

**Bray to City Centre
Core Bus Corridor
Scheme**
August 2023

**Environmental
Impact
Assessment
Report**

**Volume 2
Main Chapters**

**BUS
CONNECTS**

SUSTAINABLE TRANSPORT FOR A BETTER CITY.

Preface

The structure of this Environmental Impact Assessment Report (EIAR) for the Bray to City Centre Core Bus Corridor Scheme (hereafter referred to as the Proposed Scheme) is summarised as follows:

Volume 1: Non-Technical Summary

Volume 1 provides a non-technical summary of the information contained in Volume 2 of the EIAR.

Volume 2: Main Environmental Impact Assessment Report

Volume 2 provides a general introduction, outlines the environmental impact assessment process, describes the scope of the Proposed Scheme, presents the consideration of reasonable alternatives and describes the environmental impacts specific to the Proposed Scheme.

Volume 3: Figures

Volume 3 provides drawings and large format images (labelled as 'Figures') that illustrate the information detailed in Volume 2 of the EIAR.

Volume 4: Appendices

Volume 4 provides documentation and data that is supplemental to the information provided in Volume 2 of the EIAR.

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Glossary of Terminology, Abbreviations and Acronyms

Term, Abbreviation or Acronym	Description
A	Alluvium
AA	Appropriate Assessment
AADT	Annual Average Daily Traffic
ABP	An Bord Pleanála
ACA	Architectural Conservation Areas
AcEsk	Eskers comprised of gravels of acidic reaction
AD	Anno Domini
ADEPT	Association of Directors of Environment, Economy, Planning and Transport
ADMS	Atmospheric Dispersion Modelling System
A&E	Accident and Emergency
AeoUND	Aeolian undifferentiated
AEP	Annual Exceedance Probability
Ag	Alluvium (gravelly)
AIA	Arboricultural Impact Assessment
AIB	Allied Irish Bank
AlluvMin	Alluvial (min)
AminDW	Deep well drained mineral soil (mainly acidic)
AminPD	Mineral poorly drained (mainly acidic)
AminPDPT	Peaty Gleys Acidic
AminSP	Surface water gleys / Ground water gleys shallow
AminSRPT	Shallow rocky peaty, non-peaty mineral complexes (mainly acidic)
AminSW	Shallow well drained mineral soil (mainly acidic)
Annex I Habitats	Habitat types whose conservation requires the designation of Special Areas of Conservation. Priority habitats, which are in danger of disappearing within the EU territory, are highlighted with an asterisk.
Annex I Species	Annex I of the Birds Directive lists 193 bird species and sub-species which are: i) in danger of extinction, ii) vulnerable to specific changes in their habitat, iii) considered rare because of small populations or restricted local distribution and / or iv) require particular attention for reasons of the specific nature of habitat. Article 4 of the Birds Directive has classified a number of Special Protection Areas (SPAs) for regularly occurring migratory birds and those birds listed on Annex I of the directive.
Annex II Species	Animal and plant species whose conservation requires the designation of Special Areas of Conservation.
Annex IV	Animal and plant species in need of strict protection.
Annex V	Animal and plant species whose taking in the wild and exploitation may be subject to management measures.
APM	Automated People Mover
AQG	Air Quality Guideline
AR5	Fifth Assessment Report
As	Alluvium (sandy)
ASD	Autism Spectrum Disorder
Asi	Alluvium (silty)
AsIAm	Autism Spectrum Information Advice and Meeting Point
ASL	Advance Stacking Location
ASR	Air sensitive receptor
AT	Attenuation Tanks
ATCs	Automatic Traffic Counts
AVL	Automatic Vehicle Location
AWB	Artificial Surface Waterbodies
BCI	Bat Conservation Ireland

