Transport for London

Product design guidelines

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Foreword

With over 11 million passengers every day, Transport for London runs one of the busiest and most complex transportation systems in the world.

A well designed, confident and consistent visual identity is highly effective in communicating the strengths of our organisation. It is essential that Transport for London (TfL) maintains a high standard for co-ordinated design in every aspect of our operations.

Product design has a strong heritage within TfL. A product design generic specification was originally published in 2000 to detail the criteria by which successful product design should be approved. The document has been significantly revised to reflect the new structure of TfL.

I would like to thank key stake—holders from each of the modes who have contributed to the production of this document. Its content and structure have been influenced directly by their experiences and insights.

I hope that you will find the revised document accessible, relevant and engaging.

Nigel Marsden
TfL Group Marketing Director

What is a TfL product?

This document is relevant to those with responsibility for the procurement or management of product design within TfL. The word "product" has different meanings in different contexts; to avoid confusion a brief description of its meaning in the context of this document is given below.

The range of products within TfL's environments is diverse. The following list is not exhaustive, but shows examples of product categories to which this document is relevant:

Signage, customer information products, station furniture, gateline equipment, architectural fittings and ironmongery, furniture and fittings, customer security products, secondary revenue products.

A "product" is the generic term for any manufactured object that has been designed or specified to fit within the public facing environments owned and operated by TfL and its modes.

Delivering successful product design

Successful product design stems from a fusion of three criteria:
aesthetics, **appropriateness** and **economics**.

This document describes twenty four approval criteria that should be
considered in order to deliver success in each of these three areas.

Aesthetics 1.0

Design language

TfL's design language combines an expression of precise engineering skills with softened organic forms. Thus details and joints are tightly controlled and the outer form of a product is smooth and pleasing to the touch with rounded corners and curved front panels.

This design language has a level of robustness appropriate to the scale of our products and the range of environments in which they are used. It provides TfL with a corporate image that is consistent and has longevity.

Products developed for TfL may be badged or marked with a roundel where appropriate, such applications must conform with TfL 'Roundel Standards'.

Consistent details

Consistent design detailing can benefit the customer and maintenance staff. The customer benefits by being presented with a consistent corporate image suggestive of a company which is in control of its output. Maintenance staff benefit from building a collective experience of maintaining products and not having to carry an excessive quantity of tools.

Relates to surroundings

The range of TfL's portfolio of premises is diverse. It includes very modern environments such as the Millbank Millennium Pier, Vauxhall Cross Bus Station or the stations on the Jubilee line, as well as those listed as being of national architectural or historical importance by English Heritage.

Products designed for TfL's system must fit visually with the range of environments they are intended for.

Physical interface

Products and parts which could be regarded in any way as being vulnerable put the safety and security of our customers and staff at risk. The size of gaps and the position of corners, or edges can cause injury to people or damage to their clothing if not carefully considered.

Company colour standards

Within TfL 'Colour standards for hardware and the built environment' guidance is given to which colours may be used and the ethos behind their inclusion.

Any standards that could have an impact on design and engineering issues should be provided with each design brief.

Their listings and issue is controlled by and upon application to TfL MarComms, LU Customer Service Delivery and the TfL Technical Reference Library.

For reference, a list of all standards and documents referred to in this document is provided at the end.

Self-finish materials

Materials such as concrete, stone, stainless steel, aluminium and some timbers can be used in a manner known as 'self-finish', that is without any secondary application such as painting or powder coating. This can help to increase a product's lifespan and enables easier rectification to any damage.

