
UNDERGROUND
TRANSPORT
FOR LONDON
EVERY JOURNEY MATTERS

# PRO-LITE
# Procurement of Lighting Innovation and Technology in Europe

**Dr Leon Smith**

# About?

- Funded by the European Commission
- Engage more effectively with manufacturers to procure better / innovative products and services (Communication)
- Case study is Lighting (Italy, Germany, UK)
- Project put in place contracts for ~€1.5billion

# Awards

**PROCURA+**
**Innovative Procurement of Year 2016**

**Lux**
**Client of the Year 2016**

# Articles

- http://luxreview.com/article/2016/11/lux-awards-2016-winners-revealed
- http://publicspendforumeurope.com/2016/12/07/transport-for-london-wins-innovative-procurement-award-a-bright-future-for-london-underground/
- http://luxreview.com/article/2016/06/how-to-buy-light-fittings-that-really-work-for-you
- http://spendmatters.com/uk/congratulations-public-sector-innovation-sustainability-award-winners/
- http://luxreview.com/article/2015/06/the-one-factor-driving-the-adoption-of-led-lighting-on-the-tube
- http://luxreview.com/article/2014/12/cross-europe-buying-consortium-to-drive-prices-down-innovation-up-for-public-lighting
- http://www.sustainable-procurement.org/news/?c=search&uid=00004be5
- http://luxreview.com/article/2016/02/procurement-process-letting-down-railway-projects
- http://luxreview.com/article/2014/07/rail-lighting-procurement-struggling-to-keep-up-with-technology
- http://luxreview.com/article/2016/10/client-of-the-year-nominations-unveiled-as-excitement-builds-for-lux-awards
- http://www.luciassociation.org/magazine/Cities-Lighting-005/

# Transport for London

## Objective:

**Innovation to achieve optimal Whole Life Costs and Performance**

**Affordability**

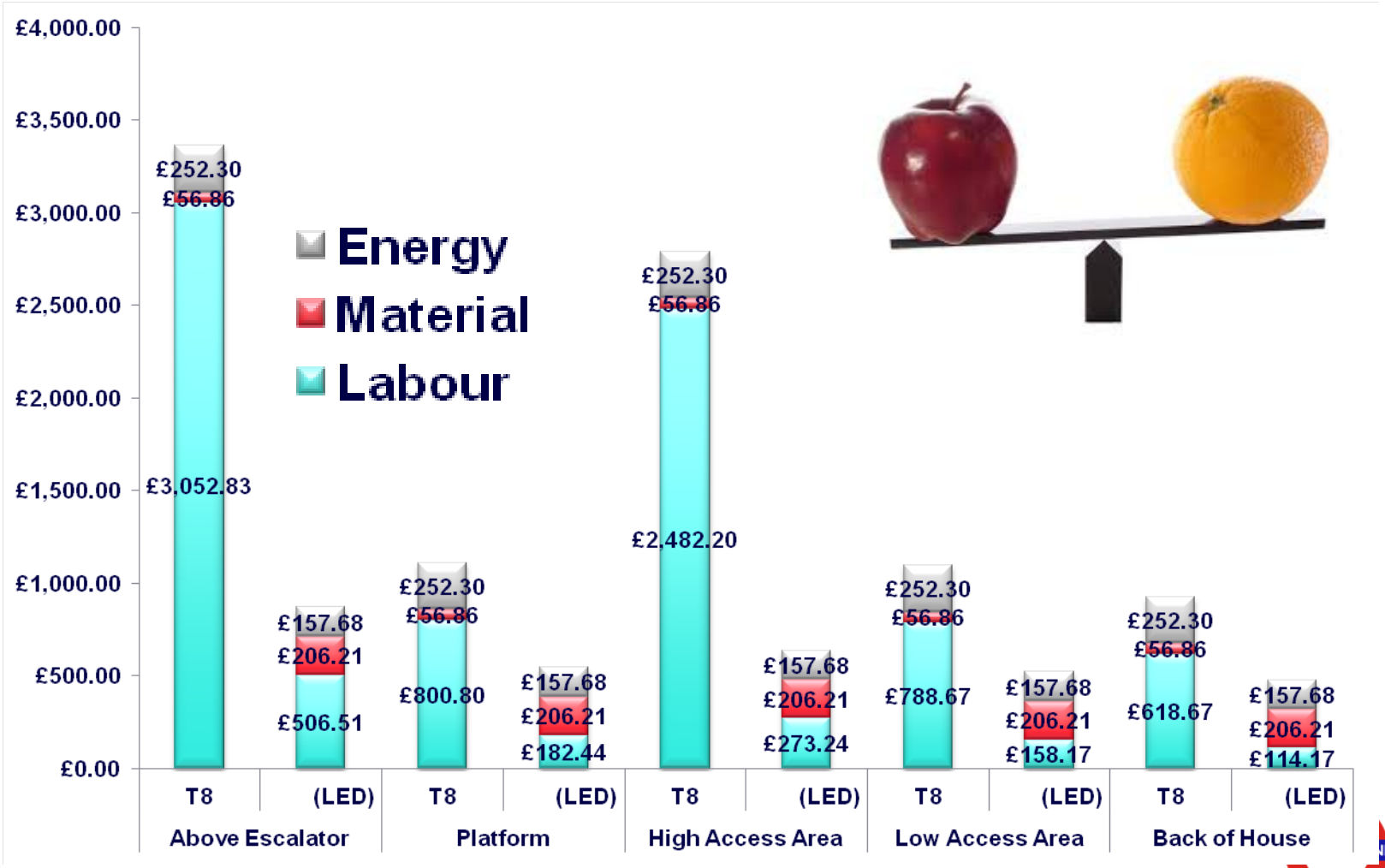
Balance the budget and do more for less

We are aiming to run our railway for less than £2bn each year

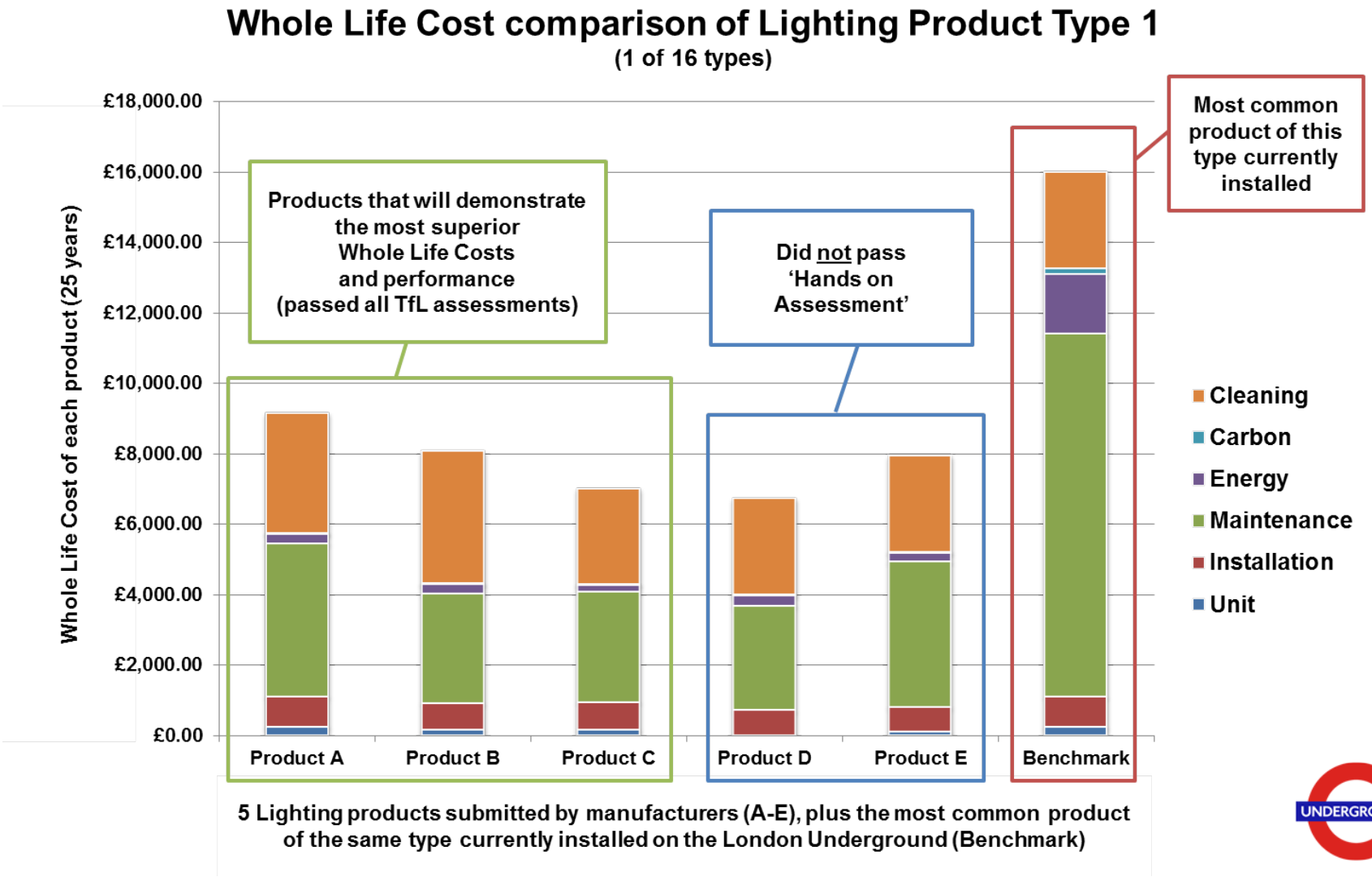
# Fit for Purpose Stations (FfPS)

