

**4th EUROPEAN CONFERENCE ON HEALTHCARE ENGINEERING**

# **Delivering low carbon building solutions for the healthcare sector**

**Case studies of a team based and proactive approach for the  
procurement of sustainable innovations**

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# Outline

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- Introduction and context
- **Case Study 1:** Looking for solutions; 70.000 soiled beds
- **Case Study 2:** Ultra Efficient Lighting for Future Wards
- LCB HEALTHCARE Network

# 1. Introduction and context

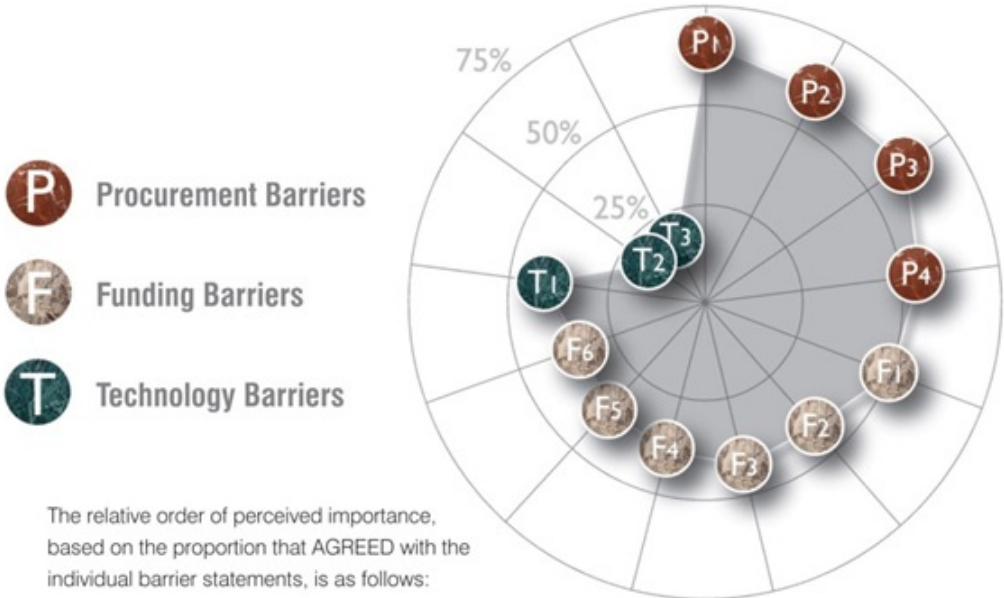


# Low Carbon; necessary but failing?\*

- Carbon footprint of European healthcare sector is estimated to be at least 5% of total EU emissions.
- EU legislation and country specific actions target carbon savings in healthcare service sector (policy setting). **Low carbon actions can save (operational) money!**
- However : lack of low carbon leadership in both the healthcare sector and design & construction sector are important.
- But most important: **We don' t ask for it !**

\* source: State of the Art Report; Low Carbon Buildings in the Healthcare Sector, May 2011, [www.lcb-healthcare.eu](http://www.lcb-healthcare.eu)

