

## ITEM NO: 7(c)

**Report To:** CARBON REDUCTION PANEL

**Date:** 22 November 2012

**Reporting Officer:** Elaine Todd – Assistant Executive Director – Asset and Investment Partnership Management

**Subject:** ENERGY REDUCTION PILOT SCHEME DUKINFIELD TOWN HALL

**Report Summary:** This report summarises a proposal to retrofit one of the Council's prestigious buildings with the objective of reducing energy consumption and CO2 emissions. It is intended that this will be a pilot project and if successful will be replicated in other retained buildings.

**Recommendations:** That the Carbon Reduction Panel support the proposal to submit a capital bid to the Council to implement the energy reduction scheme.

**Links to Community Strategy:** The reduction of carbon emissions and contributes to a more sustainable environment and leads to a more attractive borough. The reduction in the consumption of energy, will also result in a reduction in expenditure and will contribute to the achievement of savings targets.

**Policy Implications:** In line with current policy.

**Financial Implications:**  
**(Authorised by the Borough Treasurer)** It is in the Council's interest to reduce the amount of energy consumed in its operational buildings. The corporate landlord has a well reported £4 million revenue savings target. The actual savings that will be achieved cannot be accurately calculated, as these will depend on the future cost of energy, which have in recent years increased, significantly higher than Retail Price Index.

**Legal Implications:**  
**(Authorised by the Borough Solicitor)** The proposed measures will help the Council to deliver a balanced budget as well as allowing the Council to tackle climate change – something which the Committee on Climate Change has proposed should become a statutory duty for local authorities.

**Risk Management:** Failure to reduce energy consumption will result in a failure to deliver energy reduction targets and also revenue expenditure efficiency savings.

**Access to Information:** Any background papers or further information can be obtained from the report author, Elaine Todd, Assistant Executive Director, Asset and Investment Partnership Management, who can be contacted on:

 Telephone: 0161 342 3238

 e-mail: [elaine.todd@tameside.gov.uk](mailto:elaine.todd@tameside.gov.uk)

## **1.0 INTRODUCTION**

- 1.1 This report summarises a proposal to submit a capital bid to finance an energy reduction pilot project to be retrofitted at Dukinfield Town Hall.
- 1.2 The Carbon Reduction Panel are requested to review the proposal and approve the submission of a bid for finance the proposal.

## **2.0 BACKGROUND**

- 2.1 The corporate landlord service together with the Tameside Investment Partnership, who are delivering facilities management contract for corporate buildings, have for some time been reviewing the energy use in the prestigious buildings.
- 2.2 A pilot proposal for Dukinfield Town Hall was developed in the summer 2012. A key decision made by the Executive Cabinet on 24 October 2012, approved the proposals to rationalise the Council's assets, but retain a number of prestigious or civic buildings, including Dukinfield Town Hall. Now that the retention of the building has been approved, it is proposed that the energy reduction proposal is implemented, if the bid for capital investment is successful. If implemented the impact will be reviewed and if energy consumption is proved to be achieved, similar proposals will be brought forward, for review for other retained buildings. A copy of the proposal is attached at **Appendix 1**.

## **3.0 DETAILS OF THE PROPOSAL**

- 3.1 The condition and operation of Dukinfield town hall has been reviewed and a number of energy reduction:
  - Building fabric – additional insulation to the Jubilee Hall under floor void, in addition to additional insulation to lofts and boiler ceilings;
  - Insulation covers to the heating distribution system;
  - Automatic controls to the heating system;
  - Replacement of boilers; and
  - Replacement of lighting and controls.
- 3.2 The cost of the project is estimated at £109,571 including a 2 % TIP fee.
- 3.3 The anticipated annual savings are £14,661 at current prices.

## **4.0 CONCLUSION**

- 4.1 The Council has determined that Dukinfield Town Hall, should be retained as an asset of historic and civic importance. However the cost of operating all buildings needs to be reduced, in order to achieve savings and carbon emissions. This proposal recommends implementing an energy reduction pilot scheme, that can be reviewed
- 4.2 This proposal recommends implementing an energy reduction pilot scheme, that can be reviewed to determine how effective it has been before implementing similar schemes in other retained buildings.

## **5.0 RECOMMENDATIONS**

- 5.1 That the Carbon Reduction Panel support the proposal to submit a capital bid to the Council to implement the energy reduction scheme.