- **Use 1% of capital budgets to maximise the value the organisation achieves from the other 99%**
  - **Whole Life Cost (WLC) optimisation**
    - **Environmental (Energy, Carbon, Resource Efficiency, Circularity)**
    - **Innovation (towards WLC optimisation)**
    - **Competition (monopolies / oligopolies)**

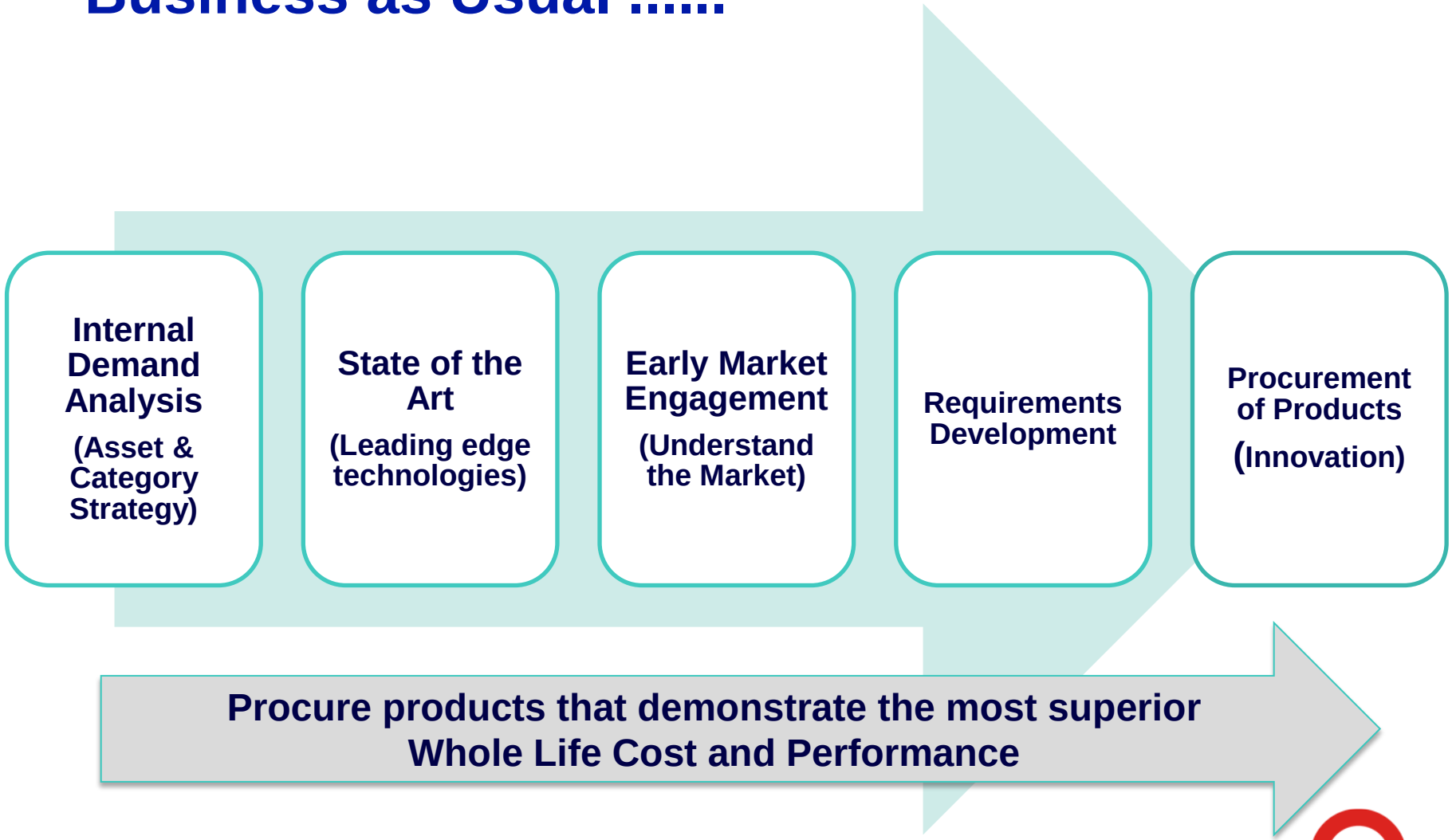
# How?
# Understanding where costs are...



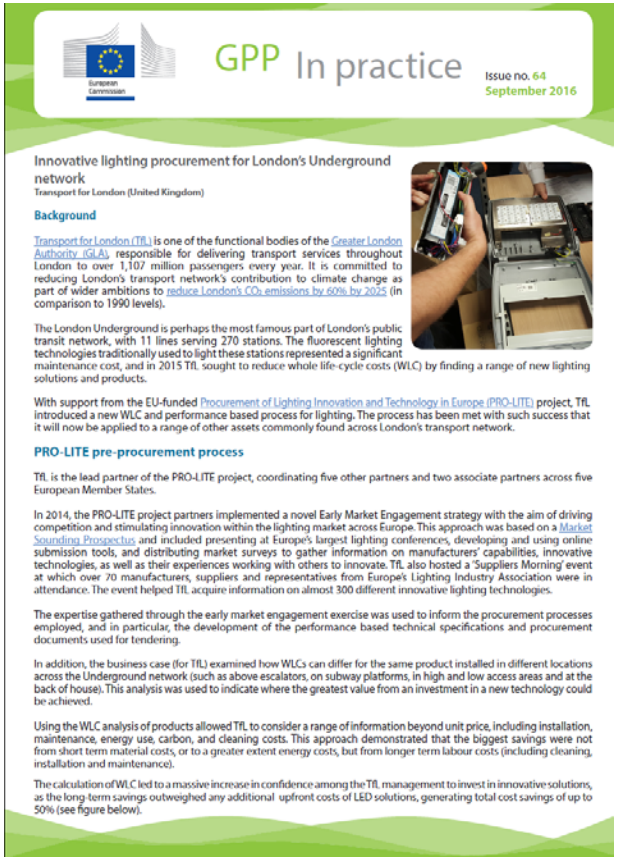
# Procurement approach: Whole Life Cost Optimisation.....



