

Continuous Commissioning (ConCom)

Delivering the optimum cost and value for the occupier

What is ConCom?

Developed by ABS, Continuous Commissioning (ConCom) is a process, focussed on operation, by which a building and its services are:

conceived, designed, constructed, commissioned, operated, maintained, and decommissioned

to provide the optimum of cost and value for the occupier.

The ConCom process provides a strategic approach to the operation of buildings that optimises energy efficiency, operating cost and occupant comfort. It enables a building's energy consumptions, carbon emissions and operating costs to be limited to those required to meet the occupier's business needs and to provide a safe and comfortable environment for the occupants.

Through ConCom's holistic and ongoing approach, buildings are able to deliver what is required of them in the most cost effective and sustainable way without compromising quality.

- **Holistic:**
 - ConCom involves the whole organization from top to bottom and
 - ConCom addresses all factors affecting the project's success: technical, motivational and managerial
- **Ongoing:**
 - ABS embeds the ConCom principles in the client's overall operating strategy enabling ongoing delivery by the with minimal external support.

How does ConCom work?

The Concom fundamental is to target avoidable waste using the 3 steps of 'Variance Analysis' :

1. Determine what is required of the buildings and their services to meet the business needs (*Ideal* provision)
2. Review the existing design, maintenance and operation (*Actual* provision)
3. Implement strategies to eliminate the variance between *Ideal* and *Actual* provision; Deliver solutions that eliminate avoidable waste and optimise the performance of all soft (e.g. people, management) and hard (e.g. technical equipment, BMS etc) assets.

ConCom provides two levels of recommendations:

Level 1: Get the estate operating at its most efficient using the existing systems and technology - no or minimum capital expenditure required.

Level 2 : Capital expenditure to increase energy savings.



What benefits to expect from Concom?

- ✓ Reduced energy consumption
- ✓ Reduced operational costs
- ✓ Reduced CO2 emissions
- ✓ Best value from existing systems
- ✓ Measured return on capital investment
- ✓ Reduced exposure to rising energy prices
- ✓ Increased asset value of building
- ✓ Compliance with regulation
- ✓ Demonstrate Corporate Social Responsibility (CSR)
- ✓ Improved working environment
- ✓ Staff support on energy and carbon reduction efforts
- ✓ Greater occupant productivity, safety and comfort