Where secondary finishes are used, designers should give consideration to their durability and the levels of maintenance required to maintain their quality of appearance.
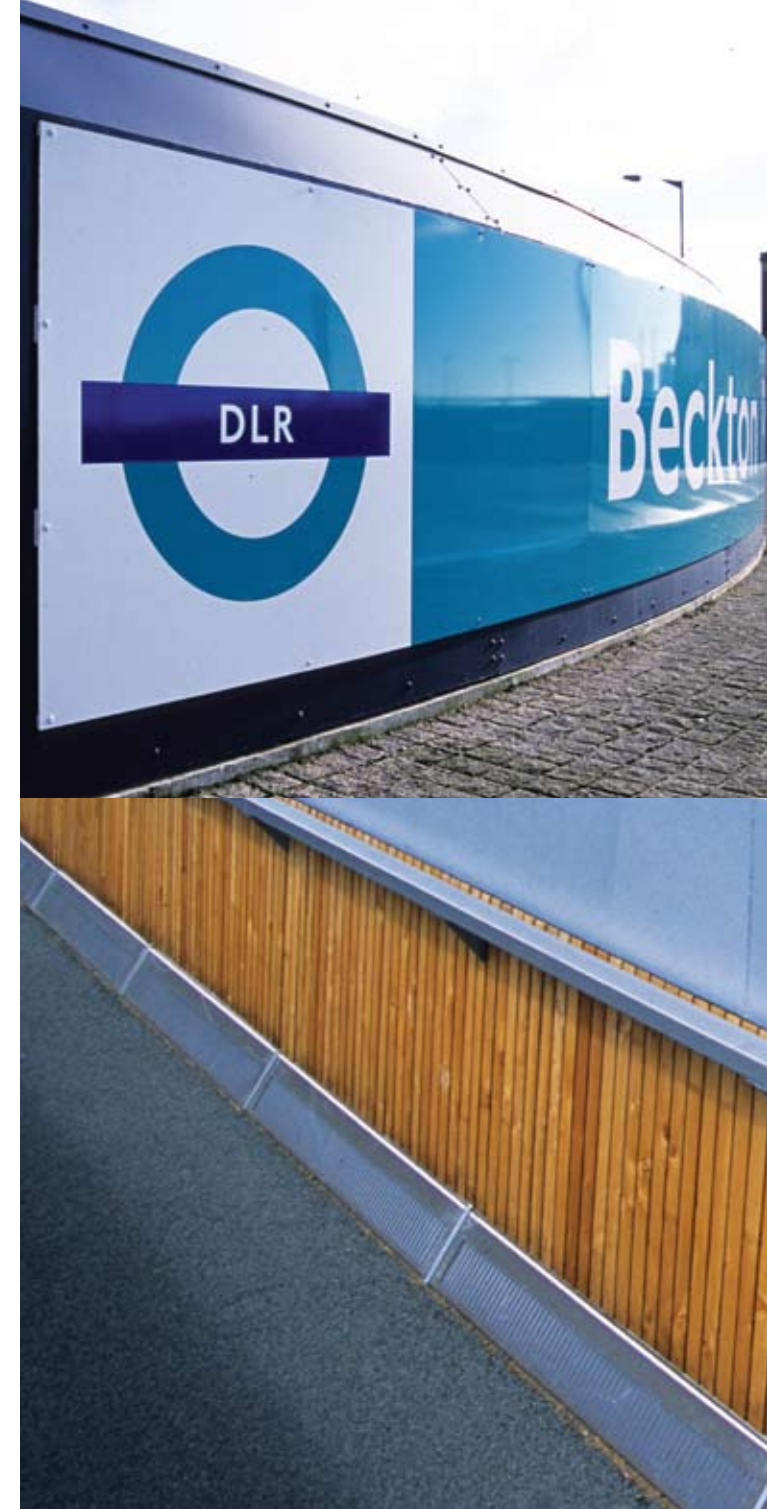
Human factors

The consideration of those qualities of products that allow users to understand and relate to them is referred to as human factors design.

User understanding and acceptance of a product will be improved if the product's user interfaces are carefully considered and logically set out. This approach improves the emotional comfort of people using what might otherwise seem to be an alien product in an unfamiliar environment.