# Barriers to slow uptake:



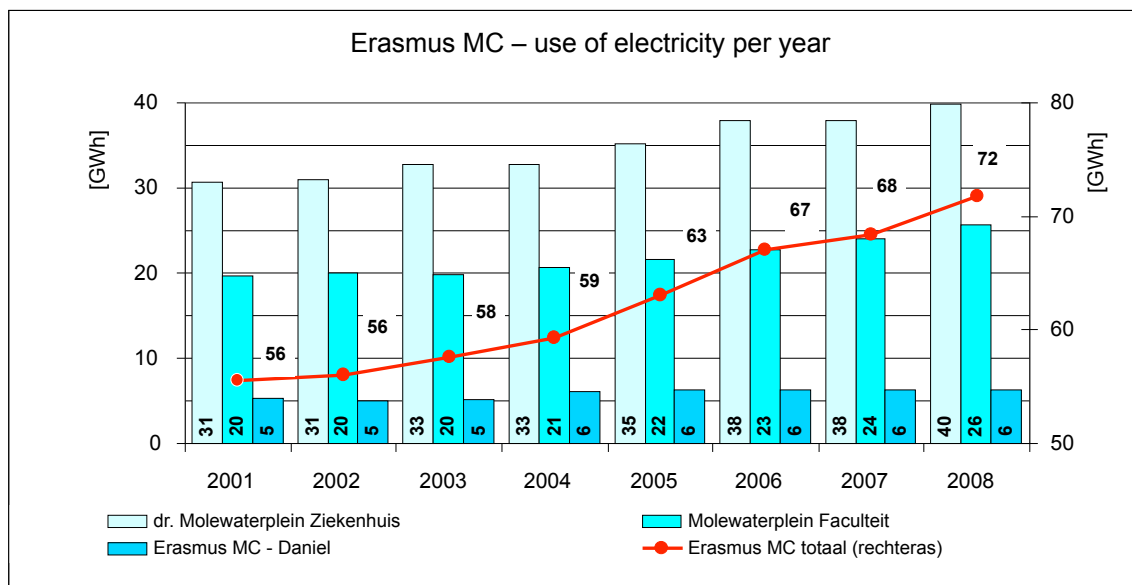
- P1 Procurement practice for healthcare facilities is still biased towards initial capital investment cost rather than whole life costing
- P2 Political targets to reduce CO2 emissions from buildings are not yet translated into mandatory procurement criteria
- P3 There is a lack of pre-procurement dialogue on low carbon options between buyers and the supply chain
- P4 Procurement specifications do not explicitly encourage low carbon outcomes
- F1 Low carbon investment is not yet a high priority for healthcare facility owners
- F2 There is a lack of financial incentives for facility owners/managers to procure low carbon solutions
- F3 There is a lack of financial incentives for suppliers to develop and demonstrate low carbon solutions
- T1 There is a lack of building owners/developers/managers that are willingness to work with suppliers to help develop and demonstrate new low carbon solutions
- F4 The financial services sector is not willing to take the risk in providing money for low carbon technologies and solutions
- F5 Low carbon solution providers cannot provide attractive financial offers (eg lease finance, performance-based charging)
- F6 Facility managers cannot make the business case for investment
- T2 Existing low carbon solutions are not economically viable
- T3 Existing low carbon solutions are too high risk

# Case Study 1: Looking for Solutions: 70.000 soiled beds Erasmus MC, Rotterdam, the Netherlands



# Erasmus MC

- 185.000 m<sup>2</sup> new university hospital – high ambitions to become a ‘green’ hospital. **Ambition to reduce 15% energy**
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- Hospital under construction from 2009 to 2017
- vast amounts of machines, equipment, goods and services to be procured (on a continuous basis)
- Hospital under construction from 2009 - 2017



# Erasmus MC

- First time: procurement department, estates, facility management, infection control and environmental officers work together in procurement
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- First time: we ask the market to define ‘what is a clean bed?’



## Case Study 2

# A Proactive Approach to Procurement Ultra Efficient Lighting Solution for Future Wards The Rotherham NHS Foundation Trust, England



# The stimulus

- Began with an **opportunity**: complete ward refurbishment over 8 years
- **Vision of the CEO**: “Hospital of the Future”, “modern, hotel feel”
- **Current wards have poor, inefficient lighting** as well as being a cluttered space, little storage
- **New and emerging lighting technology** were promising to be ‘smart’ and ‘ultra efficient’
  - New **innovation procurement** technique offered a way to deliver a better solution



