



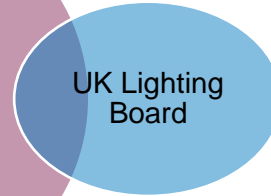
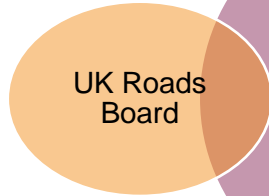
# *UK* Lighting Board



Chair, Lindsay McGregor BSc (Hons) CEng, MIET, MILP



# UK ROADS LIAISON GROUP



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Develop and promote best practice

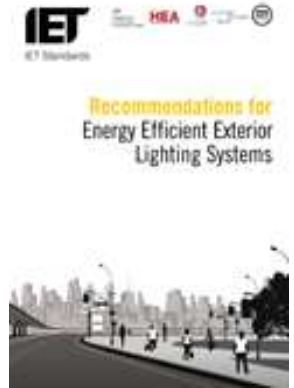
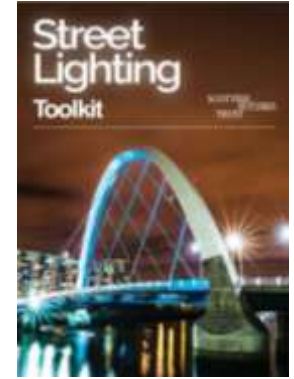
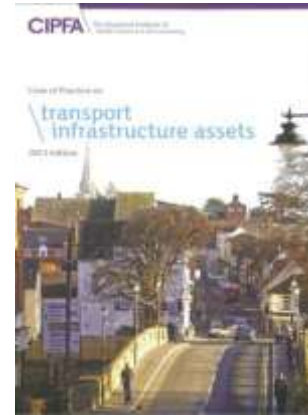
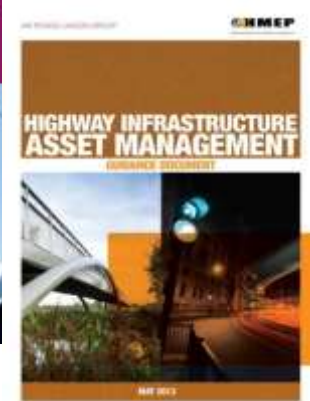
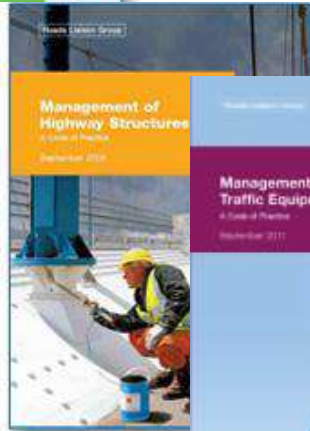
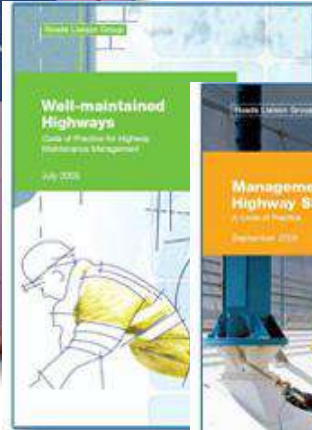
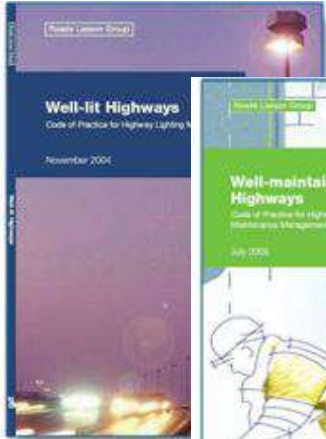


Be a source of advice to national governments, local authorities and professional bodies

Further the uptake of best practice bodies



# UK Lighting Board Guidance and Codes of Practice





# UKLightingBoard

## Principles of Reviewing the Codes

- Not a re-write
- Guidance is not mandatory and supports LHAs develop their policy. (If Codes and/or recommendations are not adopted evidence as to why should be provided)
- Align with and build on principles and recommendations in Going the Distance, Potholes Review, Transport Resilience Review, UKRLG Highway Infrastructure Asset Management (HIAM) Guidance and the NAO report.
- Risk based (outcomes not prescriptive)
- Evidence based through case studies
- Codes are aimed at practitioners
- Common style and feel for all Codes, aligning with HIAM Guidance

