

**Report to:** Finance Performance Group

**Report from:** Chief Officer of Public Private Partnerships & Procurement Units

**Date of FPG meeting:** N/A – to be ratified outside of group meetings

**Business case for:** the use of unsupported borrowing

**Name of scheme**

Heating infrastructure upgrade at Tropical World, focussing on biomass boiler installation
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### **Objectives of the scheme**

1. To reduce fuel bills for Tropical World.
2. To reduce the council's carbon emissions and their associated costs.
3. To improve security of supply for council fuel requirements.
4. To help test the performance of biomass boilers by incorporating a larger scale biomass boiler into an existing pilot scheme, the performance of which can subsequently be monitored and assessed.
5. Building on the above, to identify criteria to inform selection of sites for future biomass boilers.
6. To assist in raising awareness of biomass possibilities council-wide.
7. To bolster the educational output of the site in terms of teaching children about the virtues of environmental protection.

### **Departmental priority for the scheme**

Tropical World is the 2<sup>nd</sup> biggest gas consumer in the council. The reasons for this are obvious; it's an enclosed menagerie that has to maintain high temperature set points by virtue of the exotic flora and fauna contained within. In addition, it's an old construction and the aluminium frame and polycarbonate panels are not airtight, which allows heat to infiltrate across the membrane into the external environment, i.e. heat is wasted. Unfortunately, it would be prohibitively costly to replace the fabric of the building and hence, an alternative methodology was required in order to address the budgetary pressures caused by the site's excessive consumption.

Expanding upon the above, the site is in dire need of a heating infrastructure upgrade. The existing boiler is 10 years old and its back up (sister) boiler has been condemned as beyond repair. As such, the strain on the remaining aged boiler is a risk to the site as any failure – even over short timescales – could lead to the loss of many of the site's plants and animals. The manifestation of such an incident would

cause huge reputational damage to the council, as well as costly remedial action, and revenue from gate receipts would undoubtedly be lost.

Aside from the biomass boiler installation, the old conventional boiler will be replaced with a modern, more efficient modular boiler and heat will be shared between this and the biomass boiler to maximise the efficiency of output in order to favour the generation of improved income for the site (via the use of an 'intelligent' building management system – BMS). The biomass boiler will also serve to solve another salient issue that has afflicted the site from a heating perspective. In two of the 'houses' – the Amazonian and Australasian – the heating is provided primarily (or in its entirety) by ceiling mounted AmbiRads. These use radiating tubes – which are gas fired – but are highly inefficient, restrict space, scorch growing foliage, and can be deleterious to birdlife onsite. As part of the additional enabling works the AmbiRads will be removed and heat will instead be provided by air handling units (AHUs) that will be fed by the biomass boiler and whose function will be to blow hot air into the enclosures via an innovative fabric-based 'sock' system.

The partial retrofit to convert a large proportion of the site from gas fired heating to wood pellets will contribute to the council's Carbon Reduction Commitment (CRC) obligations by saving an estimated 328 tonnes of carbon annually. At current CRC rates (£15.60 per tonne), this represents a cost benefit of £5,117, which over 20 years equates to £102K without even considering the inevitable increases that will be applied to the notional cost of carbon rate.

Tropical World has a year round 24 hour heat demand. This means that its kWh demand profile is relatively flat. From a biomass boiler perspective this is ideal as it necessitates a consistent supply of heat. Other building types, such as schools, have close to zero demand at certain times of the year and therefore, rarely stack up financially. With this in mind, this site is the best possible candidate for a biomass boiler scheme in the entire council and as such, the returns that will be liberated from the renewable heat incentive (RHI) are substantial. RHI is a government subsidy designed to encourage the uptake of renewable energy investments.

There will also be significant gas savings from incorporating a biomass boiler into the site's heat provision mix. However, these will be offset to a large extent – in the 1<sup>st</sup> few years of the scheme – due to the corresponding purchase of wood pellets to counteract the shortfall in heat provision caused by removing the AmbiRads.

