

**REPORT TO: EDUCATION COMMITTEE - 23 OCTOBER 2006**

**REPORT ON: SCHOOLS FUND 2006/07 - ADDITIONAL ALLOCATION**

**REPORT BY: DIRECTOR OF EDUCATION**

**REPORT NO: 614-2006**

## **1.0 PURPOSE OF REPORT**

1.1 This report seeks to inform the Committee of the additional capital allocation from the Scottish Executive to School Fund in 2006-07, to seek approval from the Committee of the projects identified and recommended to be funded from this additional allocation and to seek approval to proceed with the procurement of these works relating to the projects.

## **2.0 RECOMMENDATIONS**

2.1 The Education Committee is requested to:

- (a) approve the projects recommended by the Director of Education (Appendix 1);
- (b) authorise the City Architectural Services Officer to negotiate offers, obtain tenders or partnership agreements for the Capital works detailed in Appendix 1; and
- (c) authorise the Depute Chief Executive (Support Services) in conjunction with the Director of Education to accept negotiated offers, tenders or partnership agreements as recommended by the City Architectural Services Officer for the works to be undertaken by Dundee Contract Services and other contractors.

## **3.0 FINANCIAL IMPLICATIONS**

3.1 The anticipated expenditure from the stated projects will be met from the schools fund 2006/07 - additional allocation which will be added to the Capital programme. The balance of additional allocations will be used to fund projects already identified in the capital programme.

## **4.0 SUSTAINABILITY POLICY IMPLICATIONS**

4.1 The proposals for solar heating, combination heat and power unit, thermostatic radiator valves and energy efficient lighting satisfy and address the Energy and Water principals of the sustainability policy by reducing the consumption of energy and fossil fuels, reducing CO<sup>2</sup> emissions and promoting energy efficient systems.

## **5.0 EQUAL OPPORTUNITIES IMPLICATIONS**

5.1 None.

## **6.0 BACKGROUND**

6.1 The Scottish Executive have announced a one-off £30,000,000 addition to the Schools Fund for the current financial year from which the specific allocation to Dundee City Council is £764,000. This additional resource must be spent this financial year ie by end of March 2007.

This additional money for school building improvements should fund:

- (a) Energy efficiency measures such as improved heating, better insulation, solar panels and wind power;
- (b) Spruced up canteens to encourage more pupils to eat healthy school meals;
- (c) Cashless payment systems for canteens which provide anonymity for those pupils eligible for free school meals, thereby encouraging more to take them; and
- (d) Enhance sports facilities and playgrounds.

The proposed works identified to be funded from this Additional Allocation are stated in Appendix 1 with each project identifying which of the criteria from the Scottish Executive is satisfied.

To ensure the works are carried out timeously it is envisaged that Dundee Contract Services will carry out a portion of these works and it is considered beneficial that the Depute Chief Executive (Support Services) be empowered to accept the most favourable offers, tenders or partnership agreements for all these works.

## **7.0 CONSULTATION**

7.1 The Chief Executive, the Depute Chief Executive (Finance), Depute Chief Executive (Support Services) and the Managing Director of Dundee Leisure have been consulted in the preparation of this report.

## **8.0 BACKGROUND PAPERS**

8.1 None.

Anne Wilson  
Director of Education

17 October 2006

**SCHOOLS FUND 2006/07 - ADDITIONAL ALLOCATION  
CAPITAL WORKS - EDUCATION DEPARTMENT**

1. St John's High School - Solar Heating

A report prepared by the Building Services Manager - see Appendix 2 - recommends the installation of solar panels to the gym hall roof at St John's High School. This project satisfies the Scottish Executive Criteria A.  
Estimated cost £88,000.

2. Menzieshill High School - Convert Heating from Oil to Gas and Install New Boilers

See Option Appraisal - Appendix 3. This project satisfies Scottish Executive Criteria A.  
Estimated cost £230,000.