# UK Lighting Board

## Scope of the Review

### Areas for significant review

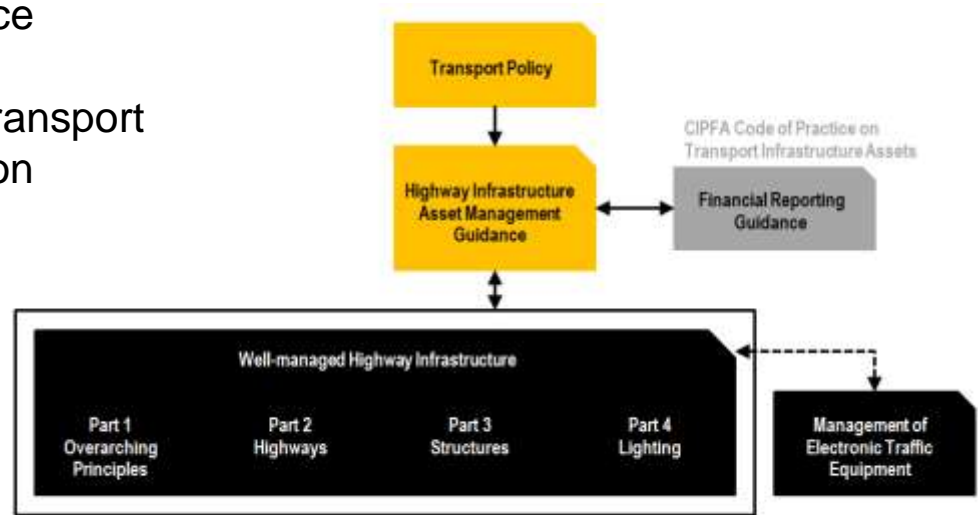
- Inspections
- Cyclical and periodic maintenance
- Response times
- Training and competency
- Design for maintenance
- Asset Inventory
- Invest to save

### Consider for removing from the Codes

- Funding arrangements
- Extensive sections on Asset Management
- Milestones approach

### New Areas for consideration

- Resilience
- BIM
- Active Transport
- Innovation



# UK Lighting Board

## Latest Update

- Version 2 of draft Code circulated for comment
- Previous Codes – 930 pages in total  
Revised Code – 236 pages
- Positive response by sector, over 600 comments received
- Additional guidance on risk based approach to be developed
- Final Code due in Summer 2016





# UKLighting Board

## Lobbying for a changes in Government Policy

Research Project; The Visual Amenity and Benefits of Illuminating Traffic Signs

Objectives - The high level objectives for the research project are to identify :-

- How, why, where and when sign lighting provides visual amenity for different types of road-user.
- What the correlation is between the optical science associated with sign lighting and laboratory tests that indicate the level of visual identification and driver interpretation of lit signs.
- To identify sufficient objective data to allow risk-based local decisions on sign lighting (in accordance with DMRB GD04) to determine the means of illumination for traffic signs in different circumstances.



# UK Lighting Board

## Raising Awareness

### Debate:

Should the requirements to illuminate traffic signs be removed in the interests of saving costs and reducing carbon consumption?

### Yes



**Lindsay McGregor**  
Associate director  
Scottish Futures Trust  
When the money has all gone it is time to stop spending. Many authorities are now simply unable to afford hundreds of pounds per traffic management to safely access a failed sign light.

So do we ask operatives to put themselves at risk and run out to the middle of the road with a ladder under one arm and a new lamp in the other? Of course we don't.

For years authorities have undertaken local risk assessments to decide if signs are sufficiently conspicuous without direct illumination, regardless of the regulations. Just look at the number of retroreflective 'Keep Left' boards, which local authorities have installed up and down the country.

The rhetoric is that regulations only call for signs which are safety critical to be directly illuminated. But we

currently have illuminated signs confirming we are driving the right way on a one way street, signs for part time restrictions which don't apply overnight, signs at good road closures - and all this in streets which benefit from street lighting.

There are 2.87M illuminated signs on our streets. Electrical energy consumption, CO<sub>2</sub> implications, electrical safety testing, lamp replacements and routine maintenance takes the bill for these up toward £100M per year. Is this all money well spent?

