



# **ADEPT SMART PLACES LIVE LABS PROGRAMME**

Giles Perkins, WSP Head of Future Mobility & Programme Director

*1<sup>st</sup> October 2019*

## Industry's contextual challenges

Today... tomorrow...

- Potholes
- Surface water
- Resilience
- Renewals
- Capacity
- Air quality
- Congestion
- Safety
- Poor satisfaction
- Growing £ cost

...early 2020s onwards

- Electrification
- Digitisation & data
- Connected & Automated
- New materials
- Pre-fabrication
- Satisfied users
- New players / partners
- New business models
- Reducing £ cost
- ...?

## Highway technology realities

- Media hype
- Vehicle focus
- Outcomes / impacts missing
- Day to day realities missing
- Resources & skills scarce
- Ongoing funding challenges
- Trajectories to change?
- How can we influence it?
- How can we be 'Future Ready'

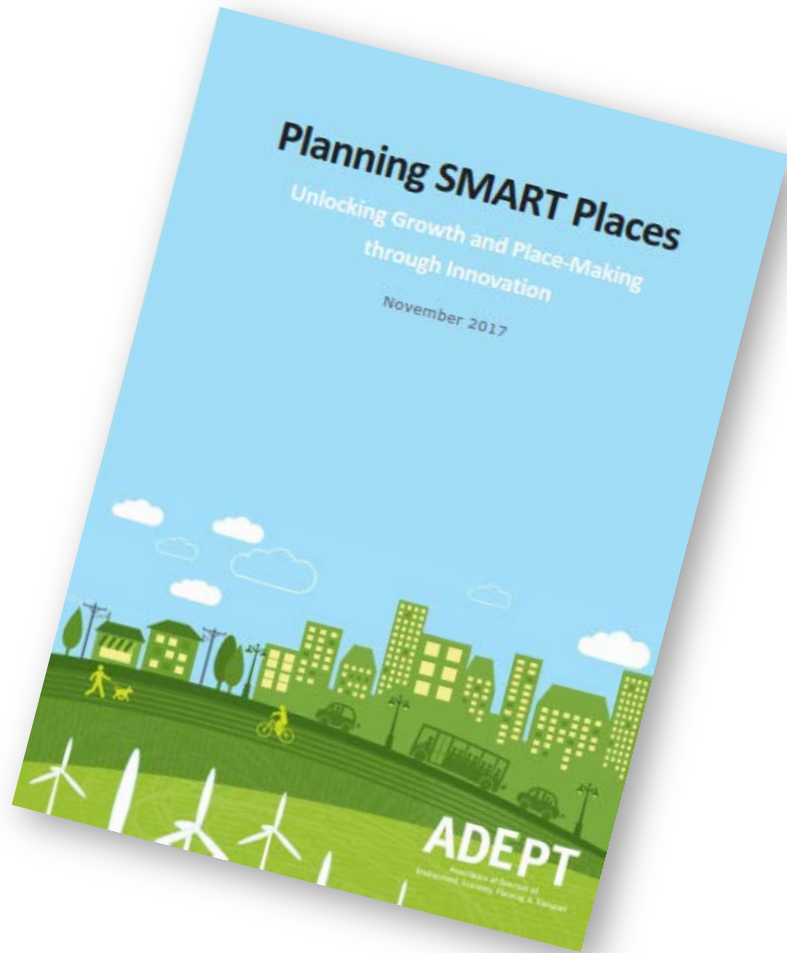


## Focusing on the outcomes

- **Not using technology for the sake of it**
- Improving asset & service efficiency
- Improving safety & security
- Customer / user centric experience
- Reducing congestion & pollution
- Balancing choice, demand & supply
- Facilitating sustainable development
- Maximising capacity, improving reliability & resilience
- Enabling seamless, equitable, access and connectivity
- Enabling economic growth & productivity



# ADEPT enabling research

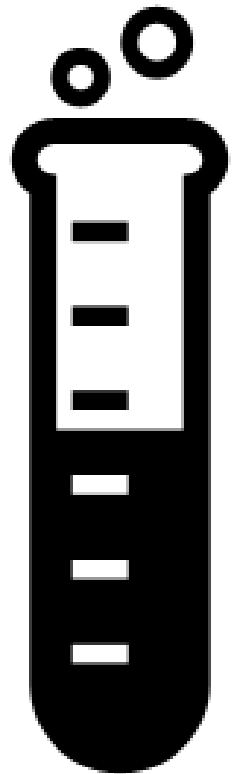


## Smart Places research

- **Phase 1:** What is meant by SMART Places / Highways, what opportunities exist & explored best practice (**What**)
- **Phase 2:** Why is best practice not mainstream practice, what needs to change, and priorities for action (**Why**)
- **Phase 3:** Ongoing financial support from the project sponsors:

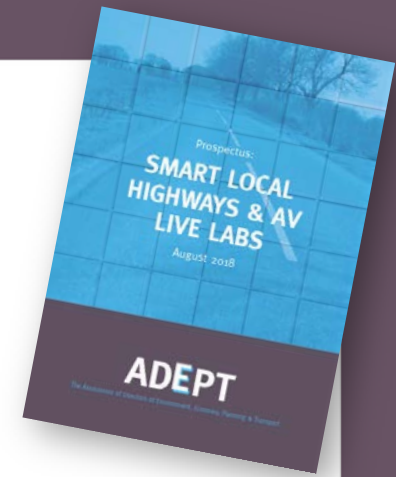
**DfT, Ringway, Atkins, Kier, O2, WSP and EY (How)**

- *Getting to grips with data*
  - ***Running highways and AV 'live labs'***
  - *A knowledge hub 'aggregator'*
- **The aim, to achieve a step-change, quickly**



## Smart Local Highways and AV live lab

- Development of 'live lab' application(s) at scale
- New settlements, suburbs & towns
- Innovative solutions to achieve step change performance of local highway assets & network
- Encompass materials, production methods, communications & energy latest thinking
- Support future changes and network usage e.g. EVs and CAVs
- Spans all use cases (passengers and freight)
- Supported by DfT and private sector partners
- **Smart Materials, Communications, Energy & Mobility**
- **Workshops, prospectus & agile competition**



# SMART Places Live Labs Competition

- 28 bids received from 35 ADEPT members
- Large geography: Cumbria to Kent / Dorset to Suffolk
- Term maintenance, academic, industrial, consultant, SME and international partners
- Innovation covering (Smart) Materials, Communications, Energy & Mobility, singularly and in combination
- 10 short listed to the Dragons' Den
- **8 successful bids, £23m secured**



