




SILVERTOWN TUNNEL

SUPPORTING TECHNICAL DOCUMENTATION

PRELIMINARY ENVIRONMENTAL INFORMATION REPORT

October 2015

This Preliminary Environmental Information Report describes the Scheme and the main alternatives considered. It sets out the environmental baseline information, provides an assessment of likely environmental effects and where necessary describes mitigation measures that would avoid, reduce or offset the adverse environmental effects.



This report forms part of a suite of documents that support the statutory public consultation for Silvertown Tunnel in October – November 2015. This document should be read in conjunction with other documents in the suite that provide evidential inputs and/or rely on outputs or findings.

The suite of documents with brief descriptions is listed below:-

- **Preliminary Case for the Scheme**
 - Preliminary Monitoring and Mitigation Strategy
- **Preliminary Charging Report**
- **Preliminary Transport Assessment**
- **Preliminary Design and Access Statement**
- **Preliminary Engineering Report**
- **Preliminary Maps, Plans and Drawings**
- **Preliminary Environmental Information Report (PEIR)**
 - Preliminary Non Technical Summary
 - Preliminary Code of Construction Practice
 - Preliminary Site Waste Management Plan
 - Preliminary Energy Statement
- **Preliminary Sustainability Statement**
- **Preliminary Equality Impact Assessment**
- **Preliminary Health Impact Assessment**
- **Preliminary Outline Business Case**
 - Preliminary Distributional Impacts Appraisal
 - Preliminary Social Impacts Appraisal
 - Preliminary Economic Assessment Report
 - Preliminary Regeneration and Development Impact Assessment

SILVERTOWN TUNNEL

**Preliminary
Environmental
Information Report**

Volume 1: Main Text

October 2015

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Silvertown Tunnel

Preliminary Environmental Information Report

Volume 1: Main Text



Planning Act 2008

Infrastructure Planning

The Infrastructure Planning (Applications: Prescribed Forms and Procedure)
Regulations 2009

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List of Abbreviations

A	Anadromous
AADT	Annual Average Daily Traffic
AAWT	Annual Average Weekday Traffic.
ABPmer	ABP Marine Environmental Research
AEP	Annual Exceedance Probability
AM	Morning peak traffic period
AOD	Above Ordnance Datum
APIS	Air Pollution Information System
AQ	Air Quality
AQAP	Air Quality Action Plan
AQFA	Air Quality Focus Area
AQMA	Air Quality Management Area
AQS	Air Quality Strategy
ARN	Affected Road Network

AURN	Automatic Urban and Rural Network
BAP	Biodiversity Action Plan
BGS	British Geological Survey
BNL	Basic Noise Level
BOD	Biological Oxygen Demand
BPM	Best Practicable Means
BSI	British Standards Institute
C	Catadromous
CAMS	Catchment Abstraction Management Strategy
CBD	Convention on Biological Diversity
CCMP	Carbon Calculation for Major Projects
CD&E	Construction, demolition and excavation
CDM	Construction Design and Management Regulations (2015)
Cefas	Centre for Environment, Fisheries and Aquaculture Science
CEMP	Construction Environmental Management Plan

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CFA	Continuous Flight Auger
CHaMP	Coastal Habitat Management Plan
CIEEM	Chartered Institute for Ecology and Environmental Management
CIRIA	Construction Industry Research and Information Association
CoC	Contaminants of Concern
CoCP	Code of Construction Practice
COD	chemical oxygen demand
CoP	Code of Practice
COSHH	Control of Substances Hazardous to Health
CPET	Central Point of Expertise in Timber
CRoW	The Countryside and Rights of Way Act 2000
CRRN	Compliance Risk Road Network
CRTN	Calculation of Road Traffic Noise
CSM	Conceptual Site Model

DBFM	Design Build Finance and Maintain
DCO	Development Consent Order
DECC	Department of Energy & Climate Change
Defra	Department for the Environment, Food and Rural Affairs
DfT	Department for Transport
DLR	Docklands Light Railway
DMRB	Design Manual for Roads and Bridges
DTI	Department of Trade and Industry
EA	Environment Agency
EAL	Emirates Air Line
EAR	Economic Assessment Report
EC	European Commission
EclA	Ecological Impact Assessment
EFT	Emissions Factor Toolkit
EHO	Environmental Health Officer

