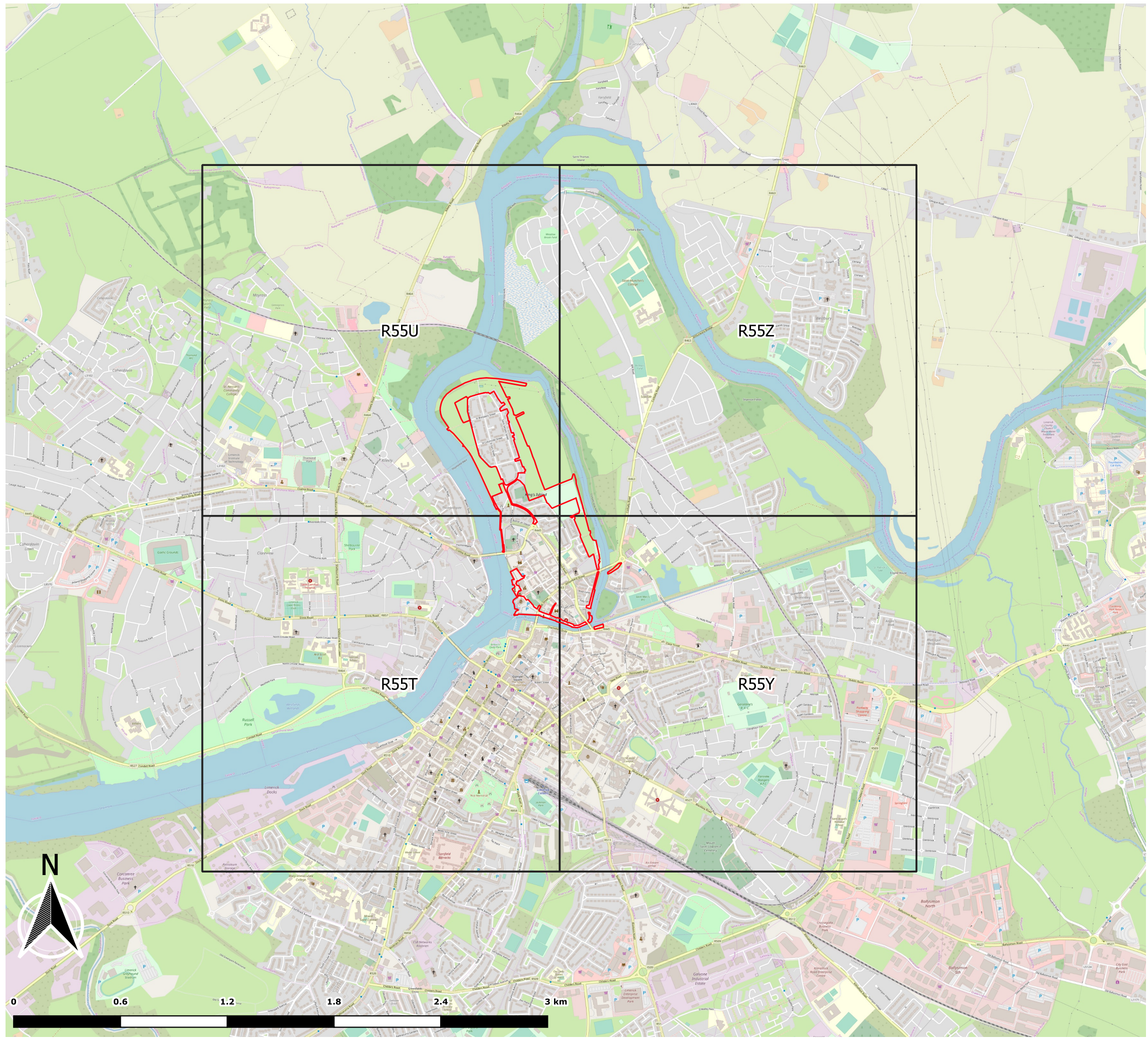


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**Environmental Impact Assessment Report
Figure No.8-6 - Opposite-leaved Pondweed
location**

Drawn by: JD Denyer Ecology	Scale: 1:1500
Checked by: PB	
Approved by: BOC	
File Name: 2015s3353_Opposite-leaved_Pondweed	
Status: Current	



Legend

- Site Boundary
- National Grid

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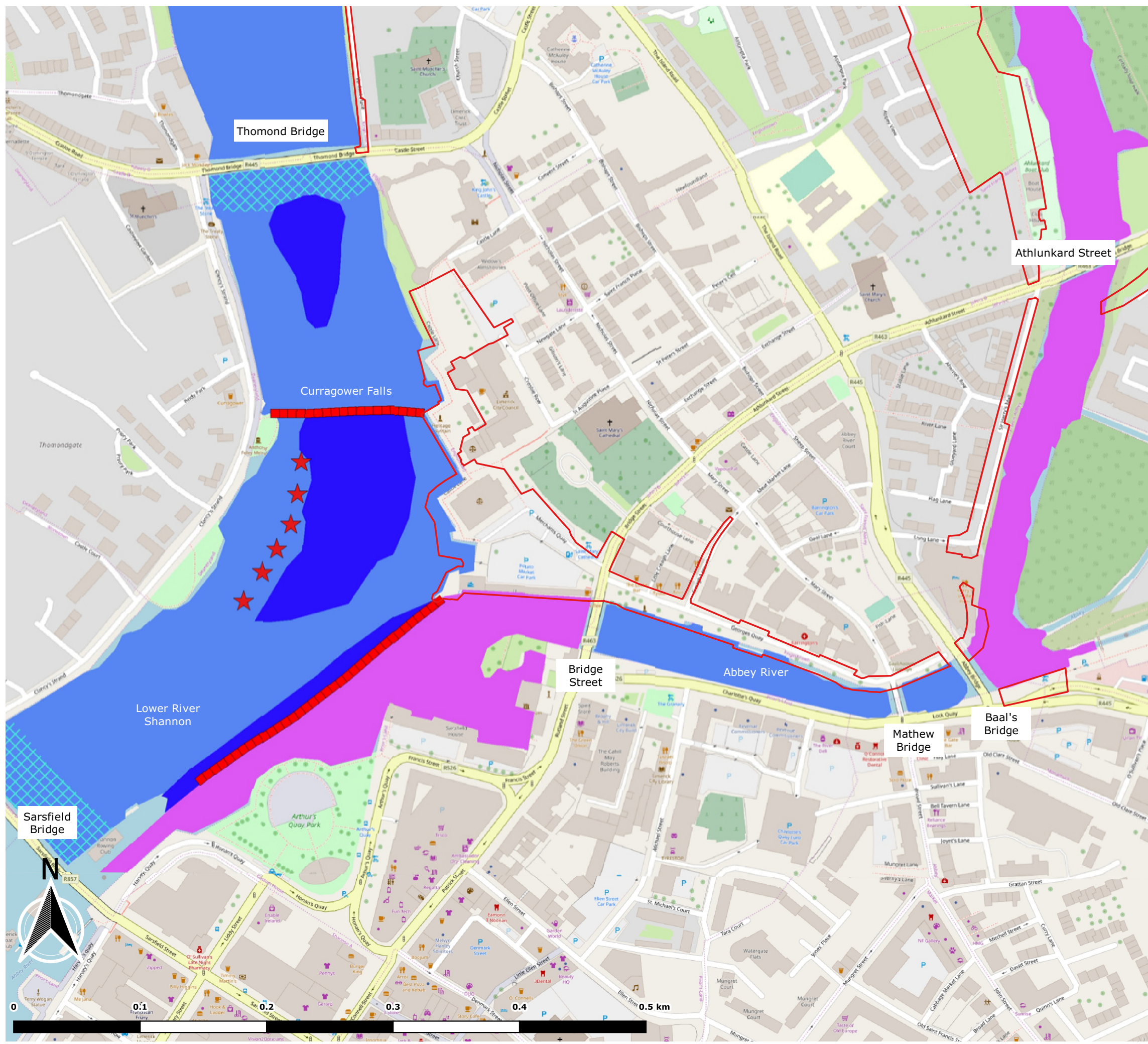


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Environmental Impact Assessment Report Figure no.8-7 - National Grid - 2km Reference

Drawn by: WM	Scale:
Checked by: BOC	1:35000
Approved by: BOC	
File Name:2015s3353 King's Island - National Grid 2km Reference	
Status: Current	



Legend

- Site Boundary
- Smelt Spawning Area
- Weir
- Pool Holding Habitat
- Shallower Glide Riffle Habitat
- Deeper Glide Habitat with localised Pools
- Deeper Pool Habitat with marginal Shallows

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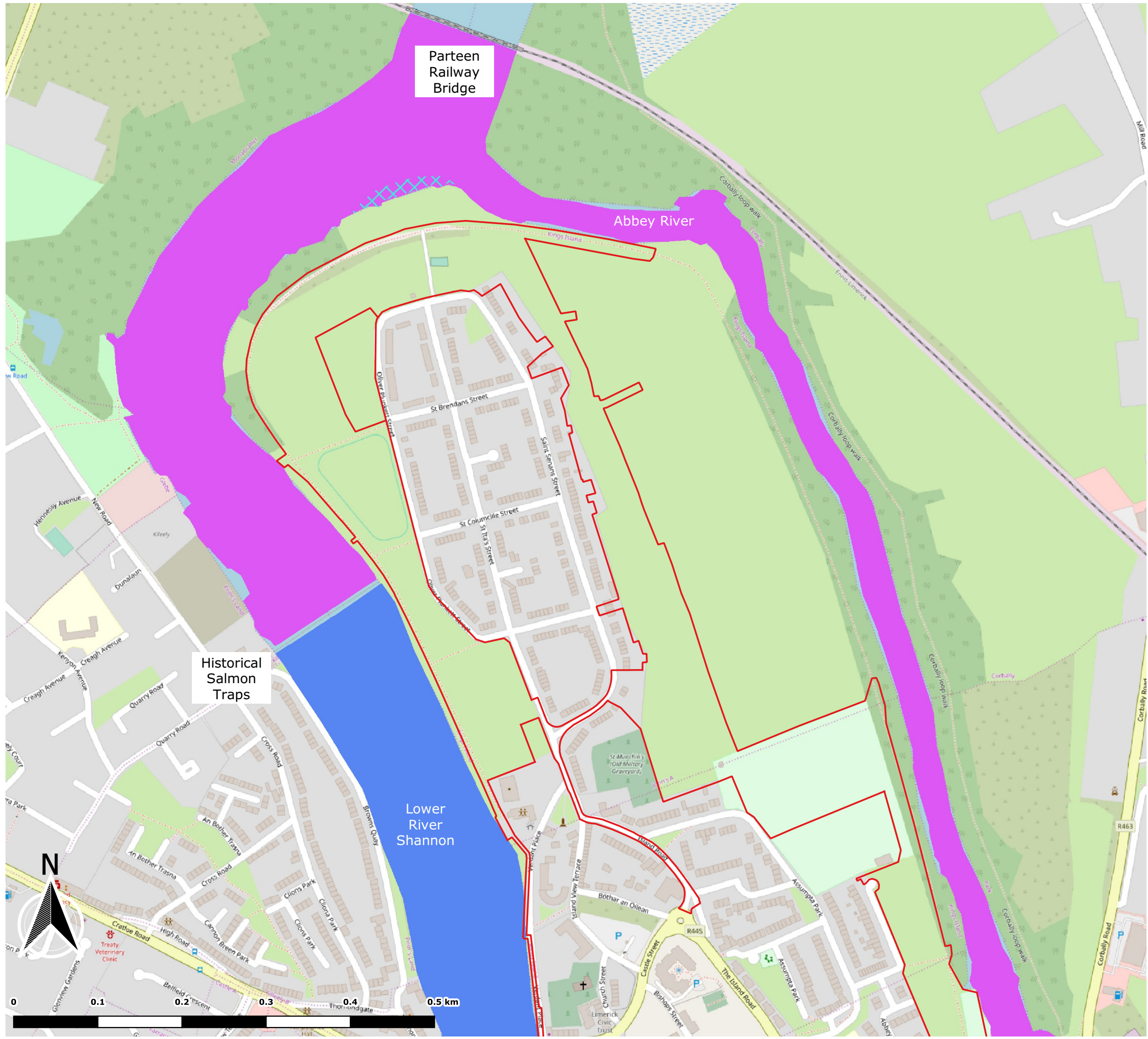


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**Environmental Impact Assessment Report
Figure No.8-8 - Fisheries Habitat Map of
the Southern end of King's Island**

Drawn by: RM Tritus Environmental Ltd.	Scale:
Checked by: PB	1:3000
Approved by: BOC	
File Name:2015s3353_fisheries_study_area	
Status: Current	



Legend

- Site Boundary
- Shallower Glide Riffle Habitat
- Deeper Glide Habitat with localised Pools
- Deeper Pool Habitat with marginal Shallows