## **Contextual background**

It should be noted that this standalone scheme has fallen out of an existing programme called RE:FIT phase 2. Under that scheme's umbrella, in the week commencing the 20<sup>th</sup> of October the council was on the verge of signing a call-off contract with E.On to deliver the agreed works, having received the necessary planning consents to go ahead with the scheme. However, without any prior warning the contractor announced that they were exiting the energy efficiency market with immediate effect. This came as a complete surprise to all involved in the project but the decision was made by the appropriate E.On entity – E.On Connecting Energies – because they felt that energy performance contract models offered limited commercial returns to them as a business. As such, in their opinion it was untenable

to commit to new projects, especially given their intention to disband that business area. For obvious reasons, this left the future of the proposed Tropical World scheme in a precarious situation.

Fortunately, the council has brokered a proposed solution which is seeking to retain the services of the subcontractors that E.On had provisionally appointed to carry out the desired work. This is bolstered by us being able to employ the project (contract) and site managers formerly on E.On's payroll (as they are to be released from E.On's employment: those roles are to be provided by Paul Redding and Mark Feugill respectively). This is advantageous because these individuals designed the scheme so have an intimate knowledge of how it is to be delivered. Furthermore, their technical capabilities have been checked and they have combined experience of more than 50 years in the field.

In terms of background, it should be noted that phase 2 of the council's RE:FIT work had been subject to sizeable delays. A considerable amount of time elapsed between contract award and proposals reaching a point where they could be signed off as viable schemes. Whilst this was disappointing it was a direct result of legacy issues from the 1<sup>st</sup> phase of the programme wherein there was a problem with access to building management systems, which had a detrimental effect on us being able to agree upon a suitable measurement and verification regime. This was closed down as an issue at the start of 2014 and subsequently, there had been renewed focus on moving forward phase 2 of our corporate energy performance contracting programme.

In addition, there have also been performance issues with phase 1 in terms of energy saving shortfalls. However, corrective work is underway to address this failing and there are contractual mechanisms in place to protect the council. Indeed, we have been assured by E.On that their corporate restructuring and withdrawal from RE:FIT phase 2 will have no effect on their contractual obligations under phase 1. Over the coming months, we will be strengthening our efforts to expedite the necessary improvements to performance in this regard. Furthermore, a report will be shared with FPG in the near future in respect of phase 1 issues experienced.

Over the past 12 months Tropical World had been the priority in the council's phase 2 programme. The rationale for this focus was primarily the site's pressing need for an upgraded heating system. The considerable time resource expended by LCC and E.On in analysing the energy saving potential at the site culminated in an investment grade proposal that focussed primarily on the incorporation of a biomass boiler. This was to take advantage of a government subsidy designed to increase the adoption of renewables technologies, i.e. the RHI.

Given the nature of the internal works that needed to be carried out at the site with respect to the scheme, the site manager agreed to a building shutdown period of 6 weeks to allow the works to be completed. Considering Tropical World's standing as a very popular Leeds based attraction, the agreement to engage in this closure represents a quantifiable loss of income. The shutdown period was extended specifically to make allowances for this scheme but there are also some other improvement works being undertaken concurrently onsite over the Christmas holiday.

The shutdown created a limitation around timescales, which meant that the programme had to be compartmentalised to a high degree of accuracy in order for the schedule to be met. The main issue in this regard is to ensure that orders for key pieces of equipment are placed before the 'drop-dead' dates for delivery lead-in times. Linked to this, another crucial deadline is the 31<sup>st</sup> of December 2014 as after this point the RHI rates are subject to change. In July 2014 the financial incentives available via the RHI reduced by 5%. In October 2014 the RHI rates were again lowered, this time by 10%. This process is known as degression and its primary purpose is to ensure that the budget set aside by the government for the subsidy can cope with the increasing proliferation of renewable energy projects across the country. Industry observers expect that degression will also occur in subsequent quarters given that the uptake of biomass boilers is increasing way above expectations. The hope is that technological advancements and increased demand will drive down CAPEX costs for the associated equipment to counteract the effect of reducing subsidies but this is not guaranteed, especially over the short to medium term. As such, the importance of achieving the earmarked delivery timescales was reinforced by the recent industry developments that have served to lower the RHI subsidy.