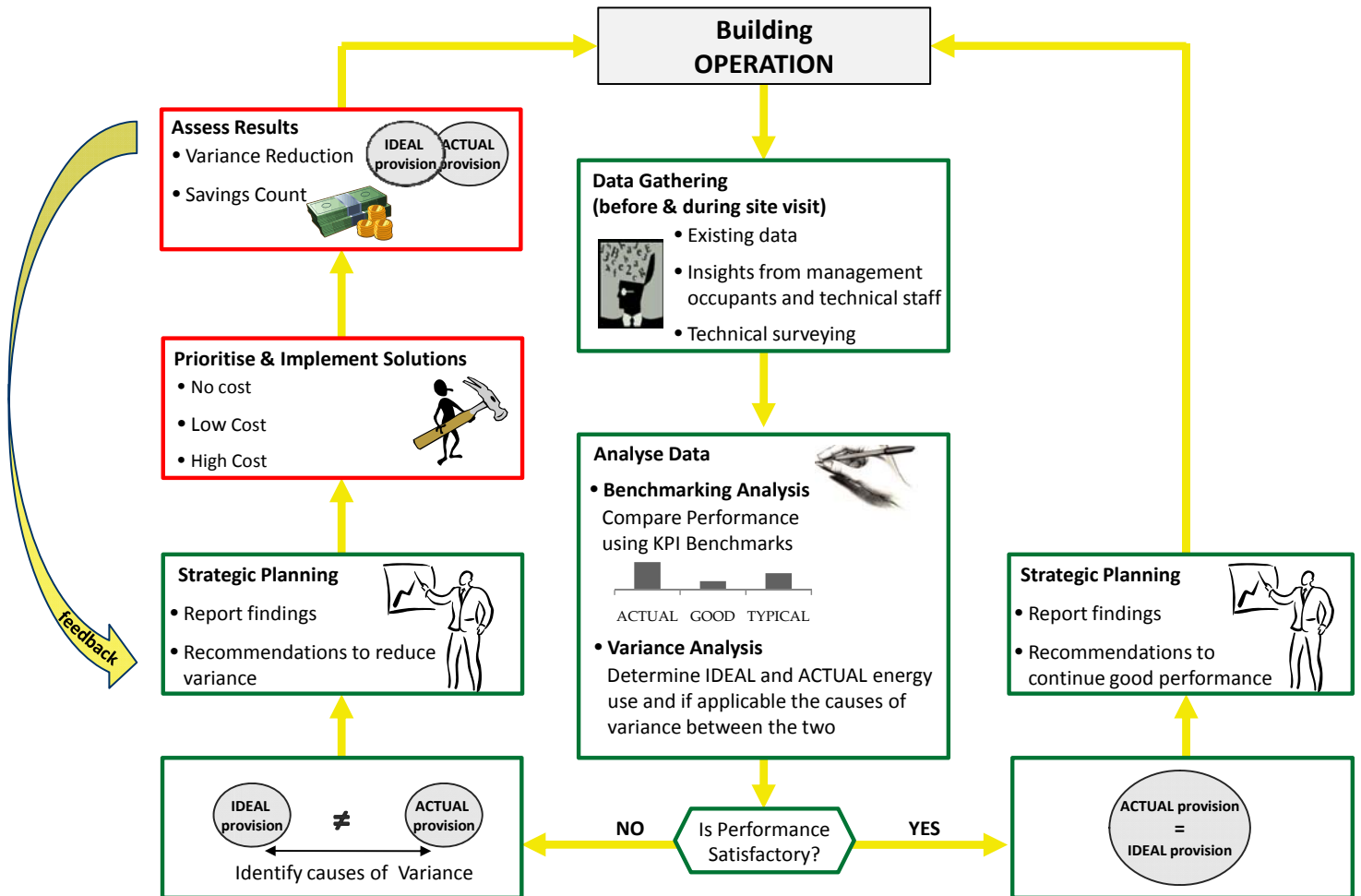
Some signs that a building needs ConCom:

- High energy costs
- High maintenance costs
- Occupant dissatisfaction
- Change of use of the building
- Inability to comply with legislation
- Repeated system failure
- Incomplete original commissioning

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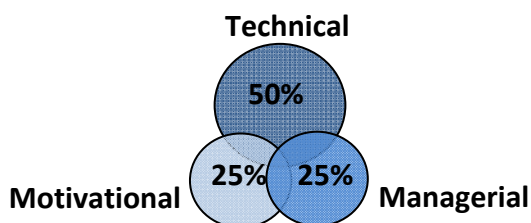
Get a better performing building with less resource input

The ConCom Process: A 3-stage ongoing and holistic approach to building operation



Green: Stage 1- Scoping Red: Stage 2- Implementation Yellow: Stage 3- Continuous feedback

ConCom's Holistic Approach:



Concom involves all factors affecting a building's performance

ConCom is about getting the **best value** from your buildings by:

- Analysing energy consumption
- Analysing technical insight
- Analysing occupant perception of the working environment
- Responding with appropriate actions
- Measuring and disseminating the results

ConCom limits energy consumption to that necessary to provide an environment within which specified activities can be carried out at maximum efficiency, in safety & comfort

ConCom in Practice

Imperial College Healthcare NHS Trust

Winner- Low Carbon Consultant: Innovation of the Year Award 2008

An example of what ConCom has delivered

Case study Imperial College Healthcare 
NHS Trust



Imperial College Healthcare NHS Trust has recently been formed by the merger of St Mary's and Hammersmith Hospitals NHS Trusts in partnership with Imperial College for Science and Technology to become the UK's first Academic Health Services Centre.



