A2. EPRP – Port of Cork

Project Overview

Name of project	Public Sector Port Project
Client name	Port of Cork
ESCO	Longship
Year contract signed	n/a
Type of facility	Port/harbour
Scope of works	The ESCO undertook lighting, heating and insulation upgrades to buildings, water saving projects and specific works to dockside cargo handling equipment such as straddle carriers and mobile cranes which are used to move containers around the facility. Local energy metering is also being installed.
Any non-energy works	n/a

Energy Performance-Related Payment

EPRP overview	The project was financed and is owned by the customer, with grant assistance from SEAI.
Contractual arrangements for EPRP	There is a gain share agreement between the customer and the ESCO, whereby if actual savings are 4%–6% of overall energy use, the ESCO will be paid their fees in full. If, however, savings are below 4% of overall energy use, the customer may claw back a percentage of the fees paid to the ESCO. If savings exceed 6% of overall energy use, the ESCO will be paid a bonus.
Measurement & verification of savings	Savings were monitored and the final fee was to be paid at the end of 2012.

Procurement Process

Procurement process	n/a
Extent of survey analysis by all bidders	n/a
Final award criteria	n/a

Project Viability

Cost of works	€270,000
Project savings	It was calculated that these projects would result in a 5% overall reduction in energy use by the Port in 2012 relative to 2011.

Project Structure

Energy performance-related payment	If actual savings are 4%–6% of overall energy use, the ESCO will be paid their fees in full. If, however, savings are above or below this threshold, the fee to the ESCO will be reduced or increased respectively.
Distribution of savings	The customer supplied the capital (via grant aid from SEAI), thus gets all

	the savings.
Term of contract	n/a
Allocation of technical performance risk	See 'Energy performance-related payment' above

Financing

Financing arrangement (debt and equity)	100% customer-financed
Source of finance and rate of interest	SEAI supplied capital grant aid.
Balance sheet allocation of debt	n/a

Other

Annual service fee	n/a
Allocation of energy price risk	n/a
Inflation	n/a

A.3 EPRP – Kerry County Council Pump upgrades

Kerry county council completed a pump upgrade project in 2012 which utilised an EPRP arrangement. The following clause was inserted into the tendering documentation. As a result, the system with the best energy design was selected, and its performance assessed before 10% of retained costs were paid.

"To complete commissioning of the plant, the contractor shall employ an independent energy consultant to measure and report on the pump / motor overall energy performance of the completed installation. Payment of the Energy Performance portion (10% of full amount) is contingent upon the overall pump / motor efficiency of the completed installation matching or exceeding that specified by the Tenderer in Appendix 3.
Where the Tenderer specifies the installed system will have an overall pump / motor efficiency of X%:

- The Tenderer will receive the full Energy Performance Payment (10% of contract value) where the overall pump / motor efficiency of the completed installation is X% or above as shown by the independent energy consultant.
- Where the overall pump / motor efficiency of the completed installation is less than X% but not less than (X-5)%, the portion of the Energy Performance Payment payable by the Client will increase linearly from €0 Energy Performance Payment for not more than (X-5)% to 10% of contract payable for attaining X% or higher overall efficiency
- Where the overall pump / motor efficiency of the completed installation is less than (X – 5)%, the system will be deemed not to be performing in an efficient manner and the installation will be deemed not to be compliant with the specification. Successful commissioning will require the plant installation to achieve an overall pump / motor efficiency of not less than (X-5)%
- Tenderer to include for cost of independent Energy Consultant in Tender submission
- A tolerance of +/- 2% is allowable."

A.3 EPRP – North Tipperary County Council pump upgrades

NTCC, advised by Tipperary Energy Agency, have retrofitted a lot of their water services stock. They have developed a life cycle assessment model to tender for projects.

In the tendering process, marks are awarded for a pump systems life time costs as opposed to direct comparison of pump capital costs. The capital cost of a pump > 10kW typically equates to only six months energy running costs. It pays significantly to ensure the best pump is selected for the application.