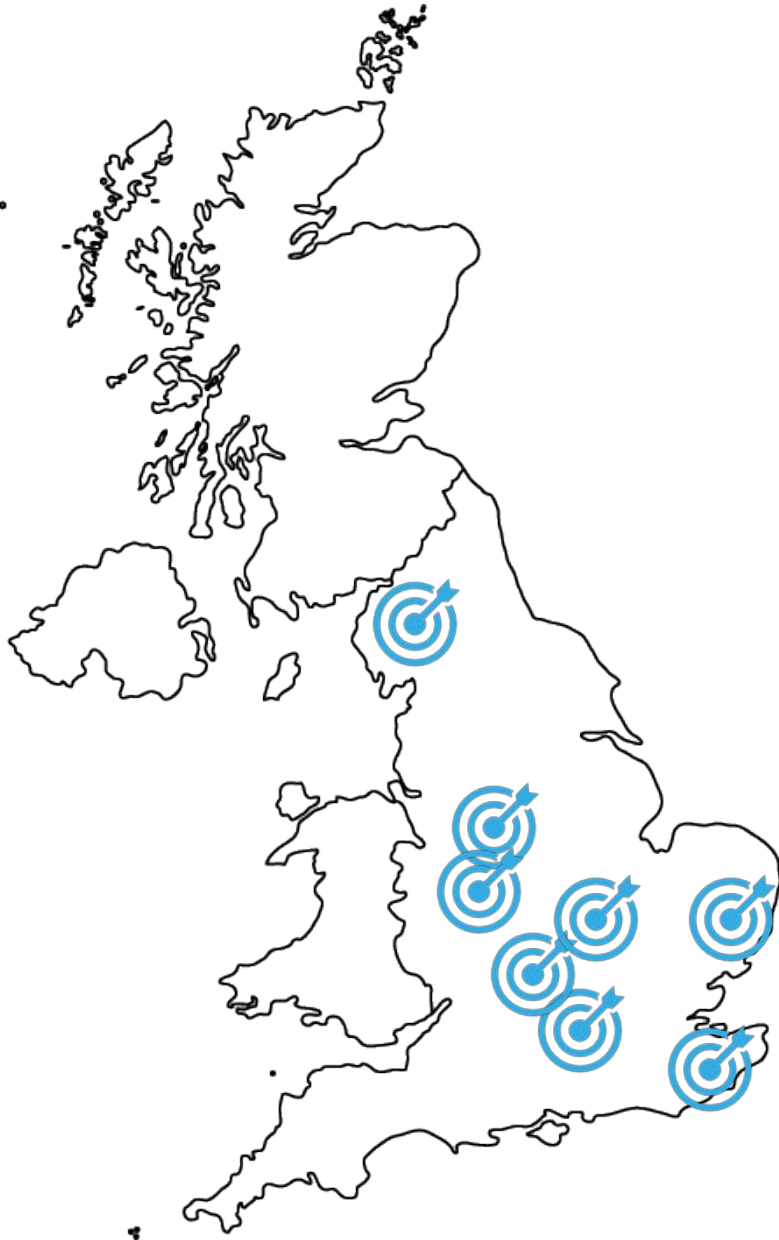


***“Today’s trials will see how new technologies work in the real world to ensure our roads are built for the 21st century.”***

***Rt. Hon Chris Grayling MP  
(then) Transport Secretary***

***Jan 2019***

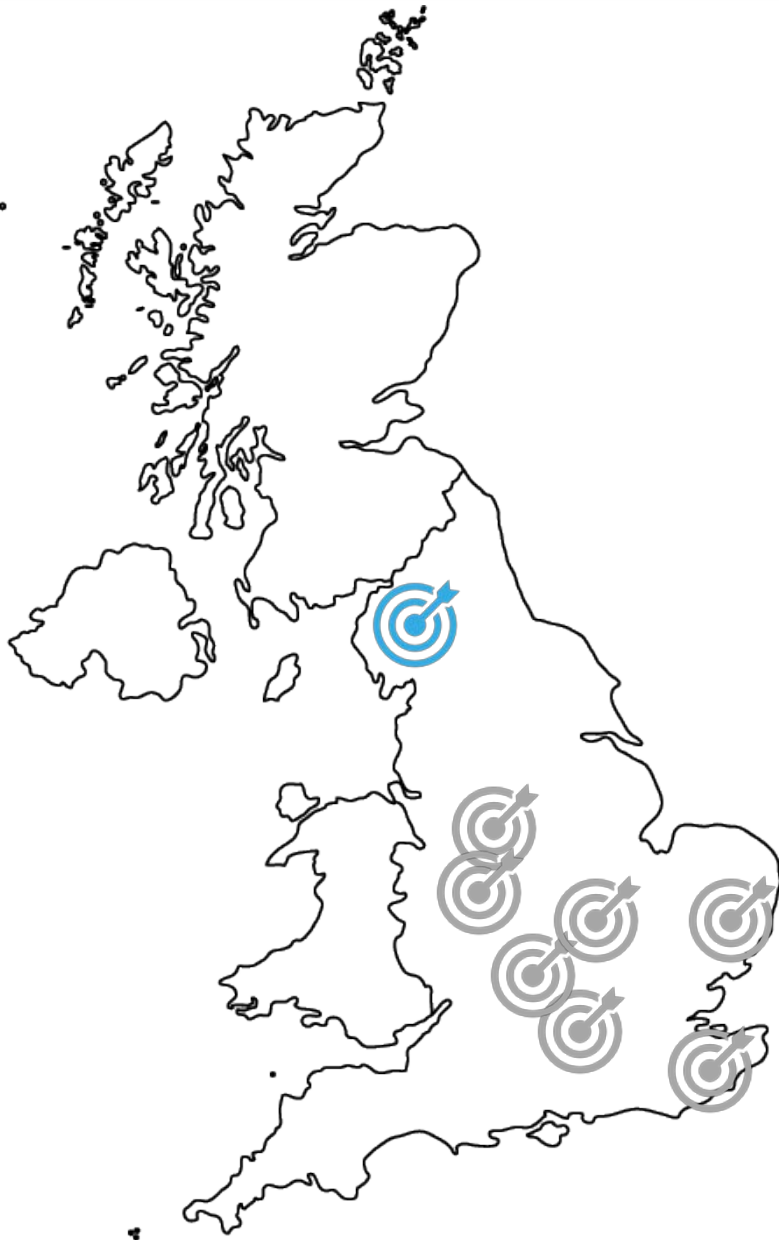




# ADEPT **LIVELABS**

- Cumbria
- Staffordshire
- Solihull & Birmingham
- Central Bedfordshire
- Buckinghamshire
- Reading
- Suffolk
- Kent

<https://www.adeptnet.org.uk/livelabs>  
@ADEPTLiveLabs

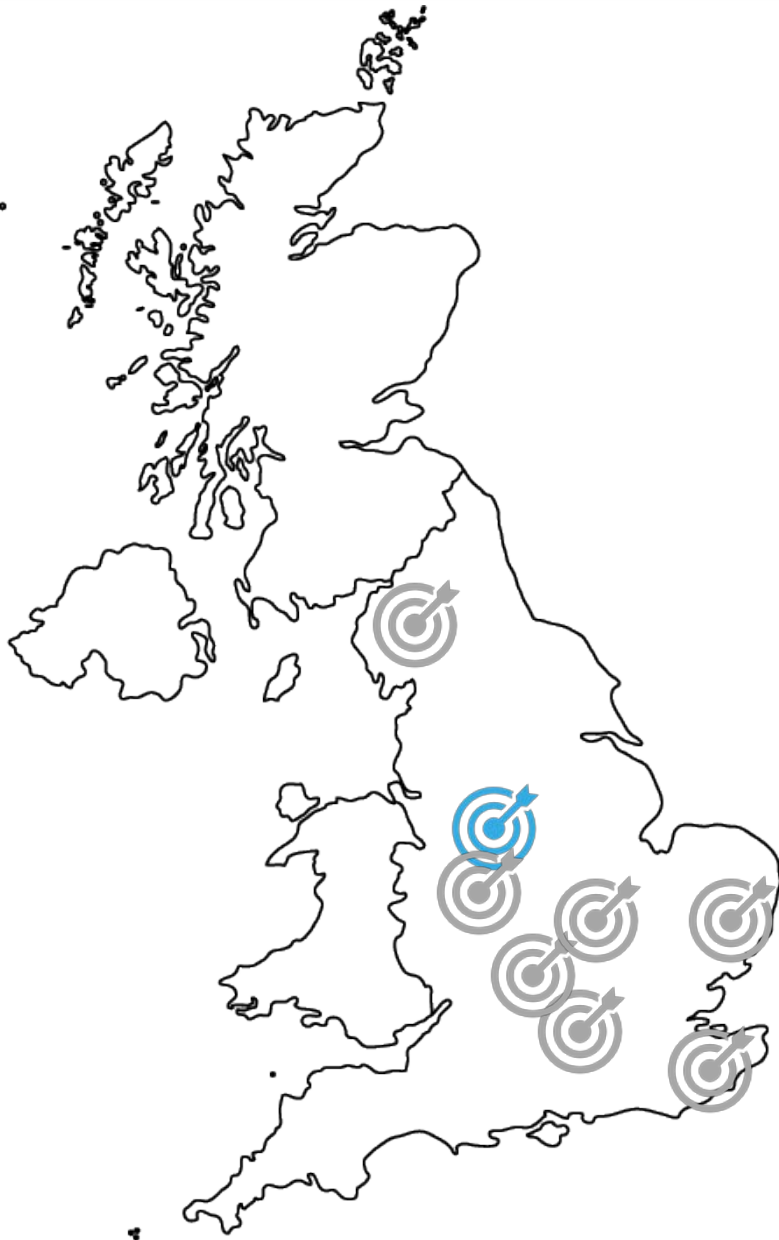


## Cumbria £1.6m

- At scale testing / trialling using single use recycled plastic in highway re-surfacing
- Integration with local waste and highways functionality
- Utilising existing production facilities
- Publication of guidance for wider selection and use