LOW CARBON
PERFORMANCE
AWARDS

Winner- Low Carbon Consultant: Innovation of the Year Award 2008

For the ConCom project at Imperial College Healthcare NHS Trust, ABS consulting won the CIBSE - Low Carbon Consultant: Innovation of the Year Award 2008.

The Chartered Institution of Building Services Engineers (CIBSE) has launched the Low Carbon Performance Awards to recognise and celebrate actual, proven achievements in delivering carbon savings in buildings.

The 'Innovation of the Year' category seeks to identify design or technical solutions, new technologies, new processes or other innovations that have significantly reduced or assisted the reduction of carbon emissions in buildings and which are capable of wider application.

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PROJECT

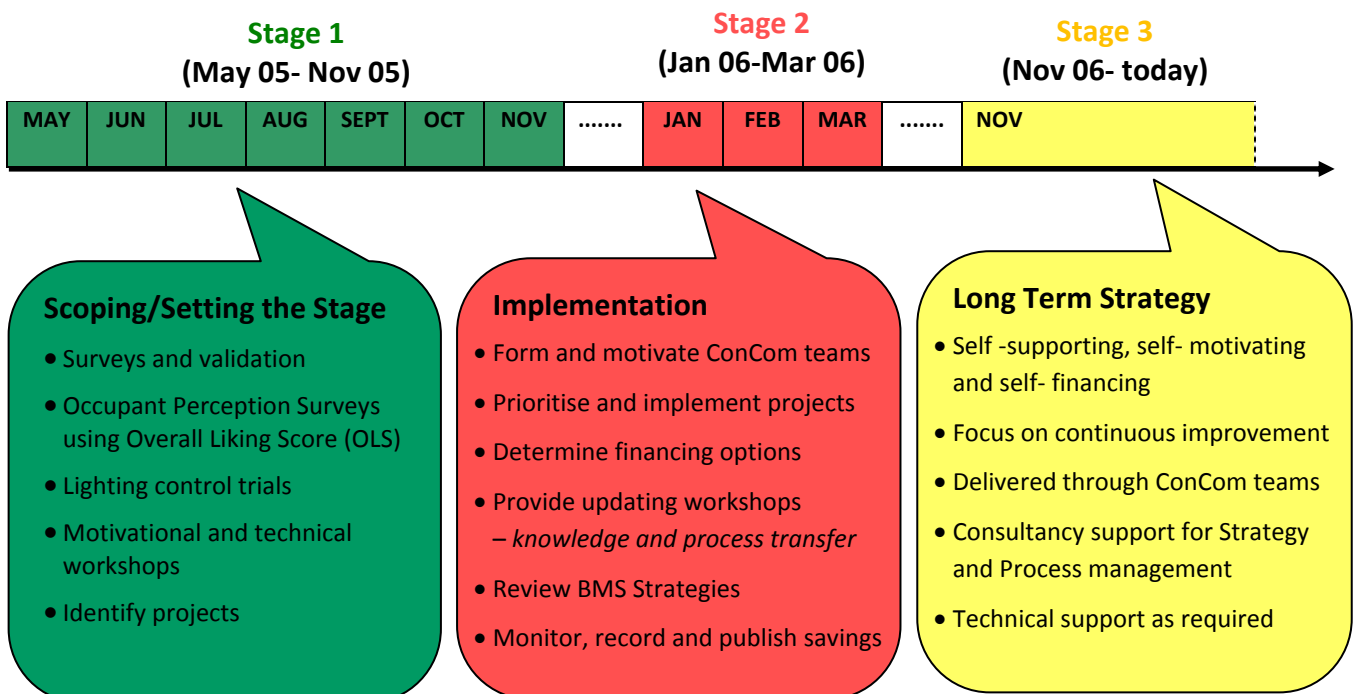
The national NHS target is for a 15% reduction in the use of primary energy from 2000 to 2010. To help achieve this order of savings Imperial College Healthcare, supported by funding from the Carbon Trust, appointed ABS consulting to implement a Continuous Commissioning (ConCom) programme.