# Make the process and success ‘Business as Usual’.....



# Case Study



GPP In practice

Issue no. 64
September 2016

## Innovative lighting procurement for London's Underground network

Transport for London (United Kingdom)

### Background

Transport for London (TfL) is one of the functional bodies of the Greater London Authority (GLA), responsible for delivering transport services throughout London to over 1,107 million passengers every year. It is committed to reducing London's transport network's contribution to climate change as part of wider ambitions to reduce London's $CO_2$ emissions by 60% by 2025 (in comparison to 1990 levels).

The London Underground is perhaps the most famous part of London's public transit network, with 11 lines serving 270 stations. The fluorescent lighting technologies traditionally used to light these stations represented a significant maintenance cost, and in 2015 TfL sought to reduce whole life-cycle costs (WLC) by finding a range of new lighting solutions and products.

With support from the EU-funded Procurement of Lighting Innovation and Technology in Europe (PRO-LITE) project, TfL introduced a new WLC and performance based process for lighting. The process has been met with such success that it will now be applied to a range of other assets commonly found across London's transport network.

### PRO-LITE pre-procurement process

TfL is the lead partner of the PRO-LITE project, coordinating five other partners and two associate partners across five European Member States.

In 2014, the PRO-LITE project partners implemented a novel Early Market Engagement strategy with the aim of driving competition and stimulating innovation within the lighting market across Europe. This approach was based on a Market Sounding Prospectus and included presenting at Europe's largest lighting conferences, developing and using online submission tools, and distributing market surveys to gather information on manufacturers' capabilities, innovative technologies, as well as their experiences working with others to innovate. TfL also hosted a 'Suppliers Morning' event at which over 70 manufacturers, suppliers and representatives from Europe's Lighting Industry Association were in attendance. The event helped TfL acquire information on almost 300 different innovative lighting technologies.

The expertise gathered through the early market engagement exercise was used to inform the procurement processes employed, and in particular, the development of the performance based technical specifications and procurement documents used for tendering.

In addition, the business case (for TfL) examined how WLCs can differ for the same product installed in different locations across the Underground network (such as above escalators, on subway platforms, in high and low access areas and at the back of house). This analysis was used to indicate where the greatest value from an investment in a new technology could be achieved.

Using the WLC analysis of products allowed TfL to consider a range of information beyond unit price, including installation, maintenance, energy use, carbon, and cleaning costs. This approach demonstrated that the biggest savings were not from short term material costs, or to a greater extent energy costs, but from longer term labour costs (including cleaning, installation and maintenance).

The calculation of WLC led to a massive increase in confidence among the TfL management to invest in innovative solutions, as the long-term savings outweighed any additional upfront costs of LED solutions, generating total cost savings of up to 50% (see figure below).

http://ec.europa.eu/environment/gpp/pdf/news_alert/Issue64_Case_Study_128_London.pdf