**PROPOSAL**

**Energy Saving Measures  
Dukinfield Town Hall**

**3<sup>rd</sup> July 2012**



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### Proposal

#### Energy Saving Measures – Dukinfield Town Hall

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Carillion Energy Services  
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 Swan Street  
 Isleworth  
 TW7 6RN

3rd July 2012

Adrian Mole  
 Tameside Investment Partnership  
 2nd Floor, Block E  
 1 Henry Square  
 225 Old Street  
 Ashton-under-Lyne  
 OL6 7SR

Dear Mr Mole

**Proposal: Energy Saving Measures, Dukinfield Town Hall**

Thank you for inviting Carillion Energy Services to submit proposals for implementing energy saving measures at Dukinfield Town Hall.

This proposal is based on the measures identified by our specialist energy management staff during two site visits and an analysis of the benefits of the available technical options.

The Business Case for the package of proposed measures is based on savings in the consumption of grid electricity and gas and the energy prices advised by your office.

We have projected the financial benefits of the proposed measures over ten years, though the expected lifespan of the measures is considerably longer.

Item	Description	Price (£)	Saving, Year 1 (£)	Saving over 10 years (£)	CRC Avoidance Year 1 (£)	CRC Avoidance over 10 years (£)
1	Building Fabric	£3,700	£568	£5,880	£29	£616
2	Services Insulation	£2,400	£440	£4,400	£22	£468
3	Automatic Controls/BMS	£7,000	£1,055	£10,550	£53	£1,127
4	Lighting and Controls	£53,773	£9,348	£93,480	£582	£12,370
	Sub-Total	£66,873	£11,411	£114,310	£686	£14,581
5	Heating Plant	£38,750	£950	£9,500	£48	£1,020
6	CDM Fee	£1,800				
	Total exc. VAT	£107,423	£12,361	£123,810	£734	£15,601
7	Lighting Maintenance	Incorporated in above costs	£2,300	£23,000	-	-
	<b>Overall Total</b>	<b>£107,423</b>	<b>£14,661</b>	<b>£146,810</b>	<b>£734</b>	<b>£15,601</b>

In summary the savings to TMBC have been evaluated as follows:

Cost of works	£107,423	
Savings over 10 years		
Energy Efficiency Savings	£146,810	
CO <sub>2</sub> Tax Saving	£15,601	
Backlog Maintenance Savings	<u>£38,750</u>	(cost of replacement boilers)
Total Saving over 10 years	£201,161	

With an ongoing annual saving of £15,395 at the end of the 10 year period based on current energy prices. We have not factored in energy inflation prices so the savings are likely to exceed the above.

Payback period is in the order of 5.5 years based on a simple calculation.

With the new lighting installation on going maintenance, in particular lamp replacement will be substantially reduced resulting in savings of £2,300 per annum which have been included in the savings summary.

Our solution includes:

- Design and installation of optimum energy saving measures in an integrated solution
- Minimum disruption during the works with this important public building remaining open
- Resolution of long-standing technical issues with the boiler plant

Our price for the above is £66,873.00 for the energy saving measures and £38,750.00 for replacement high-efficiency heating plant, we have also included the CDM fee applicable £1,800 making a total of £107,423 for the works to be carried out, excluding VAT.

We believe that our bid offers a compelling solution and we look forward to developing the relationship between our organisations through working on this important project.

Yours sincerely

Stephen MacLoughlin

## 2. Assumptions and Clarifications

### Assumptions

The proposed energy saving measures are based on the following:

#### a. Scope

- Energy Efficiency Retrofit measures in Dukinfield Town Hall and its curtilages
- energy bureau service, operation and maintenance, Facilities Management are not included in the scope of this offer (see d. below)

#### b. Investment Appraisal Criteria

- Capital available from Tameside Metropolitan Borough Council, whether Prudential Borrowing, Salix, other sources or a mix
- Financial savings assume full utilisation of the building in future
- Maximum Simple Payback Period of 7 years (modelling based on 10 year timescale)

#### c. Financial Data

- Gas purchase price: £0.0437/kWh
- Electricity purchase price: £0.10424/kWh

The above prices exclude VAT, FiT subsidy and RHI subsidy. They include Climate Change Levy (CCL) and standing charges.

Carbon Reduction Commitment Energy Efficiency Scheme (CRCEES) allowances payments have been included separately in the assessment of the financial benefits.