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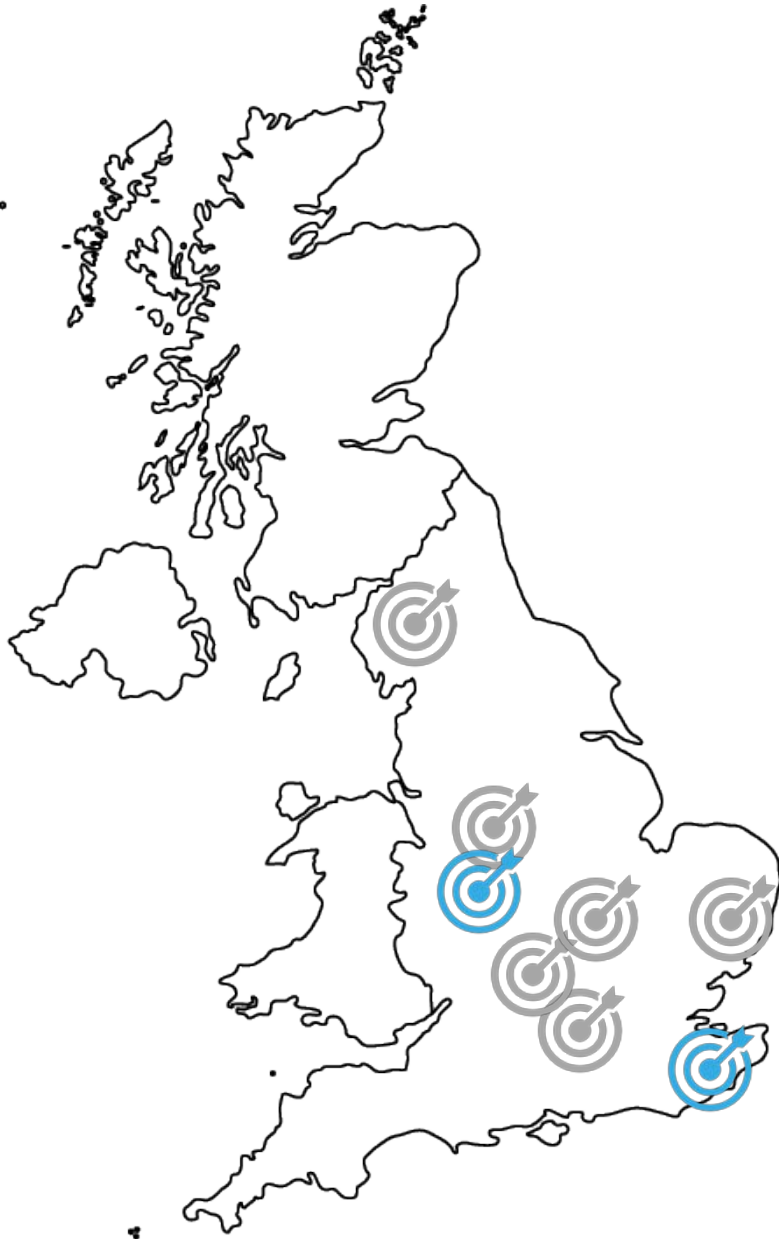


## Staffs £3.95m shared with Kent)

- Development, testing and demonstration of Smart infra. and its interaction with new service propositions, CAVs and people and alternative fuels
- Establishment of a new control centre to act as an asset manager and data broker
- Integration with the deployment of sensors across campus, road and energy networks
- Provision of a 'base-line' of interconnectivity, information and data collection capability, which can be leveraged by users looking to test new technology and services

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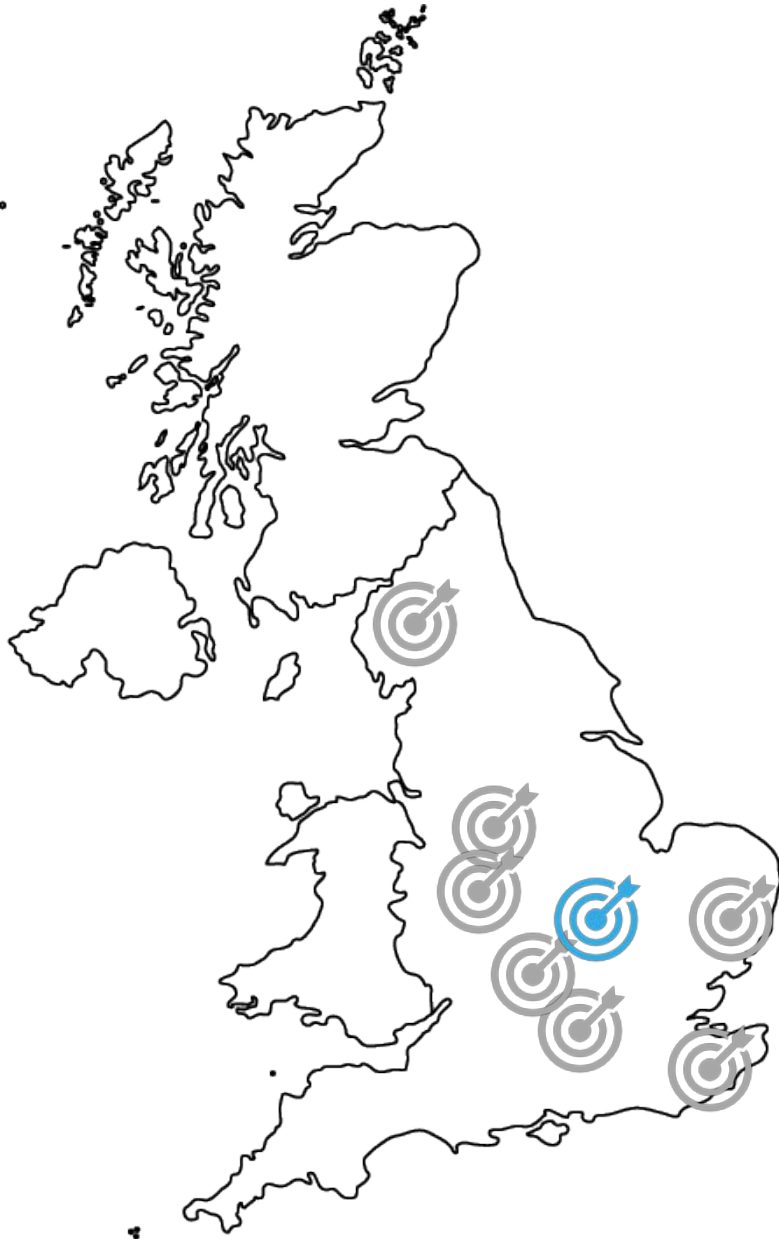


## Solihull & Birmingham £2.65m

- Video analytics in 10 selected local road corridors to collect, analyse and model movement
- Calculation of point to point vehicle journey times during different times
- ANPR recognition + other features and colours e.g. logistics company brands
- Analytics through to push messaging via existing apps to message to target user segments
- Human behaviour using ethnographic and market research