# Process

**Internal Demand Analysis**
**(Asset & Category Strategy)**

**State of the Art**
**(Leading edge technologies)**

**Early Market Engagement**
**(Understand the Market)**

**Requirements Development**

**Procurement of Products**
**(Innovation)**

**Procure products that demonstrate the best Whole Life Cost and Performance**

# Design Idiom

## Bringing good design to the forefront of the London Underground

## Chapters


## Opportunities

Improve Customer Satisfaction

Meet demands of an expanding business

Increased feeling of security

Live up to the legacy

# Create Ambience with Lighting

## Good lighting can change the way a space feels


## Principles

Design for the individual environment

Use multiple layers of light

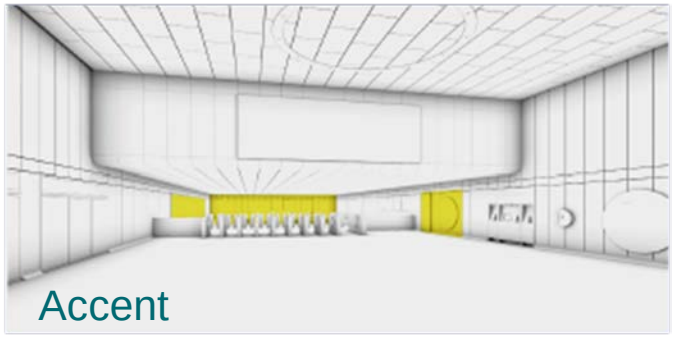
Guiding light

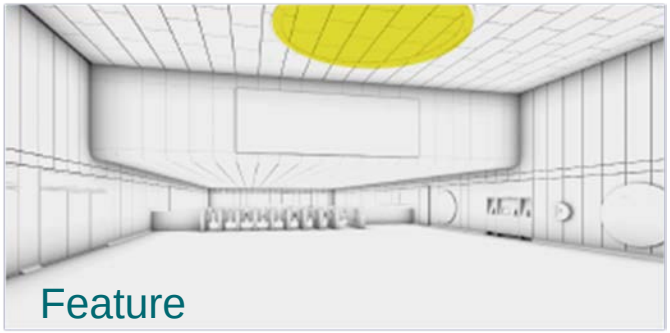
Save energy

Make it interesting

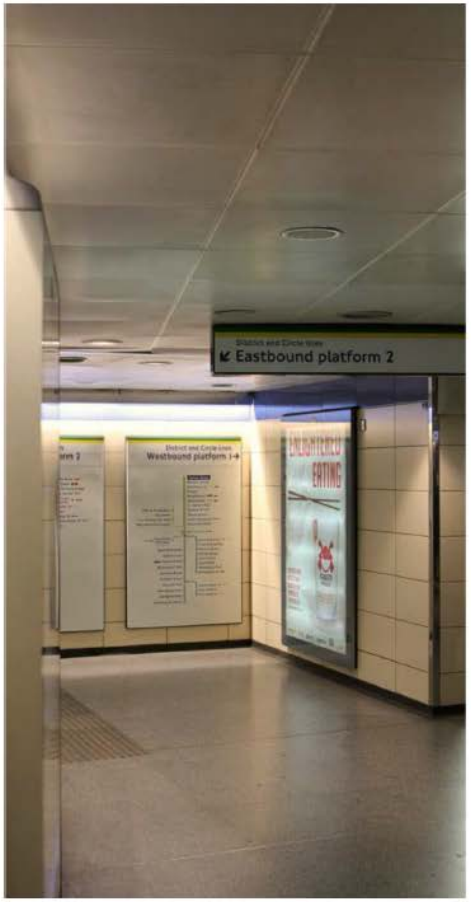
# Layers of Light

**Use layers to aid passenger flow, define important areas and make way finding intuitive**

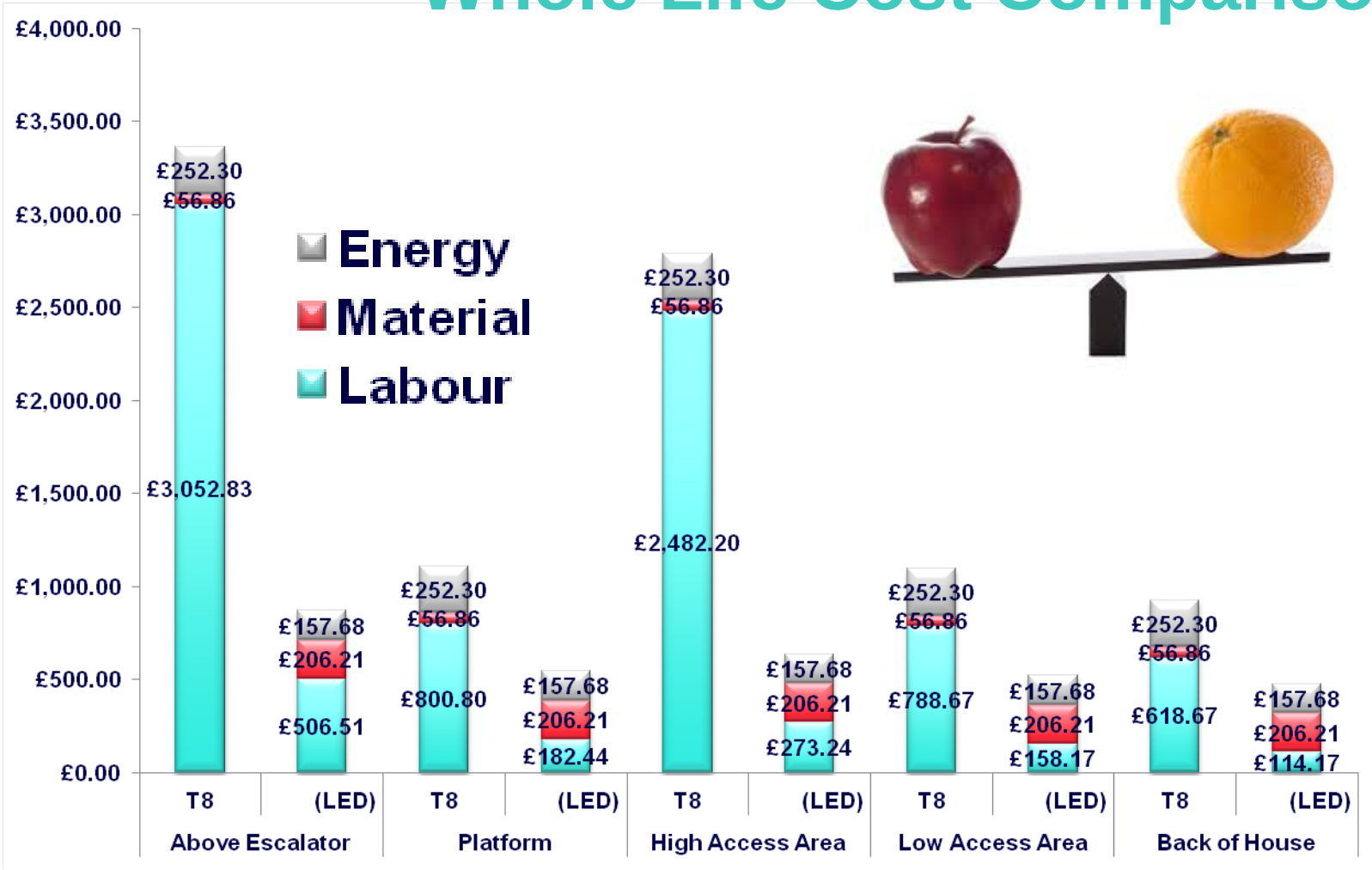




# Cannon Street Station Trial

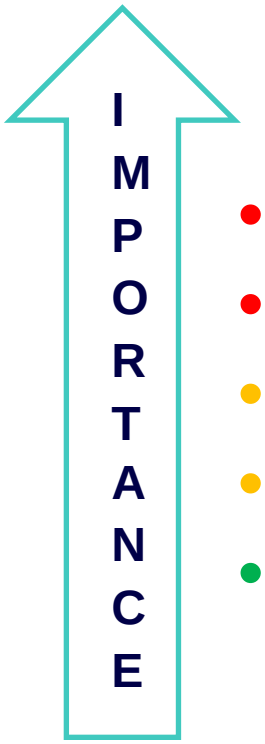
# Cannon Street Station Trial

# Internal Demand Analysis
## - Whole Life Cost Comparison



# Internal Demand Analysis
## - Where to target for savings

Capital vs. Operational expenditure




- Maintenance Costs
- Installation Costs
- Products Unit Costs
- Cleaning Costs
- Energy Costs

# Process

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(Innovation)

**Procure products that demonstrate the best Whole Life Cost and Performance**

# State of the Art
# What could we ask for?


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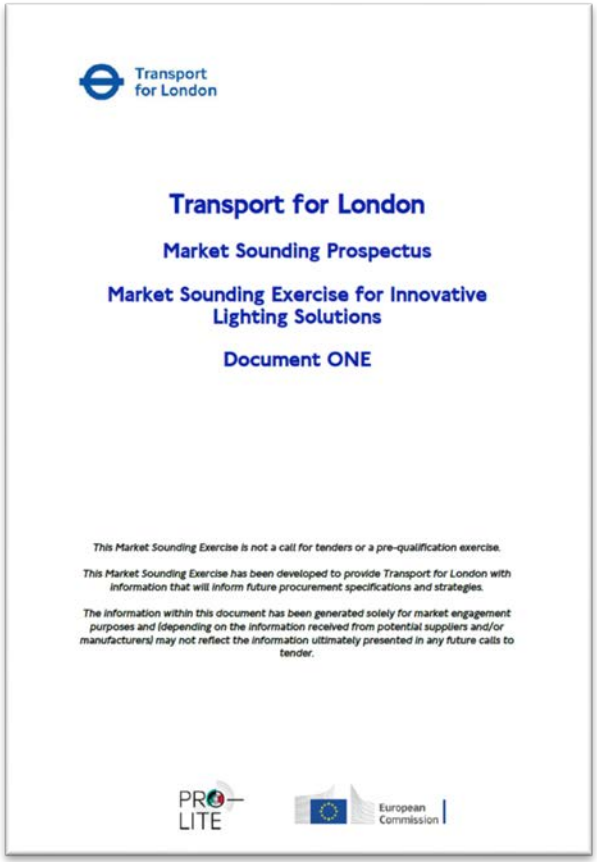
# Early Market Engagement - Who, where, what



Transport for London

**Transport for London**

**Market Sounding Prospectus**

**Market Sounding Exercise for Innovative Lighting Solutions**

**Document ONE**

*This Market Sounding Exercise is not a call for tenders or a pre-qualification exercise.*

*This Market Sounding Exercise has been developed to provide Transport for London with information that will inform future procurement specifications and strategies.*

*The information within this document has been generated solely for market engagement purposes and (depending on the information received from potential suppliers and/or manufacturers) may not reflect the information ultimately presented in any future calls to tender.*

PRO LITE

European Commission

**Transport for London**

**Market Sounding for Innovative Lighting Solutions e-Form**

**Document TWO**

Thank you for downloading this market sounding e-form. This e-form allows users to submit information on lighting products that will meet the needs of Transport for London (TfL).

Front Page

Contact Details

Procurement Questions

Technical Questions

Before answering this questionnaire, please read Document ONE – which can be found here

**How to use this form**

Users can navigate to each section of this interactive PDF form by clicking the hyperlinks on the left hand side of each page. You may also use the 'previous page' and 'next page' buttons (at the bottom of each page).

Alternatively, scroll through the document in the usual way.

