

Reference

R0704 A1

London Underground Controlled Products List

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1 Purpose

This document defines the categories of Controlled Products for London Underground.

Individual products within the categories of Controlled Products defined within this document, are required to be authorised for use in a specific application and captured in the Product Information Register prior to purchase, in accordance with standard [S1011](#).

Refer to Definitions section for a full definition of 'Controlled Product'.

2 Scope

This document is intended to be used by those involved in supplying and selecting products for use on London Underground, to establish whether a particular product needs to be treated as a Controlled Product.

A Controlled Product is only designated as such for the disciplines (and where identified, specific applications) against which it is listed. Where a Controlled Product requires joint assessment by interfacing disciplines, this is identified in the right-hand column; such products are listed under all disciplines involved.

All products used in locations/applications covered by fire standards [S1085/S1180](#)/BS9992 need to be assessed for fire compliance, whether or not they are covered by the Controlled Products List. Refer to standard [S1011](#) sections 3.5 and 5.1.

Note:

A couple of examples:

- Concrete is designated as a Controlled Product when used as part of a track form, but not for general Civil Engineering applications.
- A point machine requires joint assessment by Track and Signalling, and is therefore a Controlled Product for both disciplines.

Plant Acceptance is outside the scope of standard [S1011](#) and hence this document. Refer to standard [S1171](#) for further details.

3 Information

3.1 Transport Infrastructure

3.1.1 Civil Engineering and Built Environment

3.1.1.1 Earth Structures & Geotechnical

Product Category	Comments	Requires assessment by interfacing disciplines
None		

3.1.1.2 Pumps & Drainage

Product Category	Comments	Requires assessment by interfacing disciplines
Track Drainage products		Track

3.1.1.3 Railway Structures

Product Category	Comments	Requires assessment by interfacing disciplines
None		

3.1.1.4 Tunnels

Product Category	Comments	Requires assessment by interfacing disciplines
Waterproofing materials		
Paint finishes for cast iron tunnel segments		

3.1.1.5 Civil Engineering - General

Product Category	Comments	Requires assessment by interfacing disciplines
Concrete (used as part of a track form)	Concrete used in other applications is not a Controlled Product	Track (lead)

3.1.1.6 Built Environment

Product Category	Comments	Requires assessment by interfacing disciplines/ business areas

Heritage finishes Built environment heritage elements	Particularly when required to obtain Listed Building Consent.	Customer Insight Strategy and Experience Investment Delivery Planning (Town Planning & Heritage team)
Corporately specified products - as listed in section 3.4.1	Only those identified as requiring Built Environment input	Customer Information, Design and Partnerships (lead)

3.1.2 Building Services

3.1.2.1 Electrical & Mechanical

Product Category	Comments	Requires assessment by interfacing disciplines
Key components (Head End & MCC's inclusive of PLC's, network switches, relays etc) & field devices for Lighting Control Systems		Telecoms EMC
Key components (Head End & MCC's inclusive of PLC's, network switches, relays etc) for Building Management Systems		Telecoms EMC
Key components (Head End & MCC's inclusive of PLC's, network switches, relays etc) for Tunnel Public Area Ventilation controls Systems		Telecoms EMC
Point heaters		Signals (lead) Track
Fire Alarm panels		Fire (lead)
EDNE signs		Fire (lead)

3.1.2.2 Fire

Product Category	Comments	Requires assessment by interfacing disciplines
Fire alarm panels		E&M
EDNE signs		E&M

Note: All products used in locations/applications covered by fire standards [S1085/S1180](#)/BS9992 need to be assessed for fire compliance, whether or not they are covered by the Controlled Products List. Refer to standard S1011 sections 3.5 and 5.1.

3.1.2.3 Lifts & Escalators – Daley Brooker

Product Category	Comments	Requires assessment by interfacing disciplines
None		

3.2 Transport Systems

3.2.1 Power

3.2.1.1 Control and Protection

Product Category	Comments	Requires assessment by interfacing disciplines
Power SCADA Systems (head end and field equipment such as RTU's and network switches etc.)		
Main and Backup electrical protection relays	To be authorised as part of overall main and backup protection scheme design.	