Term, Abbreviation or Acronym	Description
Birds of Conservation Concern in Ireland	BirdWatch Ireland and the Royal Society for the Protection of Birds (RSPB) in Northern Ireland provided a list of priority bird species for conservation action on the island of Ireland. These Birds of Conservation Concern in Ireland are published in a list known as the BoCCI List. In this BoCCI List, birds which breed and / or winter in Ireland are classified into three separate lists (Red, Amber and Green), based on the conservation status of the bird and hence conservation priority.
Bq/m ³	Bequerel per cubic metre
BktPt	Blanket Peat
BminDW	Deep well drained mineral soil (mainly basic)
BminPD	Mineral poorly drained (mainly basic)
BminPDPT	Peaty gleys basic parent materials basic
BminSP	Surface water gleys / groundwater gleys shallow
BminSPPT	Peaty gleys shallow
BminSRPT	Lithosols peats
BminSW	Renzinas / Lithosols
BMW	Biodegradable Municipal Waste
BoCCI	Birds of Conservation Concern in Ireland
BRE	Building Research Establishment Group
BRT	Bus Rapid Transport
BS	British Standard
BSBI	Botanical Society of Britain and Ireland
BSI	British Standard Institute
BTH	Built Heritage
BTO	British Trust for Ornithology
BusConnects Dublin - Core Bus Corridor Infrastructure Works	The BusConnects Dublin - Core Bus Corridor Infrastructure Works are the works for Dublin and includes all 12 Proposed Schemes.
Bus Gate	A Bus Gate is a sign-posted short length of stand-alone bus lane. This short length of road is restricted exclusively to buses, taxis and cyclists plus emergency vehicles. It facilitates bus priority by removing general through traffic along the overall road where the bus gate is located. General traffic will be directed by signage to divert away to other roads before they arrive at the Bus Gate.
Bus Lane	An on-road carriageway reserved primarily for the use of buses. A bus lane forms part of a road link and it is located within the contiguous road surface.
CA	Conservation Area
CaCO ₃	Calcium Carbonate
C & D	Construction and Demolition
CAF	Common Appraisal Framework
CAFE Directive	Directive 2008/50/EC of the European Parliament and of the Council of 21 May 2008 on ambient air quality and cleaner air for Europe
CAP	Climate Action Plan
CARO	Climate Action Regional Office
Catchment	The area of land bounded by watersheds draining into a river, basin or reservoir.
CBA	Cost Benefit Analysis
CBC	Core Bus Corridor
CBD	Convention of Biological Diversity
CC	Construction Compound
CCTV	Close-circuit television
CDRWMP	Construction and Demolition Resource and Waste Management Plan
CEA	Cumulative Effects Assessment
CEMP	Construction Environmental Management Plan
CERC	Cambridge Environmental Research Consultants
CESSM	Civil Engineering Standard Model of Measurement
CGS	County Geological Sites
CH ₄	Methane
CIE	Córas Iompair Éireann

Term, Abbreviation or Acronym	Description
CIEEM	Chartered Institute of Ecology and Environmental Management
CFA	Continuous Flight Auger
CIfA	Chartered Institute for Archaeologists
CIHT	Chartered Institution of Highways and Transportation
CIRIA	Construction Industry Research and Information Association
CMATS	Cork Metropolitan Area Transport Strategy
CNL	Construction Noise Levels
CNOSSOS	Common Noise Assessment Methods in Europe
CNT	Construction Noise Threshold
CO	Carbon Monoxide
CO ₂	Carbon Dioxide
COMAH	Control of Major Accident Hazards Involving Dangerous Substances
Construction Phase	The processes and activities on or off site that contribute or are instrumental to the construction of the Proposed Scheme towards, and finally to, the Operational Phase.
Construction Year (2024)	For the purposes of modelling, a Construction Year of 2024 is assumed.
CORINE	Coordinated Information on the Environment
CPO	Compulsory Purchase Order
CPP	Campus Pollinator Plan
CPS	Cherrywood Planning Scheme
CRTN	Calculation of Road Traffic Noise
cSAC	Candidate Special Area of Conservation
CSM	Conceptual Site Model
CSMMP	Construction Stage Mobility Management Plan
CSO	Central Statistics Office
CSZ	Core Sustainance Zone
CTMP	Construction Traffic Management Plan
Cut	Raised bog cutaway / cutover
Cycle Lane	A cycle lane is a lane on the carriageway that is reserved either exclusively or primarily for cycling and is separated from general traffic or bus lanes by road markings.
Cycle Track	A cycle track is a separate section of the road dedicated for cycling only. This space will generally be isolated from other vehicular traffic by a physical kerb.
daa	Dublin Authority Airport
DAHG	Department of Arts, Heritage and the Gaeltacht
DAHGI	Department of Arts, Heritage, Gaeltacht and the Islands
DART	Dublin Area Rapid Transport
DAU	Development Applications Unit
dB	Decibel
DCC	Dublin City Council
DCCAE	Department of Communications, Climate Action and Environment
DCDP	Dublin City Development Plan 2016 - 2022
DCENR	Department of Communications, Energy and Natural Resources
DCHG	Department of Culture, Heritage and the Gaeltacht
DCIHR	Dublin City Industrial Heritage Record
DECC	Department for Environment, Climate & Communications
DECLG	Department of the Environment, Community and Local Government
DEFRA	Department of Environment, Food and Rural Affairs
DEHLG	Department of the Environment, Health and Local Government.
DELG	Department of the Environment and Local Government
Designated sites	Selected sites designated with the aim to conserve habitats and species of conservation concern.
Design Year (2043)	For the purposes of modelling, a Design Year of 2043 is assumed.