**Submitting your response**

Please read the Market Sounding Prospectus (Document 1) then confirm below

☐ I have read the Market Sounding Prospectus document

Please remember to save and send your completed form to PROLITE@TfL.gov.uk

PRO LITE

European Commission

# Communication

Lux Review


Lux Live


Europe's Lighting Industry Association

# Highlights

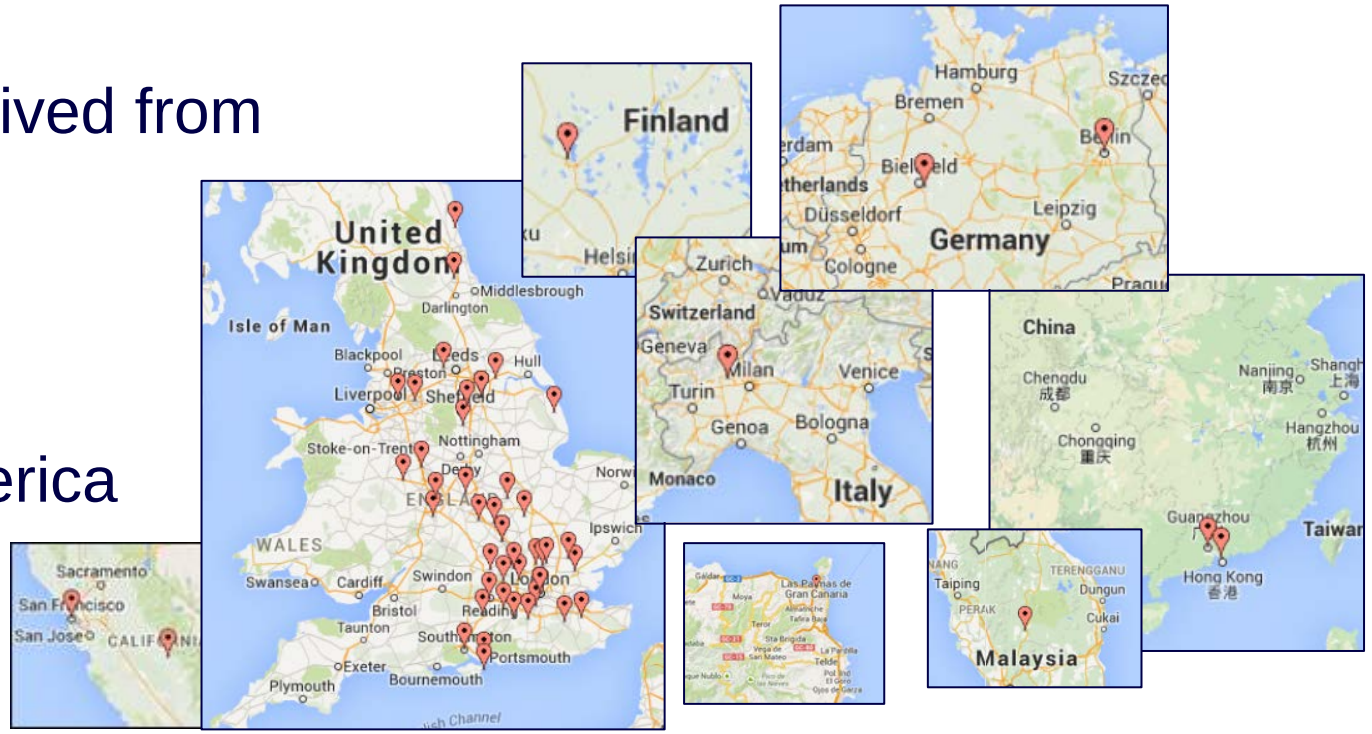

MARKET
ANALYSIS
business
strategy
identify
cost
size
potential
success
distribution
growth rate

# Received information on over 350 lighting products from over 70 different manufacturers and suppliers

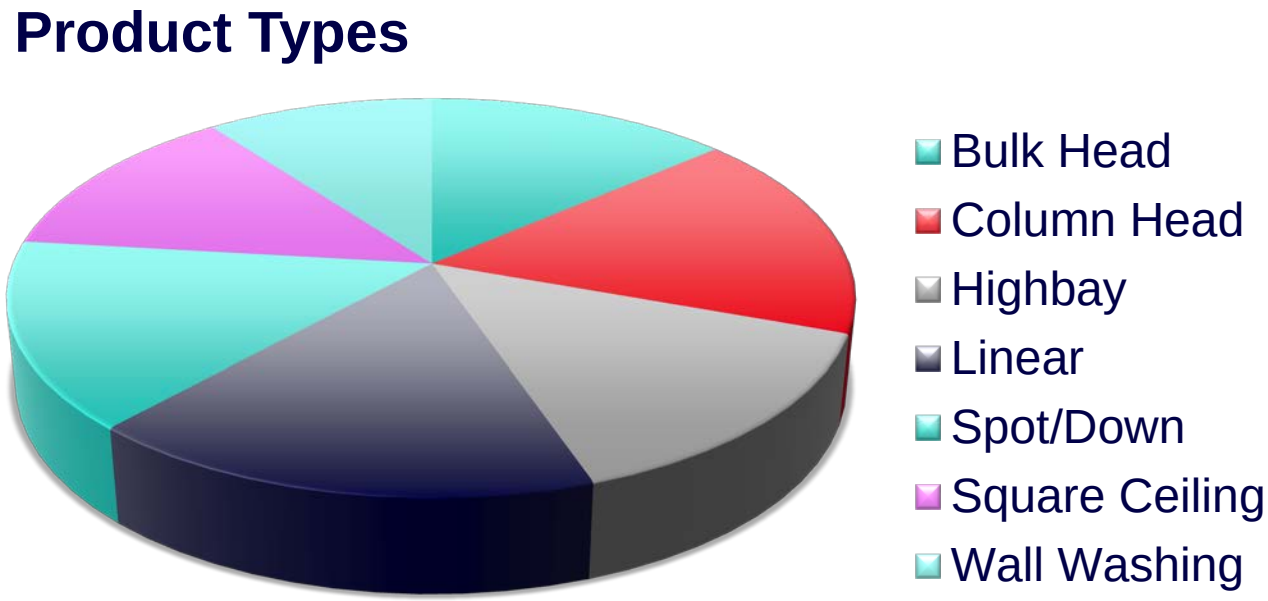
(equivalent to approximately 25% of the **known** European suppliers)