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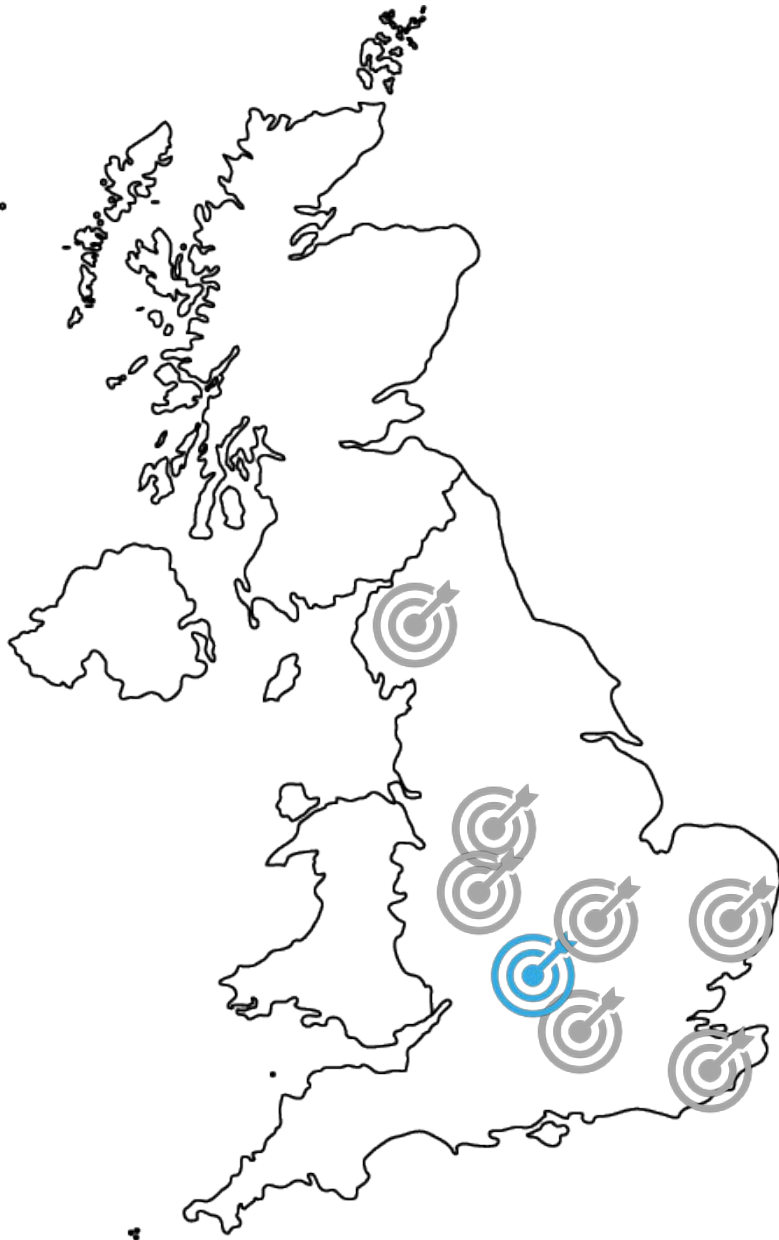


## Central Bedfordshire £1.05m

- Footway re-surfacing with a material containing solar power capability as a trial for creating and storing energy
- Installation of new footway materials in using a surface course with solar or kinetic power capability.
- Installation of 'Power Road' solution to power infrastructure and as a de-icing solution in sub-zero weather conditions.

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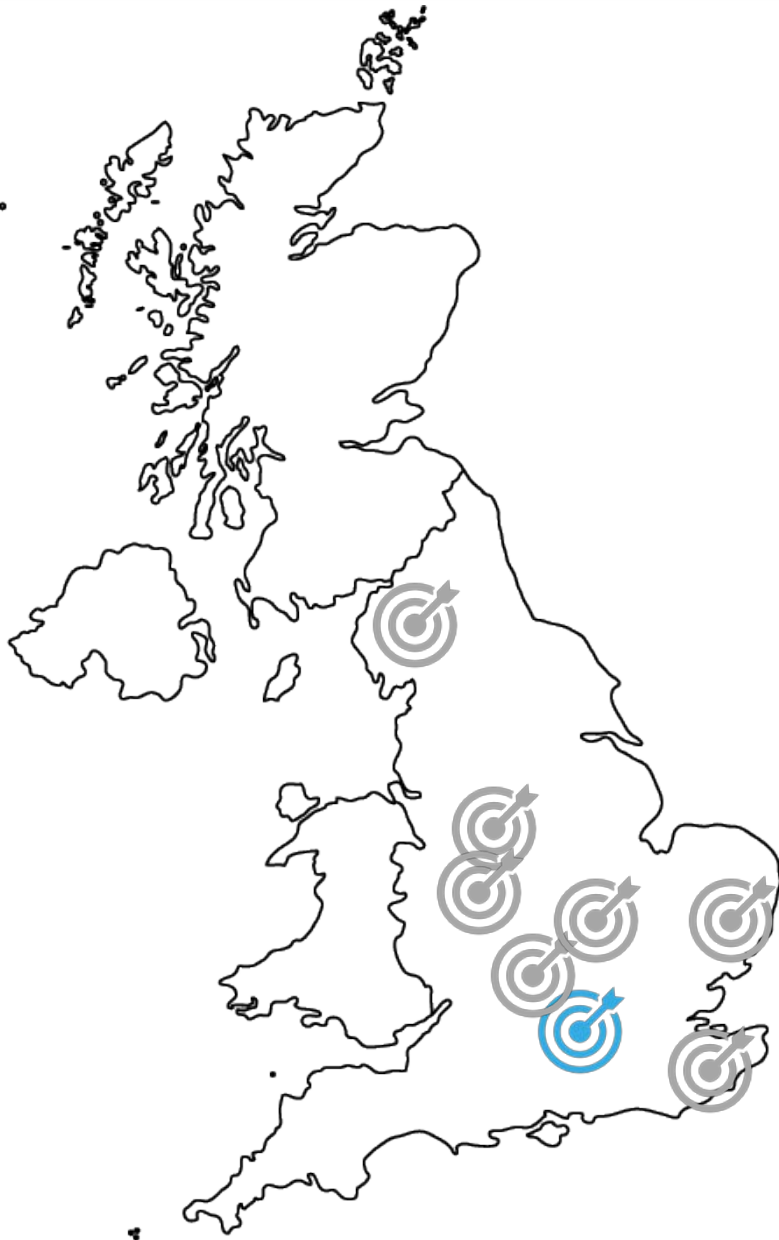


## Buckinghamshire £4.49m

- Development of Illuminated Data Access Points (iDAP): 170 recycled, composite, data / sensor / light / EV etc.
- Smart Communications using iDAPs and Central Management Systems for air quality, temperature, gullies, etc.
- Road / pavement energy generation, kinetic, solar and wind + storage and charging
- Integration with AMEY AV pod proposal + 10 hire eBikes
- Future ready provision for 5G and EV

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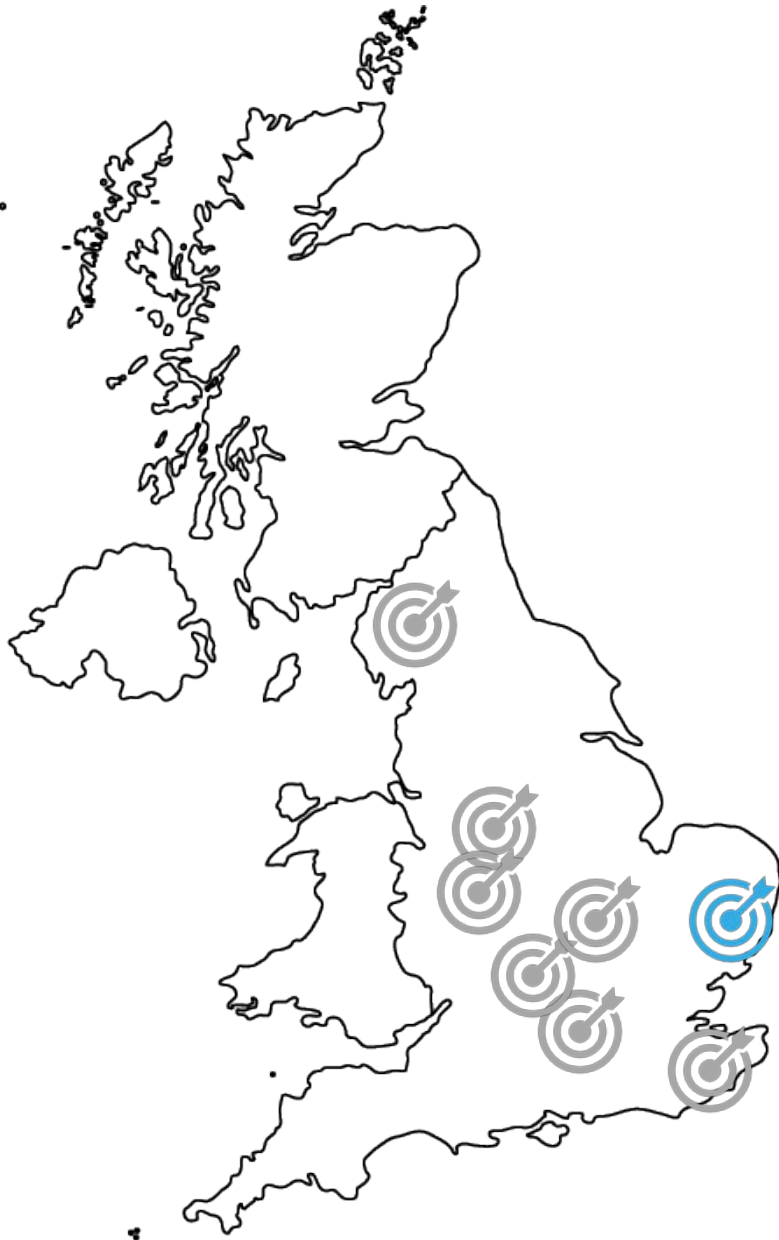