Local risk based decisions are the way forward, underpinning fundamental subsidiarity principles and strengthening local democracy. Arguing that local traffic authorities can't be trusted to apply their statutory functions in a responsible way is simply insulting.

The UKRLG plans to provide guidance to assist practitioners in taking their risk based decisions based on fact. Hopefully we will ultimately get to a position where we align with the rest of the world and only directly illuminate signs where there is a genuine need to do so.

### No



**Shirley Duminigan** MCHET  
Director, Midlands & Transport, WYG  
As an experienced transport planner and road safety auditor and someone who frequently drives a car in the hours of darkness I do not believe that removal of the requirements to illuminate traffic signs is advisable.

Not all traffic signs are required to be lit, however the ones that are required under the Traffic Signs Regulations and General Directions are warning, prohibition and restriction signs.

The importance of these signs should not be undermined by removing illumination. Providing illumination on signs makes them more visible and clear for drivers to see: surely this is a good thing on what are 'warning' signs.

The light switch off to reduce carbon emissions argument has not, to my mind, fully been reviewed in

terms of the safety impact. It has led to, however, an increase in collisions in certain areas.

Switching lights off can place urban areas in darkness which can disorientate drivers. In some cases an illuminated warning sign is the only visible indication that a driver is approaching an obstacle or hazard.

The removal of lighting will only put additional onus on maintenance activities and indeed the level of sign reflectiveness. In my opinion this is not a workable solution in the current climate with the limited local government funding and resource.

In terms of costs to the nation, the energy and infrastructure savings from removing illumination from signs must be weighed against the maintenance costs and more importantly the safety impact and costs.

I feel these factors will outweigh the cost savings of a switch off of illumination on traffic signs.

● What do you think? Is traffic sign illumination always necessary? Write to us at the address on page 16.

The UK has **2,667,158** illuminated traffic signs

- Annual Consumption **467 GWhrs** at an estimated cost of **£46.7M** (10p kWhr)

- Costs of Electricity over the 20 year life of the asset based on DECC medium line forecast is **£1.94b**.

- Annual CO<sub>2</sub> emission are **231,850 tCO<sub>2</sub>** and over the lifetime of the asset it's **4.6M tCO<sub>2</sub>**.

**ADEPT**  
ASSOCIATION OF DEVELOPMENT ENGINEERS  
TECHNICAL SOCIETY

# LIGHTING GROUP

Regional  
Representatives

## London

**London**  
Lindsay McGeer  
Surrey Futures Trust  
11-15 Theale Street,  
Barnhill,  
EPO 6CF  
Tel: 01753 618 087  
Mob: 02047711278/9  
Email: Lindsay.McGeer@surreyfuturestrust.org.uk

## West Midlands, Yorkshire and Wales

**West Midlands, Yorkshire and  
Wales**  
Mike Cunningham  
Worcestershire County Council  
Old Sodbroke Road,  
Worcester,  
CV35 9DP  
Tel: 01905 719648  
E-mail: mike.cunningham@worcestershire.gov.uk

## London, South East, South West, Wales, Yorkshire, North Yorkshire, and Devon Cornwall

**London, South East, South West,  
Wales, Yorkshire, North Yorkshire,  
and Devon Cornwall**  
City of Woking  
Cornwall County Council  
Ryder Road  
Cornwall  
Newquay  
TR10 5ZH  
Tel: 01472 527214  
E-mail: gordon@woking.gov.uk

## North East

**North East**  
Jon Colveridge  
Transport NI  
Cameron Court,  
10-15 Adelaide Street,  
Belfast,  
BT2 8DE  
Tel: 028 904 9847  
Mob: 0770048212  
Email: jon.colveridge@ni.gov.uk

## West Midlands, North West, Yorkshire, South West, London, and Birmingham, South, Coventry

**West Midlands, North West, Yorkshire,  
South West, London, and  
Birmingham, South, Coventry**  
Mik Hanwood  
Dudley MBC  
Lunar Road  
Dudley,  
DY2 6UT  
Tel: 0121 810022  
Mob: 07766 27079  
E-mail: michy.hanwood@dudley.gov.uk