Reponses received from

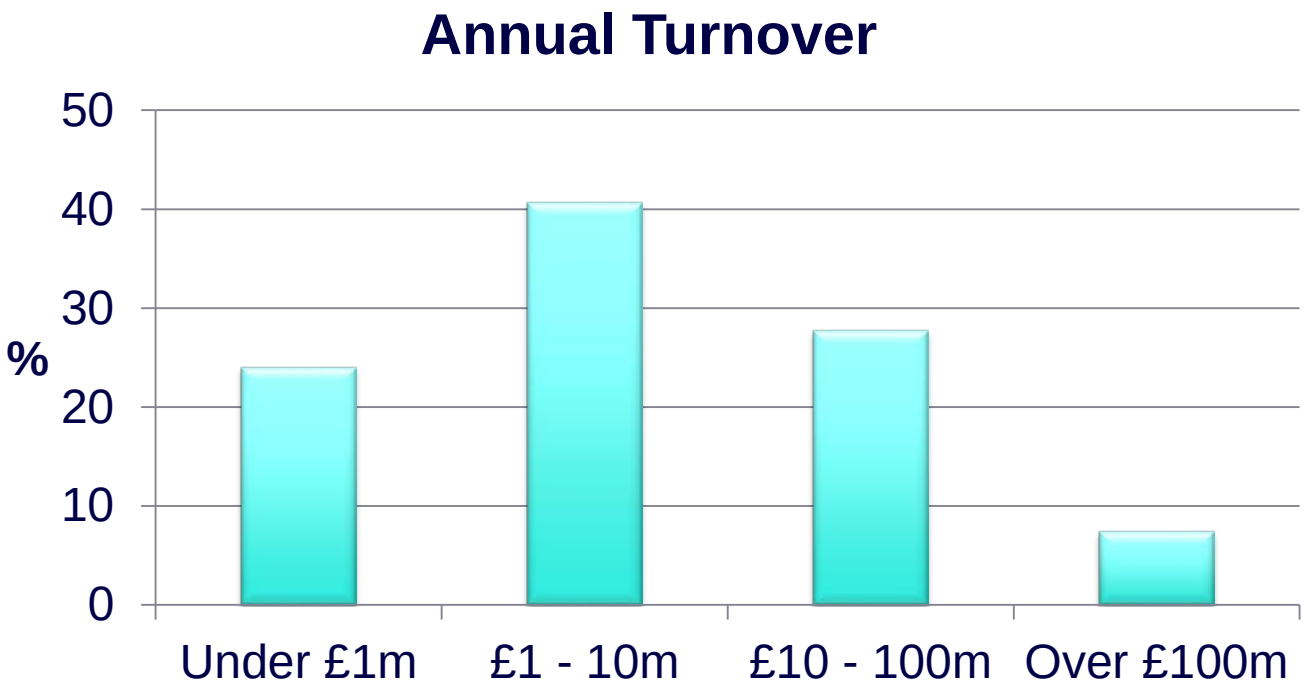
- UK
- Europe
- Asia
- North America



# Good information received on all Product Types of interest to TfL

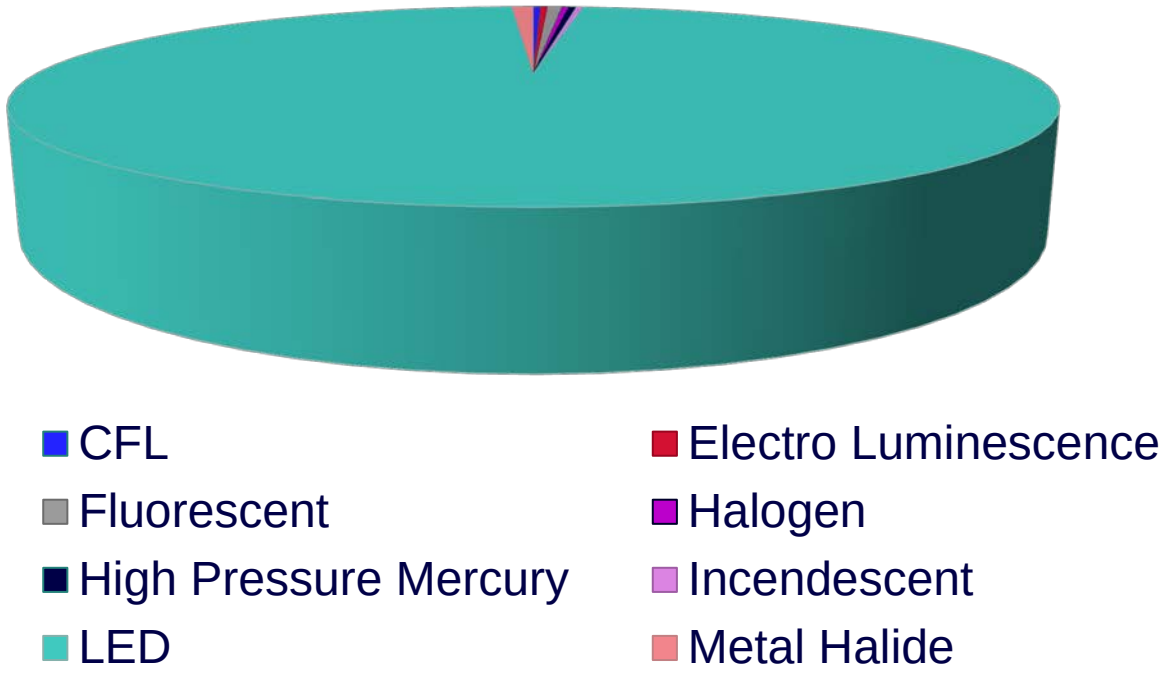


# The annual turnover of organisations that responded ranges from £0 – 4 billion per year



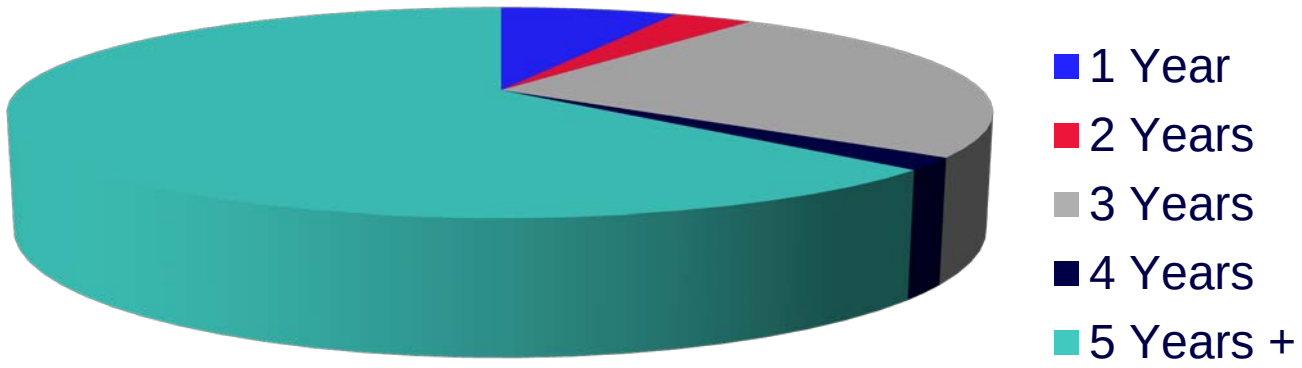
35% of the market sampled have been trading for less than 10 years, and over 75% less than 50 years

# Information on LED technologies dominated the response (97%)

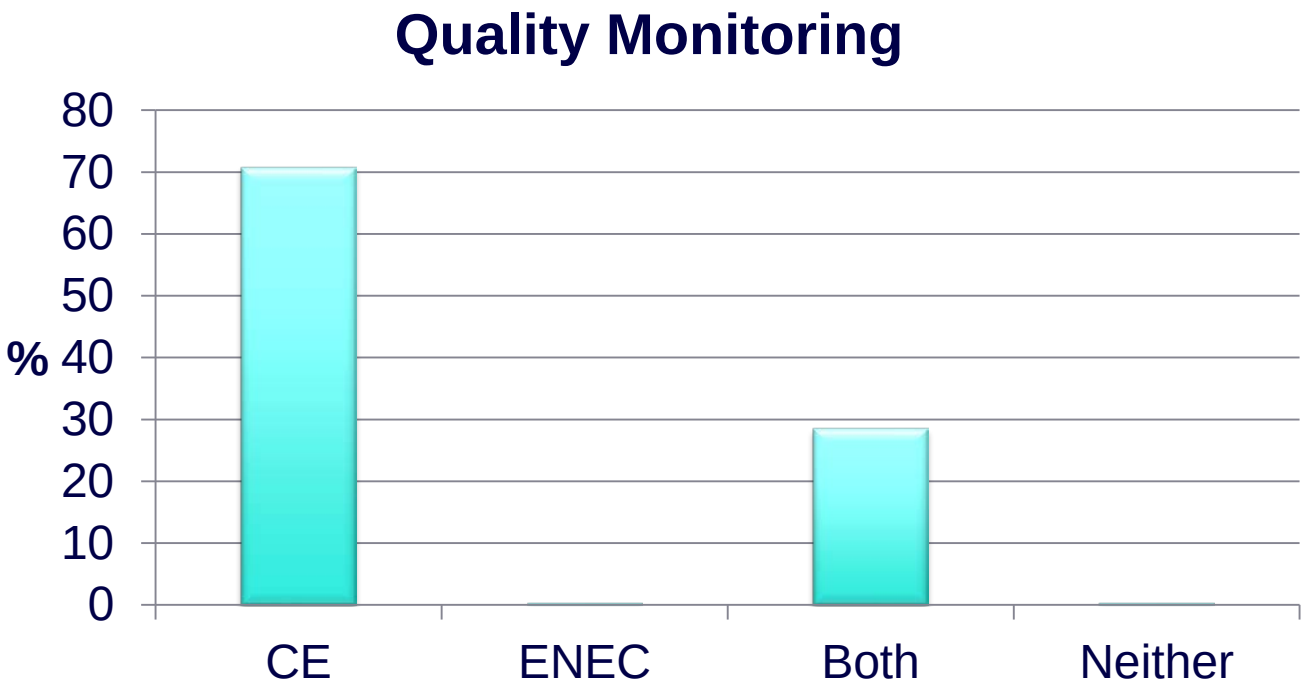


Two-thirds of LED products are sold with 5 years warranty or more, and 90% are sold with 3 years or more.