# The first step

- Support for an ‘innovation procurement’ approach from Department of Health (DH) and Department for Business Innovation and Skills (BIS)
  - ~~Support for an ‘innovation procurement’ approach~~  
CEO support  
from Department of Health (DH) and Department for Business Innovation and Skills (BIS)  
Led by Director Estates and Head of Procurement
  - CEO support
    - Led by Director Estates and Head of Procurement
      - A project team was set up, and we work-shopped the vision for ‘future ward lighting’
        - Threw away the catalogues and product lists!
          - Thought in terms of the **outcomes not**
- products
- Team encouraged to be **ambitious and forward thinking**
- directly**
- (rather than through a contractor)

"The NHS has set ambitious carbon reductions targets. To meet these targets we need to take a fresh approach to innovation, planning and procurement. This means doing all we can to support the supply chain to deliver better future proofed, Estates & Facilities Division, DH



# Project team defined outcomes

- An **outcome based** requirement was agreed:
- “**Innovative, value added, smart, ultra efficient lighting systems that can deliver the Trust’s vision for Future Ward lighting, meet the operational requirements and**
  - An **outcome based** requirement was agreed:
    - “**Innovative, value added, smart, ultra efficient lighting systems that can deliver the Trust’s vision for Future Ward lighting, meet the operational requirements and provide added value functionality, in a cost effective way.**
    - **Specifically the solutions are required to:**
      - deliver cost effective carbon reductions
      - provide a high quality patient centred user experience
      - provide a high quality working and clinical environment
      - maximise energy and resource efficiency, with improvements in product performance over the life of the Future Wards project, in particular in relation to

energy efficiency

# Next step.....communication to the market


- Made sure that **potential suppliers were aware** of the outcomes needed
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- Communicated to the supply chain in a way that demonstrated the Trusts **credibility and commitment** as a customer
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- Developed a **market sounding** prospectus and invited feedback from interested parties
- Issued a **Prior Information Notice** in the Official Journal of the EU
- Showed that there was a **wider demand** in the NHS
- **Forward commitment** provided by the 8 year programme
  - Stressed they were interested in **tomorrow technology**
    - What **could be achieved** over the life of the Future Wards project given the right market

The Rotherham   
NHS Foundation Trust

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### Future Ward Lighting Project

Market sounding regarding the supply of innovative and ultra efficient lighting systems for The Rotherham NHS Foundation Trust "Future Ward" refurbishment programme



The Rotherham NHS Foundation Trust

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### Market Sounding Prospectus

September 2008

**This is not a call for tenders or a pre-qualification exercise.**  
It is a market sounding exercise to provide advance information of requirements and open a dialogue with the supply chain. The results will be used to inform future procurement specifications and strategies.

# The response from the supply chain?

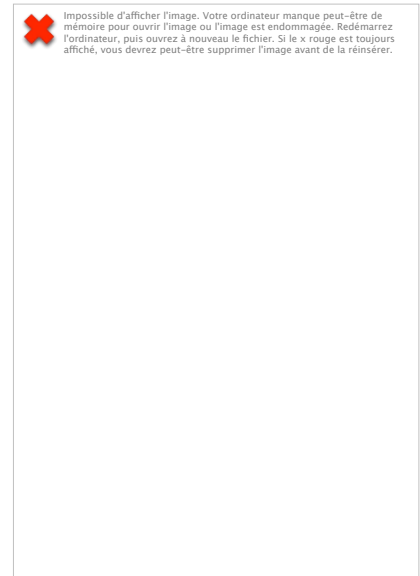
- Enthusiastic!
- More than 40 good quality responses
- The supply chain indicated that:
  - Enthusiastic
  - Could achieve a step change in the energy efficiency of lighting
  - LED technology = new options e.g. ‘smart’

solution

- Intelligent control systems = benefits in functionality and energy efficiency

- **Keys to success:**

a real procurement over a defined time



response and encouraged by the range of products that have been suggested and believe that our requirement, although demanding, is achievable”  
*extract from workshop briefing*