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EIA	Environmental Impact Assessment
EMS	Environmental Method Statement
EOD	Explosive Ordnance Disposal
EqIA	Equalities Impact Assessment
EQS	Environmental Quality Standard
ER	Estuarine residents
ERM	Environmental Resources Management
ES	Environmental Statement
ESRP	Emergency Spill Response Plan
EU	European Union
EU LV	European Union Limit Value
FRA	Flood Risk Assessment
FS	Freshwater stragglers
FSC	Forestry Stewardship Council
GES	good environmental status

GHGs	Greenhouse gases
GiGL	Greenspace Information for Greater London
GIS	Geographic Information System
GLA	Greater London Authority
GLAAS	Greater London Archaeological Advisory Service
GPLC	Guiding Principles for Land Contamination
GVA	Gross Value Added
HA	Highways Agency (now known as Highways England)
HCA	Homes and Communities Agency
HDV	Heavy Duty Vehicle
HE	Highways England (formerly Highways Agency)
HER	Historical Environment Record
HGV	Heavy Goods Vehicle
HIA	Health Impact Assessment

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HSE	Health and Safety Executive
IAN	Interim Advice Note
IAQM	Institute of Air Quality Management
IDA	International Dark Sky Association
IDB	Internal Drainage Board
IEEM	Institute of Ecology and Environmental Management
IER	Interim Environmental Report
ILE	Institution of Lighting Engineers
ILP	Institution of Lighting Professionals
IMD	Index of Multiple Deprivation
IP	Inter peak traffic period
IPC	Infrastructure Planning Commission (referred to as PINS post April, 2012)
IUCN	International Union for Conservation of Nature
LAEI	London Atmospheric Emissions Inventory

LAQM	Local Air Quality Management
LBAP	Local Biodiversity Action Plan
LBN	London Borough of Newham
LBTH	London Borough of Tower Hamlets
LEA	Local Economic Assessment
LLAU	Limit of Land to be Acquired or Used
LLFA	Lead Local Flood Authority
LOAEL	Lowest Observed Adverse Effect Level
LoD	Limits of Deviation
LSOA	Lower Super Output Area
LTTE6	Long Term Trends projections from HA IAN 170/12v3
LTVS	Longitudinal Tunnel Ventilation System
LU	London Underground
M&E	Mechanical & Electrical
MAGIC	Multi-Agency Geographic Information

	for the Countryside
MarLIN	The Marine Life Information Network
MCZ	Marine Conservation Zone
MMD	Marine migrant dependent
MMO	Marine Management Organisation
MMOS	Marine Migrant Opportunistic Species
MOL	Metropolitan Open Land
MoU	Measure of Uncertainty
MPA	Marine Protected Area
MPS	Marine Policy Statement
MS	Marine stragglers
MSFD	The Marine Strategy Framework Directive
MTS	Mayor's Transport Strategy
NABSA	Not Afloat but Safely Aground
NCN	National Cycle Network

NE	Natural England
NERC	The Natural Environment and Rural Communities
NFFO	National Federation of Fishermen's Organisations
NJUG	National Joint Utilities Group
NM	Nautical Mile
NML	Noise Monitoring Location
NMU	Non-Motorised Users
NN NPS	National Planning Policy Statement for National Networks
NNR	National Nature Reserve
NNSS	Non-Native Species Secretariat
NO ₂	Nitrogen Dioxide
NOBANIS	The European Network on Invasive Alien Species
NOEL	No Observed Effect Level
NO _x	Nitrogen Oxides

NPPF	National Planning Policy Framework
NPPG	National Planning Practice Guidance
NPS	National Policy Statement
NPS NN	National Policy Statement for National Networks
NPSE	Noise Policy Statement for England
NRMM	Non-road mobile machinery
NSIP	Nationally Significant Infrastructure Project
OBC	Outline Business Case
ONS	Office for National Statistics
OP	Off peak traffic period
OS	Ordnance Survey
OSPAR	The Convention for the Protection of the Marine Environment of the North-East Atlantic
PAH	polyaromatic hydrocarbons
PCBs	Polychlorinated biphenyl