NB It is advisable to base future tariffs on consumption with minimum standing charges.

#### d. Operational

- No smoking is allowed inside the building
- Night set back temperature set point will be 10°C
- The new installations will be operated and maintained in accordance with the manufacturer's or specialist's instructions
- The building's Facilities Management staff and building users are trained in the operation of the New Equipment

## Clarifications

Our submission is based on the following:

1. The target savings are compared to the baseline consumption period of January to December 2011:

Electricity	217,983kWh
Gas	264,523kWh

They are based on the savings in energy consumption that the measures will deliver (given the same use of the building and weather data) and average unit prices for gas and electricity (Assumption c. above).

2. We have reviewed the bookings for June to August and are satisfied that the works can be undertaken during normal working hours without disruption to users. Much of the works will be restricted to plant areas, with works in rooms being scheduled to avoid events.

We are particularly aware of the need to maintain 'front of house' services for special events such as weddings. All noisy operations will be suspended during such events.

3. We have reviewed the records relating to asbestos and we are satisfied that the risk of finding asbestos during the proposed works is extremely low.
4. In order to ensure value for money we have limited our price to the works identified in this proposal. Latent defects (e.g. rotten timbers, addled plaster work, non-compliance with wiring regulations) or unforeseen circumstances that may become apparent once works are being undertaken are not included.
5. The form of contract will be based on a standard JCT contract (e.g. MWD2011 Minor Works Building Contract with Contractor's Design).
6. As Client, Tameside Metropolitan Borough Council has the following duties under the Construction (Design and Management) Regulations 2007:
  - 1 Appoint the right people
  - 2 Allow adequate time
  - 3 Provide information to your team
  - 4 Ensure you and your team communicate and co-operate
  - 5 Ensure suitable management arrangements are in place
  - 6 Ensure adequate welfare facilities on site
  - 7 Ensure workplaces are designed correctly
7. In addition, the project is notifiable under the CDM Regulations and Tameside Metropolitan Borough Council is required to appoint a CDM Co-ordinator. A provisional sum of £1,800 is included in the project costs for this appointment.

### 3. Organisation Details

Name of Bidding organisation:	Carillion Energy Services Ltd
Registered address:	24 Birch Street, Wolverhampton, WV1 4HY
Company registration number:	3858865
Contact name:	Stephen MacLoughlin
Contact telephone number:	07944961707 / 07748 624131
Email address:	<a href="mailto:stephen.c.macloughlin@carillionplc.com">stephen.c.macloughlin@carillionplc.com</a>

## 4. Technical Proposal

### 4a. Solution Design

The proposals for Dukinfield Town Hall comprise the following five energy efficiency retrofit measures:

#### 1. Building Fabric

The Jubilee Hall has a sprung floor with a void beneath. The void is ventilated by a series of air bricks. This design results in significant heat loss, both by thermal transmittance through the walls and ground beneath the floor and by infiltration. It is proposed to insulate the external walls beneath the sprung floor, block off the air bricks and insulate the perimeter of the undercroft floor.

Sections of the lofts and the boiler room ceiling will also be insulated. The Wedding Room is directly over the boiler room in an infill which was built as part of the 2005 project. Insulating the boiler room ceiling will help to address overheating in the Wedding Room, and should mean that the Registrars use the in-room air conditioning unit less often, thereby reducing electricity consumption.

#### 2. Building Services Insulation

The valves and other fittings in the boiler room are generally un-insulated. It is proposed to fit insulating covers to minimise heat loss from the LTHW heating distribution system in the boiler room. This will also help to reduce heat transfer into the Wedding Room above.

#### 3. Automatic Controls/BMS

Recommendations for the BMS are in two parts:

1. Adapt the existing Trend BMS to suit the new controls strategy and re-commission
2. Add new user interface (either on site or a remote head end for this and other sites)

Only the first part is included in this proposal. The new controls strategy will include (some of these features exist in the current strategy):

- LTHW Heating Optimum Start for each zone
- LTHW Heating Optimum Off
- Boiler sequence control, with one of the new condensing boilers (see 4. below) acting as lead boiler
- LTHW Heating Frost Protection
- Night set back
- Separate time and temperature schedules for each of the three LTHW heating zones
- Space Temperature detectors to add room influence to the compensated circuits
- Separate time and temperature zone schedule the kitchen air handling plant
- Separate time schedule for the kitchen water heater
- Facility to add motorised dampers in the Jubilee Hall undercroft in future, if required.