Term, Abbreviation or Acronym	Description
DFI	Disability Federation Ireland
DHLGH	Department of Housing, Local Government and Heritage
DHPLG	Department of Housing, Planning and Local Government
DLRCC	Dún Laoghaire Rathdown County Council
DLRCDP	Dún Laoghaire-Rathdown County Development Plan
DLR	Dún Laoghaire Rathdown
DLRIHS	Dún Laoghaire-Rathdown Industrial Heritage Survey
DM	Do Minimum
DMRB	Design Manual for Roads and Bridges
DMURS	Design Manual for Urban Roads and Streets
DN	Do Nothing
DOD	Military Archive
DoT	Department of Transport
DS	Do Something
DTTAS	Department of Transport, Tourism and Sport
DUTC	Dublin United Tramway Company
EC	European Commission
EEA	European Environment Agency
EFLA	European Foundation of Landscape Architecture
EFT	Emission Factor Toolkit
EGD	European Green Deal
EIA	Environmental Impact Assessment – refers to the assessment process and the assessment that An Bord Pleanála will carry out.
EIAR	Environmental Impact Assessment Report – refers to the EIA report document.
EIRP	Environmental Incident Response Plan
EIS	Environmental Impact Statement
EMRA	Eastern and Midlands Regional Assembly
EMWR	Eastern-Midlands Waste Region
ENEVAL	Environmental Evaluation Model
EPA	Environmental Protection Agency
EPR	Emerging Preferred Route
ERBD	Eastern River Basin District
ERM	East Regional Model
ESB	Electricity Supply Board
ESD	Effort Sharing Decision
ETS	Emission Trading Scheme
EU	European Union
EUPHA	European Public Health Association
EV	Electric Vehicle
FCC	Fingal County Council
FD	Filter Drains
FenPT	Fenpeat
FHWA	Federal Highway Administration (US)
FRA	Flood Risk Assessment
FRM	Flood Risk Management
GGBFS	Ground Granulated Blast Furnace Slag
GCh	Gravels derived from chert
GDA	Greater Dublin Area
GDACNP	Greater Dublin Area Cycle Network Plan
GDATS	Greater Dublin Area Transport Strategy