The aim of the project was to reduce carbon emissions and reinvest financial savings to realise further cost and carbon savings while maintaining or improving the working environment

ConCom, developed by ABS consulting, provides a strategic approach to the operation of buildings that delivers the optimum of cost and value to the occupier. It enables a building's energy consumptions, carbon emissions and operating costs to be limited to those required to meet the occupier's business needs and to provide a safe, productive and comfortable environment for the occupants. This logical, but innovative approach included:

- Occupancy feedback using the Overall Liking Score (OLS) method to understand potential delivery problems and to demonstrate an inclusive approach to improvement
- Management of a staff awareness campaign followed by training workshops
- Review of Building Energy Management Systems followed by operational improvement implementation
- Review of Air Handling Units followed by operational improvement implementation
- Roll out programme of lighting replacement and installation of lighting controls
- Retro-fitting variable speed drives to fans and pumps.

Below is the TIMELINE OF ACTIONS taken, broken down in the 3 ConCom stages:



ConCom in Practice

Imperial College Healthcare NHS Trust

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The Overall Liking Score Fingerprint for the Imperial College Healthcare Estate

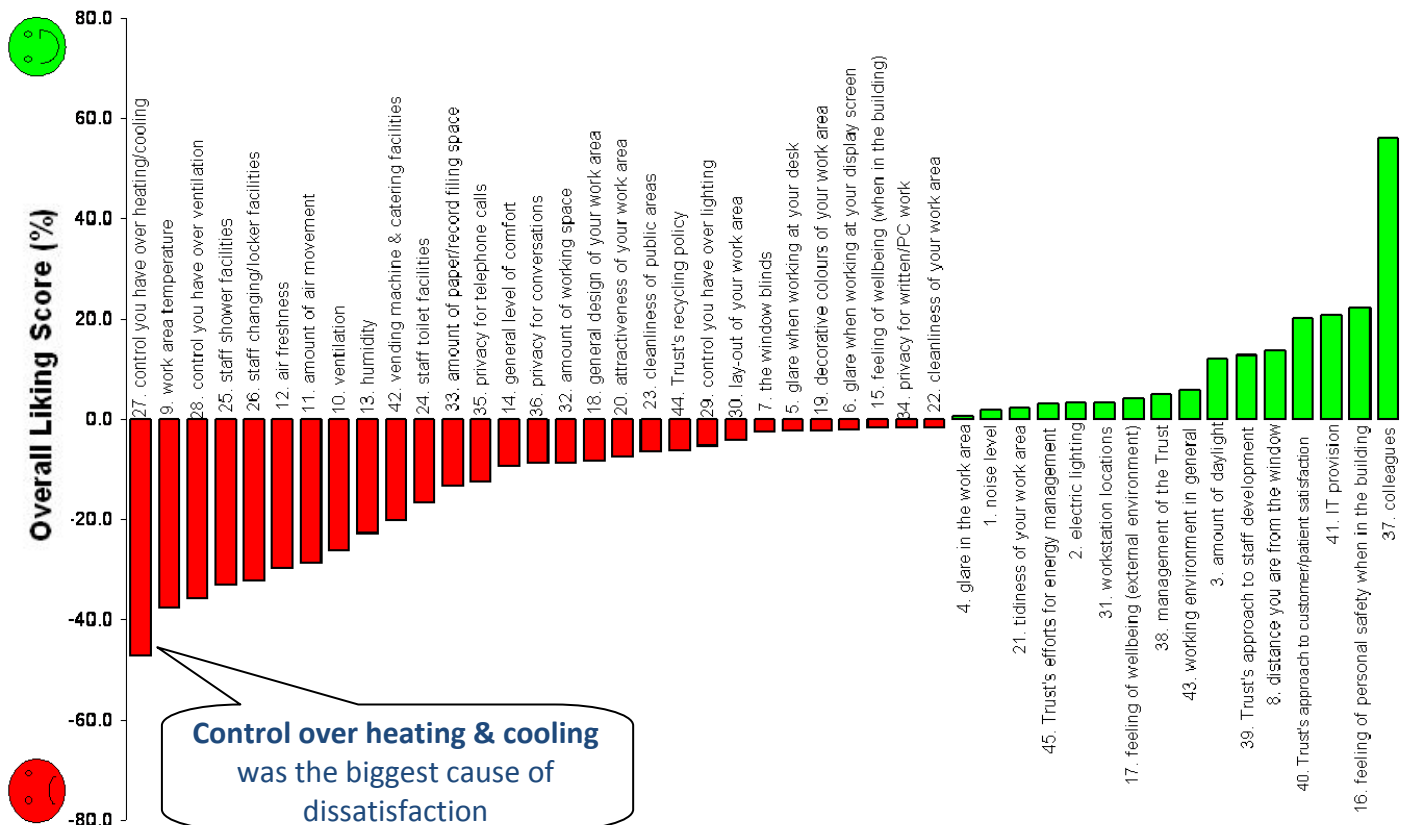
To help the Trust appraise the current performance of its buildings, identify opportunities and prioritise its efforts, we used the Overall Liking Score (OLS) technique during the first stage of ConCom to obtain staff perception on their working environment.