**Length of Warranty**



70% of LED products are sold with the CE marking, and just under 30% have both the CE and ENEC markings



79% of manufacturers rely on other suppliers/manufacturers for parts

— Ballasts

— Drivers

— Emitters

— etc.

90% of manufacturers registered for ISO9001

93% of manufacturers believe their products are eligible for the UK governments Enhanced Capital Allowances Scheme (and registering product where possible)

90% of manufacturers would be willing to develop a bespoke lighting technology for TfL for which TfL would own the Intellectual Property Rights

# Lighting Suppliers Morning – April 2015

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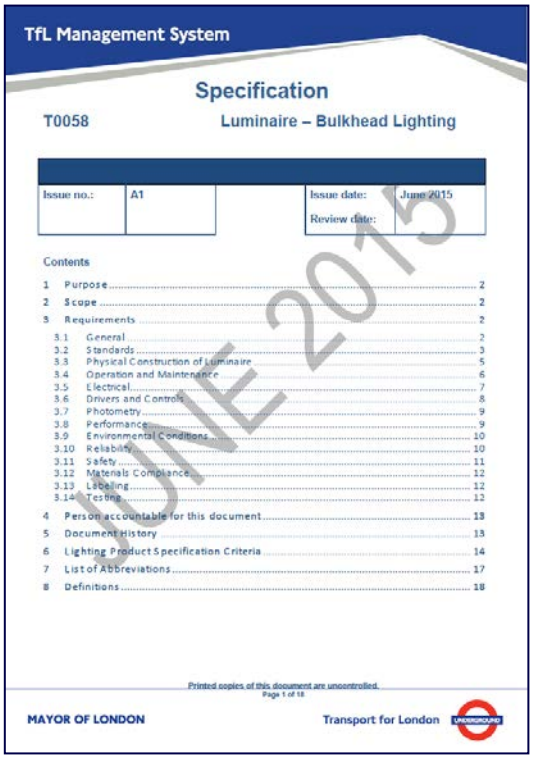
# Requirements Development - Technical Specification and Procurement Documents



TfL Management System

Specification

T0058 Luminaire – Bulkhead Lighting

| Issue no.: | A1 | Issue date: | June 2015 |
|---|---|---|---|
| | | Review date: | |

Contents







MAYOR OF LONDON Transport for London

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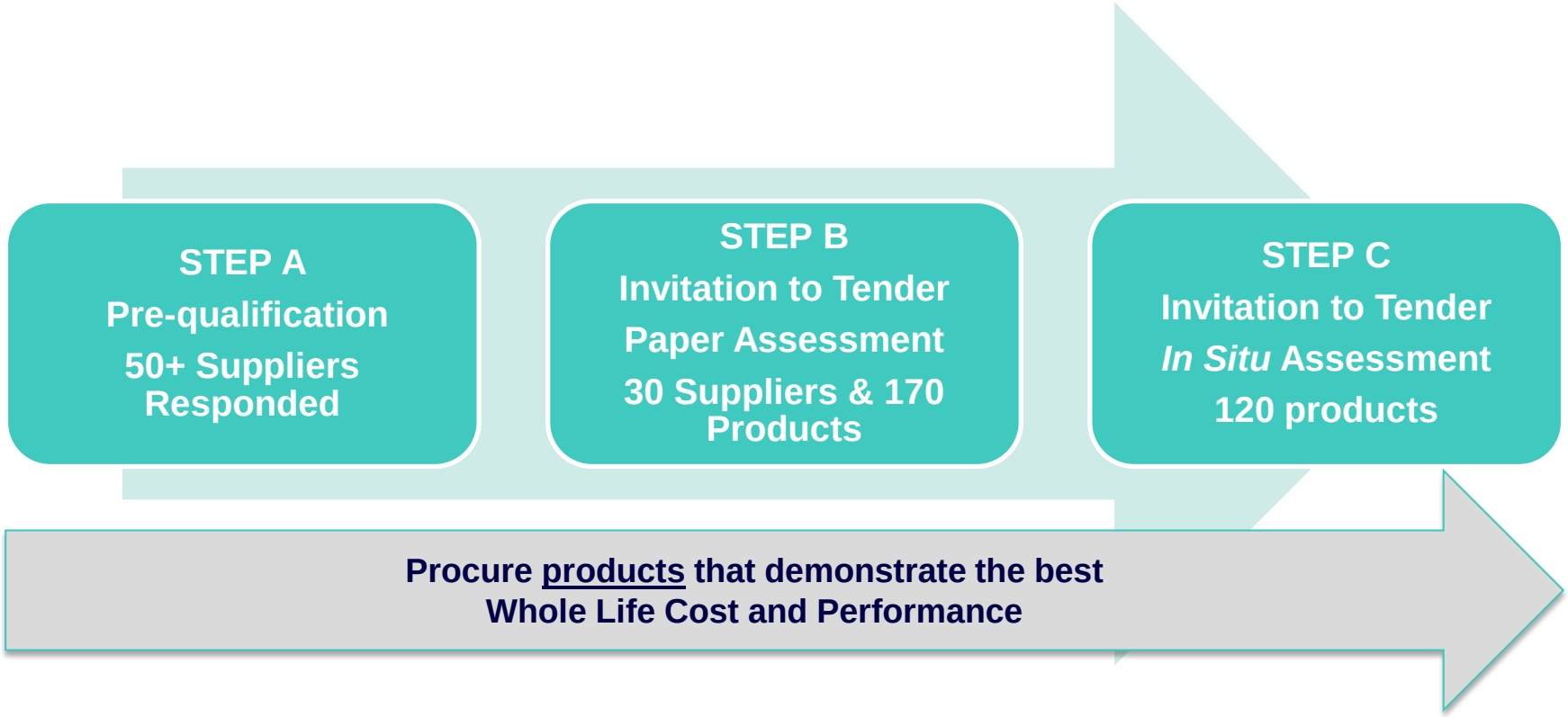
# Procurement - 3 Steps



# Procurement - Lamps and Luminaries

— **Hands on Assessment (following paper assessment)**

a. Robustness and durability
b. Ease of access to components
c. Ease to dismantle
d. Ease to reassemble
e. Integrity after reassemble
f. Ease to replace parts/components
g. Ease to clean
h. Ease to install
i. Ease to remove/uninstall
j. Ability to accommodate wiring
k. Ease to switch on and off