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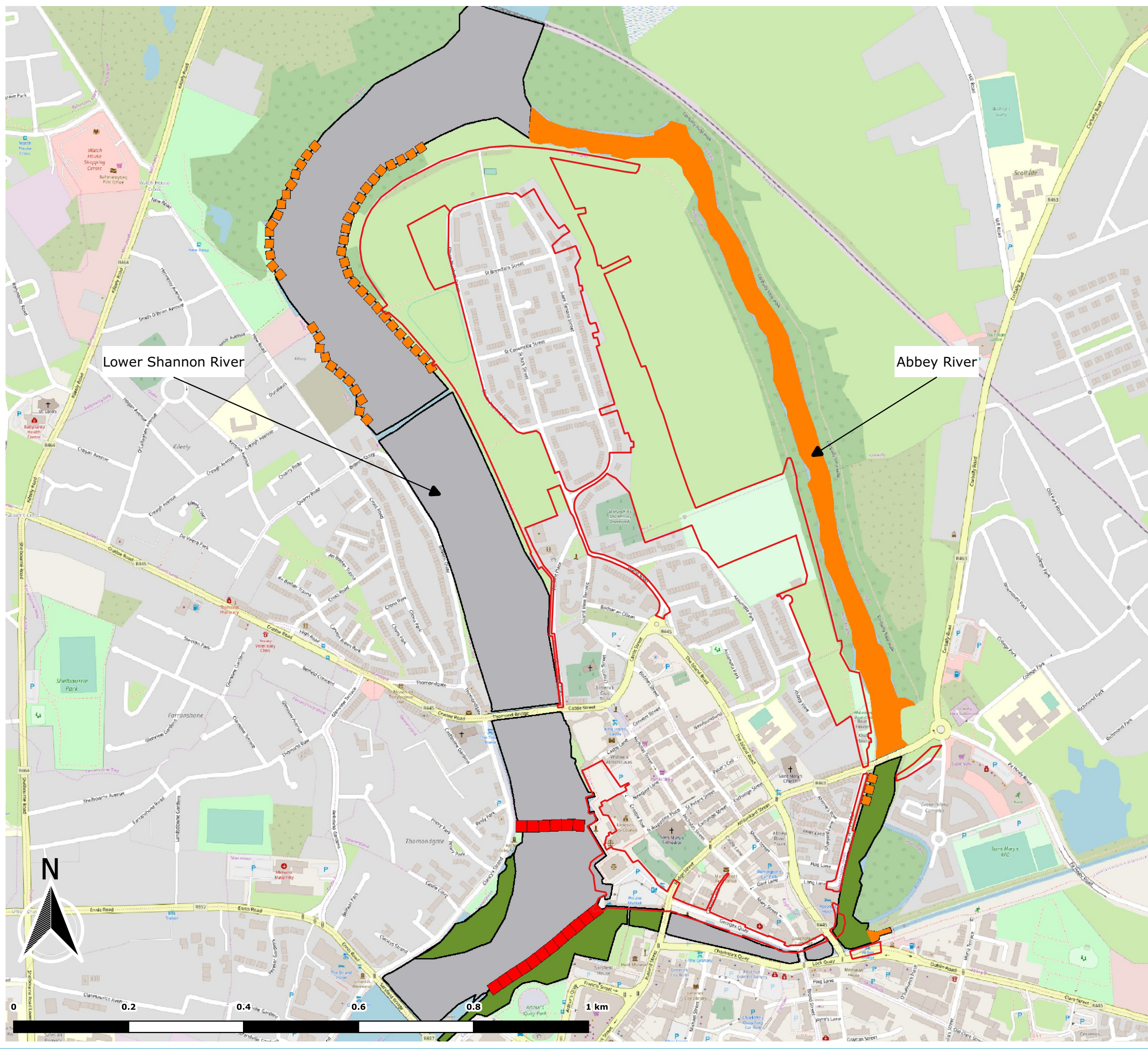


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Environmental Impact Assessment Report
Figure No.8-9 - Fisheries Habitat Map of
the Northern end of King's Island

Drawn by: RM Tritus Environmental Ltd.	Scale: 1:4500
Checked by: PB	
Approved by: BOC	
File Name: 2015s3353_fisheries_study_area	
Status: Current	



Legend

- Site Boundary
- Weir
- Soft Sediment Littoral
- Soft Sediment Dominated Substrata
- Mixed Sediment Substrata
- Cobble & Gravel Dominated Substrata

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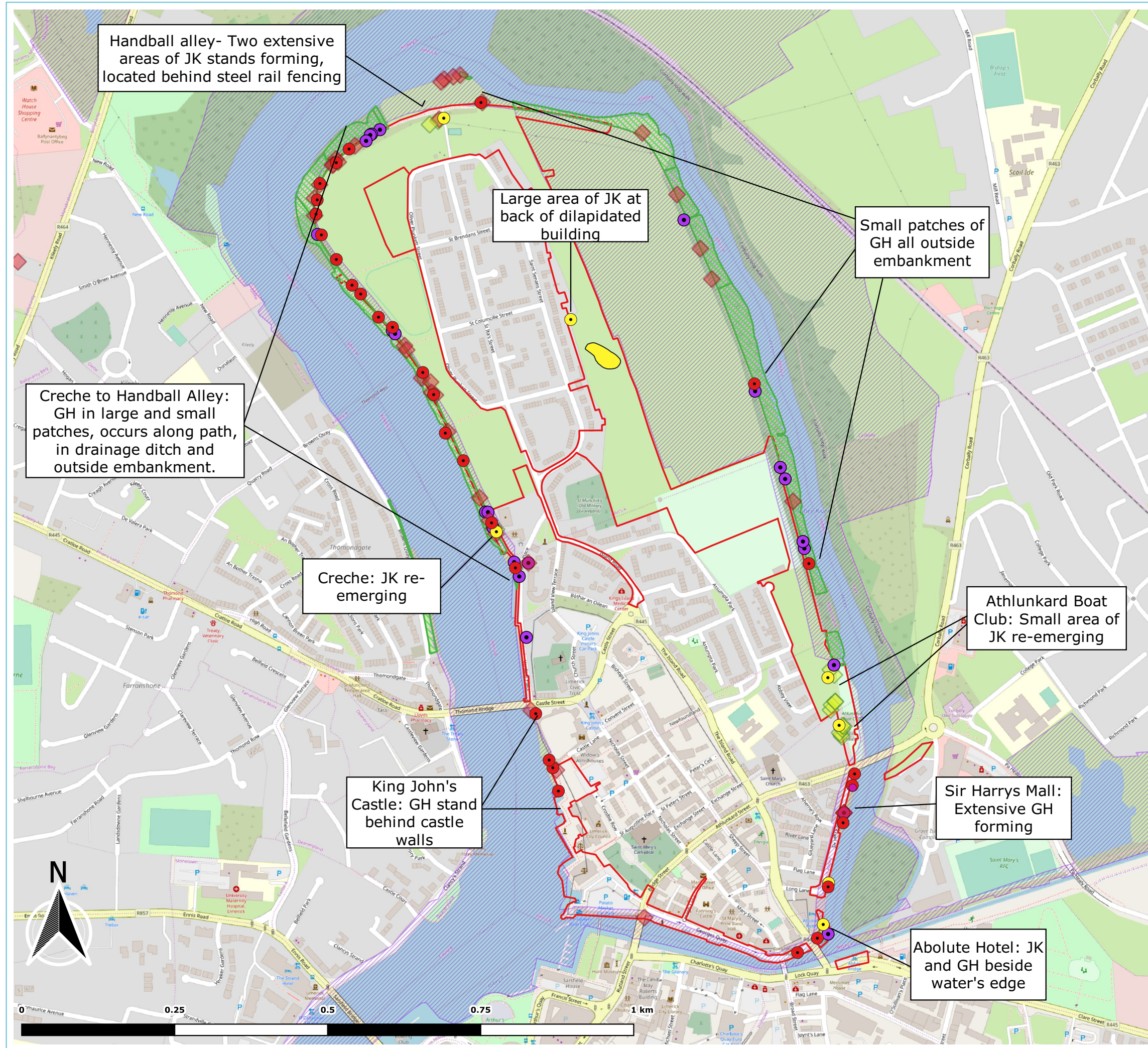


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**Environmental Impact Assessment Report
Figure No.8-10 - Indicative Substrate Map**

Drawn by: RM Tritus Environmental Ltd.	Scale:
Checked by: PB	1:6600
Approved by: BOC	
File Name: 2015s3353_fisheries_study_area	
Status: Current	



Legend

- Site Boundary
- Special Area of Conservation (SAC)
- 2019 NNIS locations
 - Giant hogweed (GH)
 - Japanese knotweed (JK)
- 2017 NNIS locations
 - ◆ Giant Hogweed
 - ◆ Japanese Knotweed
 - Himalayan Balsam
- 2015 NNIS locations
 - Japanese Knotweed Bund (treated)
 - Himalayan Balsam

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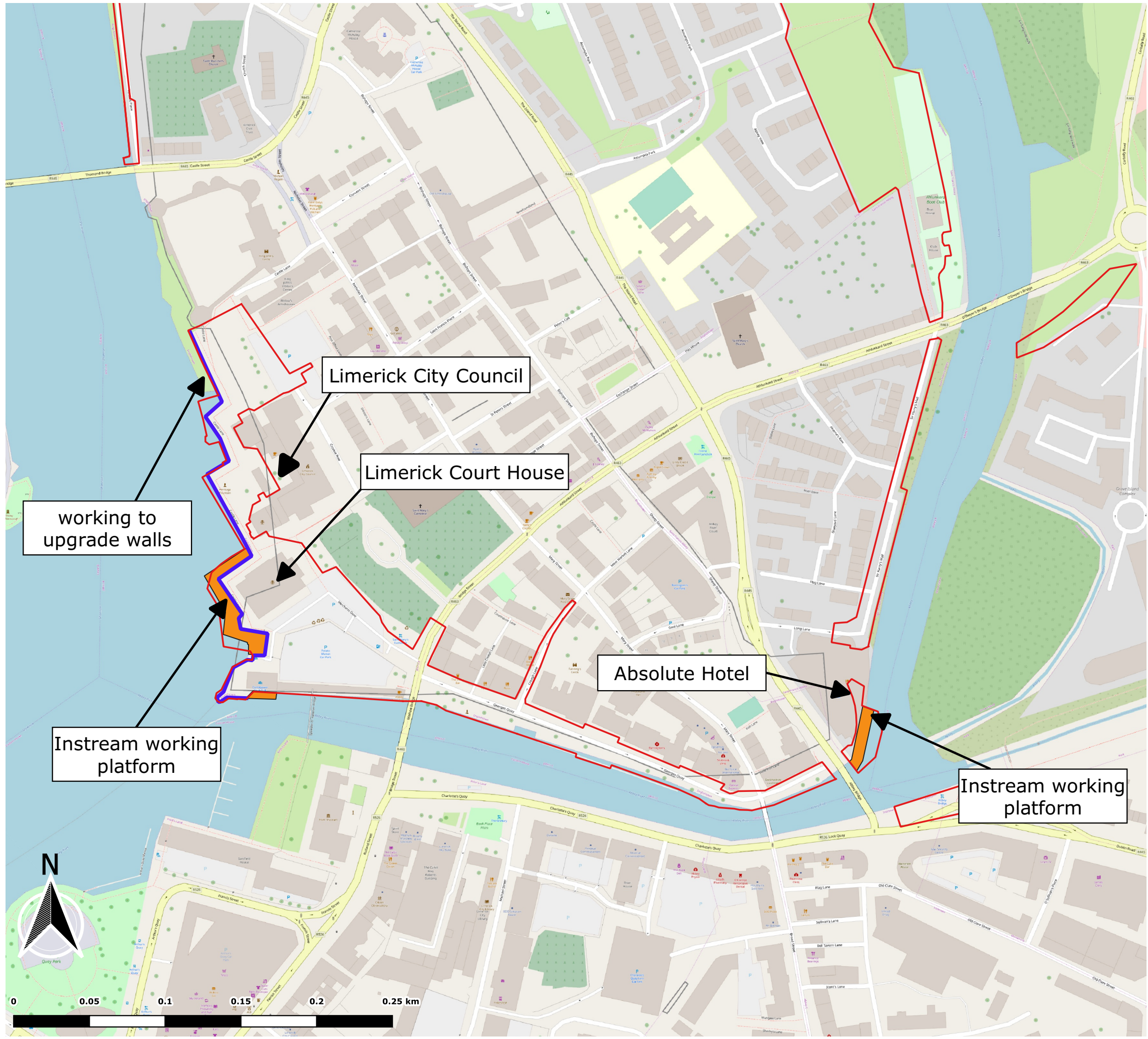


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Environmental Impact Assessment Report Figure No. 8-11 - Invasive species location map

Drawn by: HM	Scale:
Checked by: PB	1:6200
Approved by: PB	
File Name: 2015s3353 KI Invasive map and info	
Status: Current	



Legend

- Site Boundary
- Proposed jack-up rigs from ARUP
- Proposed upgrading walls from ARUP