## London

**London**  
Dave Frank  
Westminster City Council  
100, Piccadilly, City Hall  
18, Victoria Street,  
20218 RCP  
Tel: 020 7471 2649  
Mob: 07799 410000  
E-mail: dfrank@westminster.gov.uk

## Devon, Cornwall, Durham, North Yorkshire and Tyne & Wear

**Devon, Cornwall, Durham,  
North Yorkshire and Tyne & Wear**  
Dariusz Hubalard  
Street Lighting Manager  
Durham County Council  
County Hall  
DH1 1UG  
Tel: 0191 266113  
E-mail: Dariusz.Hubalard@durham.gov.uk

## London, (NW 11 & NW) Midlands, North Yorkshire, Lancashire, North Yorkshire, Nottingham City & Derby City

**London, (NW 11 & NW) Midlands,  
North Yorkshire, Lancashire,  
North Yorkshire, Nottingham City &  
Derby City**  
Stan Hill  
Lincolnshire County Council  
Rotherham Mill North  
LINDHAM LN1 1Y7  
Tel: 01509 556  
E-mail: stan.hill@lincolnshire.gov.uk

## East Devon, Hampshire, Isle of Wight, East Sussex, West Sussex, Kent, Essex, Gloucestershire, Derbyshire and Cheshire

**East Devon, Hampshire, Isle  
of Wight, East Sussex, West  
Sussex, Kent, Essex, Gloucestershire,  
Derbyshire and Cheshire**  
Sue Kiddle  
Kant County Council  
Aston Highway Depot  
JANBY WAY  
Ayrton  
Surrey  
TN24 5AD  
Tel: 01253 44487  
Mob: 07748657193  
E-mail: sue.kiddle@kent.gov.uk

## Leeds, Bradford, Yorkshire, Cumbria, Cumbria, Northumbria, Shropshire, Shropshire, Gloucester North Yorkshire, East Riding of Yorkshire, Derbyshire

**Leeds, Bradford, Yorkshire,  
Cumbria, Cumbria, Northumbria,  
Shropshire, Shropshire, Gloucester North  
Yorkshire, East Riding of Yorkshire,  
Derbyshire**  
Ian Moore  
Street Lighting PPI Manager  
City Development Dept.  
Leeds City Council  
Tel: 0113 262 3122  
E-mail: ian.moore@leeds.gov.uk

## East & North East England, Devon, Cumbria, Gloucestershire, South Yorkshire, Shropshire, Shropshire, and Yorkshire

**East & North East England, Devon,  
Cumbria, Gloucestershire, South  
Yorkshire, Shropshire, Shropshire,  
and Yorkshire**  
Karl Pitt  
Street Lighting Manager/  
Gloucestershire County Council  
Route 5, Blandford Square  
CV99 4JZ  
COVENTRY  
CV1 2TH  
Tel: 0247 85343  
E-mail: karl.pitt@gloucestershire.gov.uk

## Other Group Members

**Chair**  
Dave Johnson  
Highways Manager  
Transport for London  
107 Southwark Road  
London  
SE1 1SU  
Tel: 020 7096 1710  
E-mail: dave.johnson@tfl.gov.uk

## Vice Chair

**Shah Rabbani (Group Secretary)**  
Technical Services Manager  
Institution of Lighting Professionals  
Regent House  
Regent Place  
Rugby  
CV21 3JH  
Tel: 07468 82066 E-  
mail: shah@ilp.org.uk

**Stuart Langley**  
Intelligent Transport Systems Group  
Highways Agency  
Temple Quay House, 2 The Square  
Temple Quay  
BRISTOL  
BS1 6NA  
Tel: +44 (0) 117 370491  
E-mail: Stuart.Langley@highways.gov.uk

UK ROADS LIAISON GROUP

# Street Lighting Energy Efficiency Toolkit

SCOTTISH  
FUTURES  
TRUST



## Street Lighting Energy Efficiency Toolkit Launch

16<sup>th</sup> February 2015

# What the Toolkit can do ?



- ☀️ **Regime and Charge Codes** used to calculate consumption figures
- ☀️ Toolkit allows for **different Technical solutions** to be run, **compared and optimised**
- ☀️ Technical model will include **up to date** equipment **information** from the recent Scotland **excel material contract**
- ☀️ Costs for complete **column replacement, sleeving and gear Tray conversion** options have been included.
- ☀️ Financial model allows **phased technical solutions** and investment over a number of years