PCM	Pollution Climate Mapping
PEIR	Preliminary Environmental Information Report
PER	Preliminary Engineering Report
PEVS	Portal Extract Ventilation System
PHE	Public Health England
PINS	Planning Inspectorate
PLA	Port of London Authority
PM	Evening peak traffic period
PM10	Particulate matter less than 10 microns in diameter
PM2.5	Particulate matter less than 2.5 microns in diameter
pMCZ	proposed Marine Conservation Zone
PNNL	Pacific Northwest National Laboratory
PPG	Planning Policy Guidance
PPS	Planning Policy Statements

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ppv	Peak Particle Velocity
PRoW	Public Rights of Way
PTS	permanent threshold shift
RA	Regeneration Area
RBG	Royal Borough of Greenwich
rMCZ	recommended Marine Conservation Zone
RPS	Rural Planning Services
RR	Regeneration Report
RUC	Road User Charging
SAC	Special Area of Conservation
SAF	Strategic Assessment Framework
SAQAP	Scheme Air Quality Action Plan
SCANS	Small Cetacean Abundance in the European Atlantic and North Sea
SCOS	Special Committee on Seals
SDC SPG	Sustainable Design and Construction Supplementary Planning Guidance

SEA	Strategic Environmental Assessment
SFF	Scottish Fishermen's Association
SFRA	Strategic Flood Risk Assessment
SINC	Site of Interest for Nature Conservation
SL	Source Level
SLM	Sound Level Meter
SMRU	Sea Mammal Research Unit
SOAEL	Significant Observed Adverse Effect Level
SoS	Secretary of State
SPA	Special Protection Areas
SPZ	Source Protection Zone
SSC	suspended sediment concentrations
SSD	Stopping Sight Distance
SSSI	Site of Special Scientific Interest
SuDS	Sustainable Drainage Systems

SVOCs	Semi-volatile Organic Compounds
SWMP	Site Waste Management Plan
TAG	Transport Analysis Guidance
TBM	Tunnel Boring Machine
TEBP	Thames Estuary Benthic Programme
TfL	Transport for London
TG	Technical Guidance
TLRN	Transport for London Road Network
TraC	Transitional and Coastal Water Bodies
TRL	Transport Research Laboratory
TTS	temporary threshold shift
TTWA	Travel to Work Area
TVIA	Townscape and Visual Impact Assessment
UK	United Kingdom
UK BAP	UK Biodiversity Action Plan

UKOOA	UK Offshore Operator's Association
ULSD	Ultra-low Sulphur tax-exempt diesel
UNESCO	United Nations Educational Scientific and Cultural Organisation
UXO	Unexploded Ordnance
VMS	Variable Message Signs
VOCs	Volatile Organic Compounds
WCA	Wildlife and Countryside Act
WFD	Water Framework Directive
WSVs	Water Screening Values
ZoI	Zone of Influence
ZSL	Zoological Society London
ZVI	Zone of Visual Influence

Glossary of Terms

Abstraction	Removal of water from surface water or groundwater, usually by pumping.
Ambient Noise	Ambient noise is the total sound in a given situation at a given time usually composed of sound from many sources, near and far.
Annual chance	Floods are described according to an 'annual chance'. Meaning the chance of a particular flood occurring in any one year. This is directly linked to the probability of a flood. For example, a flood with an annual chance of 1 in 100 (a 1 in 100 chance of occurring in any one year), has an annual probability of 1%.
Aquifer	A body of permeable rock that is capable of storing significant quantities of water; is underlain by impermeable material, and through which groundwater moves.
Artificial refuge	A rectangle of roofing felt or corrugated metal, usually 0.25m ² , used for attracting reptiles.
Assessed Case	Scenario adopted for assessment of likely effects of the proposed scheme, with user charges set so as to balance the scheme's traffic, environmental, socio-economic and financial objectives.
Balancing Pond	A balancing Pond is a drainage system used to control flooding by temporarily storing flood waters.
Basic Noise Level (BNL)	The BNL is a measure of source noise at a reference distance of 10m from the nearside carriageway edge. It is determined from obtaining the estimated noise level from the 18 hour flow and then applying corrections for vehicle speed, percentage of heavy vehicles, gradient and road surface as described in CRTN.
Bat activity survey	Bat activity survey is a standard technique used to assess how bats use a particular site. Some of the information sought includes the distribution and relative extent of the activity, as well as the bat species and their behaviour.
Bat Emergence Survey	Bat emergence survey is a standard technique used to help determine presence/likely absence of roosting bats within a suitable feature such as a building or tree. It usually involves observing potential bat access points prior to dusk for approximately two hours to see if any bats emerge.
Blackwall Tunnel	A road tunnel underneath the River Thames in east London, linking the London Borough of Tower Hamlets with the Royal Borough of Greenwich, comprising two bores each with two