## Reading £4.75m

- Utilisation of existing infra. and smart coms tech. and data from Intelligent Mobility partners
- Existing sources of data from traffic signal detectors and Bluetooth journey time units will be fused with mobility data from O2 and traffic signal data
- Live data will be fused with the current transport network data to derive a multi-modal view of real time movement across the Thames Valley
- The real time and historical data will inform transport, environment and planning
- Projects throughout Thames Valley

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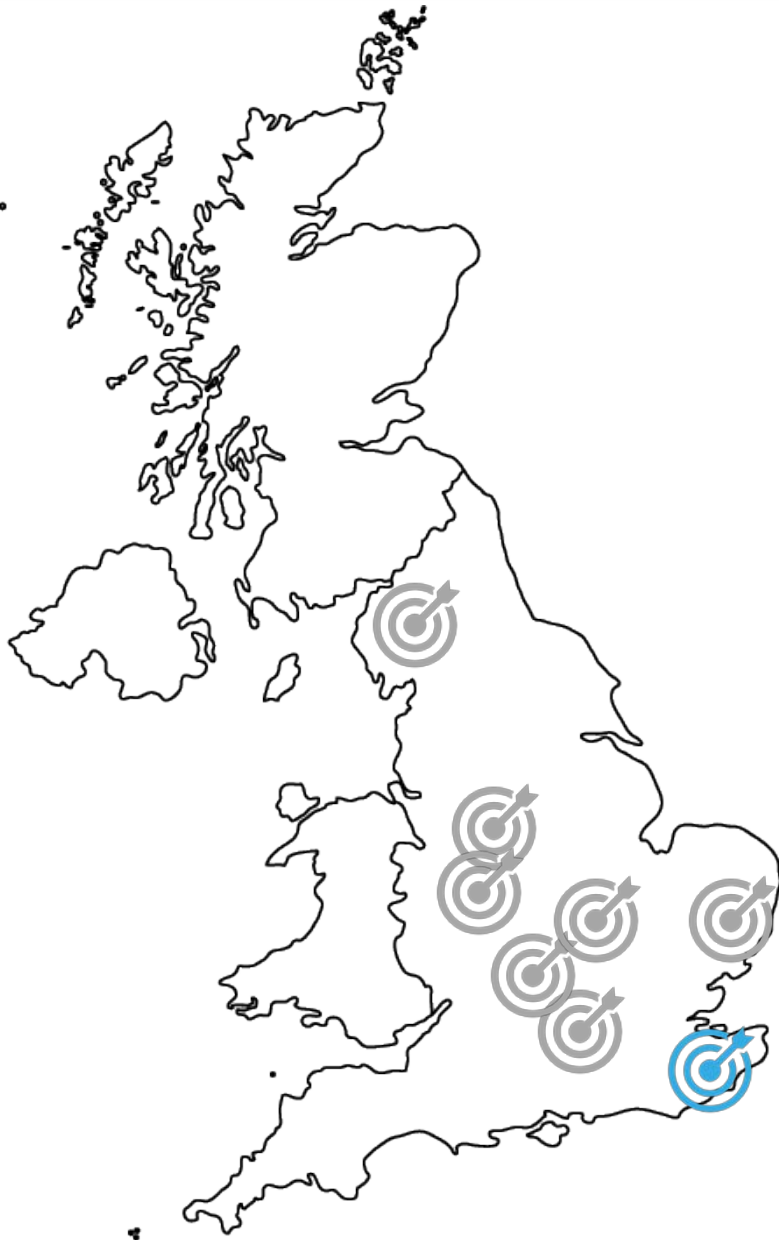


## Suffolk £4.41m

- Development of renewable energy in rural environments
- Development of sensor ready and future-proof Infrastructure
- Integration with existing and emerging communication networks
- Management hub for sensor data & sensors
- Lighting, environment, gillies, assets, adult & social care, estate

<https://www.adeptnet.org.uk/livelabs>

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## Kent £3.95m (shared with Staffs)

- Development of an Asset Management Control Hub - SAMMS, Drainage and Winter sensors
- SAMMS Capability to predict areas of high risk terrain degradation whereby transport, energy and urban systems will be disrupted
- SmartDrainage is the second sensor based service that will be feeding back into the control hub
- SmartWinter installing 120 road surface sensors to feed the hub temperature sensors (RST)
- Late-stage SME smart technology scale up

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## Your local context

- Live Labs are 'open source' for all
- Learning from Live Labs innovation
- Active engagement and import of ideas
- Applicability to local needs / challenges – now and in the future
- Practical application at scale
- Identifying benefits
- Change within context of 'Future Mobility'
- Engage, learning and capitalise



**ADEPT** **LIVELABS**

**ADEPT**  
Association of Directors of  
Environment, Economy, Planning & Transport

  
Department  
for Transport

  
**SNC • LAVALIN**

**ATKINS**  
Member of the SNC-Lavalin Group

  
**EY**

  
**KIER**

**O<sub>2</sub>**

  
**RINGWAY**



**Giles Perkins, WSP Head of Future  
Mobility & Programme Director**

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# ASPE - Highways and Streetlighting Advisory Group

Is Your Council Getting Best Value From Your UMS Provider?  
Delivered by Mike Chan - Beond Group

1/10/19

# About Beond



## Our Business:

Beond is a multi-award winning consultancy that offers bespoke procurement software for energy tendering

## Awards:

Energy Broker of the Year (twice), Best Advisor, Best Green Business, Finance Business of the Year

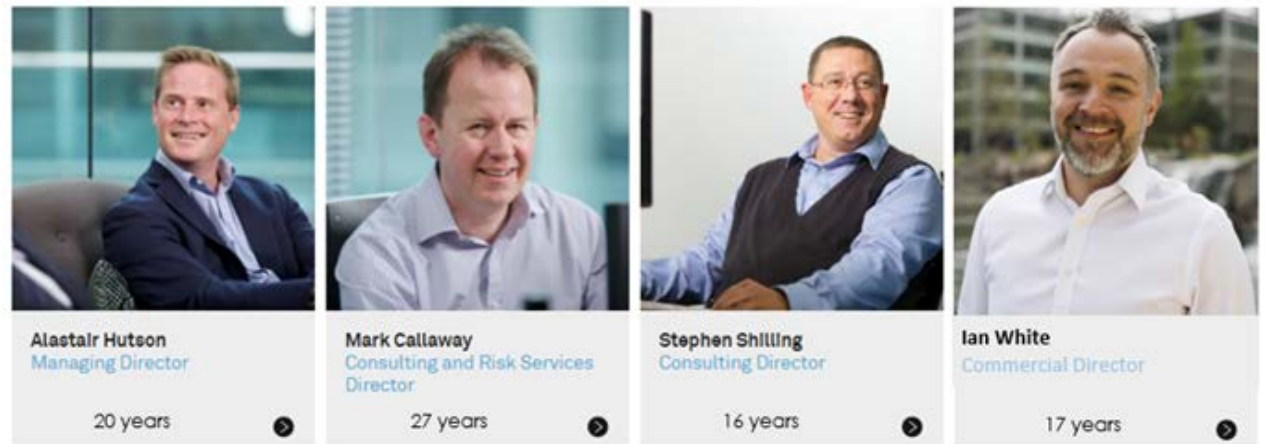
## Our History:

Beond was founded in 1999 when it developed the first ever online commercial energy Reverse eAuction platform

## Our People:

Beond's team is made up of experts with experience gained from:

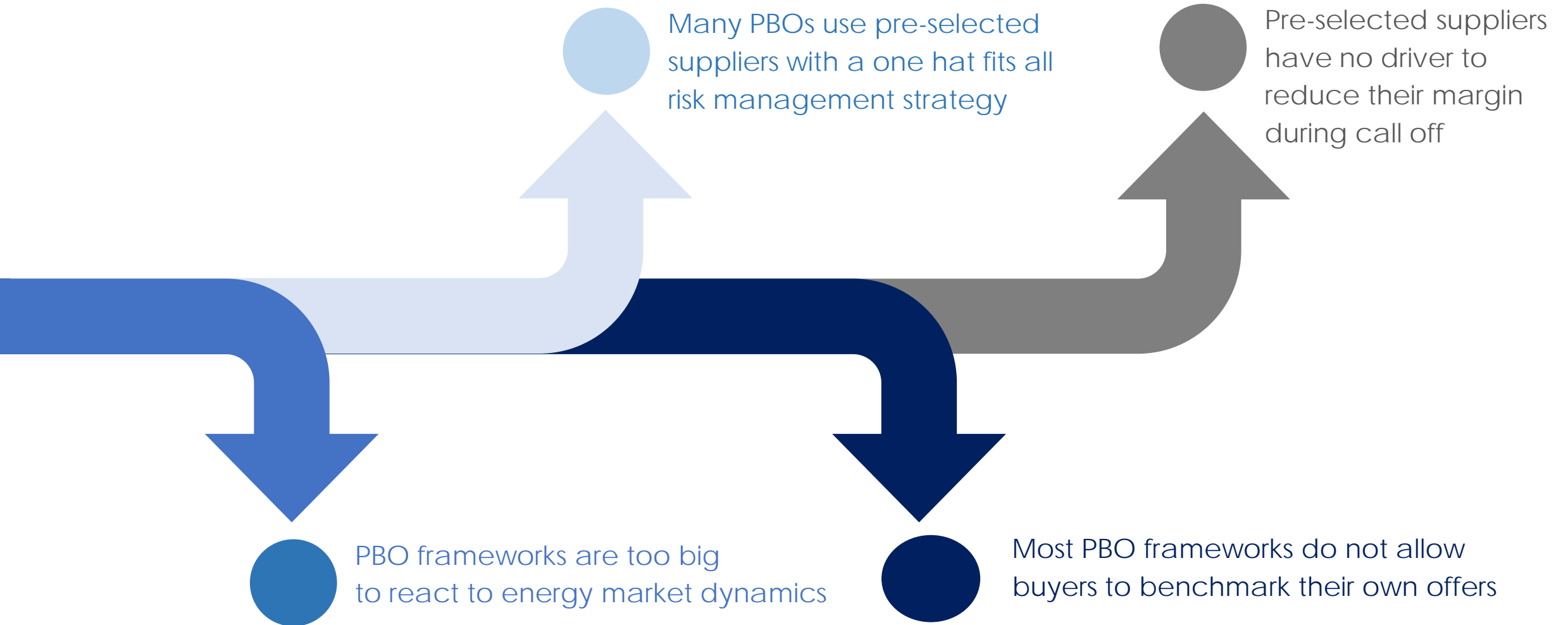
- Working for energy suppliers
- Financial services and risk management
- Oil and gas trading
- Training energy suppliers
- Software development
- Public sector procurement



# Energy Procurement Review

Beond

Since deregulations most authorities have used Public Buying Organisations (PBOs) to procure energy contracts





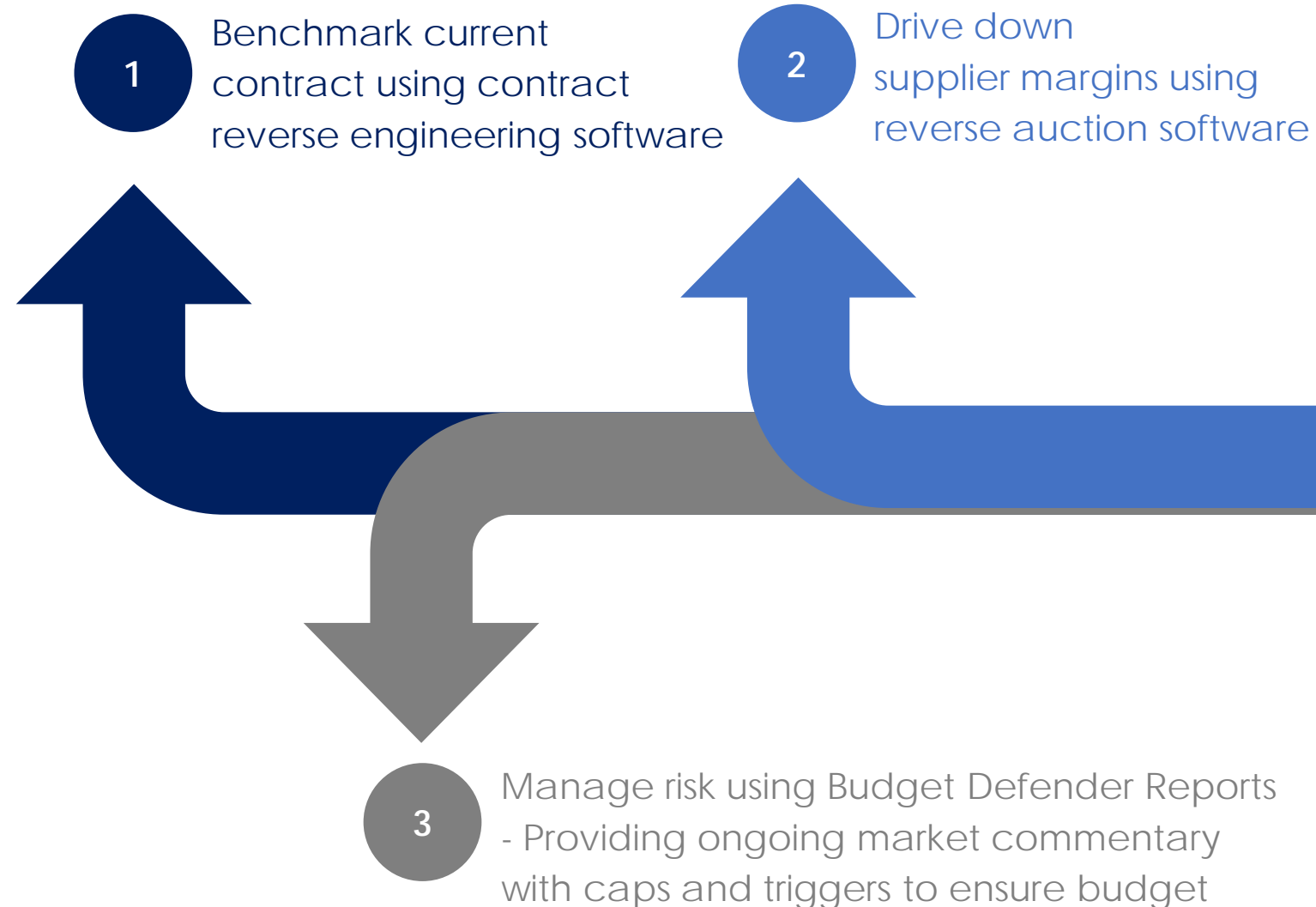
# How To Ensure Best Value From Your Energy Provider

**Beond**

This method will aim to reduce your energy costs by more than 5%

This approach to procurement uses a structured and market-oriented processes to collect data, perform quantitative analyses and apply qualitative expert opinions.

The goal is to guarantee choice, transparency and best value for money when purchasing gas, NHH, HH and UMS supply contracts.