# Typical inventory supplied to Host Electricity Company

Regime Code	Charge Code	No. Items	Charge Code Description	Manufacturers Description	Regime Code Description
808	1100351000100	32	Low Pressu Standard		Electronic PEC 35/18
808	1100352000100	138	Low Pressu Low Loss		Electronic PEC 35/18
808	1100551000100	6,367	Low Pressu Standard		Electronic PEC 35/18
808	1100552000100	9,312	Low Pressu Low Loss		Electronic PEC 35/18
808	1100902000100	3,240	Low Pressu Low Loss		Electronic PEC 35/18
808	1101352000100	1,724	Low Pressu Low Loss		Electronic PEC 35/18
808	1400701000100	4,764	High Pressu Standard		Electronic PEC 35/18
808	1400702000100	50	High Pressu Low Loss		Electronic PEC 35/18
808	1400705000100	123	High Pressu Zodion ZEBA 70		Electronic PEC 35/18
808	1401001000100	116	High Pressu Standard		Electronic PEC 35/18
808	1401501000100	424	High Pressu Standard		Electronic PEC 35/18
808	1401502000100	5	High Pressu Low Loss		Electronic PEC 35/18
808	1401505000100	55	High Pressu V150SSB255V150SSC255 150W Ballast		Electronic PEC 35/18
808	1402501000100	1,695	High Pressu Standard		Electronic PEC 35/18
808	1402502000100	555	High Pressu Low Loss		Electronic PEC 35/18
808	1402505000100	3,000	High Pressu JW-12-035 250WHPS		Electronic PEC 35/18
808	1404001000100	110	High Pressu Standard		Electronic PEC 35/18
808	2800455000100	91	Cosmopolis HID-PV 45/S CPO White		Electronic PEC 35/18
808	2800605000100	262	Cosmopolis HID-PV 60/S CPO White		Electronic PEC 35/18

# The key calculation

## Data from Elexon



## ANNUAL COST

$$(W \times \text{hours} = \text{kWh}) \times p/\text{kWh} = \text{£}$$

# Example Replacement

## SOX Lantern LED Equivalent Lantern

135w	→	60w
90w	→	45w
55w	→	24w
35w	→	18w



## SON Lantern LED Equivalent

400w	→	180w
250w	→	100w
150w	→	69w
100w	→	40w
70w	→	35w



## Fluorescent Lanterns LED Equivalent

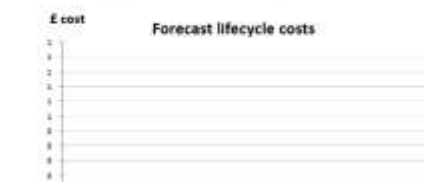
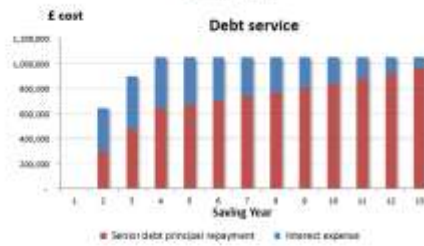
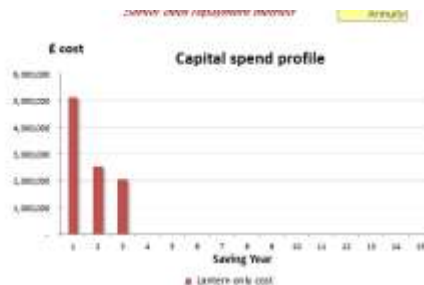
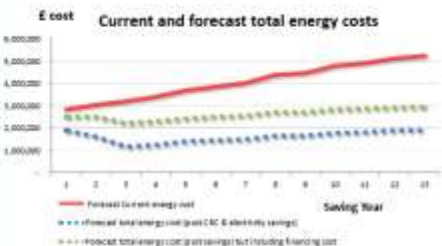
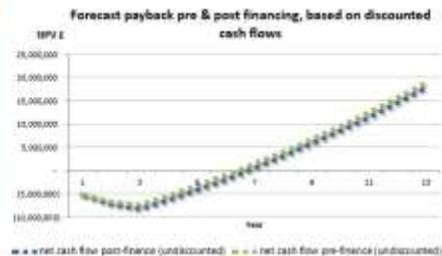
36w PLL	→	20w
42w PLT	→	20w
55w PLL	→	24w