The only difference between this proposal and the previous one that was to be delivered by E.On is the loss of the savings guarantee that would have been embedded into the RE:FIT contract. Indeed, it must be noted that if we choose to go down the route supported in this report, there will no longer be a 3<sup>rd</sup> party risk transfer since there will be no contractually embedded savings guarantee. This was a RE:FIT specific facet, which is now lost. This means that the risk for achieving the savings will be borne by the council. However, the returns associated with this scheme flow principally from the government subsidy for biomass heat generation, i.e. the RHI, and not via gas savings in isolation. Through well-established benchmarks for boiler usage, we can be fairly certain that the 5,000 operational hours earmarked for annual biomass boiler usage will be at least matched and probably exceeded, particularly through adoption of a rigorous and consistent building management system (BMS) strategy, implemented by Parks and Countryside staff onsite and monitored remotely by the council's centralised BMS server.

As such, the financial 'savings' (or income) should be relatively secure and hence, the lack of a contractual savings guarantee becomes less crucial than it would be in similar energy efficiency schemes. It is also pertinent to note that the council's other main experience with renewables, a corporate photovoltaic (PV) scheme, has been successful despite the absence of contractually binding levels of performance. In addition, as alluded to Tropical World is the best possible candidate, internally, for a biomass scheme because it has a 24/7 heat demand.

It is felt that the original approval to inject money into the capital programme as per the approvals granted in respect of RE:FIT phase 2 (July 2012) should still stand. This would be justified on the basis that the Tropical World scheme was to be undertaken under the auspices of that overarching initiative in any case and hence, does not constitute a material change to the core purpose of the initially envisaged project. Therefore, it is recommended that it is considered that the prevailing injection of capital remains in place and should be used accordingly to deliver this scheme.

## CAPEX information

Project costs are to be provided from multiple sources, namely: prudential borrowing, capital funding from corporate property management (CPM), and Salix. It is pertinent to note that this scheme is much more than just a straight boiler replacement. There will be a new gas fired boiler installed onsite and there is other associated heating infrastructure that feeds into the overall scheme. The table below shows the breakdown of CAPEX costs.

Capital breakdown		Cost	
BEMS upgrade	1. BEMS upgrade + sensors	£32,400	
	2. Electrical works	£3,877	
<b>Total Salix funded items for BEMS upgrade</b>		<b>£36,277</b>	
Heating improvement	3. 199kW Biomass package + civils	£80,568	
	4. AHU installation	£54,238	
	5. Ductwork installation	£19,776	
	6. Builders work for AHU	£7,309	
	7. LPHW pipework AHU	£39,600	
	8. LPHW pipework biomass	£32,619	
	9. Access for htg install/strip out	£9,000	
	10. Boiler infrastructure upgrades (links to item 13)	£30,000	
	<b>Total on energy saving side (&amp; share of enabling work)</b>		<b>£273,110</b>
	Additional works - classed as enabling - falling outside of 'spend-to-save' element - from 'CPM capital maintenance scheme'.	11. Access for htg install/strip out	£19,500
12. Ambi-rad strip out		£6,814	
13. Heating boiler replacement		£25,623	
14. Connection of extractor fans to enable BMS control		£4,000	
<b>Total enabling works (share of overall covered by CPM)</b>		<b>£55,937</b>	
External project management + site preparation	15. Contract/project manager fees	£25,675	
	16. Site fencing, signage, first aid, etc.	£2,000	
	17. Landscaping onsite to comply with planning conditions.	£2,000	
<b>Total costs for external PM &amp; site preparation</b>		<b>£29,675</b>	
LCC internally capitalised costs	18. Project management	£39,255	
<b>Total LCC specific capitalised costs</b>		<b>£39,255</b>	
<b>Total Salix-funded capital costs</b>		<b>£36,277</b>	
<b>Total prudentially borrowed capital costs</b>		<b>£342,040</b>	
<b>Internal contribution from CPM capital funding</b>		<b>£55,937</b>	
<b>Total CAPEX all items</b>		<b>£434,254</b>	

A proportion of the funding is to come from Salix, wherein the council holds a centralised recycled fund for these types of projects (known as SERS). Salix is a central government supported body that provides interest free loans to the public sector for energy efficiency projects. The benefit of using Salix money for some of this requirement is the fact that it reduces the prudential borrowing cost of finance liability, where the current fixed interest rate – chosen internally – is 4.5%. However, Salix approvals need to be expedited as a matter of urgency to secure the necessary

funding. Assistance needs to be provided by CPM to facilitate this. Once secured, the funding needs to be transferred into the appropriate capital budget for this scheme, i.e. 16669 / 000 / 000. In terms of the value set aside for this in the table above, a 15% uplift will be applied as per corporate requirements and the loan agreement signed by Parks & Countryside (P&C) will reflect this.