The panel shall incorporate connectivity to enable remote monitoring and adjustment by Tameside Borough Council and/or Carillion in future, either on site or via a remote head-end.

#### **4. Boilers**

The three existing, LTHW heating boilers are less than eight years olds. However, Boiler 1 and Boiler 2 are out of service. It was reported that Boiler 1 requires 'relining' while Boiler 2 suffers 'ignition problems' and has been condemned. Only Boiler 3 is in service.

The cause of these symptoms is the incorrect installation of the boilers. The hydraulic circuits do not comply with the manufacturer's recommendations. Consequently, it is highly likely that the water flow rate through all three boilers is less than the minimum recommended by the manufacturer. The inadequate heat flux within the boilers will have resulted in excessive thermal stresses. Boiler 3 may have been least affected as it is closest to the low-loss mixing header.

We propose to replace Boiler 2 with new, high efficiency condensing boiler. The boiler flow and return connections will be adapted to comply with the manufacturer's recommendations for the new boiler and the retained boiler, Boiler 3.

We also propose to replace Boiler 1 with a thermal store (vertical cylinder) with two heat transfer coils: one connected to the boilers and the other connected to roof mounted solar thermal panels. The panels will be mounted on the roof of the new (2005) infill building. The panels will generate hot water for heating.

If this option is rejected, for example due to planning issues, we would install another new high efficiency condensing boiler to replace Boiler 1.

A boiler load optimisation unit will be fitted to Boiler 3. The patented unit will control the burner to reduce cycling and boiler/burner inefficiencies. These units are tried and tested, and are fully compatible with the BMS.

Subject to an order being placed by the end of June 2012, no shut-downs are anticipated during the works which will be planned to start prior to the heating season.

#### **5. Replacement Lighting and Controls**

Replacement lights will be installed where identified below under Investment Appraisal. Generally, the existing electrical circuits and wiring will not be disturbed.

The existing emergency lighting comprises separate luminaires fed from a central battery Uninterruptable Power Supply (UPS). It is not proposed to change the emergency lighting.

#### **Integration into existing infrastructure**

Apart from the boilers, the exiting building services (M&E) installations at Dukinfield Town Hall are in generally good condition, reflecting their age and the level of maintenance. Our approach is to minimise intrusion into existing systems due to the associated risks and potential for extended down-time.

Instead, the proposals focus on refurbishing existing plant/equipment and adding or replacing components that will enhance their energy performance. How this will be achieved for each improvement measure is described below:

## 1. Building Fabric

The work involved in improving the building fabric is restricted to the Jubilee Hall undercroft, the boiler room ceiling and certain lofts. The loft insulation will be laid over the roof joists, with the material cut to fit around structural elements and services, as required.

The undercroft and boiler room insulation will be rigid board which will be fixed in place using stickpins or similar.

Access to these spaces will be controlled by Permits to Work, with Risk Assessments and Method Statements setting out procedures for working in confined spaces and lone working, as required. Apart from bringing in materials which will be done at a time to avoid planned events in the building, there will be no impact on public, front-of-house areas.

## 2. Building Services Insulation

The new and existing valves and other fittings in the boiler room will be fitted with insulating covers as part of the boiler replacement works. Any existing insulation which is disturbed will be made good or replaced.

## 3. Automatic Controls/BMS

Integration with the existing controls will be considered by our controls specialist when preparing the following documentation for comment/approval:

- Controls Strategy/Description of Operation
- Wiring Diagrams (based on existing diagrams)
- Panel Fascia Drawing showing proposed changes to existing panel(s)
- Technical Specifications for field devices (e.g. wireless room detectors)

## 4. Replacement Lighting and Controls

The locations and dimensions of the replacement lights will match the existing. The existing wiring and switching arrangements will be retained. In front-of-house areas, the sequencing of these works will be agreed with the Building Manager to avoid any disruption to events.

## 5. Boilers

The thermal store and new boiler (or two new boilers) will replace the existing Boiler 1 and Boiler 2 in the same position in the Boiler Room. The flow and return connections, flues and controls wiring will be adapted to meet the manufacturer's recommendations. All work will be restricted to the Boiler Room and the area immediately outside.