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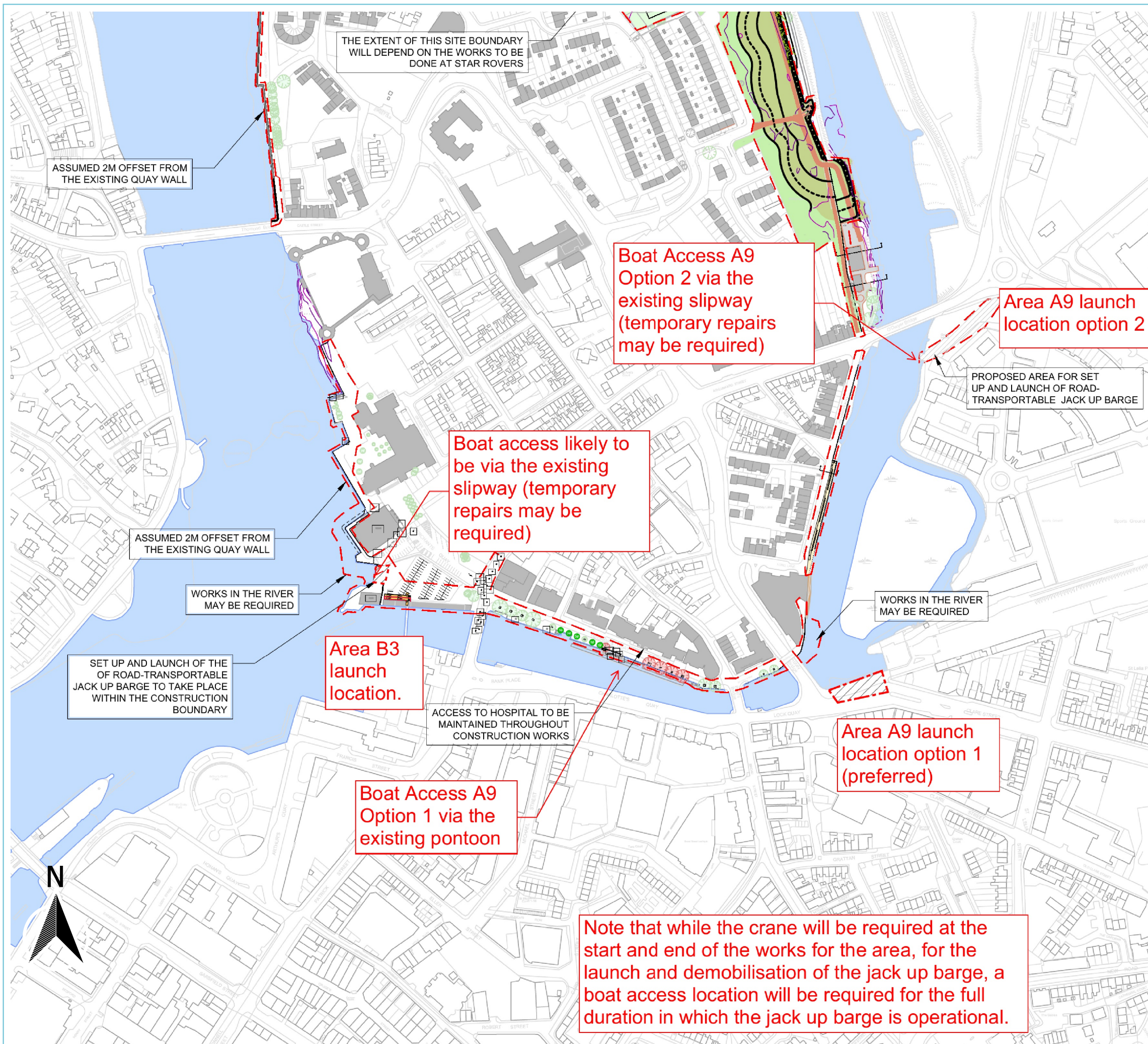


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**Environmental Impact Assessment
Figure 8-12 - Jack-up rig locations at
Areas A9 (east) and B3 (west)**

Drawn by: ES	Scale:
Checked by: PB	1:2500
Approved by: BOC	
File Name: 2015s3553-King's Island- Noise monitoring locations	
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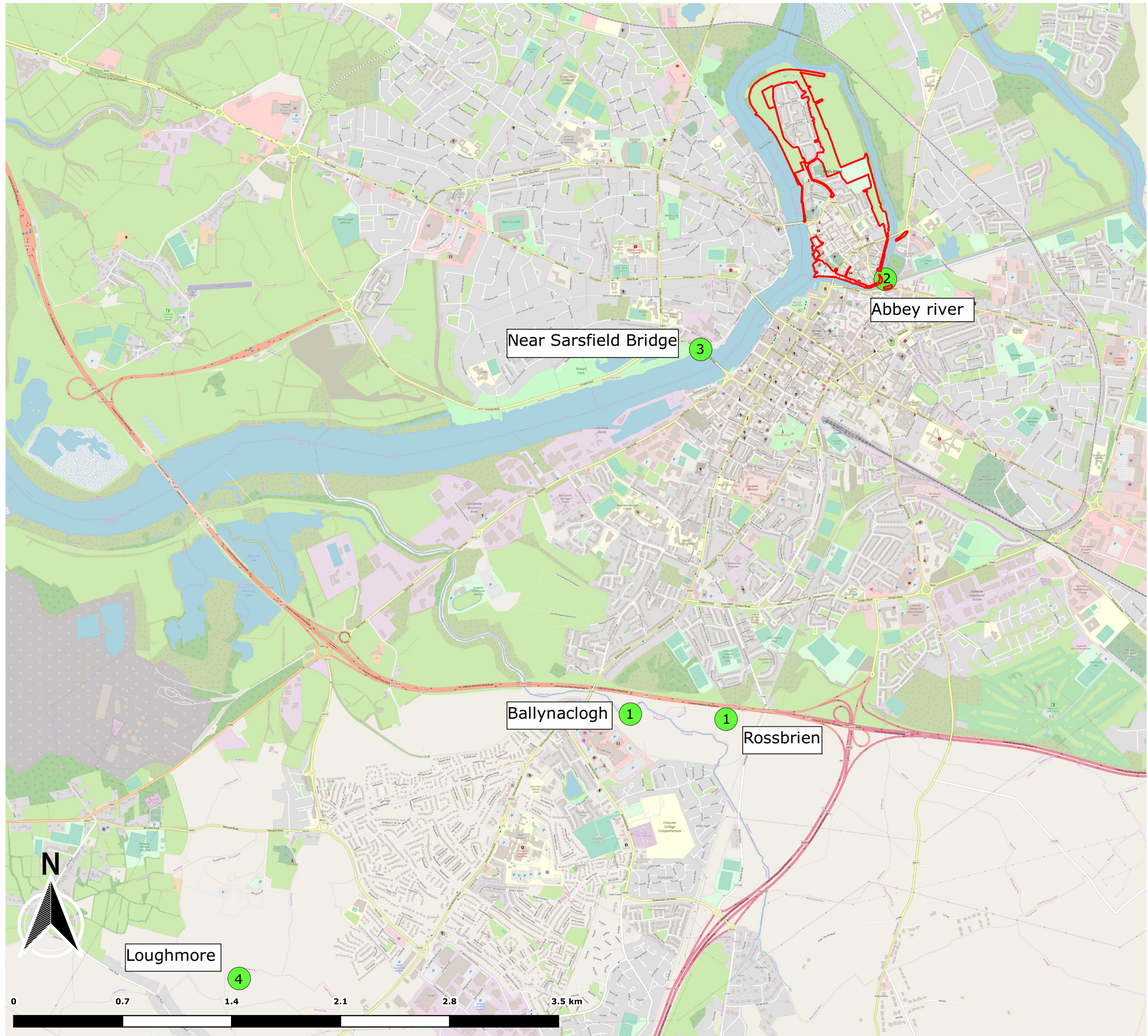


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Environmental Impact Assessment Report Figure No.8-13 - Launch sites for Jack-up rigs

Drawn by: ARUP	Scale: Not to scale
Checked by: PB	
Approved by: BOC	
File Name: KI-G-SK-002 Preliminary site boundary Rev 2	
Status: Current	



Legend

- Site boundary
- Potential *Groenlandia densa* enhancement sites

Ranked 1-4 in order of preference
Rank 1 = most suitable for enhancement works

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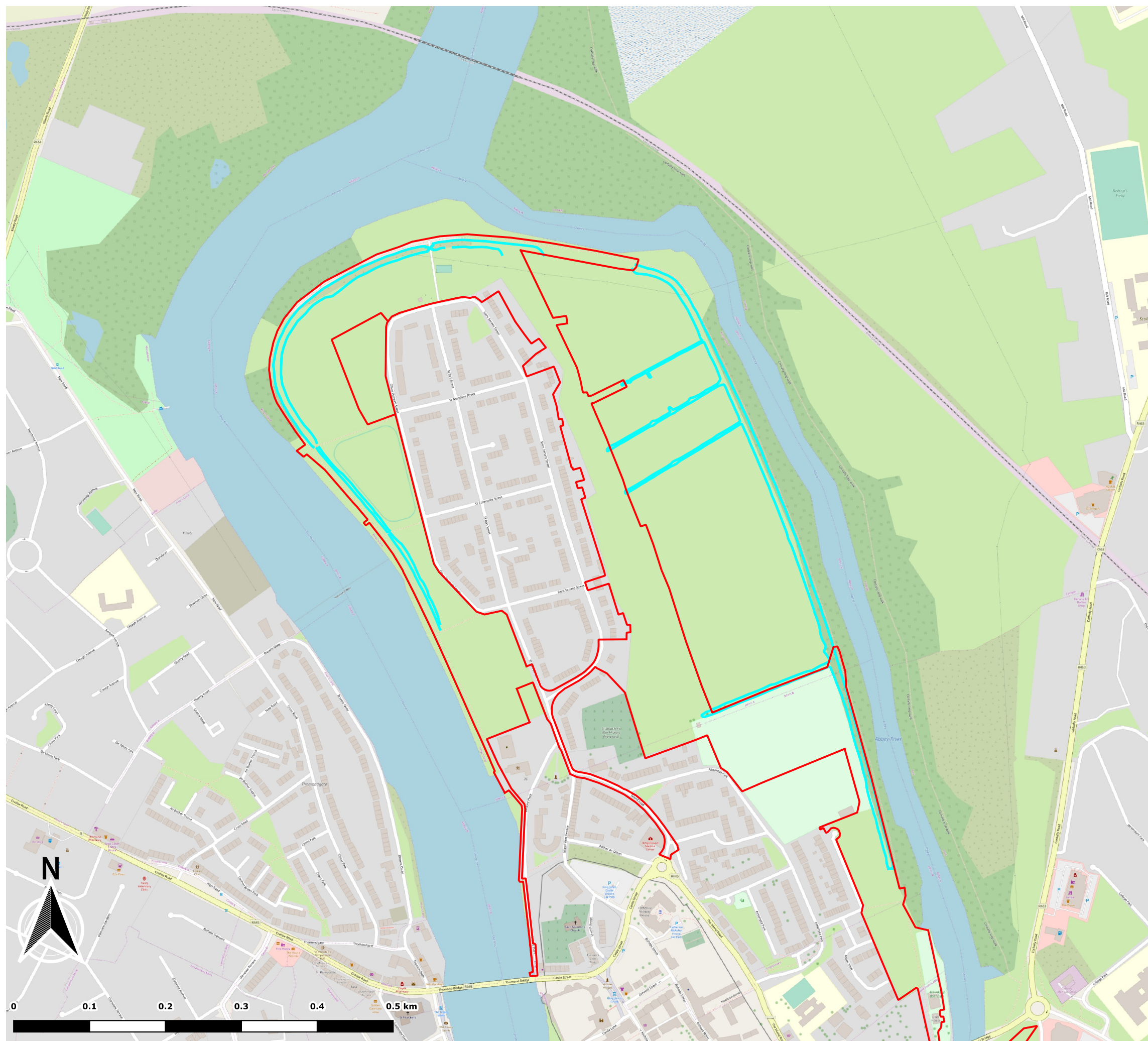


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Figure No.8.14 - Potential
***Groenlandia densa* enhancement sites**

Drawn by: ES	Scale:
Checked by: PB	1:40000
Approved by: BOC	
File Name: Groenlandia	
Status: Current	