3.2.1.2 HV Power Systems

Product Category	Comments	Requires assessment by interfacing disciplines
22kV Switchboards	As defined in LU Standard S1939	
11kV Switchboards	As defined in LU Standard S1939	
DC Switchboards	As defined in LU Standard S1940	
LVAC Switchboards	As defined in LU Standard S1941	
Signalling Switchboards	As defined in LU Standard S1941	
22kV Coupling Transformers	As defined in LU Standard S1943	

22kV and 11kV Transformer Rectifiers	As defined in LU Standard S1930	
22kV and 11kV Auxiliary Transformer	As defined in LU Standard S1942	
22kV and 11kV Earthing Reactors and Auxiliary Transformers	As defined in LU Standard S1944	
Substation Compressed Air Equipment	As defined in LU Standard S1946	
50V and 100V DC Supplies to Substation Equipment	As defined in LU Standard S1947	
Off Line Battery Inverters	As defined in LU Standard S1948	
22kV and 11kV Power Cables and Accessories	As defined in LU Standard S1931	
Pilot Cables – Copper, Fibre and Accessories	As defined in LU Standard S1932	
SCADA Systems	Including Remote Terminal Units (RTUs), Marshalling Cabinets, Networking Cabinets – and equipment as defined in LU Standard S1963	

3.2.1.3 LV Power Systems

Product Category	Comments	Requires assessment by interfacing disciplines
630/750V DC Cable	DC Cables produced to standard S1923	
630/750V DC Cable Connections	Lugs used for connection of DC cables produced to standard S1923 to conductor rail or switchgear	
630/750V DC Mini Bleed Resistors		
630/750V DC Disconnection Panels		
630/750V DC Fuse Holders	Fuse holders mounted to the conductor rail.	Track

3.2.1.4 Network Management

Product Category	Comments	Requires assessment by interfacing disciplines

None		
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3.2.2 Permanent Way

3.2.2.1 Track Engineering

Product Category	Comments	Requires assessment by interfacing disciplines
Point Machines		Signals (lead) E&M
Stretcher Bars		Signals
Point Heaters		Signals (lead) E&M
Concrete (used as part of a track form)	Concrete used in other applications is not a Controlled Product.	Civil Engineering
Track drainage		Pumps & Drainage (lead)
630/750V DC Fuse Holders	Fuse holders mounted to the conductor rail.	LV Power Systems (lead)
Track lubricators and friction modifiers		Vehicles
All other Track Products		None

Note: Plant Acceptance is outside the scope of standard [S1011](#) and hence this document. Refer to standard [S1171](#) for further details.

3.2.3 Vehicles - Ian Rawlings

3.2.3.1 For products managed by the Vehicles discipline, the [G1100](#) Change to Rolling Stock Guidance document specifies the product authorisations that will be recorded in the Product Information Register. This document covers both passenger trains and engineering vehicles.

Controlled Products owned by other disciplines which require assessment by Vehicles are as follows:

Product Category	Comments	Requires assessment by interfacing disciplines
Track lubricators and friction modifiers		Track (lead)

3.2.4 Road and Rail Traffic Control Systems

3.2.4.1 Railway Signalling

Product Category	Comments	Requires assessment by interfacing disciplines
Track Circuits		Track
Axle Counters		Track
Treadles		Track
Wayside signals and indicators	Any wayside signal or indicator which is observed by train operators including signal heads, point indicators, junction indicators, rail gap indicators, route secure indicators, fixed red lights. Repeater signals and indicators associated with the above.	
Electronic and mechanical interlocking systems (when procured as a product)	Will only be treated as a Controlled Product when the interlocking system product is procured independently from the associated application design (see note below)	
Cables		
Relays		
Point Machines		Track
Stretcher Bars		Track (lead)
Point Heaters		Track E&M