Ergonomic factors

The consideration of the physical capabilities of users in relation to the physical qualities of a product is referred to as ergonomics.

By undertaking an ergonomic evaluation the sizes and positions of points of user contact with products can be identified and optimized. This approach enables the physical comfort and ease of use of our products to be improved for all our users. Our products must be compliant with the 'Disability Discrimination Act'.

Meeting customer needs

Our customers' needs should be clearly understood and catered for by our products. A product's format and the level of its features not only affect its suitability in use, but may also contribute to its visual character.

Meeting customer aspirations

The public have access to and are constantly informed by many products and environments. This ever-changing arena helps to shape peoples' opinions of what is considered modern in terms of both technology and style. Our products should embrace the long term trends that are shaping these aspirations.

Technological gimmicks and styling that is overtly fashionable will be preceived to date very quickly and should be avoided.

Visibility

A product's visibility to those with impaired vision should be enhanced for two reasons: firstly to enable customers to avoid what may be a (necessary) intrusion into a space; and secondly to enable an easier understanding and use of a product.

The clarity and ease of use of a product if designed in consultation with disability groups will be to the benefit of all users..

Colour contrast

To aid clarity, a high degree of colour contrast between a product and its surroundings should be included. Differentiating between the floor and or walls and a product can also highlight a product's presence.

Contrast can also be achieved in two other ways: firstly by specifying different parts of a product in different colours e.g. one colour for a seat pan and another for the arm rest; secondly by including an element of reflective material, for instance, tubular stainless steel handrails against a dark wall colour.

Planning approvals

Planning permission may be required when products fall within the curtilage of a listed building. Although approval from a London Boroughs (LBA) may not be necessary, consultations with other bodies such as Her Majesty's Rail Inspectorate (HMRI) or London Fire and Emergency Planning Authority (LFEPA) may be.

English Heritage consultation

TfL and its subsidiary modes own many buildings which are listed on either a national or local basis. It is the local authority's responsibility to approach English Heritage for their comment prior to commencing work on buildings on the National List. Additionally, there may be mode specific approval processes that need to be considered.

Secondary income funding

Increasingly sponsors have approached TfL to participate in the research and development and/or production of products.

Careful application and balance of our corporate identity and those of outside companies needs to be assessed prior to any commitment. TfL's 'Sponsorship, co-branding and innovative advertising' offers further rules and guidelines.

Added value

Sponsorship and/or co-branding can offer our customers the benefits of association with companies whose products are acknowledged to offer world-class performance, technology or usability.

Promotion of TfL in the same arena as these companies can reinforce and strengthen the position of our brand.

Appropriateness 2.0

Pre-site work

Products can be designed to eliminate as much pre-site work as possible. For example, if a product can be fixed directly to the floor without the need for foundations, it may reduce costs. Industry guidelines such as the DfT New Roads & Street Works Act NRSWA and Construction Design and Management regulations (CDM) should be considered.

Secure fixings

Fixing to whatever surface must be secure to avoid unauthorised removal and/or damage. The fixing of a part requiring routine maintenance or occasional access and can be designed to restrict access to those with a specialist tool only. Alternatively, one-way or non-return fixings may be appropriate to fix parts that are expected to remain in place throughout a complete product lifecycle.

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Making good

At the end of the product's use its removal should require as little making good as possible. This not only reduces the on-site labour costs but also reduces damage to the site.

Making good should only be attempted using materials as per those around the damaged area. This point should be considered prior to installation as moving a product slightly may avoid costly problems when it has been removed.

Disposal of part and product

Following the use of a product its lifespan does not end when it has been removed from site.

If considered at the design stage, disassembling a product may offer parts which could be used in other products and thus help save costs. Following disassembly, parts which cannot be reused may be able to be recycled.

The use of parts which cannot either be reused or recycled should be minimised. The correct disposal of any parts containing hazardous materials should be considered at the design stage.