Legend

- Site boundary
- Existing Open Drains

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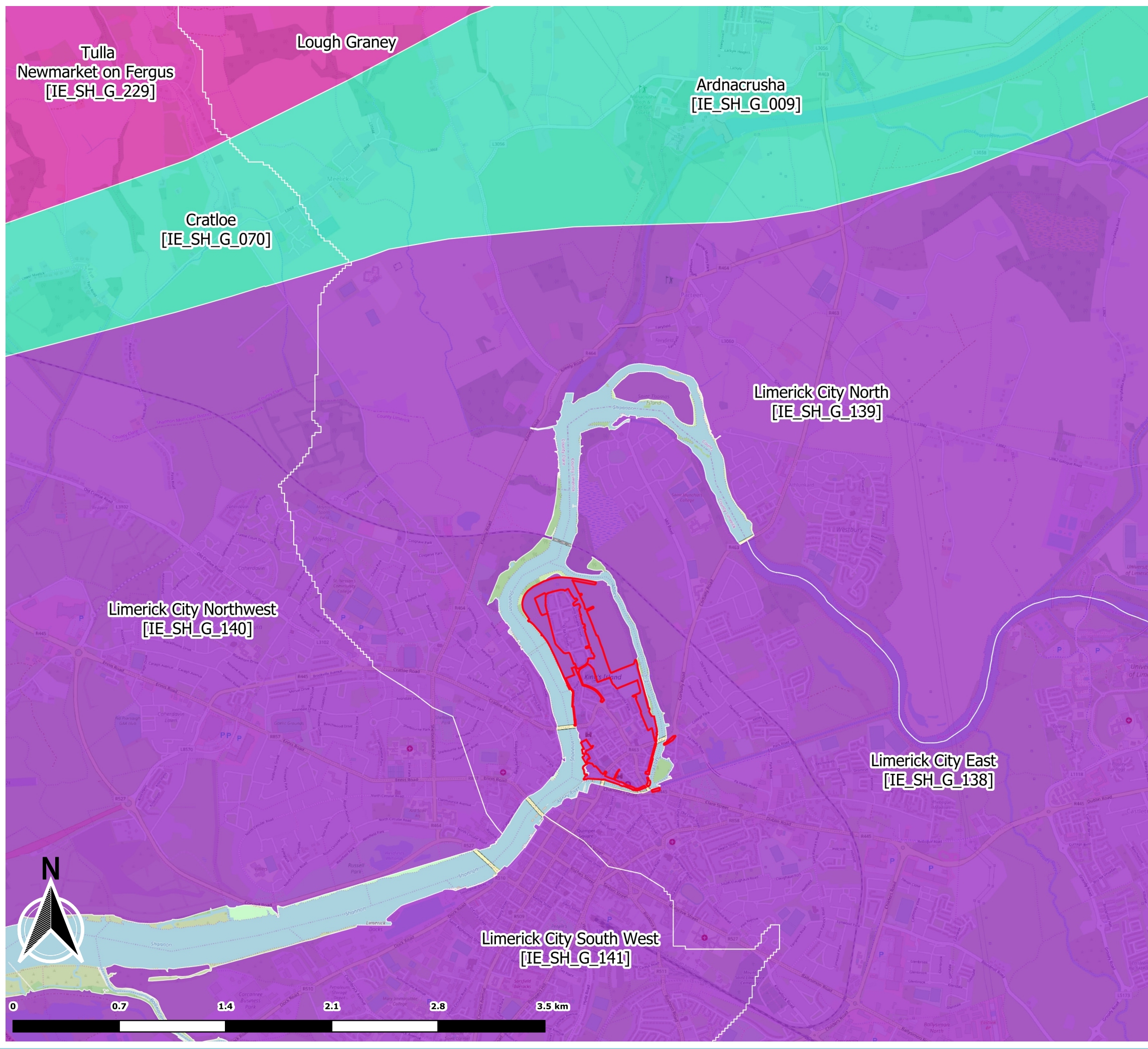


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Environmental Impact Assessment Report
Figure No.9-1 - Existing Open Drains

Drawn by: ES	Scale: 1:5000
Checked by: BOC	
Approved by: BOC	
File Name:2015s3353_surfacewaterdrains_20191218	
Status: Current	



Legend

- Site boundary
- WFD Active Groundwater Bodies
 - FI - Productive fissured bedrock
 - KA - Karstic
 - PP - Poorly Productive Bedrock

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**Environmental Impact Assessment Report
Figure 9.2 - Groundwater bodies**

Drawn by: ES	Scale: 1:25000
Checked by: BOC	
Approved by: BOC	
File Name:2015s3353_groundwaterbodies_20190520	
Status: Current	



Legend

- Site boundary
- Aquifer Vulnerability
 - E - Exeme
 - H - High
 - M - Moderate
 - L - Low
 - X - Rock at or near surface/ Karst

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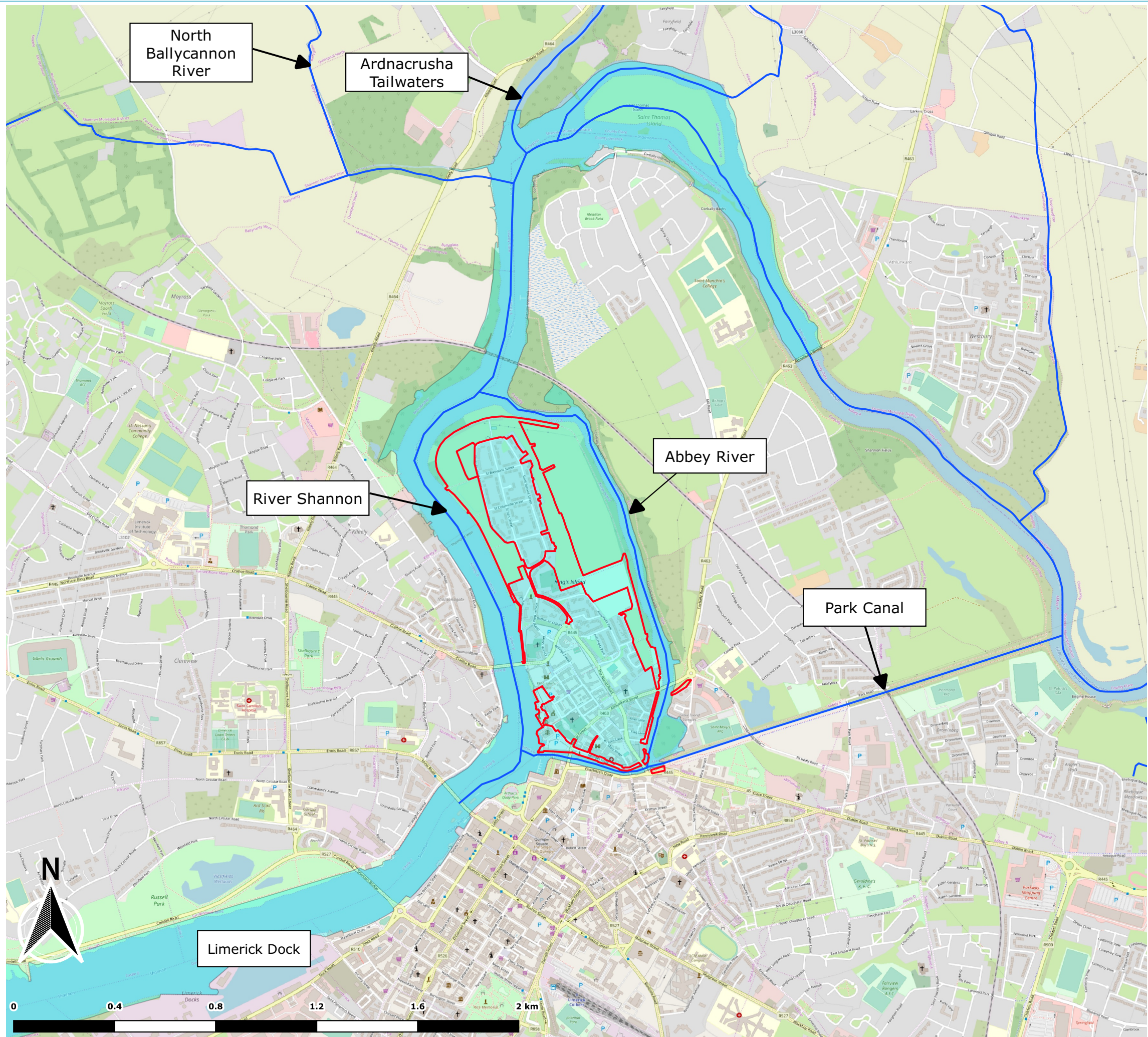


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**Environmental Impact Assessment Report
Figure 9.3 - Aquifer Vulnerability**

Drawn by: ES	Scale: 1:8000
Checked by: BOC	
Approved by: BOC	
File Name:2015s3353_aquifer_vulnerability_20191218	
Status: Current	



Legend

- Site boundary
- River Network
- Transitional Waterbodies

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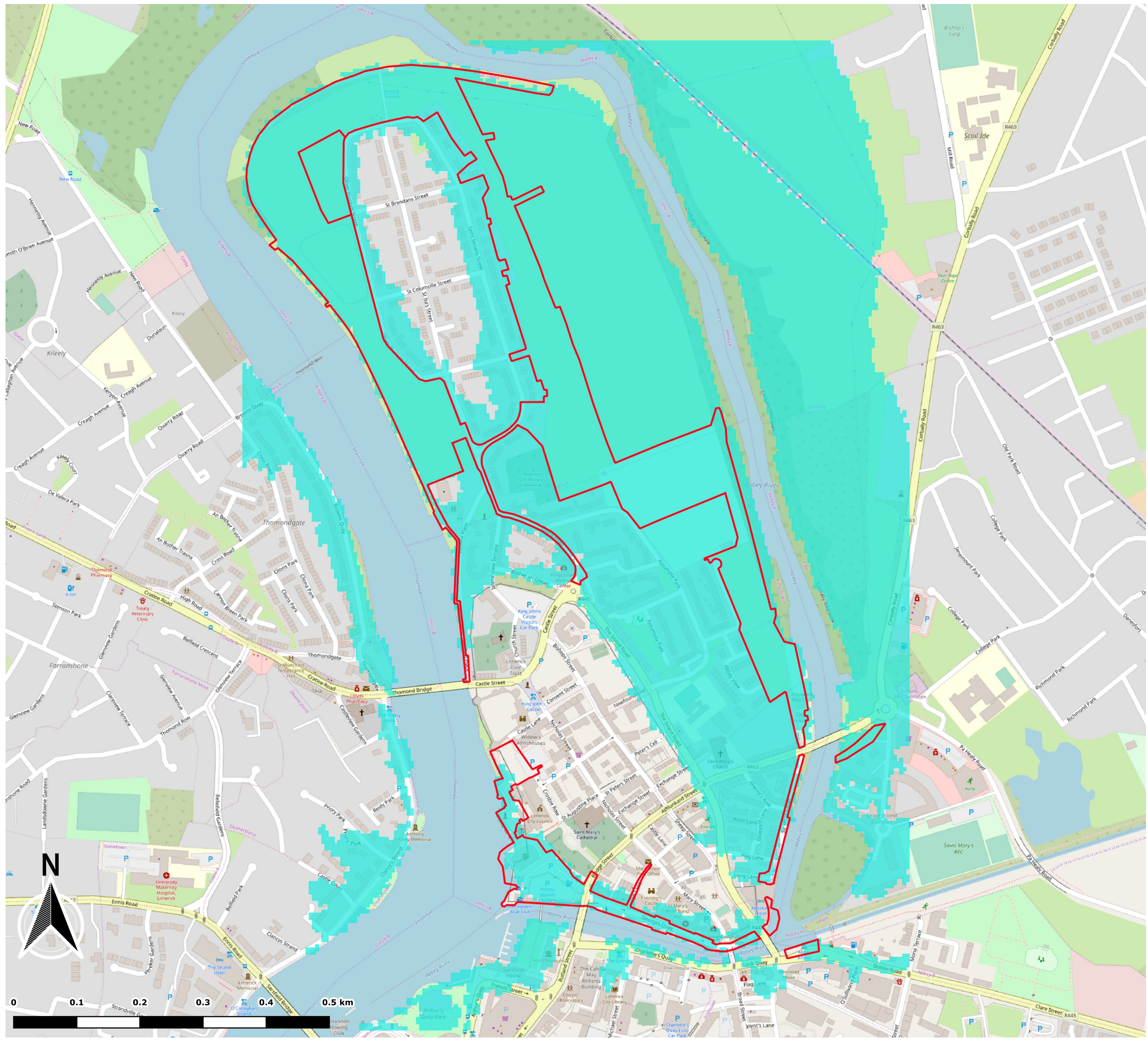


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**Environmental Impact Assessment Report
Figure 9.4 - Surface Waterbodies**

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Checked by: BOC	
Approved by: BOC	
File Name:2015s3353_surface_waterbodies_20190520	
Status: Current	