3.2.4.2 Rail Control & Information Systems

Product Category	Comments	Requires assessment by interfacing disciplines/ business areas
Train describers & controllers forming part of the signalling system	Does not include passenger information functionality within some station management systems.	
Train number boards		

Routers / switches / PLCs / embedded PCs used in signalling systems	These are likely to be COTS products, but the application is very specific, therefore they are required to be reviewed and authorised for use in that application.	
Cables & fibre optics		
Signal Control Systems (when procured as a product)	Will only be treated as a Controlled Product when the control system product is procured independently from the associated application design (see note below)	
Corporately specified products – information displays		Customer Information, Design and Partnerships

Note: Components whose only application is as part of a supplier’s proprietary signalling or signalling control system will not be assessed individually as Controlled Products, as such products cannot meaningfully be assessed for use in isolation. Such products will be assessed in the context of their application as part of a system safety case structure, which in turn will underpin the design compliance submission. For this reason, trainborne signalling products are not included in the Controlled Products List.

3.3 Central Engineering

3.3.1 Land Survey

Product Category	Comments	Requires assessment by interfacing disciplines
None		

3.3.2 Telecommunications

Product Category	Comments	Requires assessment by interfacing disciplines/ business areas
OPO Cameras		
PAVA System		
Corporately specified products - as listed in section 3.4.1	Only those identified as requiring Telecoms input	Customer Information, Design

		and Partnerships
Key components (Head End & MCC's inclusive of PLC's, network switches, relays etc) & field devices for Lighting Control Systems		Telecoms Electrical & Mechanical (lead)
Key components (Head End & MCC's inclusive of PLC's, network switches, relays etc) for Building Management Systems		Telecoms, EMC
Key components (Head End & MCC's Centres inclusive of PLC's, network switches, relays etc) for Tunnel Public Area Ventilation controls Systems		Telecoms, EMC

3.3.3 Electromagnetic Compatibility

Product Category	Comments	Requires assessment by interfacing disciplines
Key components (Head End & MCC's inclusive of PLC's, network switches, relays etc) & field devices for Lighting Control Systems		Telecoms Electrical & Mechanical (lead)
Key components (Head End & MCC's inclusive of PLC's, network switches, relays etc) for Building Management Systems		Telecoms Electrical & Mechanical (lead)
Key components (Head End & MCC's inclusive of PLC's, network switches, relays etc) for Tunnel Public Area Ventilation controls Systems		Telecoms Electrical & Mechanical (lead)

3.4 Non-Engineering teams

3.4.1 Customer Information, Design and Partnerships (corporately specified products)

Product Category	Comments	Requires assessment by interfacing disciplines
Products listed in the "Standard for TfL Products" as follows:		
Section 1: Identification Products		
<ul style="list-style-type: none"> Totems, roundels Directional signage 	Sections 1.1 to 1.5, 1.8 and 1.9 Sections 1.10 to 1.13 inclusive	Built Environment Built Environment

Section 2: Customer Information Products <ul style="list-style-type: none"> Clocks (digital and analogue) Information displays (free standing and wall-mounted) 	Sections 2.1, 2.2 Sections 2.5 to 2.7, 2.9	Telecoms Rail Control & Information Telecoms
Section 3: Gateline and ticketing equipment: <ul style="list-style-type: none"> Manual gate and fixed barrier 	Section 3.3	Built Environment
Section 4: Safety and security <ul style="list-style-type: none"> Help point OPO platform-mounted equipment Platform end barrier Barriers – internal 	Section 4.1 Section 4.4 Section 4.5 Sections 4.7	Telecoms Telecoms (lead) Built environment Built environment
Section 5: Furniture <ul style="list-style-type: none"> Seating Bicycle racks Glazed wind-breaks 	Sections 5.1 to 5.4 Section 5.5 Section 5.6	Built environment Built environment Built environment

Note: The Standard for TfL Products is not a mandatory standard. However, the use of Controlled Products in the categories above which have been authorised for use in a specific application by TfL Engineering (or in the case of Underground Ticketing System gates, by Technology & Data), is governed by standard [S1011](#), and is therefore mandatory.