Clear sight lines

Security of our products, environments and buildings is of paramount importance. The design process should eliminate recesses from where people could conceal themselves. Clear sight lines particularly around free-standing products should be maintained.

Secure opening mechanisms

Any mechanism which is to be operated by maintenance staff is to be secure and easy to locate and operate. Consistency with other mechanisms and tools should be investigated by the designer to reduce the quantity of tools required by maintenance teams.

No hiding places

Places where litter or other items could be concealed should be eliminated at the design stage. Not only may this issue cause a security alert but it may also affect the operation and usage of the product.

Horizontal surfaces

In certain environments flat surfaces can attract litter or other items. Where appropriate, inclining a horizontal surface by at least 15 degrees will mean that undesireable items are less likely to remain in place.

This helps not only in security terms but also in keeping our products and environments clean.

Clarity

How a product works must be clear and simple to understand. This should be investigated by the designer to provide a logical sequence of operations, perhaps enhanced by either pictograms and or numbers.

The clarity of a product and its offer can be obscured by an over-abundance of suppliers' branding or adverts. All intended applications of such should be illustrated at the design stage prior to any approval being granted.

Communication

The use of any words or pictograms on TfL products should be carefully considered. Any application that might result in potential misunderstanding or unnecessary visual clutter should be avoided.

Wherever colour is used for informing it should follow TfL 'Colour standards for identity and information'.

Mechanisms

Mechanisms are to be robust and simple. The use of established mechanical technologies should not be overlooked in favour of less proven solid–state technologies.

Feedback

Feedback is the term used to describe the responses a product provides to confirm to a user that it is working or that a control has been actuated. When a customer or member of staff is using a mechanical or electrical product, the product should offer feedback to the user that firstly the product is switched-on and secondly that it is working.

This feedback may take the form of a mechanical, audible or illuminated response.

No fussy detailing

The appearance of a product over time should not be undermined by the inability to clean it effectively. Designers should therefore consider how a product is cleaned and secondly what can be done to avoid a build up of residual dirt.

Details should be kept clean with joints simply expressed.

Self-clean

Wherever possible materials and finishes are to be self-cleaning. Materials and finishes such as stainless steel and vitreous enamel have proven to be effective over many years of use.

Wear and tear

Vandalism to TfL's products is unavoidable. Materials durability combined with cost and ease of replacement will improve the performance of products. This combination will reduce the potential and probability of damage and the speed at which it can be replaced or repaired.

A products appearance can be enhanced over time with careful consideration to the choice of materials, finishes and colours. Normal wear and tear is to be expected and the level of durability should be considered at the design stage.

Cleaning surfaces

Designers should expect surfaces to be cleaned by a variety of cleaning products. Therefore a surface or finish's robustness and liability to scratching, fading or distortion is to be tested and proven prior to specifying.

Economic criteria   3.0

IPR (Intellectual Property Rights)

It is in TfL's interest to retain ownership of copyright and all tools, jigs or other devices used to create products. This enables multi-sourcing of products and enables transfer of production from one company to another. This investment in copyright and tooling strengthens TfL's position in retaining IPR and pursuing claims against companies attempting to produce similar products or people fraudulently misusing our IPR.

Further information is contained within TfL 'How to use and protect the intellectual property rights of Transport for London' standard.

Additionally all intended uses of TfL corporate logos should be clearly illustrated by the designer prior to any approval being granted.

Level of tooling investment

Tooling is a generic term that describes the moulds, dies, jigs and formers from which the parts and components of a product are manufactured. The type and quantity of tooling should be procured to suit the scope of the project.

In order to make make an appropriate level of tooling investment, advice should be sought from the supplier to the envisaged quantities that the tools will be able to produce. For example, it may be advisable to produce three sets of cheaper resin tools to produce the quantity or quality of parts required rather than one set of more expensive steel tools.

Compatibility

The compatibility of materials is a two-fold issue. Firstly, aesthetic compatibility when a combination of materials are used. Designers should present their intentions to the project team at an early stage of the design.