Legend

- Site boundary
- 0.5% AEP Tidal Flood Extent

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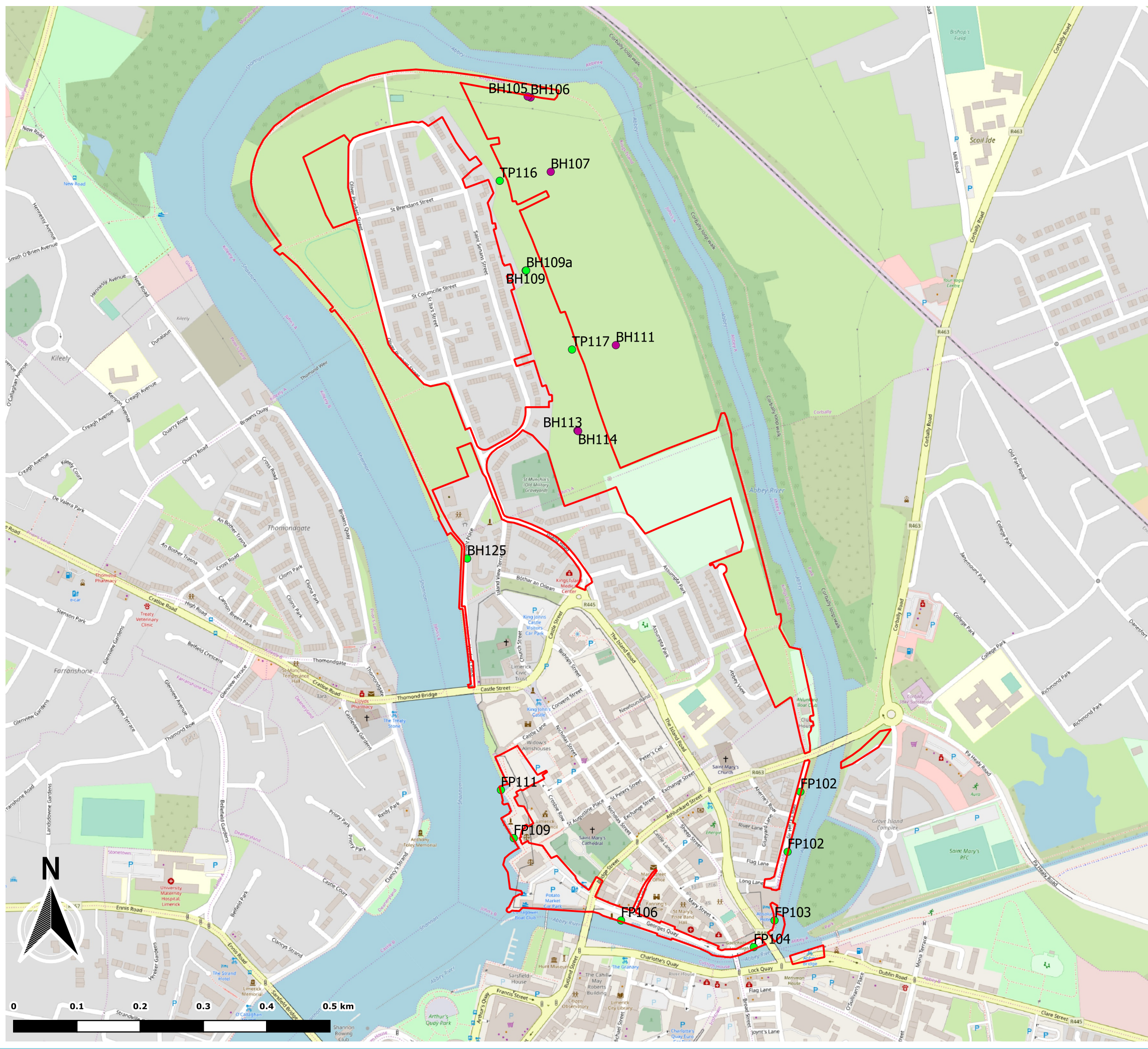


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**Environmental Impact Assessment Report
Figure 9.5 - Tidal 0.5% AEP Flood Extent**

Drawn by: ES	Scale: 1:6000
Checked by: BOC	
Approved by: BOC	
File Name:2015s3353_flood_zones_20190520	
Status: Current	



Legend

- Site boundary
- Site Investigation Location
 - Soil Testing Sites
 - Groundwater Tresting Sites

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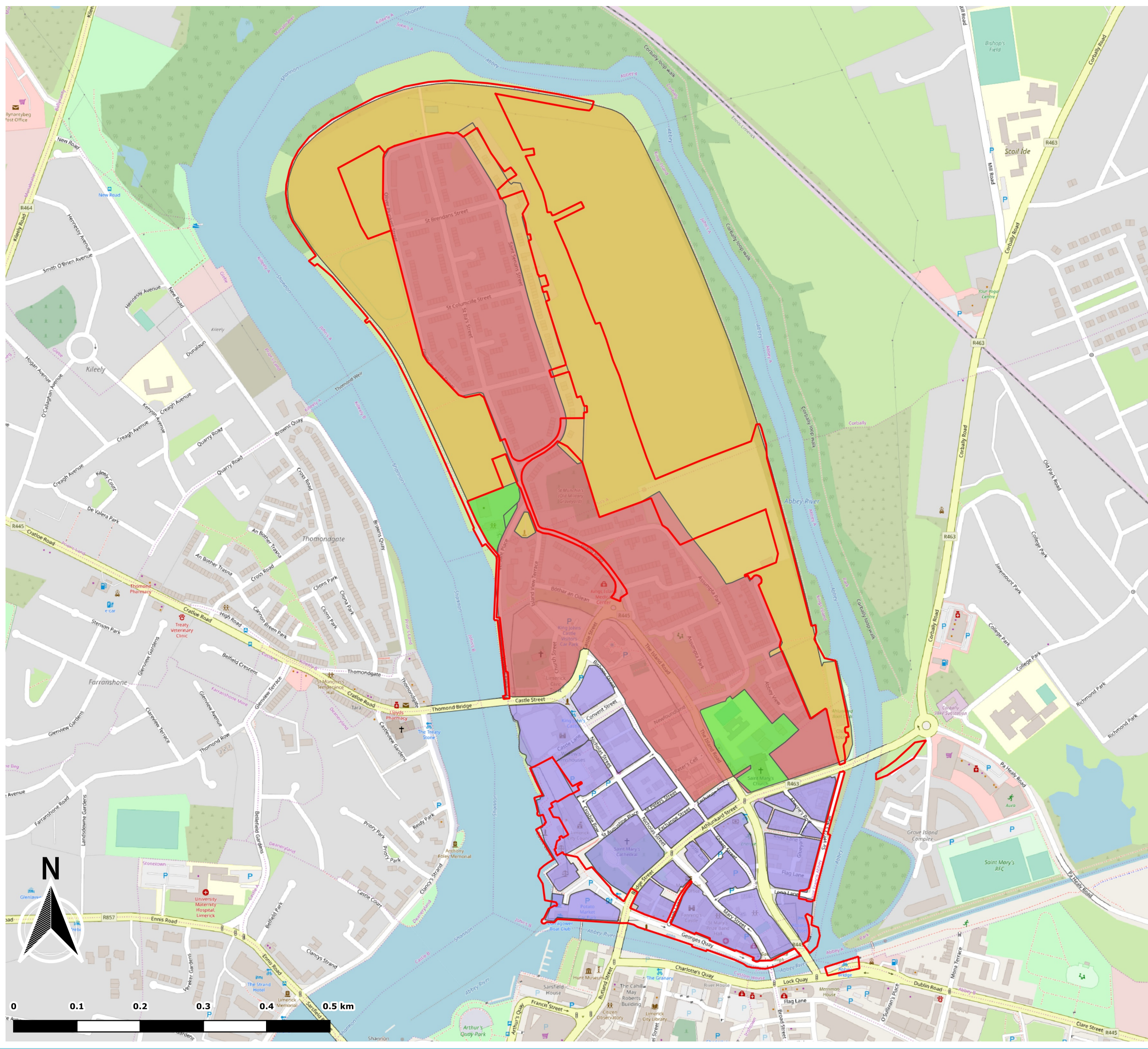


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Environmental Impact Assessment Report Figure 9.6 - Site Investigation Testing Locations

Drawn by: ES	Scale:
Checked by: BOC	1:6000
Approved by: BOC	
File Name: 2015s3353_bore hole locations	
Status:	



Legend

- Site boundary
- Limerick City Development Plan
 - Community & Educational Uses
 - Public Open Space
 - Residentially Zoned Area
 - Retail Commercial

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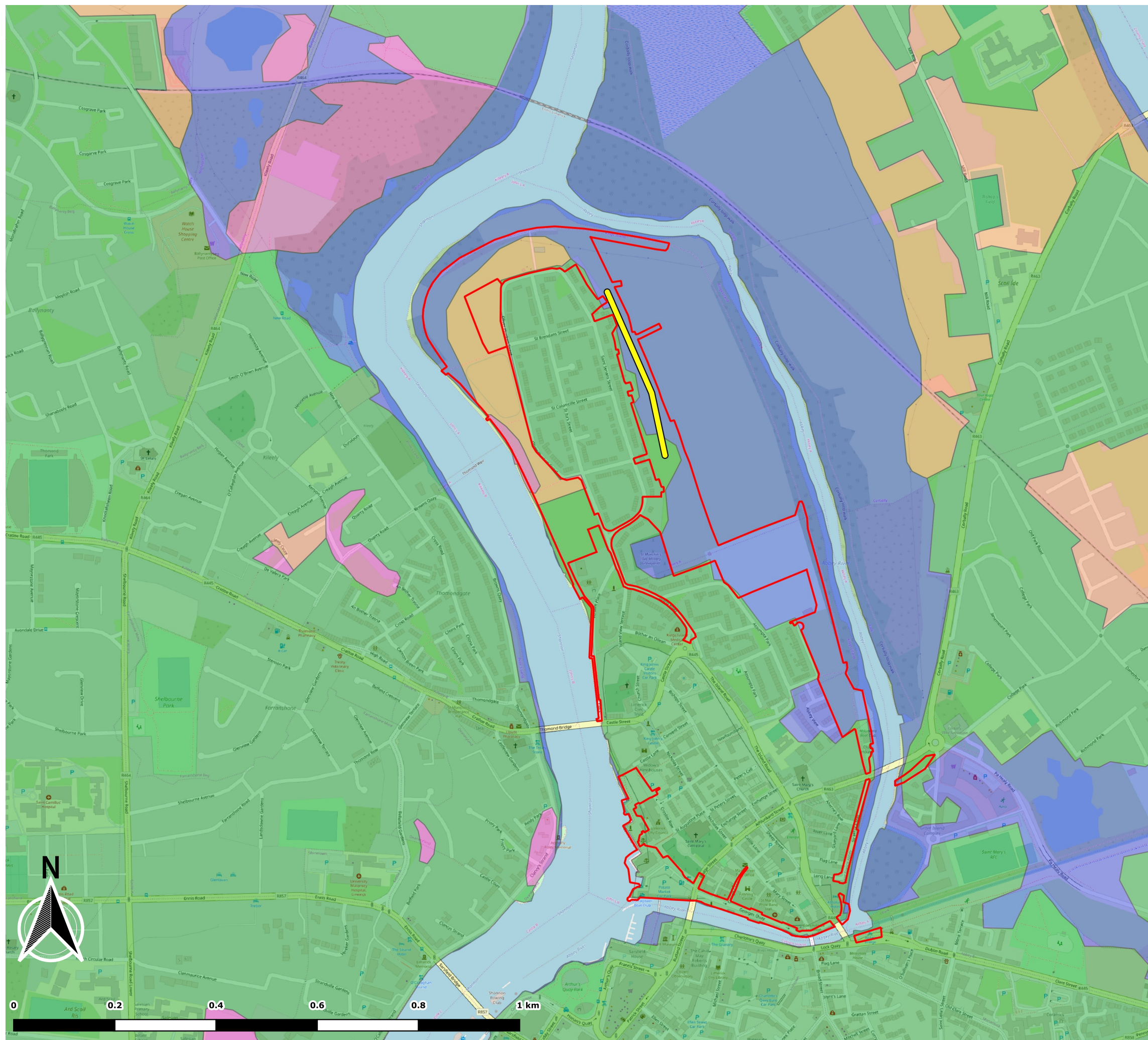


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Environmental Impact Assessment Report
Figure 10-1- Limerick City Development
Plan

Drawn by: ELR	Scale: 1:6000
Checked by: BOC	
Approved by: BOC	
File Name: 2015s3353_limerickdevelopmentplan_20190520	
Status: Current	



Legend

- Site boundary
- Historic Landfill Location
- Subsoils
 - Made - Made Ground
 - Mesc - Marine Estuarine Sediments
 - Rck - Bedrock at Surface
 - TLs - Basic Poorly Drained Mineral Soils