	lanes of traffic. The tunnel was originally opened as a single bore in 1897, as a major transport project to improve commerce and trade in London's east end. By the 1930s, capacity was becoming inadequate, and consequently, a second bore opened in 1967, handling southbound traffic while the earlier 19th century tunnel handled northbound.
Breach scenario	A Breach scenario is when a flood defences overtops or fails
Bronze Age periods	2,500 BC to 700 BC;
Bund	A barrier, dam or mound used to contain or exclude water (or other liquids). Can either refer to a bund made from earthworks material, sand etc. or a metal/concrete structure surrounding, for example, a fuel tank.
Bus and Goods Vehicle Lane	A dedicated highway lane that has restricted occupancy, available for use by buses, Heavy Goods Vehicles and taxis.
Bus Gate	Bus gates are traffic signals often provided within bus priority schemes to assist buses and other permitted traffic when leaving a bus lane to enter or cross the general flow of traffic or to meter the flow of general traffic as it enters the road link downstream of the bus lane. Depending on their purpose, bus gates can be located remote from other signals or they can be positioned immediately upstream of a signal controlled junction, as a bus pre-signal.
Carbon	'Carbon' is used as short hand to refer to the basket of six greenhouse gases (GHGs) recognised by the Kyoto Protocol. GHGs are converted to carbon dioxide equivalents (CO ₂ e) based on their global warming potential per unit as compared to one unit of CO ₂ .
CDM (2015)	The Construction (Design and Management) Regulations 2015 set out the roles and responsibilities of parties involved in construction projects in relation to health and safety during the project life cycle including design, construction operation and maintenance stages.
Contaminants of Concern	Chemical substances found at site that have been determined to pose an unacceptable risk to human health or the environment.
Contractor	Anyone who directly employs or engages construction workers or manages construction work. Contractors include sub-contractors, any individual self-employed worker or

	business that carries out, manages or controls construction work
Control Centre	Facility to deal with issues with over-height, illegal and unsafe vehicles going through Blackwall and Silvertown tunnels, and help manage traffic
Core Strategy	The Core Strategy sets out the vision, key objectives and strategic planning policies for the area.
Cumulative Effects	The summation of effects that result from changes caused by a development in conjunction with other past, present, or reasonably foreseeable actions
Cut and Cover	A method of construction for shallow tunnels where a trench is excavated and roofed over with an overhead support system strong enough to carry the load of what is to be built above the tunnel
Decibel	Sound pressure levels and noise levels are usually quoted in decibels (dB). The decibel scale is logarithmic rather than linear. The threshold of hearing is zero decibels while, at the other extreme, the threshold of pain is about 130 decibels. In practice these limits are seldom experienced and typical levels lie within the range of 30 dB(A) (a quiet night time level in a bedroom) to 90 dB(A) (at the kerbside of a busy street).
Department for Transport (DfT)	The government department responsible for the English transport network and a limited number of transport matters in Scotland, Wales and Northern Ireland that have not been devolved.
Design Manual for Roads and Bridges	A series of 15 volumes that provide official standards, advice notes and other documents relating to the design, assessment and operation of trunk roads, including motorways in the United Kingdom.
Design, Build, Finance and Maintain (DBFM)	<p>A DBFM company is typically a consortium of private sector companies, formed for the specific purpose of providing the services under the DBFM contract. This is also technically known as a Special Purpose Vehicle (SPV).</p> <p>The DBFM Company will obtain funding to design and build the new facilities and then undertake routine maintenance and capital replacement during the contract period, which is typically 25 to 30 years.</p> <p>The DBFM Company will repay funders from payments received from TfL during the lifespan of the contract. Receipt of payments from TfL will depend on the ability of the DBFM Company to deliver the services in accordance with the output specified in the contract and will be subject to deductions if</p>