## Key Steps and Processes

### Design

#### **Design Development**

Carillion Energy Services will manage the detailed design. Where relevant, the detail design of plant, equipment and the controls would be the responsibility of our specialist package contractors.

Design drawings will be submitted to Tameside Metropolitan Borough Council in good time for comment. Normally, two weeks would be allowed for comment and any amendments.

### Selection of measures

The proposed energy saving measures were selected on the basis of

1. Maximising financial savings
2. Maximum Simple Payback Period of 7 years
3. Planning constraints
4. Age and condition of assets
5. Minimising disruption to the building
6. Health and safety

Applying these criteria meant that the following were considered but rejected:

- PV Panels and other renewable electricity sources
- External Wall Insulation
- Voltage Optimisation (already installed)

### Design Standards and Criteria

The following criteria have been taken from CIBSE Guide A (7<sup>th</sup> Edition). They will be applied for the design of the HVAC systems, with the set points being used to programme the BMS:

Space	Temperature Set Point	Ventilation
Offices	21°C	As existing (no changes proposed)
Police Station	21°C	As existing (no changes proposed)
Jubilee Hall	19°C	As existing (no changes proposed)

Tolerances: actual air temperatures in occupied spaces are likely to vary by +/-1°C, according to the responsiveness of the HVAC systems and hysteresis in control devices

### Information required from the Council

Access to the following information held by Tameside Metropolitan Borough Council or on site will be required to develop our proposals:

1. Fire Engineering: Fire Strategy for the building, including compartmentation
2. Energy Policy
3. Asbestos Management Plan
4. Operating and Maintenance Manuals, As Installed drawings and Building Log Book

### BS/EN/ISO Standards

The design and installations will comply with the following standards:

- Codes of Practice, British Standards, European and International Standards
- Building Regulations
- Tameside Metropolitan Borough Council's Planning Policy and Guidance
- Health and Safety legislation including the CDM Regulations 2007
- CIBSE Guides and Technical Memoranda

The Mechanical Installation will comply with the following:

- All relevant International Standards Organisation Standards (ISO) series
- Heating and Ventilation Contractors' Association guidance documents
- The Water Supply Regulations

The Electrical Installation will comply with the following:

- All relevant CENELEC European Standards (EN) series
- All relevant International Standards Organisation Standards (ISO) series
- All relevant International Electro Technical Commission Standards (IEC) series
- BS 7671: 2008 Institution of Electrical Engineers Wiring Regulations – 17th Edition

## **Pre-commencement**

### **Project Initiation**

Carillion's Project Team will be responsible for launching the project in accordance with our Integrated Management System, Phoenix. The Project Management Plan will cover design development, programme, quality assurance, health, safety and welfare and environmental management.

### **Condition Survey**

While Carillion Energy Services has conducted site visits, it has not been possible to undertake detailed, intrusive surveys to establish the size and location of every element. Consequently, it will be important to complete a condition survey at the earliest opportunity. Carillion Energy Services will prepare a condition survey and report, including digital images of the building and its engineering services.

It will be used in the event of any complaints or concerns about the impact of our works. Any deficiencies found in the existing M&E installations which are beyond the scope of this project will be identified. It should be noted that the proposed scope of works does not address backlog maintenance or existing defects, except where stated.

Any input from Tameside Metropolitan Borough Council and/or Tameside Investment Partnership staff would be welcome at this stage, especially those with an intimate knowledge of the building and its engineering services.

### **Procurement**

Carillion Energy Services's Project Team, comprising an Installation Manager and Quantity Surveyor supported by a Project Director, will be responsible for all technical and commercial aspects of procuring the package contracts. Once the scope of each package has been finalised and we are satisfied with that the sub-contractor/supplier meets our health & safety and quality criteria for this project, they will place orders with sub-contractors and suppliers. Their submittals will be reviewed with amendments made by the specialists, as appropriate.

### **Samples**

Carillion will arrange for samples of selected equipment to be made available to Tameside Metropolitan Borough Council for comment. In particular, any items installed in public areas will be inspected in situ to ensure coordination with existing systems and finishes.

### **Implementation**

Carillion Energy Services's Project Team will manage the implementation of the measures. Our Installation Manager will be the prime point of contact, and he will be responsible for ensuring that works are coordinated and programmed, with the local site management being made aware of our programme, sequence of works and any shut-downs.