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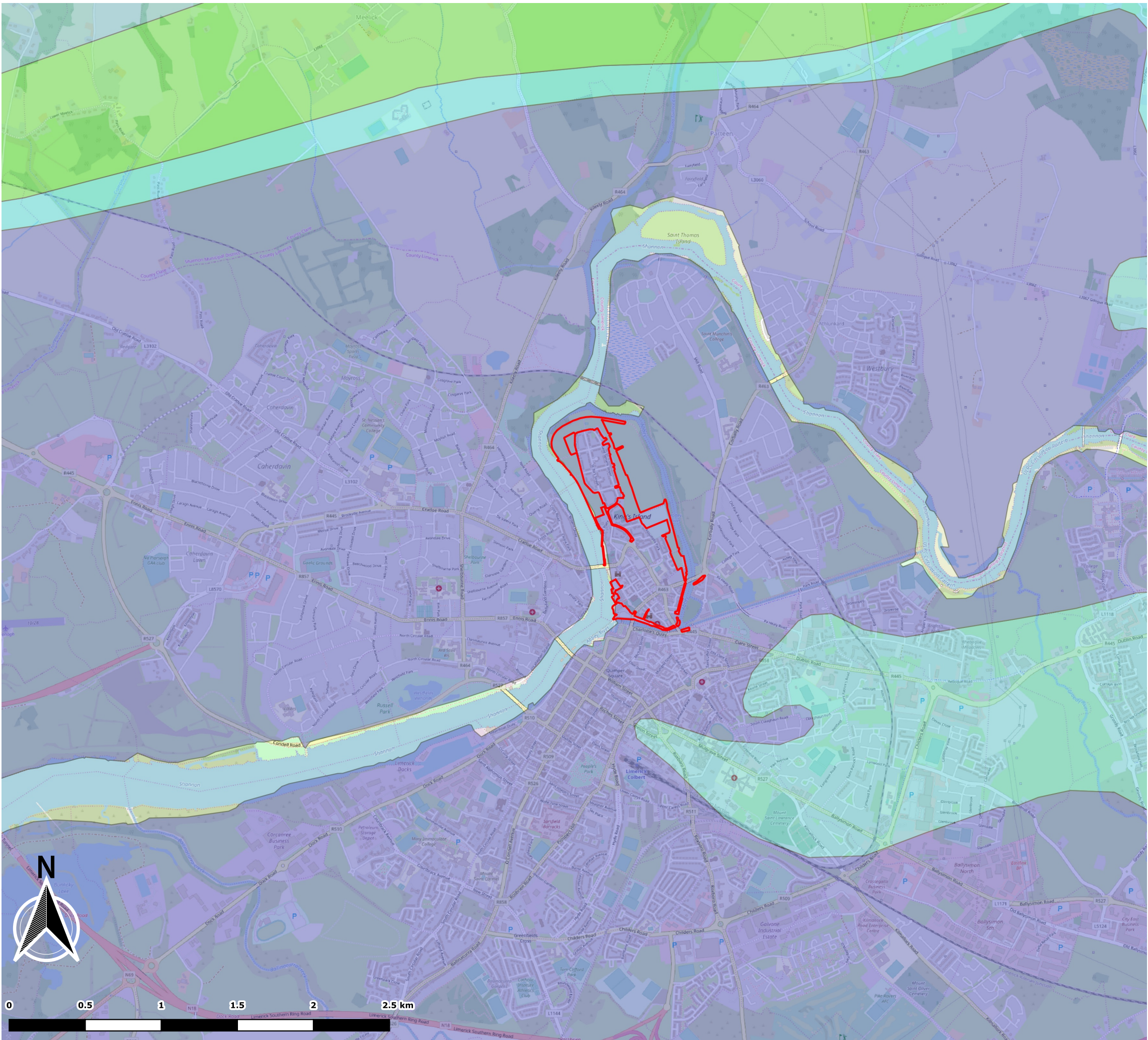


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Environmental Impact Assessment Report Figure 10-2 - Subsoils

Drawn by: ELR	Scale: 1:7500
Checked by: BOC	
Approved by: BOC	
File Name: 2015s3353_subsoil_20190520	
Status: Current	



Legend

- Site boundary
- Bedrock Formations
- BA - Ballysteen Formation
 - LR - Lough Gur Formation
 - VIS - Visean Limestones (undifferentiated)
 - V - Volcaniclastic Rocks
 - WA - Waulsortian Limestones

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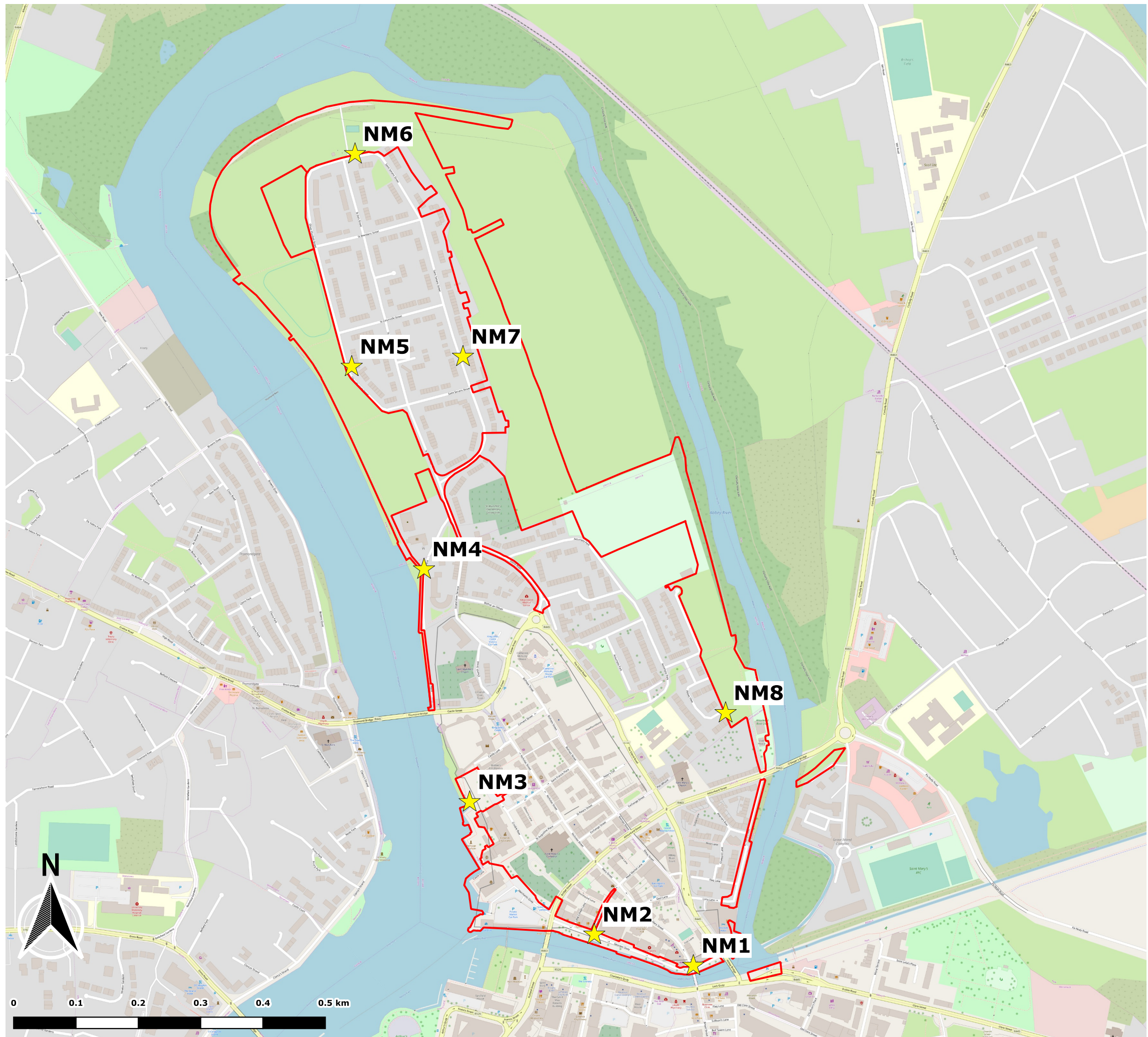


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Environmental Impact Assessment Report
Figure No.10-3- Bedrock Geology

Drawn by: ELR	Scale: 1:25000
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Approved by: BOC	
File Name:2015s3353_bedrock_geology_20190520	
Status: Current	



Legend

- Site boundary
- ★ Noise monitoring location

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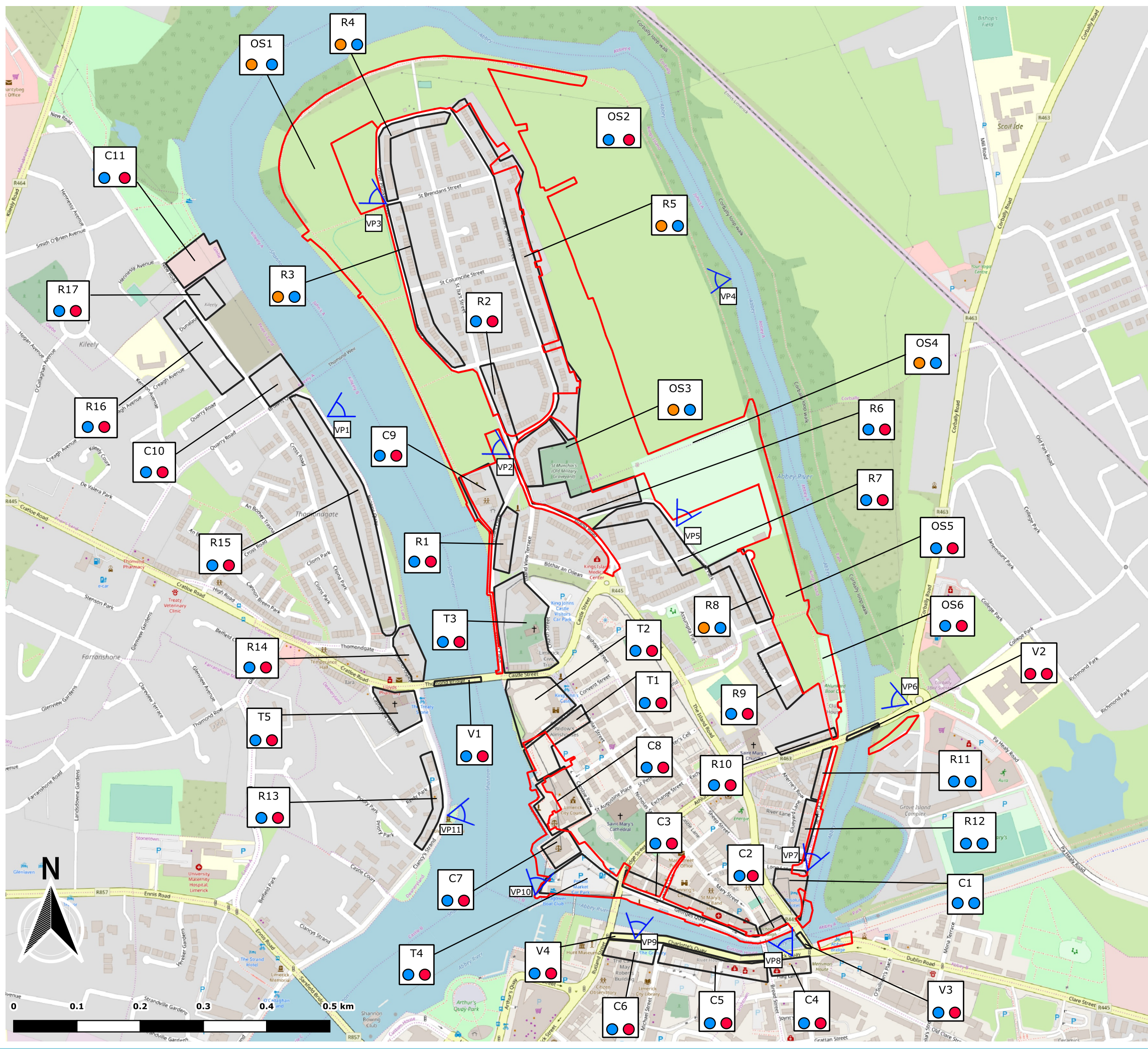


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**Environmental Impact Assessment Report
Figure No.11-1 -Noise monitoring
locations**

Drawn by: ES	Scale: 1:10000
Checked by: BOC	
Approved by: BOC	
File Name: 2015s3553-King's Island-LVIA	
Status: Current	



Legend

— Site boundary

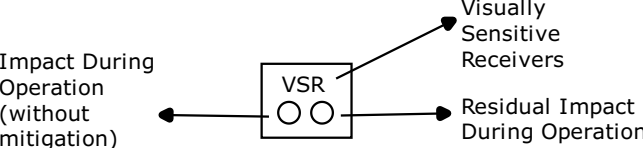
Visual Impact

- Moderate
- Slight
- Imperceptible

Visually Sensitive Receivers

- R1-17 Residential properties
- C1-9 Commercial/ Community buildings
- OS1-6 Open space area
- V1-4 Vehicular users
- T1-4 Tourist facility

Visual Impact During Operation



Photomontage locations

VP1-11 Viewpoints (see Volume 4)