# Sample of Contract Reverse Engineering

Using mark to market techniques we can expose margins and assess contract performance

Supplier Name	Exp Ann Spend	Avg Rate	% vs Best	£ vs Best	Bid/M2M Date	Wsale Index	Comments
Current Contract to Oct 13-Sep 14	£1,354,049	10.602			03-04-2014 12:00	4.5050	CCL Added for 2 Brown Meters - Commission Included
Reverse Engineering - Low*	£1,194,827	9.355	-11.8%	-£159,222	29-03-2014 13:40	4.6160	0% Supplier Commission - Brown Prices (CCL included)
Reverse Engineering - Avg*	£1,268,405	9.931	-6.3%	-£85,644	21-01-2014 13:40	5.1328	0% Supplier Commission - Brown Prices (CCL included)
Reverse Engineering - High*	£1,278,261	10.008	-5.6%	-£75,788	06-12-2013 13:40	5.3069	0% Supplier Commission - Brown Prices (CCL included)

\*Low - Day with the lowest wholesale closing price in the 6-month period prior to the contract start

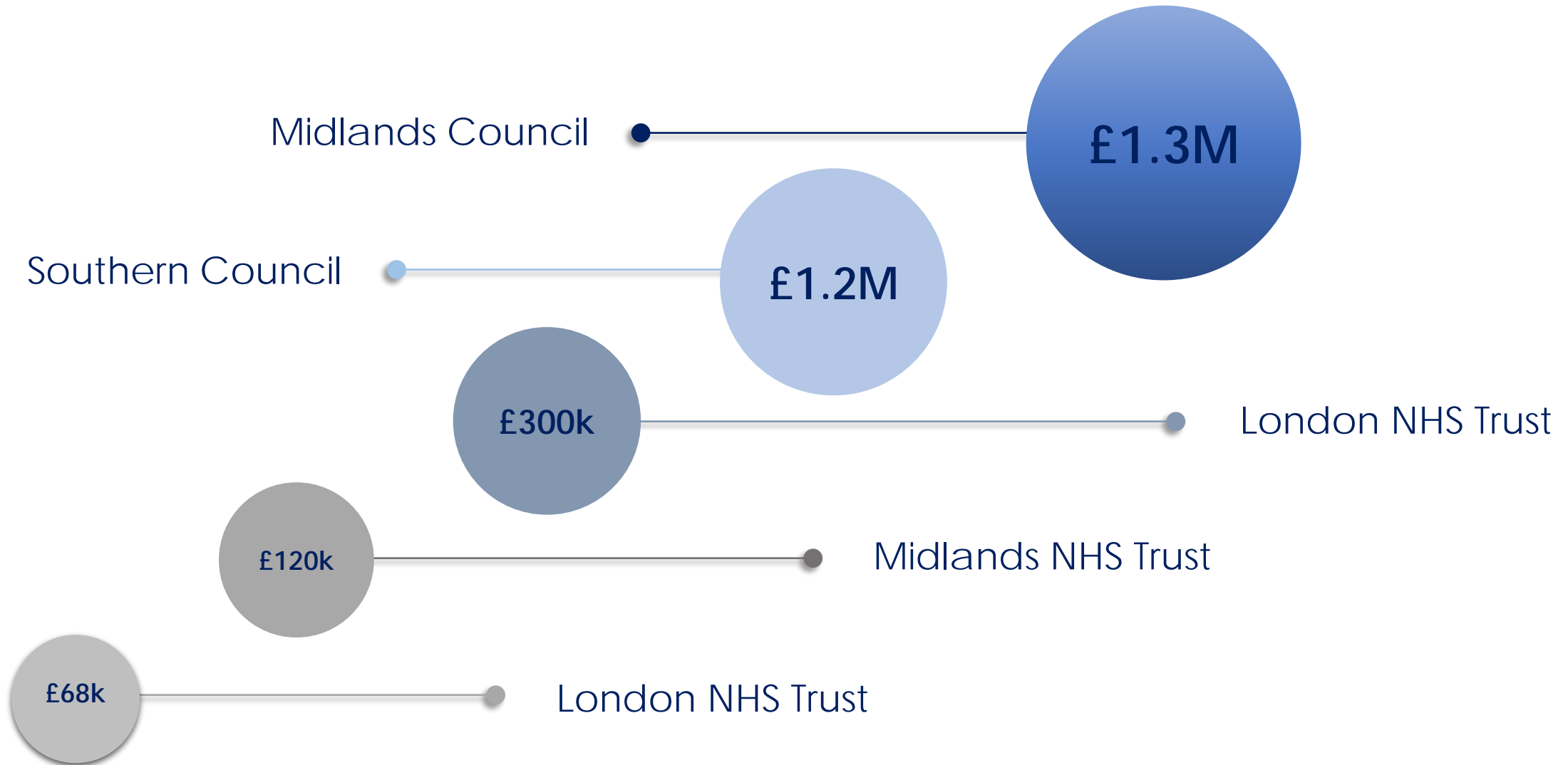
\*Avg - The Average (arithmetic mean) wholesale level in the 6-month period prior to the contract start

\*High - Day with the highest wholesale closing price in the 6-month period prior to the contract start

- By reverse engineering this £1.3m contract we can expose hidden all premiums and margins
- The best and worst trades for this account showed **5.6% -11.8%** margin
- These supplier margins are 3-9 times higher than what we can achieve using the same hedging strategy with a similar size private sector consumer

# Contract Reverse Engineering Results

Exposed hidden margins and premiums in PBO contracts



# Reverse e-Auction - Fixed Electricity

Live Bids			
Bid ID	Supplier Name	Total-exCCL	Avg Rate
78829	Scottish Power	£6,660,070	9.3760
78300	Scottish & Southern	£6,826,572	9.6104
78807	SmartestEnergy	£6,850,564	9.6442
78245	Hudson Energy	£6,854,768	9.6501
78253	Total Gas & Power	£6,886,150	9.6943
78315	nPower Corp	£6,905,432	9.7214
78243	Haven Power	£6,925,008	9.7490
78865	Gazprom	£7,018,604	9.8807
78135	E.ON Energy	£7,036,125	9.9054
78886	Engie	£7,110,837	10.0106
78809	EDF Energy	£7,114,388	10.0156

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In this auction, the PBO's incumbent HH supplier was EDF.

**11 suppliers competed** aggressively to win the business.

On this day the EDF Energy benchmark was beaten by **£454k (6.4%)**.

Proving pre-selected suppliers do not always provide best value.

# Reverse e-Auction - Fixed Gas

Utilise the e-auction to drive down supplier margins

Comments: Monthly group electronic billing to head office email address. BOTH fully fixed and p required.

View Auction

Manage Bids

Requirements

Bid Log

## Live Bids

Bid ID	Supplier Name	Total-exCCL	Avg Rate	P
82732	Corona Energy	£347,145	2.8293	29-Apr-
82627	nPower	£357,363	2.9125	29-Apr-
82641	Gazprom	£358,370	2.9207	29-Apr-
82686	Scottish & Southern	£360,963	2.9419	29-Apr-
82714	Crown Gas & Power	£383,957	3.1293	29-Apr-

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- 9 suppliers competed for **224 gas meters**
- **Over 50 bids** were compared like for like.
- Gas auction provided **£78k** savings against the incumbent supplier x.
- Electricity auction produced a further **£212k** savings against the incumbent x.
- Link to the case study can be found here

<https://beondgroup.com/case-studies/barnardos/>

# Energy Budget Defender - Sample

Report Date: April 2019

Renewal Date: Oct-2019

## 1. Wholesale Market Tracker

As part of Beond's Fixed Plus Risk Management Report procurement service we will monitor Optivo's wholesale costs daily against Optivo's agreed cap and target price. This report is a summary of our service.

The below graph shows Optivo's 12 month forward wholesale price movement for your renewal date in Oct 2019. Included in this graph are the agreed targets and caps and your fixed wholesale price from your Oct 2018 tender.