	performance is not satisfactory.
Desk-based Assessment	A data collection exercise using existing sources of data. The purpose is to identify relevant known resources.
Detailed Design	The design that defines precisely the works that are to be constructed to meet the specified outputs.
Development Consent Order (DCO)	This is a statutory order which provides consent for the project and means that a range of other consents, such as planning permission and listed building consent, will not be required. A DCO can also include provisions authorising the compulsory acquisition of land or of interests in or rights over land which is the subject of an application. http://infrastructure.planninginspectorate.gov.uk/help/glossary-of-terms/
Dewatering	The process of removing groundwater from an aquifer
Docklands Light Railway (DLR)	An automated light metro system serving the Docklands and east London area. The DLR is operated under concession awarded by Transport for London to KeolisAmey Docklands, a joint venture between transport operator Keolis and infrastructure specialists Amey plc
Drawdown	Drawdown is the change in head or water level relative to background condition, indicating the difference in head which has occurred at a given location relative to an initial time at the same location.
Dwelling	A building used for living purposes. A mobile home used for permanent living should be included in an assessment. If calculations are being conducted for compensation purposes then some mobile homes are dealt with under the Highways Noise Payments and Moveable Homes Regulations.
Earth Pressure Balance (EPB) Tunnel Boring Machine	A type of tunnel boring machine used in soft ground. The machine uses the excavated material to balance the pressure at the tunnel face. Pressure is maintained in the cutter head by controlling the rate of extraction of spoil through the removal Archimedes screw and the advance rate of the machine
Embodied Carbon	Embodied carbon dioxide (CO ₂) emissions of a material is the total carbon dioxide equivalent emissions released prior to it leaving the factory gate.

Emirates Air Line (EAL)	A cable car service across the River Thames in east London, linking the Greenwich peninsula to the Royal Victoria Dock. The service is managed by TfL, and is part of the TfL transport network
Extended Phase 1 Habitat Survey	Phase 1 habitat survey is a standard technique for rapidly obtaining baseline ecological information over a large area of land. Habitats are mapped based on the vegetation present. The technique is often extended to give further consideration to the potential of habitats to support protected species and species of conservation concern
Façade Sound Level	A façade sound level is that determined 1 metre in front of a window or door in a facade. Sound is reflected from hard surfaces in a similar manner to light by a mirror and the effect is to produce a slightly higher (about 2.5 dB) sound level than would occur if the building was not there. For façade levels at dwellings required for this assessment process, the level 1 metre from the façade should be calculated with a reflection correction.
FINDWAVE	A Finite Difference Model for predicting vibration of structures, re-radiated noise and ground borne propagation of vibration at acoustic frequencies.
Flood gates	Flood gates used to control water flow in flood barriers, reservoir, river, stream, or levee systems.
Floodplain compensation	An artificially excavated, hydraulically equivalent volume of floodplain storage sufficient to offset a reduction in floodplain storage resulting from filling or construction within the local regulatory floodplain.
Free-Field Sound Level	The sound level which is measured or calculated, in the open, without any reflections from nearby surfaces. For free-field levels at dwellings required for this assessment process, the level one metre from the most exposed façade should be calculated without a reflection correction.
Future assessment year	The future assessment year is the year between opening and the 15th year where the maximum impact from the road project would occur.
Gasholder	A large container in which natural gas is stored near atmospheric pressure at ambient temperatures
Greenwave	Coordinated control of a series of traffic signals to allow continuous traffic flow in a given direction.
Groundwater	Defined by the European Commission groundwater Directive (80/68/EEC) as "all water which is below the surface of the ground in the saturation zone and in direct contact with the ground or subsoil".