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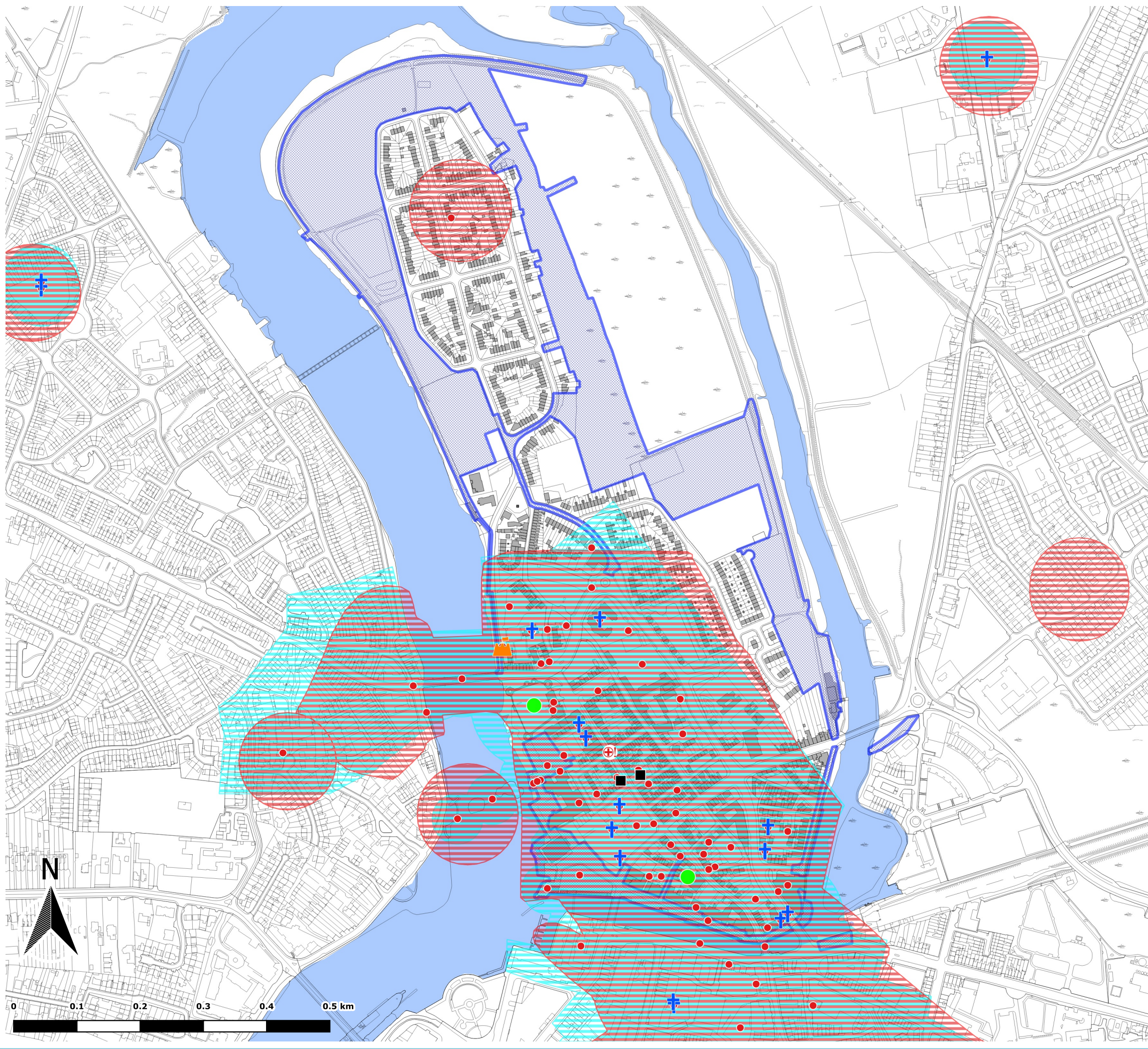


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**Environmental Impact Assessment Report
Figure No.13-1- Location of Visually Sensitive Receivers and Photomontage viewpoints**

Drawn by: ES	Scale:
Checked by: BOC	1:6000
Approved by: BOC	
File Name: 2015s3553-King's Island-LVIA	
Status: V1-10/09/2019	



Legend

- Site Boundary
- Shannon and Abbey Rivers
- Archaeological Heritage**
 - National Monument in State Care
 - Walled Town
 - Preservation Order
 - Religious Site
 - Register of Historic Monuments
 - Archaeological Monument
 - RMP Zone of Notification
 - SMR Zone of Notification

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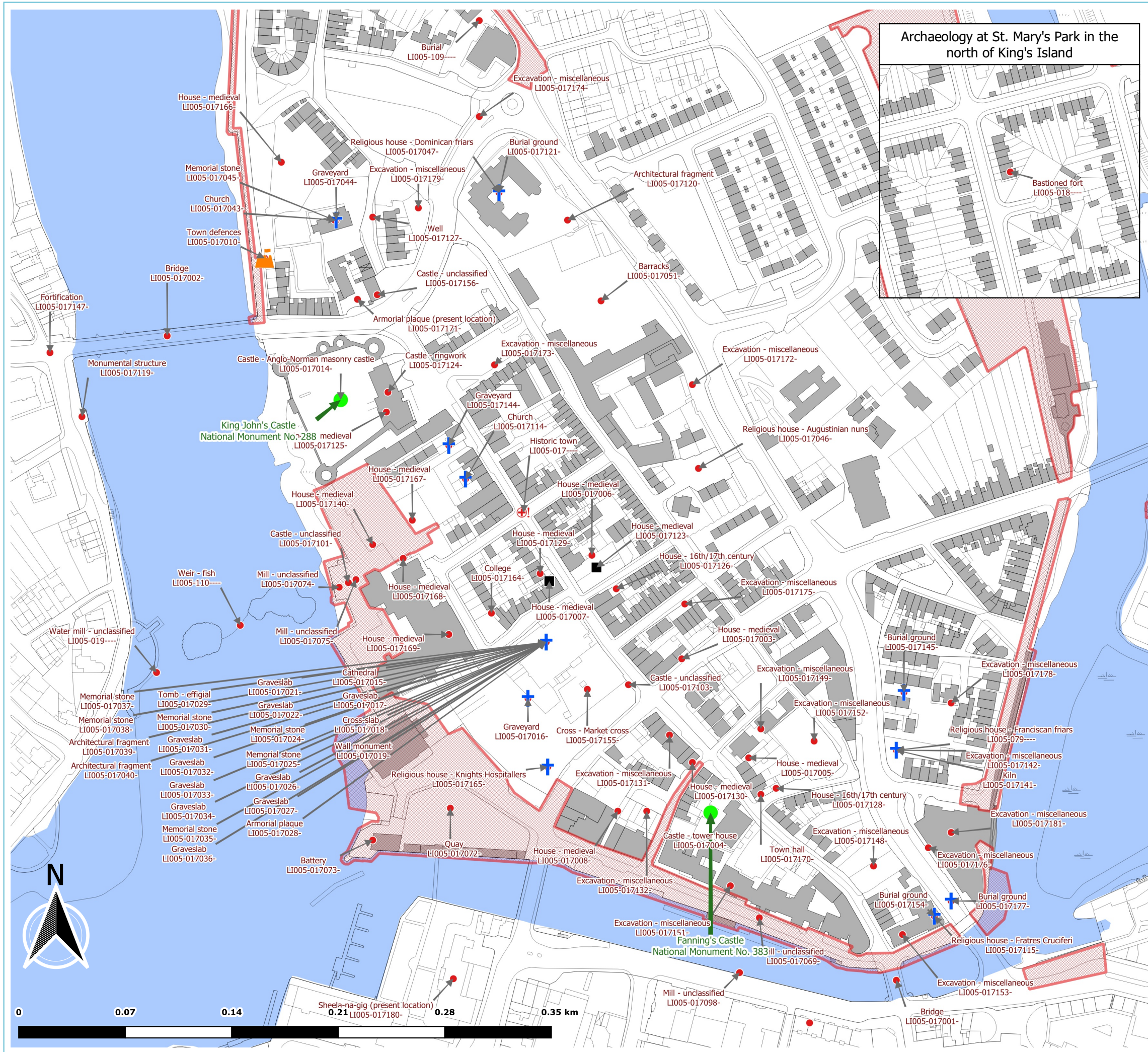


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**Environmental Impact Assessment Report
Figure No. 14.1 - Archaeological Heritage**

Drawn by: NM	Scale:
Checked by: DM	1:6000
Approved by: DM	
File Name: 19036 Kings Island Mapping RevA.qgz	
Status: Current	



Legend

- Site Boundary
- Shannon and Abbey Rivers

Archaeological Heritage

- National Monument in State Care
- Walled Town
- Preservation Order
- Religious Site
- Register of Historic Monuments
- Archaeological Monument

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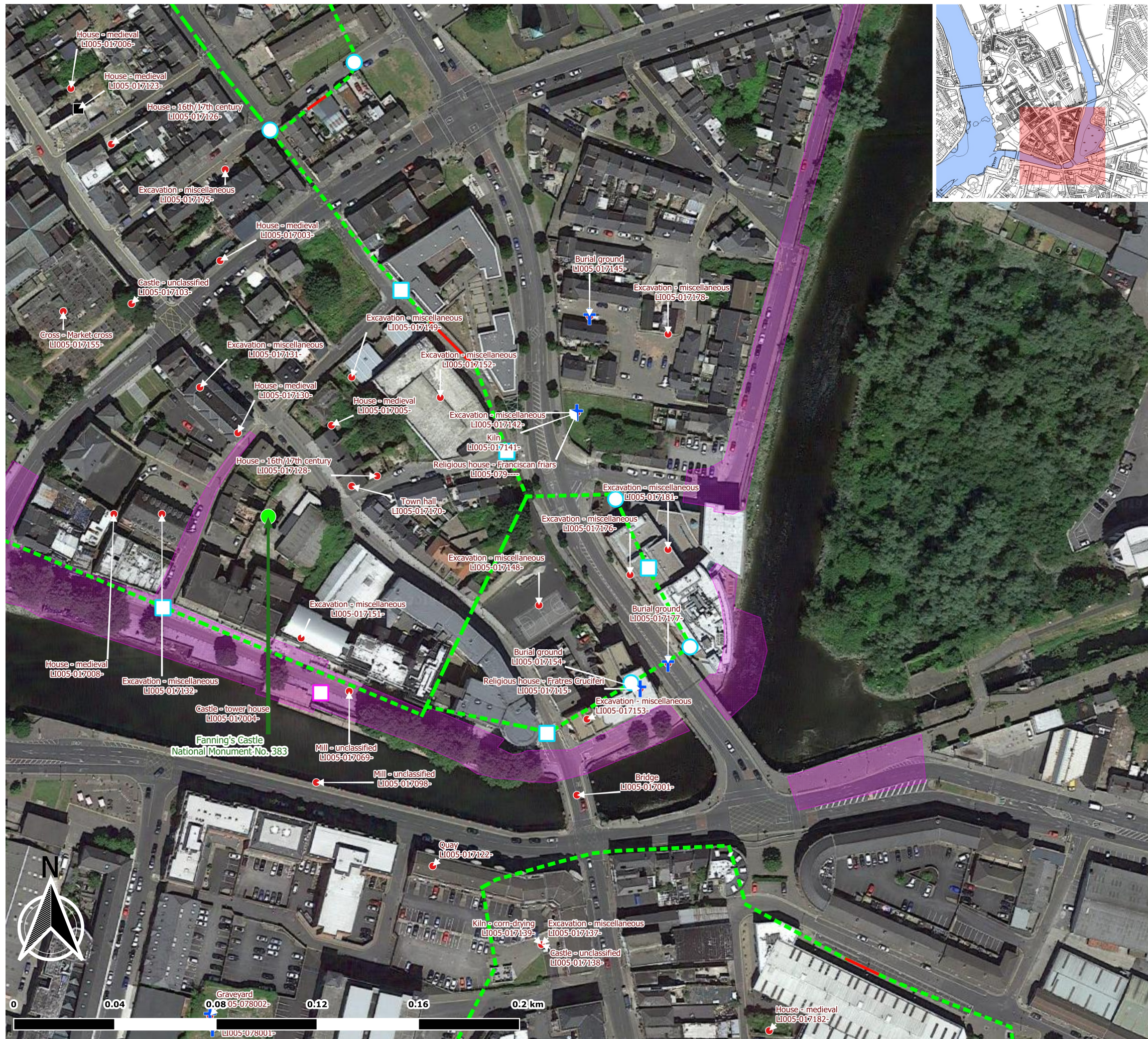


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Environmental Impact Assessment Report Figure No. 14.2 - Archaeological Heritage Detail

Drawn by: NM	Scale:
Checked by: DM	1:2500
Approved by: DM	
File Name: 19036 Kings Island Mapping RevA.qgz	
Status: Current	



Legend

Site Boundary

Archaeological Heritage

National Monument in State Care

Religious Site

Register of Historic Monuments

City Walls - from Limerick City Walls Conservation Management Plan (2008)