# Procurement
# - Lamps and Luminaries

—**Lamps**

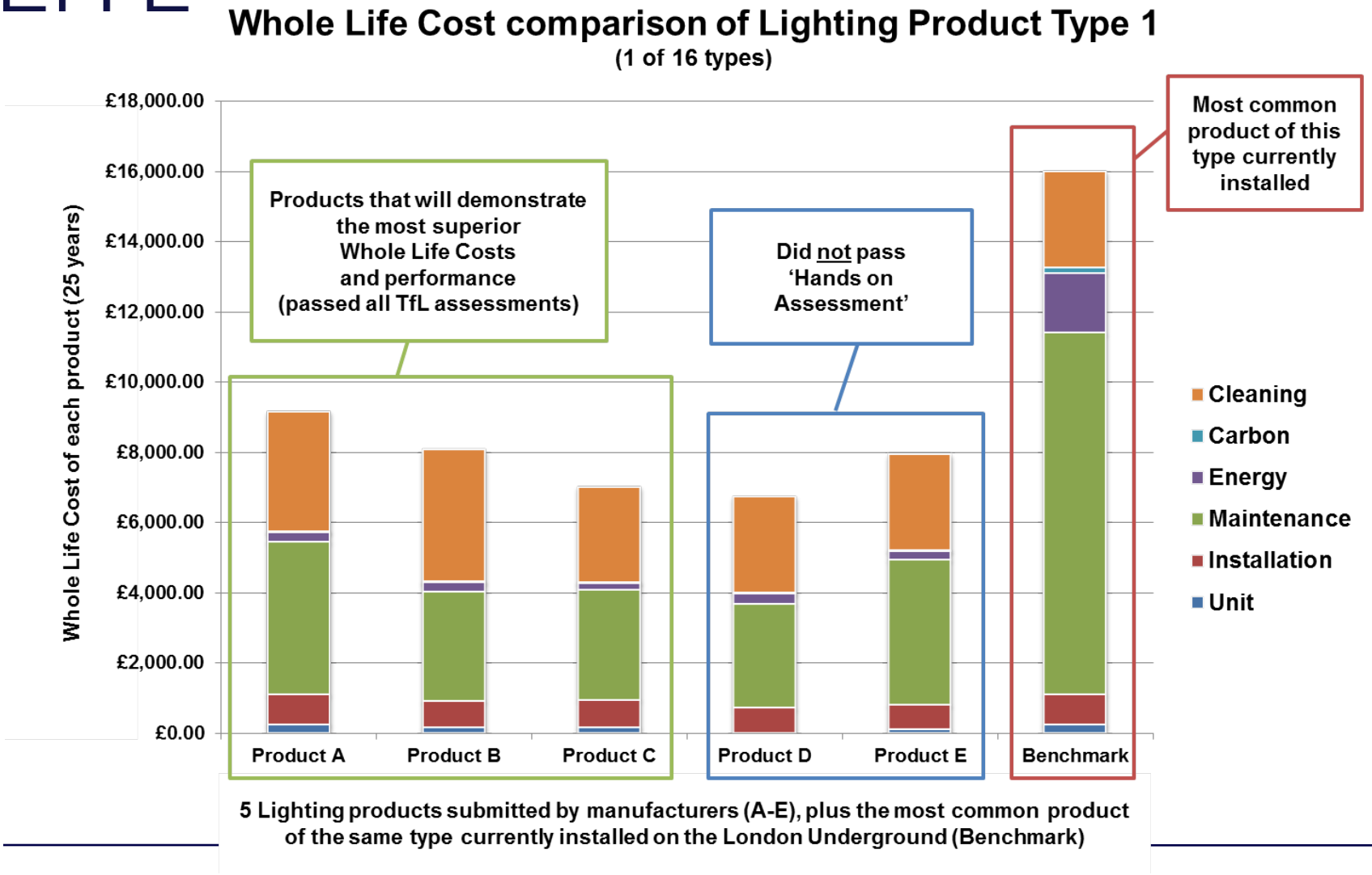
—**Luminaries**

# Contract(s) - Lamps and Luminaries

## Contracts

- Up to 8 years
- Product Refresh
  - Actively incentivise innovation (improvements to the technologies to reduce Whole Life Costs)
  - Reward manufacturers that improve their technologies
- Award contracts to ~5 different manufacturers
  - 3 suppliers, plus 2 reserve suppliers
  - All 5 will be able to participate when the Lots are refreshed
  - Sufficient competition within Lots – secure the best prices
- TfL Warranty (5 years)

# Example result



# Example result


**Save**

- **25% Whole Life Costs**
- **75% Maintenance Costs**

**16/17**

- **~60% of lighting installed on network**

**17/18**

- **Aiming for 100%**

# Circularity in PRO-LITE (Part 1)

**Technical Specification Clause:**

- Luminaires shall have a modular design so that components are replaceable upon failure, become life expired or redundant. For example:
  - Drivers.
  - LED panel/module.
  - Battery and inverter.
  - Diffuser.
  - Reflectors / Refractors.
  - Surge Protection.

**Why?**

Different components in luminaires ‘die’ at different times. For example, the ‘outer structure’ of a luminaire has a life of approximately 25 years, while the ‘driver’ components usually last ~5 years

Through a modular design (where components of high quality can be readily exchanged and replaced), TfL engineers are able to:

- ‘re-use’ components from failed luminaires
- ‘repair’ luminaires with new components
- ‘upgrade / retrofit’ luminaires with more efficient components
- send individual components to be ‘recycled’ instead of the entire luminaire.

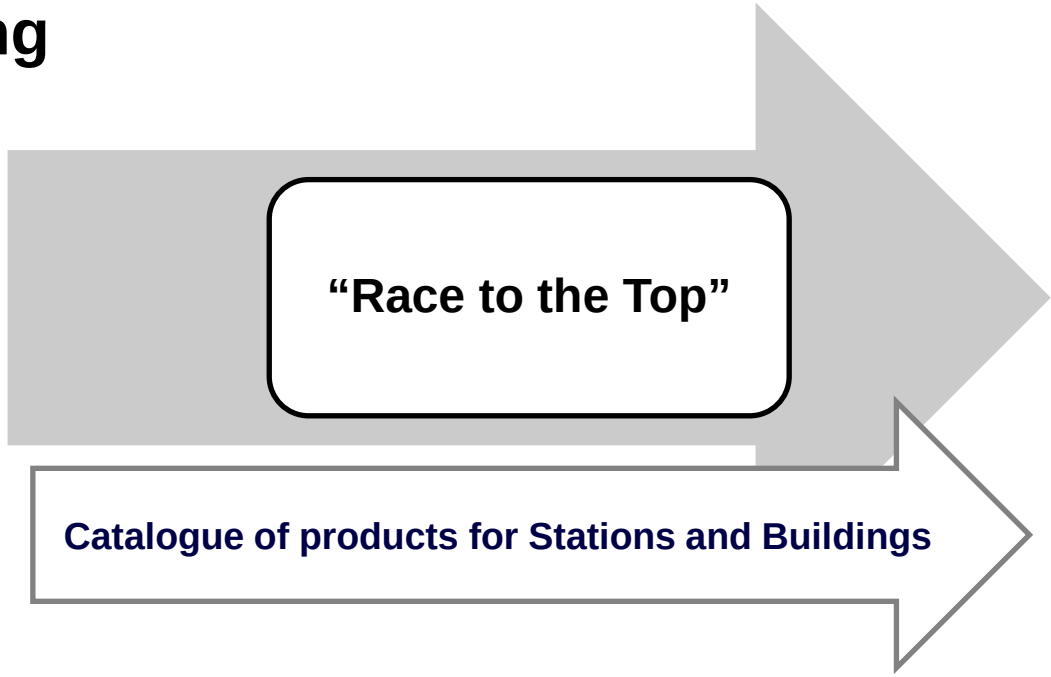
# Circularity in PRO-LITE (Part 2)

**Assessment:**

- To ensure we achieved it, as part of the assessment (‘hands on’) of the luminaires, engineers/maintainers scored products using the following criteria:
  - Ease of access to components
  - Ease to dismantle
  - Ease to reassemble
  - Integrity after reassembly
  - Ease to replace parts/components

# Fit for Purpose Stations

- **Electrical and Mechanical**
  - **Uninterruptable Power Supply**
  - **Air conditioning**
- **Premises**
  - **Stair nosing**
  - **Tiles**
  - **Flooring**
- **Communications**
  - **CCTV**



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# tfl.gov.uk