Secondly, the materials' molecular compatibility with one another. Certain materials when combined or adjacent to one another can cause bi-metallic corrosion.

Existing resources

Prior to a new product being considered an evaluation of whether the same project objectives could be gained by other means should be investigated. For example upgrading and or adapting existing equipment rather than replacing it with new. Opportunities may exist to share experiences or resources developed by other modes

Floor, ceiling, walls

The context of the range of environments in which TfL products may be sited should be considered fully. A product may need to be sufficiently adaptable to allow it to be fixed either to the floor, wall or ceiling of a site depending on the project requirements and site conditions.

Physical fit with surroundings

It is important that a product is designed to fit physically into all intended sites. Space within the central area of London is at a premium so a product should be as compact as possible whilst still being appropriate to its function.

Many TfL environments have been fitted out in a manner using similar sizes of tiles and panels. This should be investigated by the designer prior to commencing a project to provide guidance to the benefits of adopting similar sizes

Flexible method

Designers should investigate a fixing method or design a mounting part which is separate to the product which can be adapted for all possibilities without altering the product itself. Thus products could be removed without affecting the mount.

Minimal site work

Engineering hours vary according to the requirements and constraints of each TfL mode. The simplification of installing products without compromising safety or security should be addressed by the designer to enable a reduction of on-site preparation and installation works and thus save costs. NRSWA or CDM regulations must be considered where appropriate.

Cost of spare parts

The cost of replacing parts can be kept down by using wherever possible appropriate standard components from 'off-the-shelf' sources. Additionally using parts which have to be made which are compatible with those used in other products may also help to keep costs down.

Availability of spare parts

Spare parts which cannot be easily obtained or have long lead-times may result in products having prolonged down times. To avoid this it may be prudent to procure a limited number of spare parts during manufacture.

Accessible parts

Parts should be accessed, whenever possible, from the front of a product to accomodate access in a wide range of environments. If a product is to be used exclusively in a free-standing environment, away from walls or other surfaces, it may be beneficial to access parts from the side that will be least customer-facing.

Fixings should be as discreet as possible and preferably to one side or the bottom of a product.

Removal of parts

Prior to removing a part all products which have an electrical source must be locally isolated, in accordance with the regulations of the Institute of Electrical Engineers (IEE). The exchange of a part should be as simple as possible, preferably via plug-together sockets unless predetermined or legislated for hard wired connections.

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Operational benefits

During the design process operational benefits such as developing a more effective maintenance programme can be set as a project objective. The designer should not only deliver the project objectives and user requirements but also consider issues in the larger picture and bring them to the attention of the project team

Customer benefits

In addition to the designer satisfying all project objectives and user requirements additional features and or soft issues may be appropriately included to extend customer benefits. Such things may include providing a greater level of comfort and/or feeling of security.

Low impact on resources

The impact on financial resources should be kept to a minimum. Financially the use of 'standard' solutions promotes a consistent corporate identity and avoids a continuation of the 're-inventing the wheel' syndrome.

The cost of added value

In appropriate cases economy may become a secondary issue if the additional expenditure adds significant function and/or value. However expenditure which may not gain more than a perceived higher level of quality should be avoided.

References and contacts 4.0

- Transport for London 'How to use and protect the intellectual property rights of Transport for London'

- TfL E1042 A2 'Fire safety performance of materials used in the Underground'

- TfL 'Roundel Standard'

- TfL 'Colour standards for hardware and the built environment'

- TfL 'Sponsorship, co-branding and innovative advertising'

- TfL 'Colour standards for identity and information

- BS 7000 'Design management systems' parts 1&2

- BS 7000-6 Managing inclusive design

- Disability Discrimination Act

- The DfT New Roads & Streets Works Act

- CDM regulations

- DfT Inclusive Mobility – A guide to best practice on access to pedestrian and transport infrastructure

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