3. St Joseph's Primary School - New Gym Floor and Servery Improvement

The existing gym hall doubles up as gymnasium, games hall and dining facility. The gym floor is of timber construction which has undergone numerous repairs during its life and whilst can be maintained in a relatively safe condition - it has come to the end of its useful life - and its condition severely restricts the extent of physical activities and games that can be undertaken by pupils and community.

The location of the existing servery, whilst functional, is not conducive to encouraging pupils to eat healthy school meals, also inhibits the safe use of the gymnasium.

It is proposed to replace the existing timber floor with a sports floor covering, thereby allowing pupils and community to engage in a wider range of games and activities together with upgrading and improving the servery location, providing chair and table storage to encourage more pupils to eat healthy school meals and to allow safer use of the gymnasium. This project satisfies Scottish Executive Criteria B and D.  
Estimated cost £50,000.

4. Menzieshill High School - New Gym Floor and Upgrade Gym Windows

The construction of the floor allows water ingress below the existing floor covering causing frequent failure in the surface resulting in long periods that the gymnasium cannot be used. The historical repairs to the high level windows in this gymnasium have rendered these windows to be inoperable resulting in excessive heat build up within the gymnasium which also restricts the physical activity that can be undertaken.

It is proposed to replace the existing floor covering with a timber sprung floor incorporating an appropriate damp proof membrane which will alleviate the moisture problem and also to replace the high level windows with controlled opening windows. Both these measures will allow full range of physical education and games activities to be undertaken by pupils and community. This project satisfies Scottish Executive Criteria D.  
Estimated cost £40,000.

5. Morgan Academy - New Fitness Suite

Morgan Academy delivers all its physical education activities at the Dundee International Sports Centre (DISC). Morgan has exclusive use of the major areas during the school day. As part of the Standard Grade and Higher curriculum it is necessary for pupils to have access to the facilities of a fitness suite. There is presently a fitness studio at DISC which is open to the public during the school day. Due to child protection issues the school cannot make use of this facility. It is proposed to convert two rooms at DISC into a fitness suite that can be exclusively used by the school during the school day and could also be used by the community at other times. This project satisfies Scottish Executive Criteria D.  
Estimated cost £30,000.

6. Menzieshill High School - Playing Field Flood Prevention

The blaze pitches at Menzieshill High School have compacted over the years making them very impervious. During periods of heavy rain there is severe flooding making the pitches unusable for long periods. Where rainwater does manage to run off the pitches it causes severe flooding to adjoining residential properties. It is proposed to construct a French Drain which runs into a new large soak-away. This would allow the rainwater to disperse more efficiently and help prevent flooding and render the pitches more usable by the school. This project satisfies Scottish Executive Criteria D. Estimated cost £13,000.

7. Swimming Pool - Combination Heat and Power Unit

It is proposed as a pilot to provide a combination heat and power unit to one of the school swimming pools. This unit is a gas fired engine which heats the pool water and as a by product provides approximately 5.5 kilowatts of electricity to power the swimming pool pumps and fans. The anticipated saving is approximately £3000 per annum. This scheme satisfies Scottish Executive Criteria A. Estimated cost £17,000.

8. Selected Schools - Fit New Thermostatic Radiator Valves (TRV)

It is proposed to select several schools where TRVs can be fitted without causing disruption to the curriculum delivery. TRVs in these schools would provide a better level of control of the classroom environment and should allow for significant reduced energy consumption. This project would satisfy Scottish Executive Criteria A. Estimated cost £30,000.

9. Energy Efficient Lighting

In consultation with the Building Services Engineering Manager it is proposed to select a suitable school for this pilot installation. This project would be to convert the lighting to the circulation and possibly classroom areas to incorporate low energy lighting and presence detectors which would switch off the lighting when the areas were not occupied. This scheme would satisfy Scottish Executive Criteria A. Estimated cost £40,000.