# Further consultation with the supply chain

- **Consultation workshop** in January 2009
  - 75 stakeholders
    - **Consultation workshop** in January 2009
      - 75 stakeholders
  - enabled exchange among suppliers
    - Invaluable insights on:
      - Choice of lighting technology and use of control systems
      - Lighting design
      - Measuring energy efficiency
        - Future proofing
      - Optimal procurement and contract approach
  - Barriers to delivery and finding



“What is great about this process is that it gives us time to plan, build consortia, and bring new solutions forward”

# Procurement of Ultra Efficient Lighting for Future Wards

- Supply chain and stakeholder consultation led to refinement and simplification of **outcome based specification**:
  - **Innovative, value added, smart, ultra efficient lighting systems** that can deliver the Trust's vision for Future Ward lighting, meet the operational requirements and
    - Supply chain and stakeholder consultation led to refinement and simplification of **outcome based specification**:
      - **innovative, value added, smart, ultra efficient lighting systems** that can
  - **A step change in patient experience**

deliver the Trust's vision for Future Ward lighting, meet the operational requirements and provide added value functionality, in a **cost effective** way.

- **improvements in energy efficiency and operational performance over the life of the project**
- **A step change in patient experience** of the project, creating a pleasant healing environment with patients being in control of bed zone lighting levels and ambience and provide the lighting to perform clinical requirements
- **A fully installed, maintained and future-proofed service**



# Procurement of Ultra Efficient Lighting for Future Wards

- A ‘pro-innovation procurement strategy’ developed

## Key features:

- Outcome based specification
- A ‘pro-innovation procurement strategy’ developed

## Key features:

- Outcome based specification
- Competitive Dialogue
- Emphasis on innovation
  - e.g. included in the Pre-qualification Questionnaires (PQQ)
- Demanding and committed customers
- Forward commitment

““The key to success was to begin by asking for what was needed – not what we thought was available or affordable. The results have exceeded all expectations”.



A future ready, ultra efficient integrated patient experience, improving the efficiency of lighting and energy use within the healthcare environment.