The financial model appended to the last page of this report shows that the associated returns are very positive from a financial standpoint. The scheme has a simple return on investment of 241% and a net present value (over 20 years) of £570K. Furthermore, the scheme will have an annual surplus from year one.

In addition to the above, the scheme will reduce the council's CRC obligations by at least £100K over the project's lifetime (£5k multiplied by 20 years) and there will be a significant net maintenance benefit straight away from removing the majority of the AmbiRads within the building (and replacing the old boiler).

A share of the funding is to be provided by CPM. The logic of this is that there are clear synergies between the energy saving component of the scheme and the additional enabling works that the council would need to tackle internally with or without this scheme. As such, it made sense for an internal investment to be made in order to reduce costs later down the line (as well as to address the growing risks that would be posed by the potential failure of aged equipment). The apposite sum is £55,937 and a design & cost report (DCR) covering this is being submitted to senior management in Civic Enterprise Leeds (CEL). There needs to be agreement that the DCR in question be sanctioned expeditiously and the money cascaded from the applicable budget into the capital scheme relating to RE:FIT phase 2. In the interim, purchase orders will undoubtedly need to be placed; however, there should be no impediment to this given that the RE:FIT phase 2 budget should 'contain' in excess of £1.4m based on the already approved capital injection.

It should be noted that good value should naturally be embedded into this scheme. In support of this assertion, it is salient to reference the fact that the project is based on E.On costings that were achieved on the basis of their considerable leverage in the market. We can reasonably speculate that it is highly unlikely that the council could have obtained similar quotations had it attempted to deliver the scheme by itself. Furthermore, by removing E.On from the equation, we have been able to eliminate their corporate mark-up from the CAPEX items listed in the table on the previous page. This has had a beneficial impact on the financial model.

The cost of borrowing – prudentially and via Salix – will be met in part by savings arising from using wood pellets for a section of the site rather than grid-fed gas across the board. However, the most important element by far will be the income from central government's RHI. Nevertheless, it is expected that the impact of the gas savings will increase annually due to fossil fuel inflation being forecast to be at least double that of biomass fuel.

In terms of procurement, the DCR that will be submitted to Neil Evans imminently sets out the prescribed route and will request authority to waive the council's contract procedure rules in order to award 5 contracts – without competition – to the following commercial entities:

- Heating infrastructure (Sayes) – £215,979
- Biomass boiler (Synergise) – £80,568
- Scaffolding (RIM) – £28,500
- Building management system (Matrix) – £40,277
- Project / contract / site management and design of the overall scheme (Redding Associates) - £27,675
- **Total** = £392,999

The scheme will cost more than the total above due to the addition of the 15% mark-up for the Salix money (£5,442). In addition, a fee has been included for internally capitalised project management costs already incurred by the council (£39,255). Finally, a sum of £2K has been set aside for P&C to complete landscaping works onsite, which are a prerequisite of imposed planning permission conditions.

- £392,999 + (£5,442 + £39,255 + £2,000) = £439,696

This overall figure matches the totals shown in the table below:

Funding Approval :	Capital Section Reference Number :-		16669 / 000 /000				
Previous total Authority to Spend on this scheme	TOTAL	TO MARCH	FORECAST				
	£000's	2012 £000's	2012/13 £000's	2013/14 £000's	2014/15 £000's	2015/16 £000's	2016 on £000's
LAND (1)	0.0						
CONSTRUCTION (3)	0.0						
FURN & EQPT (5)	0.0						
DESIGN FEES (6)	0.0						
OTHER COSTS (7)	0.0						
<b>TOTALS</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
Authority to Spend required for this Approval	TOTAL	TO MARCH	FORECAST				
	£000's	2012 £000's	2012/13 £000's	2013/14 £000's	2014/15 £000's	2015/16 £000's	2016 on £000's
LAND (1)	0.000						
CONSTRUCTION (3)	372.766				372.766		
FURN & EQPT (5)	0.000						
DESIGN FEES (6)	0.000						
OTHER COSTS (7)	66.930				66.930		
<b>TOTALS</b>	<b>439.696</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>439.696</b>	<b>0</b>	<b>0</b>
Total overall Funding (As per latest Capital Programme)	TOTAL	TO MARCH	FORECAST				
	£000's	2,012 £000's	2012/13 £000's	2013/14 £000's	2014/15 £000's	2015/16 £000's	2016 on £000's
CPM capital scheme	55.937				55.937		
Corporate USB	342.040				342.040		
Any Other Income (Salix)	41.719				41.719		
<b>Total Funding</b>	<b>439.696</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>439.696</b>	<b>0</b>	<b>0</b>
<b>Balance / Shortfall =</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>