Heavy Goods Vehicle (HGV)	European Union term for any vehicle with a gross combination mass of over 3500kg
Heritage Asset	A heritage asset is defined as ' <i>A building, monument, site, place, area or landscape identified as having a degree of significance meriting consideration in planning decisions, because of its heritage interest. Heritage asset includes designated heritage assets and assets identified by the local planning authority (including local listing)</i> '.
Hydrogeology	Hydrogeology is the area of geology that deals with the distribution and movement of groundwater in the soil and rocks of the Earth's crust
Illustrative Design	An example of how the proposals could be developed at the next stage of design as a result of engagement with the DBFM contractor, planning authority and other relevant stakeholders.
Indirect Effects	The combined action of different environmental topic-specific impacts upon a single resource/receptor.
Inert materials	Inert material is material which is neither chemically or biologically reactive and will not decompose. Examples of this are sand, drywall, and concrete. This has particular relevance to landfills as inert materials typically require lower disposal fees than biodegradable waste or hazardous waste.
Iron Age	800 BC to AD 43.
LA10 index	LA10 is the A-weighted sound level in dB that is exceeded 10% of the measurement period. This is the standard index used within the UK to describe traffic noise.
LA10,18h index	The LA10,18h noise level is arithmetic mean of all the levels of LA10 during the period from 06:00 to 24:00. From research it has been found that subjective response to road traffic noise is closely linked to higher noise levels experienced and is correlated well with the LA10,18h index.
LA90 index	The background noise level is commonly quoted using the LA90 index. This is the A-weighted sound level in dB that is exceeded 90% of the measurement period.
LAeq index	The equivalent continuous sound level LAeq is the level of a notional steady sound, which at a given position and over a defined period of time, would have the same A-weighted acoustic energy as the fluctuating noise.
LAmx index	The maximum A-weighted level measured during a given time period.

Level of Effect	Determined through the combination of sensitivity of the receptor and the proposed magnitude of change brought about by the development
Limits of Land to be Acquired and Used (LLAU)	The extent of land and rights over land that will be needed temporarily to construct the Scheme, and permanently to operate, maintain and safeguard the Scheme (often referred to as 'the red line boundary')
Listed Buildings	Grade I buildings are of exceptional interest, sometimes considered to be internationally important. Grade II* buildings are particularly important buildings of more than special interest. Grade II buildings are nationally important and of special interest.
Lnight index	For the purpose of night-time noise assessment in this document, the Lnight, outside index is the equivalent continuous sound level LAeq,8h for the period 23:00 to 07:00 hours assessed outside a dwelling and is free-field.
Local Geological Site	A designation recognising areas of geological or geomorphological significance at a local scale
London Streets Tunnels Operations Centre (LSTOC)	LSTOC operates the traffic and tunnel safety systems for various road tunnels in London operated by Transport for London. LSTOC operations are fundamental to the safe and reliable operation of TfL's tunnels and performance of the corridors serviced by the London streets traffic control system
Made ground	An area of land that has been man-made, generally through the reclamation of marshes, lakes, or shorelines. An artificial fill is used, consisting of materials, refuse, etc.
Magnitude	A combination of the scale, extent, and duration of an effect also defined as 'degree of change'
Material resources	Material resources include primary raw materials, such as aggregates and minerals, and manufactured construction products which include recycled and secondary aggregates.
Medieval period	AD 1066 to AD 1540.
Mesolithic period	10,000 BC to 3,500 BC.
Millennium Exhibition Site (MES)	The Millennium Dome is the original name of a large dome-shaped building, originally used to house a major exhibition celebrating the beginning of the third millennium. Located on the Greenwich Peninsula the exhibition was open to the public from 1 January to 31 December 2000. All of the original exhibition and associated complex has since been demolished. The dome still exists, and it is now a key exterior

	feature of The O2. The Millennium Exhibition Site comprises of the O2 and the surrounding buildings and infrastructure.
Mitigation	Measures including any process, activity, or design to avoid, reduce, remedy or compensate for negative environmental impact or effects of a development
Modern period	AD 1900 to present.
Neolithic period	4,000 BC to 2,200 BC.
Outline Design	Defines the design principles and freezes the scope of the project
Polyaromatic hydrocarbons (PAH)	PAHs, also polyaromatic hydrocarbons are hydrocarbons organic compounds containing only carbon and hydrogen that are composed of multiple aromatic rings. They are found in fossil fuels (oil and coal) and in tar deposits, and are produced, generally, when insufficient oxygen or other factors result in incomplete combustion of organic matter.
Palaeoenvironmental	The determination of the prehistoric environment of an archaeological site. Paleoenvironmental reconstruction refers to the investigations which are undertaken to reconstruct the climate and vegetation of a specific time and place.
Pathway	The route by which potential contaminants may reach receptors.
Polychlorinated biphenyl (PCBs)	A polychlorinated biphenyl is a synthetic organic chemical compound of chlorine attached to biphenyl, which is a molecule composed of two benzene rings.
Pollution Pathway	The retraceable route of a pollutant, from its source, through its interactions with the environment, and finally to its effect upon a target ecosystem or organisms.
Pollution Prevention Guidelines	Best practice guidelines set out by the Environment Agency to advise industry and public on legal responsibilities and good environmental practice.
Post-medieval period	AD1540 to 1914.
Prehistoric period	Pre 30,000BC to AD43.
Receptor	A receptor is defined as living organisms, ecological systems or property that may be harmed by contamination or hazards.