# Ultra Efficient Lighting for Future Wards



# Future Ward - Lighting Scene - Night



# Future Ward - Lighting Scene – Morning



# Future Ward - Lighting Scene - Midday



# Future Ward - Lighting Scene - Medical



# Future Ward - Lighting Scene - Evening





## The IMI ward - Financial benefits

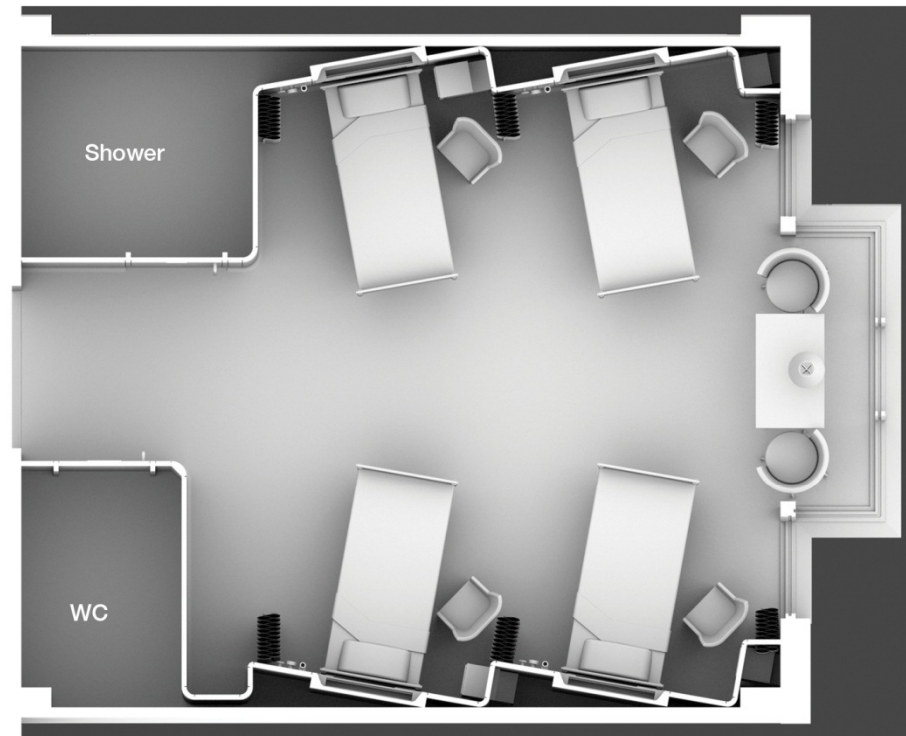
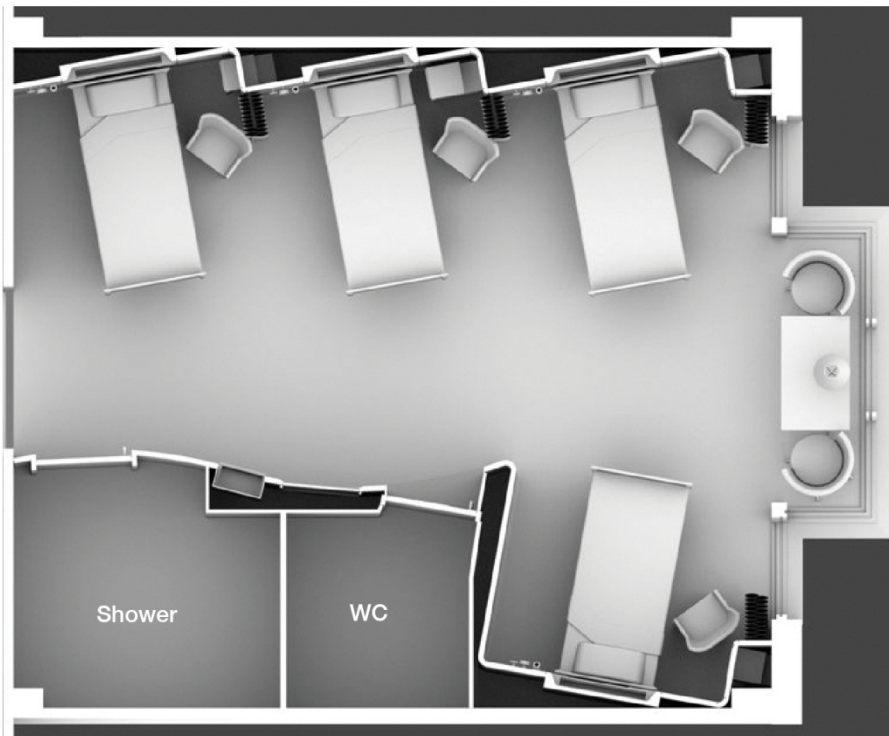
- Same cost as traditional build
- Anticipated reduced energy costs - 30%
- Anticipated reduced maintenance costs - 80%
- Reduced construction programme

## The IMI ward - Patient benefits

Angled design creates:

- A private space for patients
- Improved day lighting
- Views out
- Increased patient and staff storage

## Flexible ward configurations



# Benefit Realisation Forecast

For example.....

- Future proofed
- Same cost as a traditional refurbishment
- Energy consumption saving of 30% or €5,200 per 40 beds over 10 years.
- Maintenance Saving of 88% or €15,400 per 40 beds over 10 years.



“From the start we said that the solution had to be cost effective and affordable.

We have not been disappointed.

The outcome shows that better and more sustainable does not have to cost more”.

*Steph Holmes, Head of Procurement.*



# Join the LCB:HEALTHCARE Procurement Network

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## LCB-HEALTHCARE

Procuring better building solutions

**FIND OUT MORE AND REGISTER AT**  
**[www.lowcarbon-healthcare.eu](http://www.lowcarbon-healthcare.eu)**



**LCB-HEALTHCARE**  
Procuring better building solutions