Wholesale Market (p/kWh)				Caps + Targets (p/kWh)			
Last Month average	Lowest	Highest	Range	Cap	Variance	Target	Variance
1.66	1.57	1.80	0.23	2.54	0.87	1.96	0.30

\*Please refer to glossary for terminology

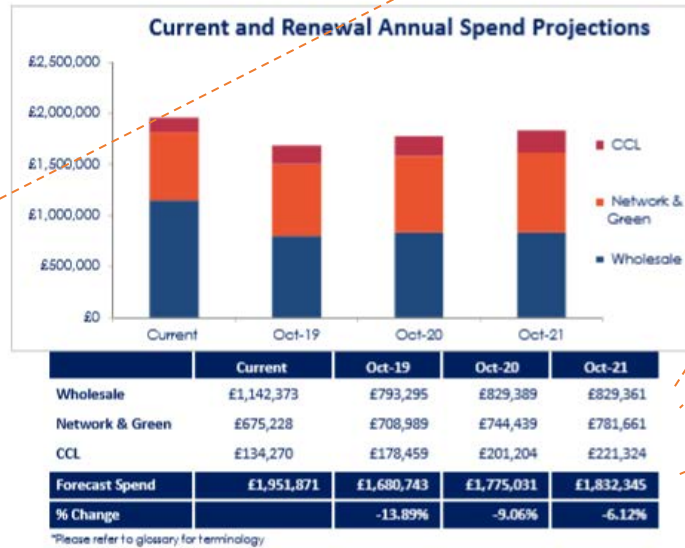
Report Date: April 2019

Renewal Date: Oct-2019

## 2. Annual Spend Projections

The below table and bar chart shows Optivo's estimated annual spend for their current contract agreed Oct 2018. It also shows Optivo's estimated spend over the next 3 years from your renewal date in Oct 2019.

These estimates are created from your usage of 49,546,085 kWh's per annum. The below table and bar chart is calculated using your projected wholesale gas costs (found on the wholesale tracker) and your contracted distribution, metering, CCT and other costs agreed Oct 2018, including future estimates.



Beond will continue to track the wholesale market for your future contract. Please find attached our monthly market report on our website (<https://beondgroup.com/be-informed/>) for further information on current market drivers and regulatory news.

If you have any questions about the report please contact your key contact Tamas Edwards.

Sets caps and triggers to meet an agreed risk strategy

Tracks wholesale market against your current price

Projects tax increases for next 3 years

Projects annual costs for the next 3 years

Provides rationale on market timing and settlement

# Process Summary

# Beond

1- Reverse engineer current contract



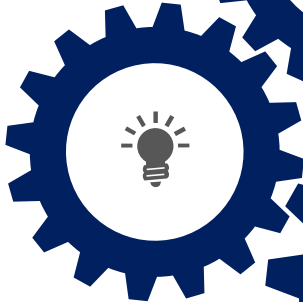
4- Evaluate auction results for value



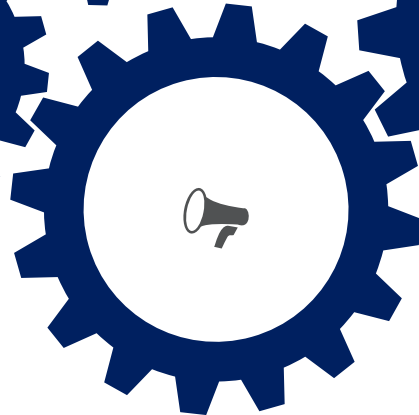
6- Call off contracts if results and savings are satisfactory



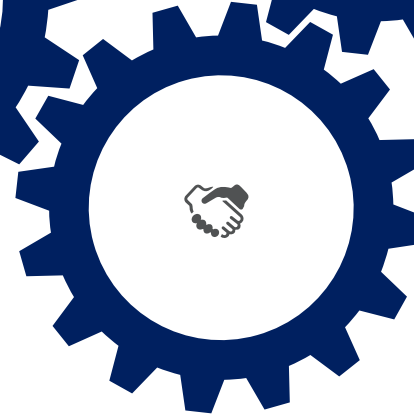
2- Define margins and supplier premiums



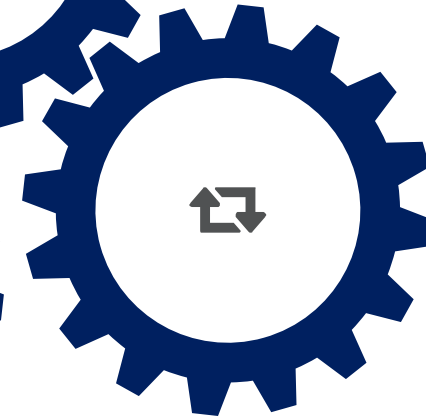
3- If margins are excessive run a trial auction



5- Instruct Beond to call run a formal OJEU tender via their framework



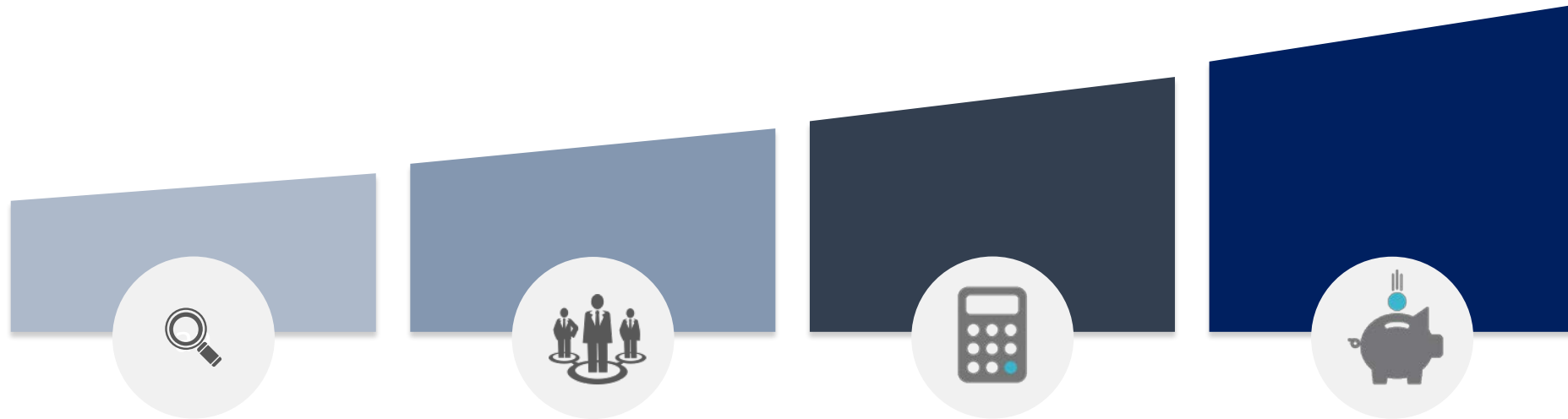
7- Allow Beond to manage contracts and market risks going forward



# Summary of Benefits

Beond

Offering risk free compliance without compromise



## Transparency

Direct market prices  
transparency to all parties  
on the day of tender

Bids can be audited at  
meter level

Legally compliant process

## Choice

Wider choice of  
suppliers

Broader range of  
hedging strategies

Bespoke contracts

## Efficiency

Instant assessments  
on all contracts

Suppliers have  
multiple opportunities  
to bid

Price and contract  
are assessed

## Savings

Exposes hidden  
premiums in up to 23  
cost components

Targets 5% savings  
against other offers

Complimentary VAS



# Proven Results- Savings Delivered

# Beond

Examples of successful public sector and non-for-profit organisations achievements using the reverse auction



UMS Procurement services

**£140k savings**



UMS Procurement services

**£270k savings**



OJEU Procurement services

**£53k savings**



OJEU tender for procurement services

**£731k savings**



Tender for procurement, bill validation and carbon compliance services

**£2.7m savings**



OJEU tender for procurement, bill validation, auditing and metering services

**£241k savings**



Tender for procurement, bill validation and carbon compliance services

**£290k savings**



OJEU tender for procurement, bill validation, solar PV and carbon compliance services

**£220k savings**



Newcastle Council and North Tyneside Council  
Most Tender Results for UMS eAuctions 11/10/18

# Newcastle and NTC Case Study Results

Objectives achieved:

Transparency

- Participants submitted live bids on the day of the auction
- All offers were visible to all stakeholders
- All bids were time stamped and fully auditable
- SSE provided the incumbent benchmark on the day of the tender, which was compared like for like

Choice

- 7 suppliers competed aggressively with multiple bids to win the business
- Contracts terms were negotiated to meet clients needs :
  - 100% green
  - zero volume tolerance)

Efficiency

- Instant assessments on all contracts
- Automated evaluation
- Qualitative and quantitative criteria were assessed

Savings

- Newcastle Council achieved **£270k** cost avoidance over the 36 month contract
- North Tyneside Council achieved **£140k** cost avoidance over the 36 month contract

Collective benefit was **£410k** over the 36 month contract provided by the benchmark



For information on our other services please contact us on [info@beondgroup.com](mailto:info@beondgroup.com)