**Report to :** Director of Education

**Report by :** City Architectural Services Officer

**Report on :** St Johns High School - Solar Panel Heating for Swimming Pool

**Report by :** Building Services Engineering Manager

## **1.0 Purpose of the Report**

The purpose of this report is to provide information on the viability of the Solar Panel system serving the swimming pool at St Johns High school, including running costs and payback based on future predicted fuel costs.

The report concludes that as the installation benefits from a 40% capital grant from the Energy Savings Trust (EST) under their Scottish Community and Householder Renewables Initiative (SCHRI), and the payback for the solar panel installation is approximately 12 years,

It is estimated that the Education Department will achieve a financial saving of £4336 in the first year of operation, and over £426,000 cumulative savings over a 25 year period.

Savings in CO2 emissions are estimated to be 28,500 kg per annum, with a cumulative saving of 712,500kg over 25 years

If the installation is carried out it is believed that this will be the largest solar panel installation in Western Europe

## **2.0 Recommendations**

The report recommends that the Education Department capitalise on the available grant to achieve increased energy efficiency and contribute the balance of £87,600 to realise the project.

Please note that the total cost of the installation is £146,000 however a grant application to the Energy Savings Trust has been successful in obtaining a contribution of £58,400.

## **3.0 Background**

The solar panels would be mounted on the existing gym roof, and will deliver the solar heat to the adjacent swimming pool plant room.

Various types of solar systems ranging from flat plate collectors to evacuated solar tubes were considered, manufactured and installed by the following three organisations, who are all Clear Skies approved;

- Riomay
- Solheat
- AES

The installation will be complete with an easy to read display panel, located in a prominent location within the school. This will reveal the temperature readings in the system and the cumulative energy saved. An educational video will also be provided for the school, describing the manufacturing process, the installation and how the system operates. This package provides the necessary links to involve the interests of the pupils and community.

#### 4.0 Conclusions

The evacuated tube system offered the best solution due to the following advantages

- higher efficiency, providing heat even during overcast conditions
- extended life expectancy
- system can be used in sub zero temperatures without the sustaining damage.
- financial payback period is more attractive.

Riomay offer the best value to the project, as their system is highly efficient and is able to provide the lowest surface area for output ratio.

Tests carried out by the DTI 2 years ago showed that their product is the most efficient in the solar panel market.

Riomay have installed a very similar system at Bridge of Don Academy, Aberdeen where they provided a full service ensuring all parts of the system were supplied and installed to a satisfactory standard.

Table 1. below shows the savings expected with this system over a period of 25 years.

Assumptions are made on the fuel cost supplied by the Dundee City Council Energy Advisor,. anticipate at least a 60% increase by April next year over the current price of 1.608p/kwh to 2.628p/kwh. An assumption is also made on the 40% grant being awarded

Output of System	150,000kw/h
Annual Fuel saving	£3,942.00
Capital cost of system	£146,000.00
Grant level	40%
Actual Capital Cost	£87,600
System Lifetime	35 Years
Efficiency of Gas	70%

<b>Table 1. Expected Savings</b>							
Fuel type	Price (p/kwh)	Annual saving (kwh)	Annual Saving (£)	Simple Payback (years)	kgCO2/kwh	Annual CO2 saving (kg)	CO2 saving over 25 years (kg)
<b>Gas</b>	<b>2.628</b>	<b>150,000</b>	<b>3,942</b>	<b>22</b>	<b>0.19</b>	<b>28,500</b>	<b>712,500</b>

Table 2 below also shows the savings over a 25 year period taking into account an assumption of inflation (10%) which reduces the payback of the system to around 12 years. These calculations are also based on the project benefiting from a 40% grant.

The table illustrates on a 25 year basis (up to 2031), the cost per kwh installed is only 1.5p.

As illustrated above the, expected tariff for gas from next year will be 2.628p per kwh. This indicates the potential energy saving which can be made with this system.