Term, Abbreviation or Acronym	Description
GDG	Guideline Development Group
GDRCoP	Greater Dublin Regional Code of Practice
GDSDS	Greater Dublin Strategic Drainage Study
GEIA	Guidelines for Planning Authorities and An Bord Pleanála on Carrying Out Environmental Impact Assessment
GEP	Good Ecological Potential
GES	Good Ecological Status
GGr	Gravels derived from granite
GGBFS	Ground granulated blast-furnace slag
GHG	Greenhouse Gas
GI	Green Infrastructure
GIS	Geographic Information System
GLs	Gravel derived from limestone
GLC	Ground level concentrations
GLPSsS	Gravels derived from Lower Palaeozoic sandstones and shales
GLVIA	Guidelines for Landscape and Visual Impact Assessment
GMp	Gravels derived from metamorphic rocks
GNI	Gas Networks Ireland
GPA	Guidelines for Planning Authorities
GPO	General Post Office
GPR	Ground Penetrating Radar
GPS	Global Positioning System
GSI	Geological Survey Ireland
GSL	Geological Society of London
GWB	Groundwater Bodies
GWP	Global Warming Potential
ha	Hectares
HA	Hydrometric Area
HAWRAT	Highways Agency Risk Assessment Tool (UK)
HDV	Heavy Duty Vehicle
HMWB	Highly Modified Water Bodies
HEV	Historic Environment Viewer
HEVs	Hybrid Electrical Vehicles
HGV	Heavy Goods Vehicle
HIA	Health Impact Assessment
HLC	Historic Landscape Character
HSA	Health and Safety Authority
HSE	Health Service Executive
Hydromorphology	Hydromorphology is a term used in river basin management to describe the hydrological (water flow, energy etc.) and geomorphological (surface features) processes and attributes of rivers, lakes, estuaries and coastal waters.
Hz	Hertz
IAA	Irish Architectural Archive
IAIA	International Association for Impact Assessment
IAI	Institute of Archaeologists of Ireland
IAQM	Institute of Air Quality Management
ICE	Internal Combustion Engine
ICOH	International Commission on Occupational Health
ICOMOS	International Council of Monuments and Sites
IE	Industrial Emissions
IEMA	Institute of Environmental Management and Assessment

Term, Abbreviation or Acronym	Description
IES	Institute of Environmental Sciences
IFI	Inland Fisheries Ireland
IGI	Institute of Geologists of Ireland
ILI	Irish Landscape Institute
INDCs	Intended Nationally Determined Contributions
Invasive species	An invasive species is a plant, fungus, or animal species that is not native to a specific location.
IPCC	Intergovernmental Panel on Climate Change
IPH	Institute of Public Health in Ireland
IPI	Irish Planning Institute
IPPC	Integrated Pollution Prevention and Control
IrSTCSsS	Irish sea till derived from Cambrian sandstones and shales
IrSTLPSsS	Irish Sea Till derived from Lower Palaeozoic sandstones and shales
IrSTLs	Irish sea till derived from limestones
ISMP	Invasive Species Management Plan
IOA	Institute of Acoustics
IRRS	Irish Railways Record Society
ISO	International Organization for Standardization
ITM	Irish Transverse Mercator
IUCN	International Union for Conservation of Nature
IW	Irish Water
IWA	Irish Wheelchair Association
JTCs	Junction Turning Counts
KER	Key Ecological Receptors – Ecological receptors include any living organisms (other than humans), the habitat which supports such organisms, or natural resources which could be adversely affected by the Proposed Scheme
KFPA	Kerbs, Footways and Paved Areas
kg	Kilogram
km	Kilometre
kt	Kilotonnes
kV	Kilovolt
L	Lacustrine sediments
LAM	Local Area Model
LAP	Local Area Plan
LAQM	Local Air Quality Management Policy Guidance
LED	Light Emitting Diode
LEV	Low Emission Vehicle
LGV	Light Goods Vehicle
LI	Locally Important Aquifer
LIBS	Locally Important Biodiversity Sites
LoS	Level of Service
LoW	List of Waste
LP	Lamp Post
LPA	Local Planning Area
LUTS	Land Use and Transport Strategy
m	Metres
Made	Made ground
MarSands	Marine sands and gravels
MarSed	Marine / Estuarine sediments
MASP	Metropolitan Area Strategic Plan
mBGL	Metres Below Ground Level
Mbs	Marine beach sands