Extant medieval/post medieval walls

Preseumed line of non-extant walls

Presumed line of core 'Vikingtown' wall

City Wall Features

Presumed Location of Gate

Presumed Location of Tower

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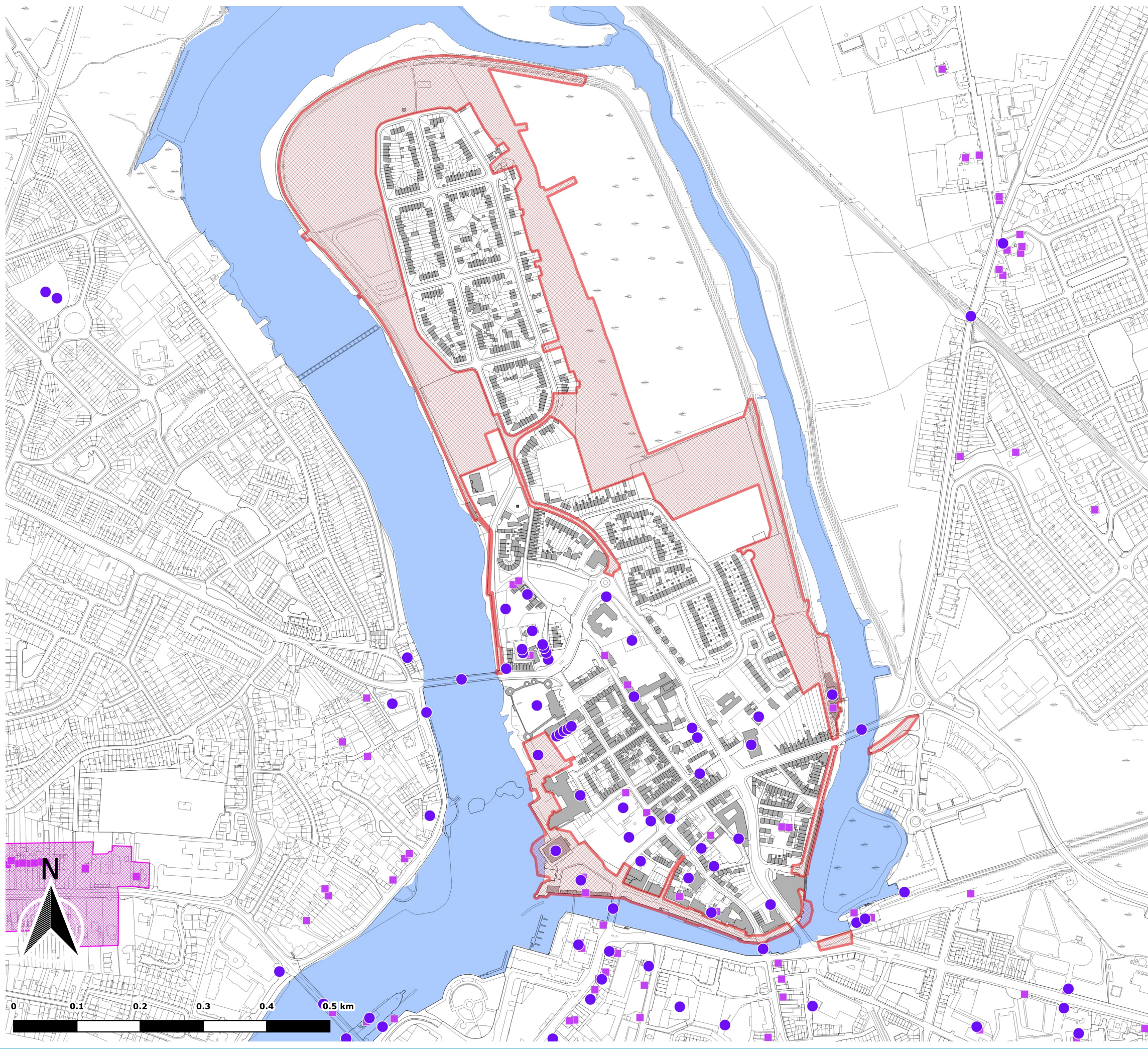


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Environmental Impact Assessment Report Figure No. 14.5 - Archaeological Heritage Detail on Google Aerial Photography 3 of 3

Drawn by: NM	Scale:
Checked by: DM	1:1500
Approved by: DM	
File Name: 19036 Kings Island Mapping RevA.qgz	
Status: Current	



Legend

- Site Boundary
- Shannon and Abbey Rivers
- Architectural Heritage
 - Architectural Conservation Area
 - Protected Structure
 - National Inventory of Architectural Heritage

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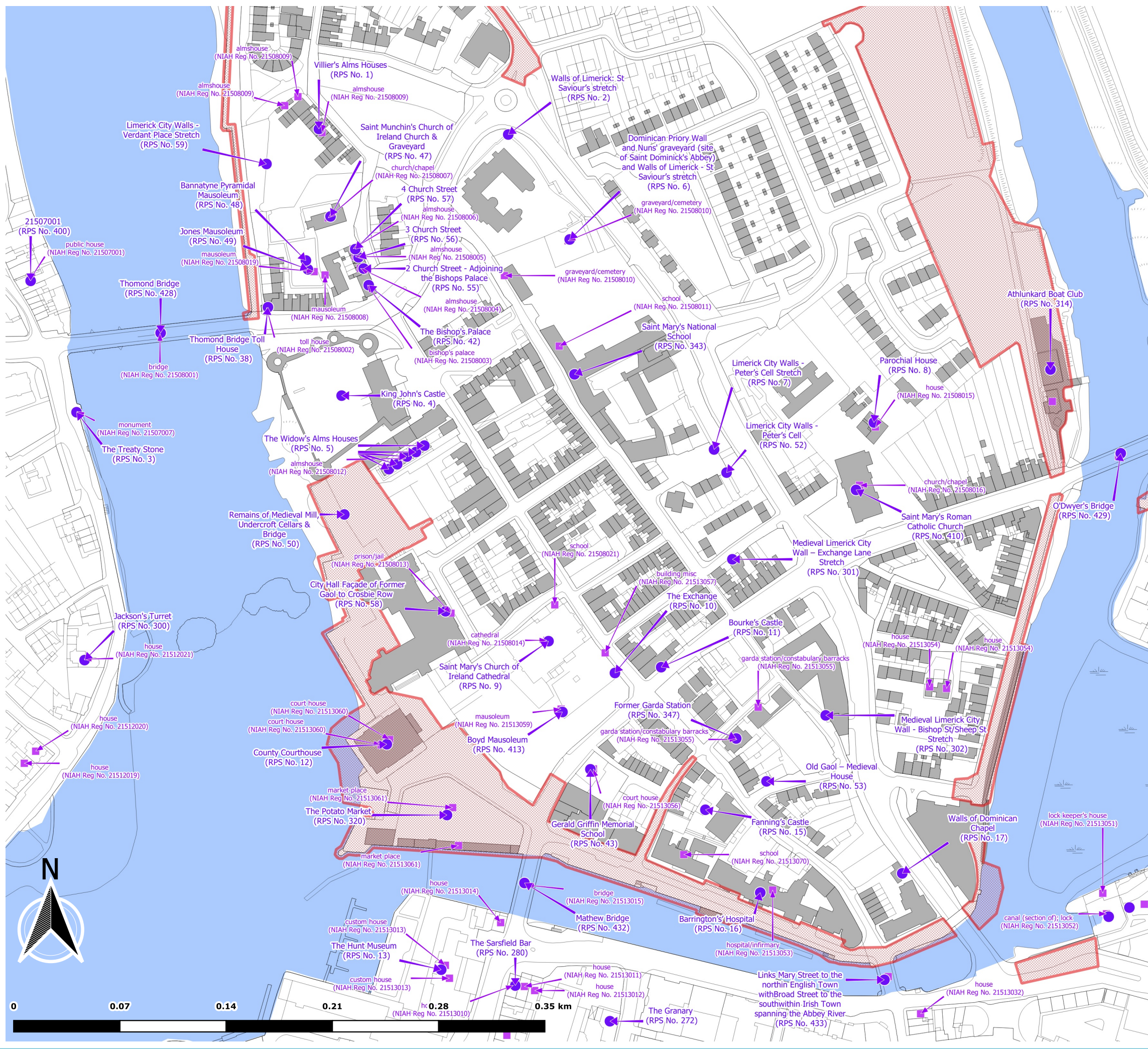


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Environmental Impact Assessment Report
Figure No. 14.6 - Architectural Heritage

Drawn by: NM	Scale: 1:6000
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Approved by: DM	
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Legend

- Site Boundary
- Shannon and Abbey Rivers
- Architectural Heritage
 - Protected Structure
 - National Inventory of Architectural Heritage

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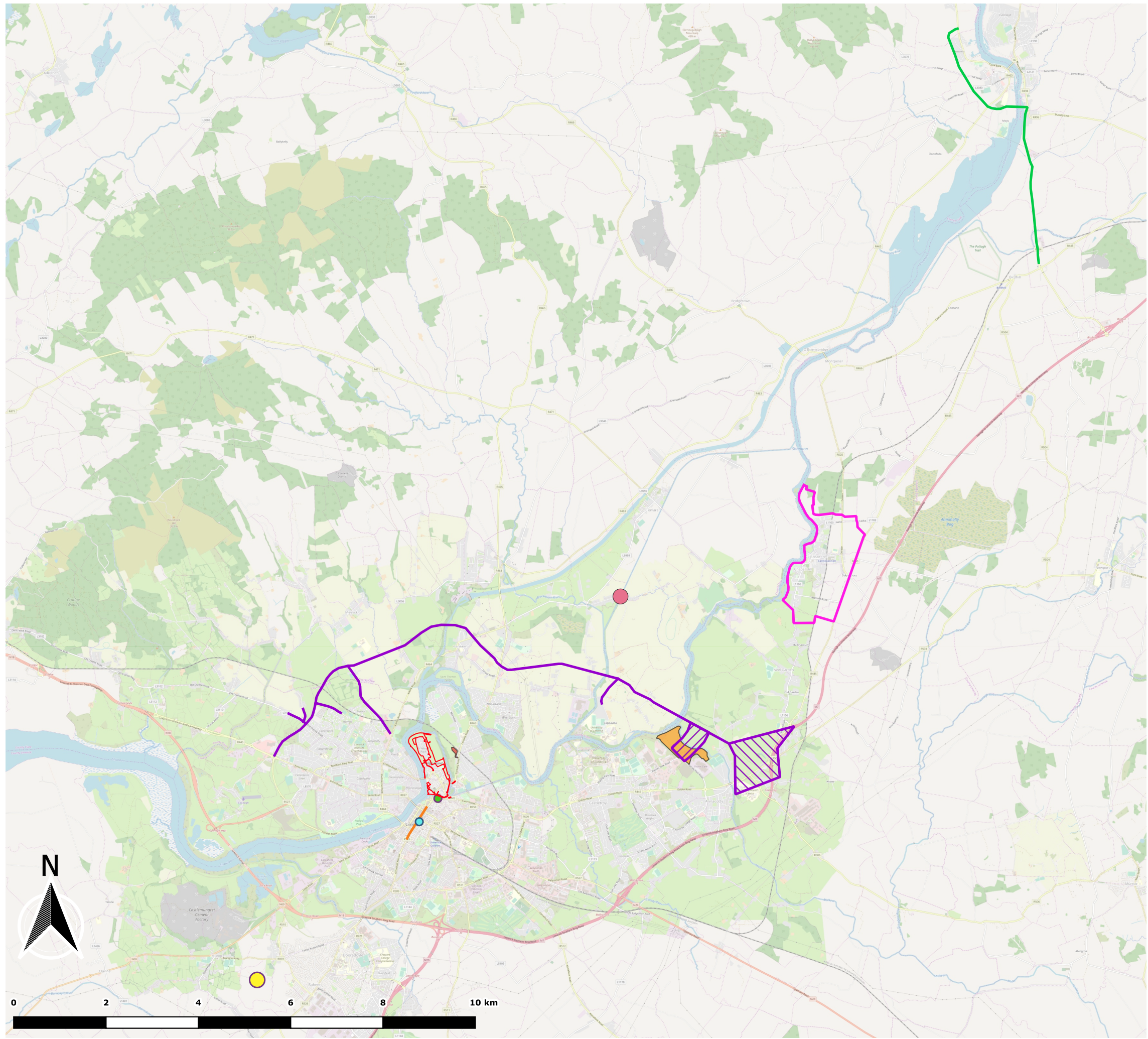


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Environmental Impact Assessment Report
Figure No. 14.7 - Architectural Heritage
Detail

Drawn by: NM	Scale:
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File Name: 19036 Kings Island Mapping RevA.qgz	
Status: Current	



Legend

- Site Boundary
- Internatioal Rugby Experience
- Mungret Local Infrastructure Housing
- Opera Site
- St Mary's Park Housing
- Springfield FRS
- Castletroy FRS
- Corbally Housing Development
- LNDR Junction Reservation
- LNDR Link Road Area
- Limerick Northern Distributor Road (LNDR)
- Killaloe Bypass & Shannon Bridge Corssing
- O'Connell Street - Limerick Urban Centre Revitalisation
- Castleconnell FRS

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Environmental Impact Assessment Report Figure No.16-1- Cumulative Impacts

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Approved by: BOC	
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