# Financial Summary

KEY OUTPUTS	Total	Unit
<b>Capital related</b>		
Lantern only cost	9,736,786	£
Lantern & column costs	9,736,786	£
Lantern, column & sleeve costs	9,736,786	£
Lantern, column, sleeve & CMS	9,736,786	£
Fundable debt level from savings	22,785,703	£
Capital funding (if applicable)	-	£
Total CO2 emission over life of Abatement cost	80,913	tonnes
Absentee cost	121	£ per annum
<b>Savings passed centrally</b>		
Year 1 savings to be received by	-	£
Total savings to Council over	-	£

TOTAL AND YEAR 1 PROJECT C&F	Total	Unit	Year 1
Length of operations	10	years	
Length of project inc. construction timescale	13	years	
Value of Electricity saving (cost)	24,389,893	£	682,200
DFC annual savings (cost)	2,587,335	£	89,827
Forecast maintenance (cost)	4,887,375	£	274,828
Forecast Council (cost) saving	-	£	-
Forecast lifecycle expenditure	-	£	-
<b>Total savings</b>	<b>31,974,333</b>	<b>£</b>	<b>942,955</b>
Service debt principal repayment	19,736,786	£	(299,796)
Interest expense	(2,363,312)	£	(84,472)
<b>Net operational savings £</b>	<b>10,874,235</b>	<b>£</b>	<b>239,237</b>
<b>Current forecast energy cost</b>	<b>£2,652,861</b>	<b>£</b>	<b>£268,889</b>
<b>% energy saving</b>	<b>68.45%</b>		<b>32.46%</b>
Payback period (post-financing)	13	years	
Payback period (pre-financing)	6	years	
<b>Overall Net present value of NPV/Capital use</b>	<b>£1,015,391</b>	<b>£</b>	

ECONOMIC ASSUMPTIONS	Input	Unit
Financial forecast start date	01 Jan 14	date
First financial year	3714	year #
Months per model period	12	months
Financial year end month number	12	month #
Month end date from when savings start to be made	31 Dec 14	date
Length of project inc. construction timescale	13	years





# Key Financial Observations

- ☀️ DECC Electricity costs forecast still expect prices to double in 10 years.
- ☀️ Total cost reduced by c.50-65% by converting to LED.
  - ☀️ CRC savings - 5-10%
  - ☀️ O&M Savings – 10-20%
  - ☀️ Electricity savings – 70-80%
- ☀️ Scottish Councils have Investment plans of £187m over the next 6 years and rising
- ☀️ Typical payback 5-6 years pre-finance, 6-7 years post-finance.
- ☀️ Current energy cost profile - Top 5 lanterns - 60-70%, Top 10 Lanterns – 90%+ of.
- ☀️ Overall: c.£200m investment will deliver c.£864m savings after financing costs

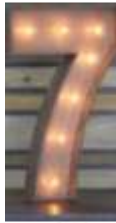


**An Investment tidal wave is coming!**

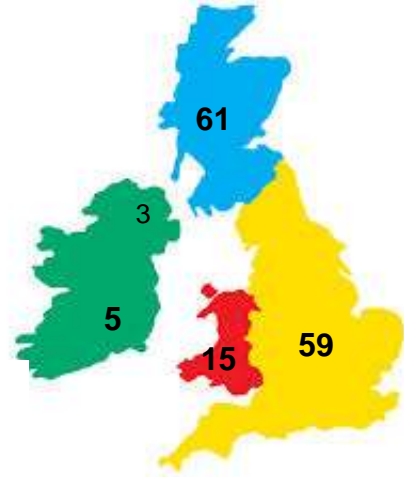


Chartered Institute of  
Highways and  
Transportation  
Annual Awards Dinner  
9<sup>th</sup> June 2015