It should be noted that a number of transactions have already been charged to the capital budget code for RE:FIT phase 2. Those costs cover the following elements: initial governance and approvals to go ahead; the tendering process and all this entailed; contract award; post-award liaison with E.On to guide their drafting of investment grade proposals; site engagement; and, internal technical assistance. The costs have been incurred via chargeable time expended by PPPU and CPM staff. In terms of figures, up to £80K has been already been expended under RE:FIT phase 2 (this year's costs and some from last year are still to be quantified).

However, Tropical World cannot be expected to bear all those costs. The £39k is both equitable and proportionate to the time outlaid in helping to make this scheme a reality for that site. The wider issue regarding the overspend in the budget is a matter for further discussion between officers of appropriate seniority.

## Revenue implications

The annual annuity for prudential borrowing (PB) will be £26,295, for a period of 20 years, this on the basis of borrowing £342,040 over that time span and applying the council's standard 4.5% interest rate for PB. The cost of finance £183,854 and hence, the total annuity is £525,894. Initially, there will also be an annual charge for the Salix borrowing but this will be repaid within 5 years.

**Biomass pellets** – The cost for this is still to be ascertained as the tender has not yet been released. In the interim, a notional figure of 4.2p/kWh has been used for the purposes of the financial model but it is envisioned that we will achieve a better price than this once we go through a competitive procurement process. E.On were of the belief that based on their soft market test we should be able to achieve somewhere in the region of 3.6p/kWh. If true, this will only improve the business case. As the pellets will be required for 20 years and the costs will increase broadly in line with RPI, we want to add an annual 3% uplift to the costs set aside for this purpose in the site's budget. The 3% figure was selected based on what's been used previously in similar business cases submitted to FPG (as were all the inflationary percentages used in the model).

**Maintenance** – the maintenance 'burden' introduced is transcribed below:

- Biomass boiler (first 5,000 hours of operation) – £950
- AHU servicing (2 visits including filter changes) – £2,292
- Modular boiler (2 visits, labour only) – £840
- **Total** = £4,082

This will form an annual charge for the lifetime of the equipment. However, there is also a substantial saving in terms of no longer having to scaffold up to and maintain the AmbiRad system, which will be decommissioned and removed as part of this scheme. The existing maintenance costs for the servicing of the affected AmbiRads and the existing boiler was quantified by CPM as £8,080. As such, in year one there is a net benefit of £3,998 (= **-£4,082** + £8,080). Therefore, CPM will save money from its centralised maintenance budget. The change will be neutral to the site because they don't pay for this maintenance themselves but it still provides a positive impact to the overall business case.

Regardless, the site/CPM will still need to make arrangements to find expertise – internal or external – that can be used to provide the required 'new' maintenance. It should be noted that the allowance made for maintenance will need to increase with 'RPI' (at a selected rate of 3%) year on year. Given the urgency of the works it is proposed that arrangements for servicing and maintenance will be dealt with once the works are underway.



**RHI** – in terms of the entry for ‘external income generated’, the figure offered is attributable to RHI. The exact mechanism for how this will be paid to the council is still to be clarified; however, this is the figure that we envisage receiving in the 1<sup>st</sup> year. Thereafter, the RHI will be index-linked and as such, will increase over time. This is important because the relevant inflationary rises in different cashflow items all feed into the financial model and indeed, the payback. Pertinently, Redding Associates are going to prepare the RHI application on our behalf, which is advantageous given that the council has not processed an RHI application before in its own right.

### **How will the decision be taken?**

The decision already has approval in principle from The Director of Environment and Housing.

### **Head of Finance Comments**