Term, Abbreviation or Acronym	Description
MCA	Multi-Criteria Analysis
Mesc	Estuarine silts and clays
mg/m ³	Milligrams per cubic metre
mOD	Metres above Ordnance Datum
MPA	Mineral Products Association
MRF	Materials Recovery Facility
MS	Mile Stone
MSW	Municipal Solid Waste
MV	Medium Voltage
N	Nitrogen
NAI	National Archives of Ireland
NAP	Noise Action Plan
NAF	National Adaptation Framework
NaPTAN	National Public Transport Access Nodes
Natura Impact Statement (NIS)	Statement for the purposes of Article 6 of the Habitats Directive, of the implications of a proposed development, on its own or in combination with other plans or projects, for one or more than one European site, in view of the conservation objectives of the site or sites prepared to enable the carrying out by the competent authority of an Appropriate Assessment as required under the Habitats Directive.
NBDC	National Biodiversity Data Centre
NCM	National Cycle Manual
NCPF	National Cycle Policy Framework
NCRI	National Cancer Registry Ireland
NDA	National Disability Authority
NDP	National Development Plan
NFGWS	National Federation of Group Water Schemes
NH ₃	Ammonia
NHA	Natural Heritage Area
NIAH	National Inventory of Architectural Heritage
NIFTI	National Investment Framework for Transport in Ireland
NIS	Natura Impact Statement
NLI	National Library of Ireland
NMI	National Museum of Ireland
NMS	National Monuments Service
NMVOG	Non-methane volatile organic compounds
NO _x	Nitrogen oxides
NO	Nitric oxide
NO ₂	Nitrogen dioxide
N ₂ O	Nitrous oxide
NPF	National Planning Framework
NPWS	National Parks and Wildlife Services
NRA	National Roads Authority
NSA	Nutrient Sensitive Area
NSL	Noise Sensitive Location
NSO	National Strategic Outcome
NSNW	National Survey of Native Woodland
NTA	National Transport Authority
NTM	National Transport Model
O ₃	Ozone
Opening Year (2028)	For the purposes of modelling, an Opening Year of 2028 is assumed
Operational Phase	This phrase refers to the processes and activities implemented following the Construction Phase to ensure the appropriate environmental management of the Proposed Scheme over time.

Term, Abbreviation or Acronym	Description
OPW	Office of Public Works
OS	Ordnance Survey
OSI	Ordnance Survey Ireland
OSP	Oversized Pipes
OSM	Ordnance Survey Mapping
Pb	Lead
PB	Post Box
PC	Process contribution
PDGB	Preliminary Design Guidance Booklet for BusConnects Core Bus Corridors
PEC	Predicted Environmental Concentration
Pedestrian Link	A stretch of footpath that facilitates the movement of pedestrian traffic which can be located immediately adjacent to or segregated from a road link.
PI	Poor Aquifer
PINS	UK Planning Inspectorate
PM	Particulate matter
PM _{2.5}	Particulate matter of less than 2.5 microns
PM ₁₀	Particulate matter of less than 10 microns
PMSC	People Movement at Signals Calculator
pNHA	Proposed Natural Heritage Area
PoMs	Programme of Measures
PPV	Peak Particle Velocity
PRO	Preferred Route Option – this is the route option chosen, and the subject of the EIA.
PRFs	Potential Roost Features
ProPG	Professional Practice Guidance on Planning and Noise
Protected Cycle Lane	This refers to a cycle lane that is protected intermittently with pencil bollards or armadillos between the cycle lane and the traffic lane.
PSCI	Pavement Surface Condition Index
PSO	Public Service Obligation
PT	Public Transport
Q	Biotic Indices or Quality Values
QBC	Quality Bus Corridor
QI	Qualifying Interest
QoS	Quality of Service
Quiet Street Treatment	Quiet Streets are called so due to the low amount of general traffic and are deemed suitable for cyclists sharing the roadway with general traffic without the need for segregated cycle tracks. The Quiet Street Treatment would involve appropriate advisory signage for both general road users and cyclists.
RBD	River Basin District
RBMP	River Basin Management Plan
rBWD	Revised Bathing Water Directive
RC	Reinforced Concrete
Rck	Bedrock outcrop or subcrop
RMP	Record of Monuments and Places
RMS	Root mean squared
RMSE	Root mean square error
Road Link	A stretch of national, regional or local road network that predominantly facilitates the movement of vehicular traffic along a carriageway.
RPA	Root Protection Area
RPO	Regional Policy Objective
RPS	Record of Protected Structures
RSA	Road Safety Authority
RSES	Regional Spatial and Economic Strategy