# What's been happening in the last 12 months?



Department of Energy & Climate Change



## AROUND the WORLD



190 Free download requests

# What has the Toolkit been used for ?



13,674,738

=



=



1,200

=



10,000



113,000

# Also used to identify Scotland wide Opportunities



40,000



£300m



740,000

**Annual Savings**

=



=



£21m

**Savings over 20 Years**

=

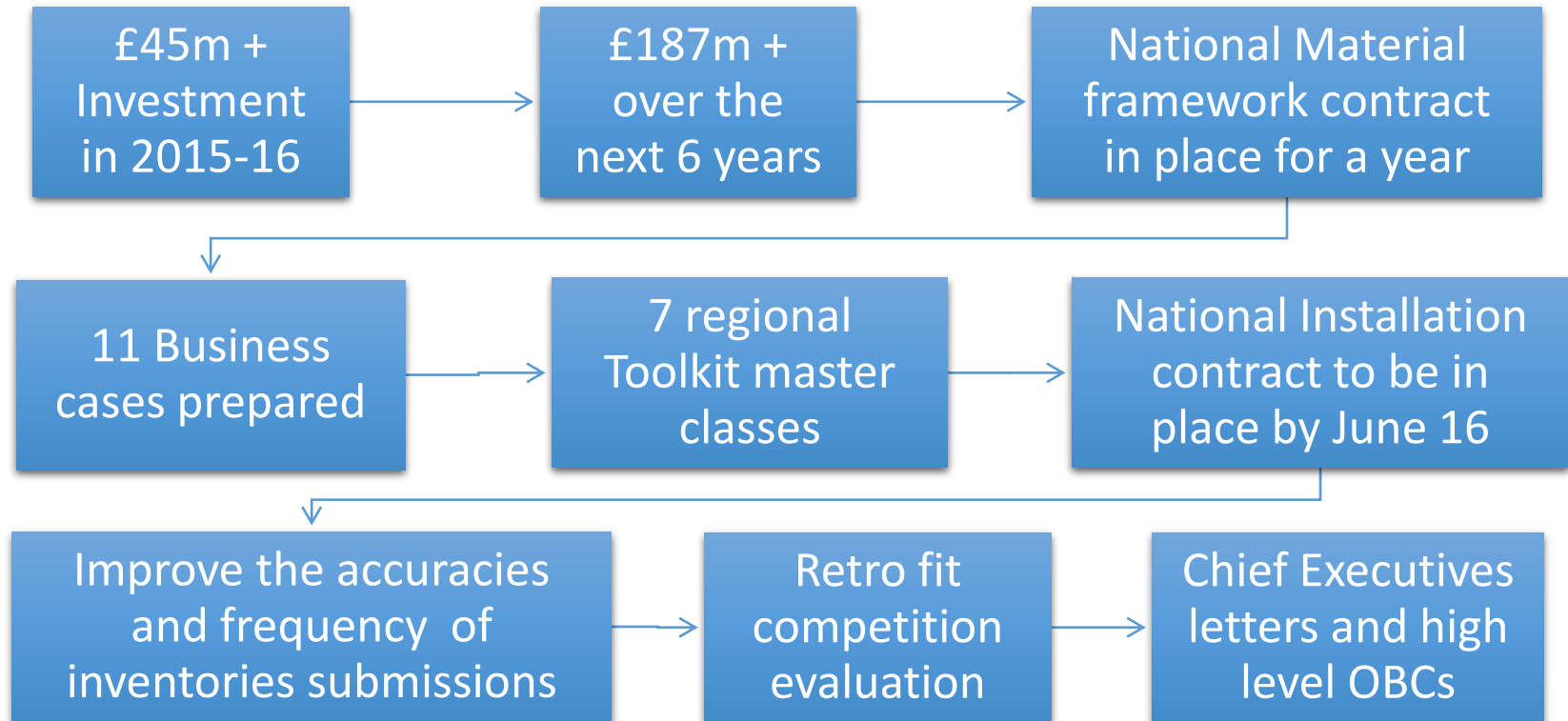


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£864m post finance

# Where are we now and next steps



# Contact Details

Lindsay McGregor BSc (Hons) CEng, MIET, MILP

Email: [lindsay.mcgregor@scottishfuturestrust.org.uk](mailto:lindsay.mcgregor@scottishfuturestrust.org.uk)

Mobile: 07711 373 618



**Note: The Street Lighting Toolkit is available as a free download by contacting the Scottish Futures Web site at [www.scottishfuturestrust.org.uk](http://www.scottishfuturestrust.org.uk)**