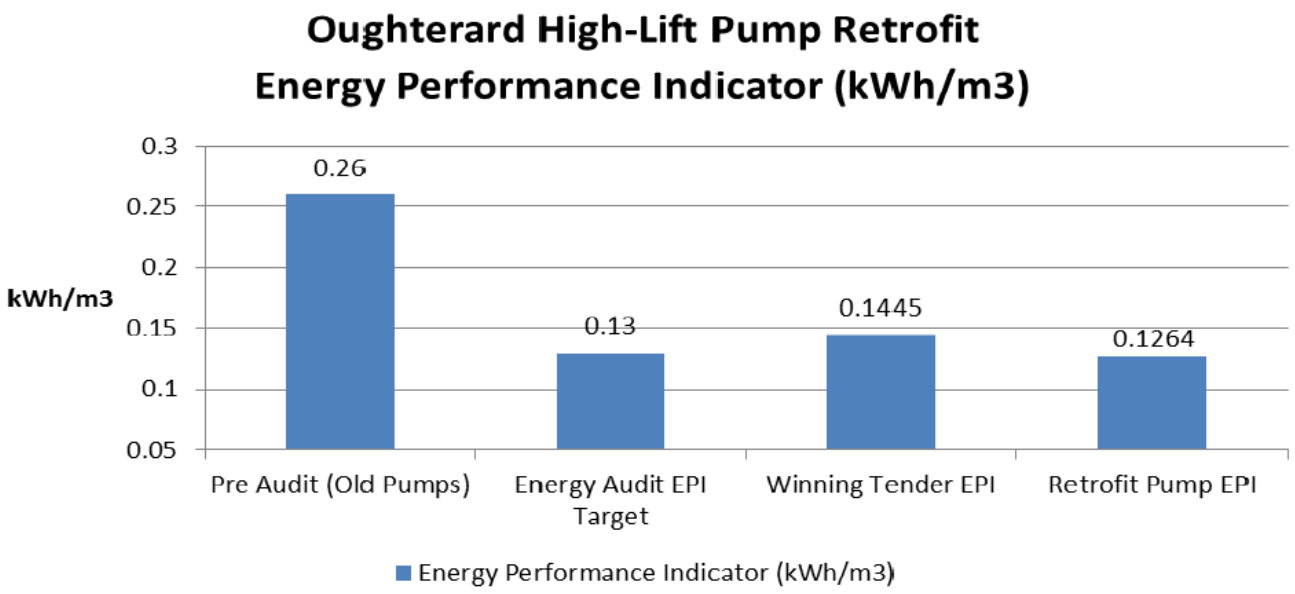
The table below is an extract of the main elements used to calculate a 5 year cost for the pumping systems. Tenderers bid in the five year running costs. This forms the basis for awarding maximum awards in the tendering process. In this case the project is awarded on the lowest cost, but it is the lowest running costs as opposed to upfront capital costs.

The retention, approximately 5% was withheld pending proper commissioning and measurement to confirm the pumping system operated as designed.

Response:	kWh /m3	M3/year	Euro/ kWh	Cost Per annum	Cost 5 year
Retrofit pump @ 185 m3/h		60,7725		0.16	
Retrofit pump @ 160 m3/h		26,7180		0.16	
Total energy cost (A)					
Fixed price lump sum capital cost (B)					
Total 5 year cost (Energy + Capital) (A+B)					

The result of using this process is the bidders now know they need to be proposed the best energy solution, and ensure they are installed and commissioned properly. Pump systems are a 'no brainer' for EPRP, as the design and commissioning are crucial to achieving the savings. A 1% difference in efficiency of the pumps tendered can equate to one third the cost of the capital costs in terms of five year energy costs.

Results
The results are impressive. The graphic below highlights the performance improvements.


Oughterard High-Lift Pump Retrofit
Energy Performance Indicator (kWh/m3)
kWh/m3
0.3
0.25
0.2
0.15
0.1
0.05
0.26
0.13
0.1445
0.1264
Pre Audit (Old Pumps)
Energy Audit EPI Target
Winning Tender EPI
Retrofit Pump EPI
Energy Performance Indicator (kWh/m3)