Term, Abbreviation or Acronym	Description
RTÉ	Radio Teilifís Éireann
RTPI	Real-time Passenger Information
RW	Retaining Wall
SAC	Special Area of Conservation
Salmonid	Any species of the family (Salmonidae) of elongate bony fishes (such as a salmon or trout) that have the last three vertebrae upturned (i.e. ray-finned fish).
SATs	Standardized Assessments
SCATS	Sydney Coordinated Adaptive Traffic System
SCI	Special Conservation Interest
SCP	Signal Control Priority
SDCC	South Dublin County Council
SDCCDP	South Dublin County Council Development Plan
SDG	Sustainable Development Goal
SDR	Standardised Death Rate
SDZ	Strategic Development Zone
SEA	Strategic Environmental Assessment
SFPA	Sea Fisheries Protection Authority
SFRA	Strategic Flood Risk Assessment
Shared Surface	Part of a carriageway that facilitates more than one mode of transport e.g. Shared Surface Pedestrian / Cycle Lane, Shared Surface Bus / Cycle Lane etc.
SHD	Strategic Housing Development
SID	Strategic Infrastructure Development
SIFLT	Strategic Investment Framework for Land Transport
Signal Controlled Priority	Signal Controlled Priority uses traffic signals to enable buses to get priority ahead of other traffic on single road sections and is only effective for short distances.
SLR	Single-lens Reflex
SMR	Sites and Monuments Record
SNH	Scottish Natural Heritage
SO ₂	Sulphur dioxide
SPA	Special Protection Area
SPSV	Small Public Service Vehicle
SPW	Specification for Road Works
SPZ	Source Protection Zone
SUDS	Sustainable Drainage Systems
SWMP	Surface Water Management Plan
SWO	Storm Water Overflow
TCA	Townscape Character Assessment
TCD	Trinity College Dublin
TCSsS	Till derived from Cambrian sandstones and shales
TdIMr	Tidal Marsh
TGr	Till derived from granites
The Birds Directive	The Birds Directive (formally known as Council Directive 2009/147/EC on the conservation of wild birds) is a European Union directive adopted in 2009. It replaces Council Directive 79/409/EEC of 2 April 1979 on the conservation of wild birds. It aims to protect all European wild birds and the habitats of listed species, in particular through the designation of Special Protection Areas.
The Habitats Directive	EU Directive on the Conservation of Habitats, Flora and Fauna (92/43/EEC), commonly known as "the Habitats Directive", was adopted in 1992, came into force in 1994 and was transposed into Irish law in 1997.
TIA	Transport Infrastructure Assessment
TICCIH	The International Committee for the Conservation of the Industrial Heritage
TII	Transport Infrastructure Ireland
TLPSsS	Till derived from Lower Palaeozoic sandstones and shales

Term, Abbreviation or Acronym	Description
TLs	Till derived from limestones
TMp	Till derived from metamorphic rock
Toucan Crossing	A Toucan Crossing is a roadway crossing designed to enable both pedestrians and cyclists to cross the road with purposefully designed signal controls.
TPO	Tree Preservation Order
TQz	Till derived from quartzites
TRB	Transportation Research Board
TSM	Traffic Signs Manual
TTM	Temporary Traffic Management
UCD	University College Dublin
UITP	International Association of Public Transport
UK	United Kingdom
UKAS	United Kingdom Accreditation Service
UKHA	United Kingdom Highways Agency
UN	United Nations
UNECE	United Nations Economic Commission for Europe
UNEP	United Nations Environment Program
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNFCCC	United Nations Framework Convention on Climate Change
Urban	Urban (made ground)
Urban Realm	Urban Realm is the term for everyday street spaces that are used by the public to cross, shop, socialise, play and use for activities including walking, exercising and commuting.
US	United States
UV	Ultra Violet
UWWT	Urban Waste-Water Treatment
VDI	Verein Deutscher Ingenieure
VDV	Vibration Dose Value
VO	Valuations Office
VOC	Volatile Organic Compound
VRDP	Visual Representation of Development Proposals
VSL	Vibration Sensitive Location
WCC	Wicklow County Council
WCDP	Wicklow County Development Plan
WEEE	Waste Electrical and Electronic Equipment
WFD	Water Framework Directive
WHO	World Health Organization
WRAP	Waste and Resources Action Programme
Ws	Windblown sands
Wsd	Windblown sands and dunes
WwTP	Wastewater Treatment Plant
ZAP	Zone of Archaeological Potential
ZoI	Zone of Influence
µg/m ³	Micrograms per cubic metre