Overall Liking Score (OLS) is a process that collects and analyses occupant feedback on their perception of the quality of the working environment. This helps management to identify and prioritise improvements to locations and systems that are causing occupant concern. This will often lead to improved energy efficiency and greater occupant comfort.

The OLS Fingerprint below presents the results for the whole Trust. Overall, the Trust scored an OLS (aggregate of all aspects studied) of -5.5%.

The Trust's OLS score is slightly on the negative side of the median score of -3.8% for all working environments rated by ABS.* This indicates that respondents are marginally dissatisfied with their overall working environment. The aspects of most concern are related to the heating, ventilation and air-conditioning (HVAC) systems within the buildings. Priority was therefore given to improving the HVAC services in the locations that received poor scores. Initially this included reviewing automated controls and adjusting operation times and temperature set-points. The next priorities included electric motors for fans and pumps, lighting and lighting controls, good practice housekeeping and an awareness campaign.

Detailed OLS Fingerprint



Building Overall Liking Score (OLS): -5.5%*

*ABS has measured over 100 working environments with OLS scores ranging from -39% to +31%

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SAVINGS' TARGETS:

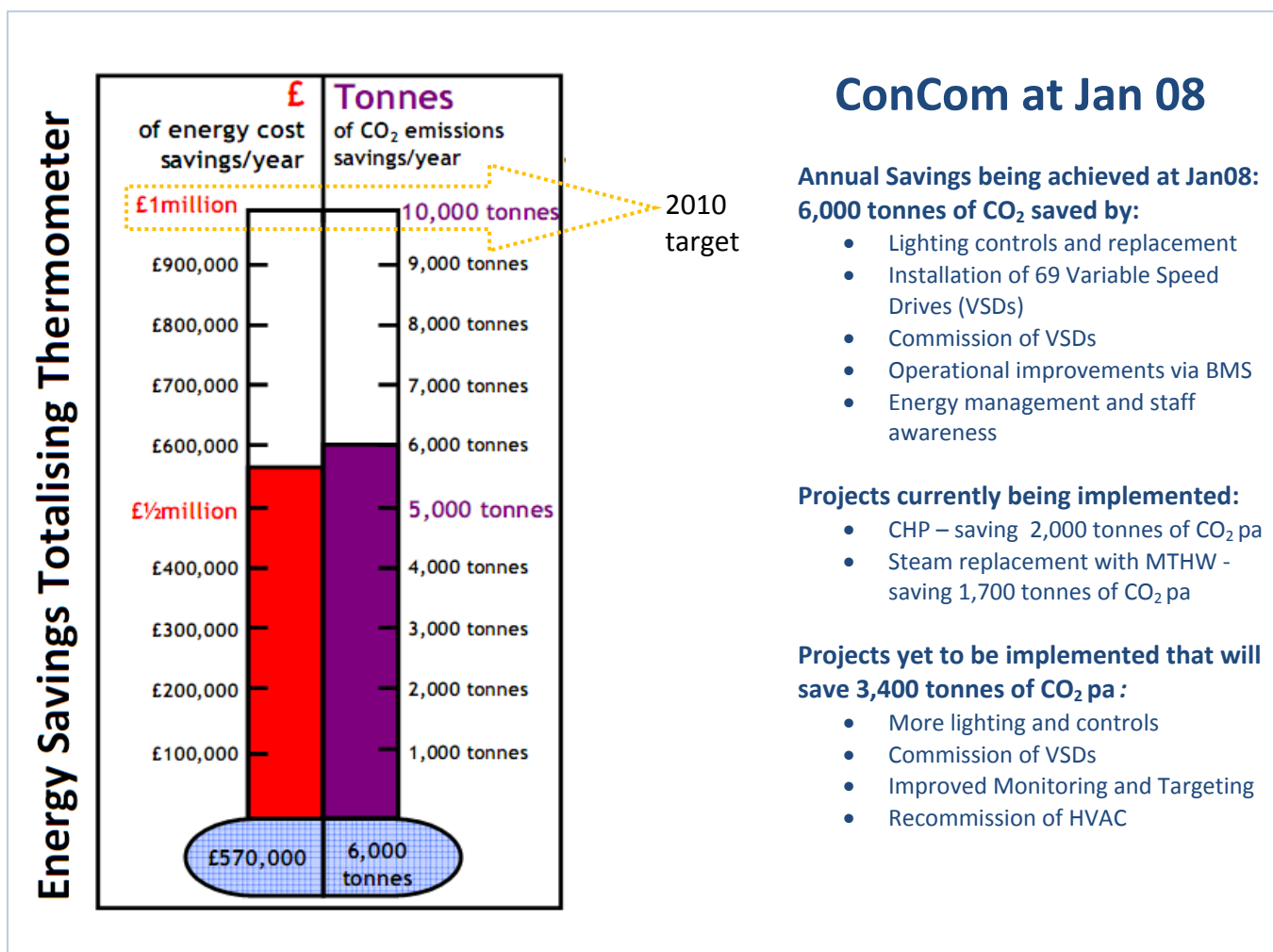
Measure	MWh savings	£/yr savings	CO2 savings t/yr
BMS & AHU operation improvements	9,600	£256,000	2,424 tonnes
Low cost ConCom initiatives	2,500	£120,000	750 tonnes
Lighting and controls	3,960	£243,000	1,750 tonnes
Variable speed drives & EFF1 motors	2,420	£145,000	1,040 tonnes
			5,964 tonnes

The above targets were those set at project inception. Other projects being implemented include:

- Installation of a 2MWe CHP system
- Replacement of steam boilers and distribution with MTHW
- Further lighting and lighting controls projects

BENEFITS as of Jan 2008

As the graph below illustrates the original CO₂ saving targets are being achieved, with 6,000 tonnes of CO₂ per year being saved at January 2008. Projects currently being implemented are estimated to save another 3,700 tonnes of CO₂ per year, with a further 3,400 tonnes from projects yet to be implemented. The process is continuous and it is expected that further opportunities will be identified, implemented and monitored.



ConCom at Jan 08

Annual Savings being achieved at Jan08:
6,000 tonnes of CO₂ saved by:

- Lighting controls and replacement
- Installation of 69 Variable Speed Drives (VSDs)
- Commission of VSDs
- Operational improvements via BMS
- Energy management and staff awareness

Projects currently being implemented:

- CHP – saving 2,000 tonnes of CO₂ pa
- Steam replacement with MTHW - saving 1,700 tonnes of CO₂ pa