Reference Case	An assumed 'future baseline' scenario, which represents the circumstances and conditions that we would anticipate in the future year without the implementation of the scheme, taking account of trends (for example in population and employment growth) and relevant developments (such as other committed transport schemes). The reference case is frequently used as a comparator for the 'with scheme' case, to show the effect of the scheme against the appropriate reference point.
Reference Design	Design proposals that the consultation and DCO application will refer to.
Roman period	AD 43 to AD 410.
Secant Piles	Piles are vertical structural elements of deep foundations. Secant pile walls are formed by constructing intersecting reinforced concrete piles. The secant piles are reinforced with either steel rebar or with steel beams and are constructed by either drilling under mud or auguring. Primary piles are installed first with secondary piles constructed in between primary piles once the latter gain sufficient strength
Semi-improved grassland	Grasslands can be classified in terms of their 'improvement' by natural or artificial nutrients such as manure or agricultural fertilisers. Grasslands with high levels of nitrification, such as pasture, tend to have low species-diversity and are referred to as improved.
Semi-natural habitat	Generally considered to be any naturally occurring vegetative habitat that has been affected by human actions, and includes most, if not all, habitats in the UK
Sensitive receptor (SR)	Receptors which are potentially sensitive to noise and vibration. Examples include dwellings, hospitals, schools, community facilities, designated areas (e.g. AONB, National Park, SAC, SPA, SSSI, SAM), and public rights of way.
Service Building, Tunnel Service Building, Portal Building	The building housing all control, power supply, and other essential equipment for the operation of the tunnel. Also houses firefighting control and ventilation equipment. Serves as a maintenance base and has the facility to become a standby operations room.
Sheet Pile	Sheet piles can be a temporary or permanent earth retention solution, providing support and reducing groundwater ingress. Steel sheets are driven into the ground, interlocking with neighbouring piles in order to create a continuous wall.
Significant Effects	It is a requirement of the EIA Regulations to determine the likely significant effects of the development on the environment which should relate to the level of an effect and the type of effect. Where possible significant effects should

	<p>be mitigated.</p> <p>The significance of an effect gives an indication as to the degree of importance (based on the magnitude of the impact and the sensitivity of the receptor) that should be attached to the impact described.</p> <p>Whether or not an effect should be considered significant is not absolute and requires the application of professional judgement.</p> <p>Significant – ‘noteworthy, of considerable amount or effect or importance, not insignificant or negligible’.</p>
Silt	The generic term for particles with a grain size of 4-63mm, i.e. between clay and sand.
Site Waste Management Plan (SWMP)	A document that outlines how the Scheme will reduce, manage, and dispose of its solid waste.
Slurry Shield (SS) Tunnel Boring Machine	A type of tunnel boring machine used in soft ground with very high water pressure or where ground conditions are granular (sands and gravels) such that a plug cannot be formed in the removal Archimedes screw. The cutter head is filled with pressurised slurry which applies hydrostatic pressure to the excavation face. The slurry also acts as a transport medium by mixing with the excavated material before being pumped out of the cutter head back to a slurry separation plant
Solid (bedrock) geology	Consolidated material that underlies superficial geology; bedrock
Source	A source is a contaminant or industrial activity which produces a contaminant which is likely to cause harm to people or the environment.
Source Protection Zone	An Environment Agency designation to identify and protect groundwater supplies. There are 3 zones – Inner (defined as the 50 day travel time from any point below the water table to the source), Outer (defined by a 400 day travel time from a point below the water table) and Source Catchment (defined as the area around a source within which all groundwater recharge is presumed to be discharged at that source)
Spoil	The material excavated by the Tunnel Boring Machine during the construction of the tunnel.
Strata	A layer of rock or soil.