3.4.2 Customer Insight, Strategy and Experience

Product Category	Comments	Requires assessment by interfacing disciplines/ business areas
Heritage finishes Built environment heritage elements.	Particularly when required to obtain listed Building Consent.	Built Environment (lead) Investment Delivery Planning (Town Planning & Heritage team)

3.4.3 Investment Delivery Planning (Town Planning & Heritage team)

Product Category	Comments	Requires assessment by

		interfacing disciplines/ business areas
Heritage finishes Built environment heritage elements.	Particularly when required to obtain listed Building Consent.	Built Environment (lead) Customer Insight Strategy & Experience

4 Person accountable for this document

Name	Job title
John Park	Principal Engineering Leader, Digital Engineering

All changes to section 3 of this document are required to be supported by the relevant Head of Profession or Technical Head (or equivalent) for the section concerned. Changes shall be submitted via the normal TMS change process.

5 Definitions

Term	Definition	Source
Controlled Products	<p>All products covered by the categories in the London Underground Controlled Products List.</p> <p>TfL requires to authorise these products for use in a specific application, because</p> <ul style="list-style-type: none"> a) their application is critical to safety or reliability; or b) they are being manufactured to a TfL design; or c) consistency of 'look and feel' is an essential requirement e.g. branded or heritage items. <p>Assessment may include consideration of in-service experience, review of manufacturing processes or tests undertaken independently from the manufacturer.</p> <p>A Designer wishing to use a product covered by the category of Controlled Products ensures that the product is authorised in accordance with section 3.4 of standard S1011 prior to purchase of the product.</p>	Jargon Buster

6 Abbreviations

Abbreviation	Meaning
AC	Alternating Current
COTS	Commercial Off The Shelf
DC	Direct Current
EDNE	Emergency Do Not Enter
EMC	Electromagnetic Compatibility
HV	High Voltage
LVAC	Low Voltage Ac
MCC	Motor Control Centre
OPO	One Person Operation
PAVA	Public Address and Voice Alarm
PC	Personal Computer
PLC	Programmable Logic Controller
RTU	Remote Terminal Unit
SCADA	Supervisory Control and Data Acquisition
T&D	Technology & Data

7 References

Document no.	Title or URL
S1011	Product Selection, Assessment and Authorisation for use
S1085	Fire Safety Performance of Materials – Stations and Tunnel Infrastructure
S1171	All Plant – Acceptance, Use and Maintenance
S1180	Standard for Rolling Stock
S1923	DC Traction Feeder Cables
S1930	Traction Converter Groups
S1931	11kV & 22kV Power Cables and Accessories
S1932	Pilot Cables – Copper Cable, Fibre Cable and Accessories
S1939	High Voltage A.C. Indoor Switchboards up to 36kV
S1940	630/750V Direct Current Indoor Switchboards
S1941	LV Switchboards for Substations
S1942	22kV/433V and 11kV/433V Three Phase Auxiliary Transformers
S1943	22/11kV Power Transformers
S1944	22kV and 11kV Three Phase Earthing Reactors and Earthing Auxiliary Transformers
S1946	Requirements for Stationary Compressed Air Equipment in Traction Substations
S1947	50 and 110 V DC Supplies from Batteries and Chargers
S1948	Off Line Battery Inverter (OLBI) Power Supply Equipment
S1963	Substation Supervisory Control and Data Acquisition Equipment
G1100	Change to Rolling Stock (CRS)
-	Standard for TfL Products https://content.tfl.gov.uk/tfl-standard-for-tfl-products.pdf
BS9992	Fire safety in the design, management and use of rail infrastructure. Code of practice.

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8 Document history

Issue no.	Date	Changes	Author
A1	December 2023	First issue - to accompany standard S1011 A3. Change No. CR-18235.	Andy Gordon