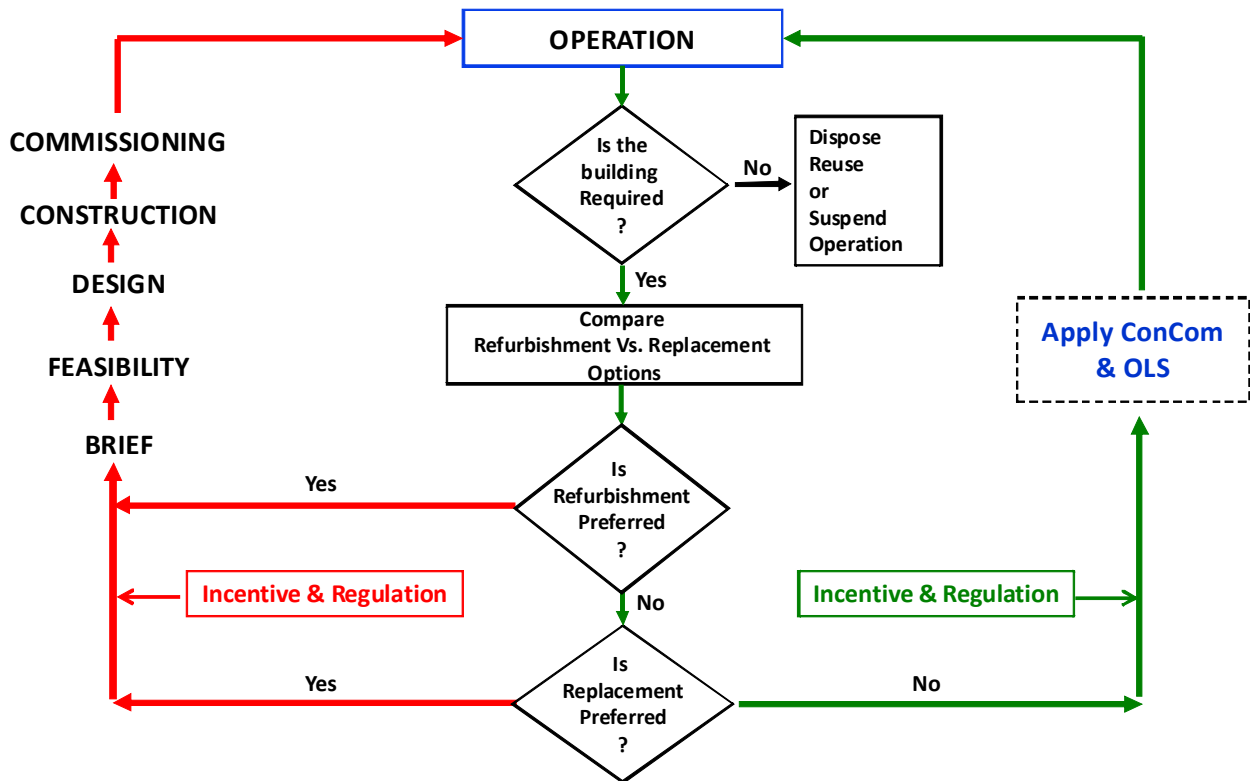
Projects yet to be implemented that will save 3,400 tonnes of CO₂ pa :

- More lighting and controls
- Commission of VSDs
- Improved Monitoring and Targeting
- Recommission of HVAC

Continuous Commissioning (ConCom)

Get a better performing building with less resource input

The Building Life Cycle and ConCom:



Concom ensures optimum cost and value throughout the building life cycle

Why ABS consulting?

Our team includes experienced engineers and accredited Carbon Trust and CIBSE Low Carbon consultants.

Our philosophy is that buildings exist to fulfil the owner or occupier's business plan and to provide an efficient, safe and comfortable environment for users. We therefore take a client centred strategic view, informed by our hands-on experience of all phases of the building life-cycle. We describe our approach as Green and Businesslike.

Government Funding

ABS can help you access government funding in support of your carbon and energy management initiatives.

Next Steps

For more information on ConCom please **contact** Jim Ure:

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ABS consulting provides strategic consultancy in a number of property and construction related specialist disciplines which include:

- Building Services
- Carbon & Energy Management
- **Continuous Commissioning (ConCom)**
- Facilities Management
- Management Services
- Post Occupancy Evaluation
- Regulation Compliance
- Training & Workshops



ConCom - ABS' holistic and ongoing approach to building operation