**Table 2.**  
**Expected savings taking into account fuel inflation.**

Year	Gas price p/kwh	inflation 10%	Annual saving(£)	Annual saving (kwh)	cumulative savings
2006	0.2628	0.28908	4336.2	150000	4336.2
2007	0.28908	0.317988	4769.82	150000	9106.02
2008	0.317988	0.349787	5246.802	150000	14352.82
2009	0.349787	0.384765	5771.482	150000	20124.3
2010	0.384765	0.423242	6348.63	150000	26472.93
2011	0.423242	0.465566	6983.493	150000	33456.43
2012	0.465566	0.512123	7681.843	150000	41138.27
2014	0.512123	0.563335	8450.027	150000	49588.3
2015	0.563335	0.619669	9295.03	150000	58883.33
2016	0.619669	0.681636	10224.53	150000	69107.86
2017	0.681636	0.749799	11246.99	150000	80354.85
2018	0.749799	0.824779	12371.68	150000	92726.53
2019	0.824779	0.907257	13608.85	150000	106335.4
2020	0.907257	0.997983	14969.74	150000	121305.1
2021	0.997983	1.097781	16466.71	150000	137771.8
2022	1.097781	1.207559	18113.38	150000	155885.2
2023	1.207559	1.328315	19924.72	150000	175809.9
2024	1.328315	1.461146	21917.19	150000	197727.1
2025	1.461146	1.607261	24108.91	150000	221836
2026	1.607261	1.767987	26519.8	150000	248355.9
2027	1.767987	1.944786	29171.79	150000	277527.6
2028	1.944786	2.139264	32088.96	150000	309616.6
2029	2.139264	2.353191	35297.86	150000	344914.5
2030	2.353191	2.58851	38827.65	150000	383742.1
2031	2.58851	2.847361	42710.41	150000	426452.5
					<b>426452.5</b>

energy saved over  
35 years life time      5,250,000kwh  
cost of installation      £87600

**cost per kW installed      1.7 pence**

## EDUCATION CAPITAL PROGRAMME 2006/2007

### OPTION APPRAISAL

#### MENZIESHILL HIGH SCHOOL

#### CONVERT HEATING FROM OIL TO GAS

##### 1. Project Statement

This project complies with the principles of energy and water within the sustainability policy in so far as it will reduce the consumption of energy and fossil fuels, reduce CO<sub>2</sub> emissions and promote the use of an energy efficient system.

##### 2. Define a Need for the Objective of the Project

The existing boilers are oil fed, inefficient, coming to the end of their useful life - having undergone several recent reactive repairs, the oil fuel also emits noxious fumes that linger around the games hall causing discomfort to users.

##### 3. Options

The options are as follows:

- (a) renew the existing boilers with gas fired boilers with a new gas supply;
- (b) renew the boilers with oil fired boilers;
- (c) do nothing.

##### 4. Cost Implications

- (a) The capital cost of option (a) has been assessed at:

New gas supply	£80,000
New gas fired boilers	<u>£150,000</u>
Estimated total cost	<u>£230,000</u>

Other than loan charges there will be revenue savings of approximately £16,700 per annum, at current energy costs, as a result of the conversion from oil to gas.

- (b) The capital cost of option (b) has been assessed at approximately £140,000.

Other than loan charges there will be no revenue implications with this option.

- (c) There will be no capital costs incurred with option (c). There are likely to be significant revenue implications resulting from anticipated reactive maintenance in responding to boiler failures - resulting eventually in having to replace the boiler.



## **5. Non Monetary Costs and Benefits of Each Option**

- (a) Under option (a) there will be reduced consumption of energy and fossil fuels, reduced CO<sub>2</sub> emission and removal of noxious diesel fumes from the oil tank vents.
- (b) Under option (b) although with a new more efficient oil fired boiler there will still be a greater CO<sub>2</sub> emission than with a gas fired boiler. There will still be periodic emission of noxious oil fumes from the oil tank vents.
- (c) Under option (c) there is likely to be a continued deterioration in the efficiency of the existing oil fired boiler resulting in increased fuel consumption and greater CO<sub>2</sub> emissions.

## **6. Identify Chosen Option**

The most suitable option in both monetary and non-monetary terms is option (a).