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SuDS	Sustainable Drainage Systems (SuDS) are water management solutions designed to reduce the impact of surface water runoff from new and existing developments to the natural environment. The purpose of such systems is to improve water quality and store or reuse surface runoff to reduce the discharge rate to the watercourse.
Superficial geology	Unconsolidated material, usually recent, occurring at the Earth's surface (as distinct from solid geology)
Surface Water	Water that appears on the land surface that has not seeped into the ground, i.e. lakes, rivers, streams, standing water, ponds, precipitation.
Target Note	A target note is a method of showing the location of an ecologically significant feature, for example a badger sett, on a Phase 1 habitat map.
Tension Piles	Piles are vertical structural elements of deep foundations. Tension piles used to resist uplift/pull-out loads
The O2	A large entertainment complex on the Greenwich peninsular, including an indoor arena, cinema, bars and restaurants. It is built largely within the former Millennium Dome
The Scheme	The construction of a new bored tunnel under the River Thames between the Greenwich peninsula and Silvertown, as well as necessary alterations to the connecting road network and the introduction of user charging at both Silvertown and Blackwall tunnels
The Tunnel, Silvertown Tunnel	A new bored tunnel under the River Thames between the Greenwich peninsula and Silvertown
Total Petroleum Hydrocarbon (TPH)	Total petroleum hydrocarbon is a term used for any mixture of hydrocarbons that are found in crude oil.
TPH Criteria Working Group	TPH criteria working group (CWG) is an analytical method to screen the criteria of carbon chains grouped into 13 fractions.
Toucan Crossing	A signal controlled crossing that allows pedestrians and cyclists to cross a road safely.
Transport for London (TfL)	A local government body responsible for most aspects of the transport system in Greater London. Its role is to implement transport strategy and to manage transport services across London. These services include: buses, the Underground network, Docklands Light Railway, Overground and Trams. TfL also runs Santander Cycles, London River Services, Victoria

	<p>Coach Station and the Emirates Air Line.</p> <p>As well as controlling a 580km network of main roads and the city's 6,000 traffic lights, TfL regulates London's private hire vehicles and the Congestion Charge scheme.</p>
Tunnel Boring Machine (TBM)	<p>A machine used to excavate tunnels with a circular cross section. There are two main types of closed face TBMs: Earth Pressure Balance (EPB) and Slurry Shield (SS). Please see those terms for further explanation</p>
Unexploded Ordnance	<p>Unexploded ordnance are explosive weapons (bombs, shells, grenades, land mines, naval mines, etc.) that did not explode when they were employed and still pose a risk of detonation, potentially many decades after they were used or discarded.</p>
Ventilation Building	<p>Surface level structure housing ventilation equipment, fans and an exhaust shaft, used to move fresh air underground by drawing air from the tunnel and venting it to the atmosphere. Located adjacent to and integral with the Service Buildings.</p>
VOCs	<p>Volatile organic compounds (VOCs) are organic chemicals that have a high vapour pressure at ordinary room temperature Some VOCs are dangerous to human health or cause harm to the environment.</p>
Waste	<p>Waste is defined in Article 1(a) of the European Waste Framework Directive 2008/98/EC (Ref 13-3) as 'any substance or object in the categories set out in Annex I which the holder discards or intends to discard or is required to discard'. The term 'holder' is defined as the producer of the waste or the person who is in possession of it and 'producer' is defined as anyone whose activities produce waste. Waste can be further classified as hazardous, non-hazardous or inert.</p>
Watching brief	<p>The watching of a situation by a suitably qualified person to ensure that works (e.g. an excavation) are being done correctly.</p>
Water Screening Values (WSVs)	<p>Water Screening Values assess the chronic human health exposure from inhalation of vapours from contaminants within shallow groundwater or perched water.</p>
WHO	<p>World Health Organisation</p>
World Heritage Site	<p>Places of 'outstanding universal value' selected by the United Nations Educational, Scientific and Cultural Organisation. Sites can be selected because they contain important cultural or natural features.</p>

Zone of Visual Influence (ZVI)	The approximate area from which the operational Scheme is anticipated to be visible.
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