### **Testing, Commissioning and Handover**

The testing, commissioning and handover of the measures will be overseen by our Installation Manager. Carillion Energy Services will prepare a commissioning programme which will ensure a planned and coordinated approach which results in all new and existing installations working in harmony.

#### **4b. Programme**

The programme is based on the following:

1. award of contract by Tameside Metropolitan Borough Council by the 15<sup>th</sup> July 2012
2. the pre-commencement activities, including detailed surveys, detailed design, placing orders, delivery periods, permissions and approvals (the lead-in period for critical items has determined the start on site date, e.g. boilers and BMS controls) during July
3. Start on site 27<sup>th</sup> August 2012
4. Completion 28th September

#### **Off-Site (Pre-commencement) Phase**

On award of the contract, Carillion Energy Services will manage the detailed design, including site visits by specialist sub-contractors. This will enable Carillion to place orders with our supply chain partners.

It is expected that there will be regular meetings between the Client and Carillion Energy Services's designers and Installation Manager early in this period.

#### **Implementation Phase**

In good time prior to starting on site, Carillion Energy Services's Project Director and Installation Manager will meet with the Client. We will issue an agenda for the pre-start meeting and issue minutes afterwards.

Matters relating to the management of the works will be discussed and agreed. These will include working hours, access, site office, welfare facilities, notice periods for shut-downs, cordons and signage, emergency procedures and Health and Safety. These matters will also be reviewed at regular site progress meetings.

The proposed sequence of works and the critical path have been considered in developing the programme, based on our extensive experience of similar projects in occupied buildings which are used by the general public.

## Service Interruptions and Shut-Downs

Inevitably, there will be some interruption to services. Detailed planning will be agreed with the Council and local site management to minimise interruptions. We anticipate that a permit to work system will be implemented to confirm when systems can be out of service and when services are restored. The following tables provide an indicative overview of the likely interruptions:

Area/System	Works Package	Interruption	Duration	Stage
Areas in constant use	Lighting	Specific work areas cordoned off with ample signage. Public and staff access will be maintained.	Approximately two weeks	To be agreed
Rooms with intermittent occupation	Lighting	Room not available for activities or bookings	Typically, half a day per room	To be agreed
General	BMS	Short interruptions while switchovers are made	Towards the end of the implementation period	After BMS panel adaptations and field wiring
General	Commissioning	Short interruptions while plant operation is proven and demonstrated (e.g. normal mode, fire mode, off, start-up)	At the end of the implementation period	After all installation works are complete

The installation of the boiler load optimisation units will not affect the operation of the building.

### 4c. Warranties

Carillion Energy Services's proposals comprise five key improvement measures:

- Building Fabric
- Building Services Insulation
- Automatic Controls/BMS
- Replacement Boilers
- Replacement Lighting and controls

Each supplier and Sub-Contractor will provide a warranty for their products, systems and/or installation works.

### 4d. Installation

#### Project Execution Plan (PEP)

Carillion Energy Services's Installation Manager will be responsible for the Project Execution Plan. It will be compiled in accordance with Carillion's Integrated Management System in compliance with ISO9001 (Quality Assurance), ISO14001 (Environmental Management) OHSAS 18001 (Occupational Health and Safety).

Our Project Management Team will undertake Pre-Commencement Planning. This will include confirming the delivery periods for plant and equipment, labour availability and agreeing any attendances required by Sub-Contractors.

This information will be retained in the Project Execution Plan which will be a live document throughout the installation phase.

**Pre-Start Meeting**

Prior to starting on site, a formal, minuted, pre-start meeting will be held with Thameside Metropolitan Borough Council’s Project Manager and the building manager.

The agenda will include formal contractual matters as well as day-to-day operational issues such as parking, noise, working hours, small power availability and shutdowns.

**Preliminary Works and Implementation:**

**Site Meetings**

The Project Director will arrange regular Site Progress Meetings with the Client. The agenda for each meeting will be issued in good time and minutes will be issued afterwards.

**Project Management including lead contact**

**Project Organisation**

Key contact details for this project:

NAME	TEL.	POSITION	E MAIL
Sean Fitzpatrick	07772 823780	Project Director	<a href="mailto:sean.fitzpatrick@carillionplc.com">sean.fitzpatrick@carillionplc.com</a>
Stephen MacLoughlin	07748 624131	Business Development Manager	<a href="mailto:stephen.c.macloughlin@carillionplc.com">stephen.c.macloughlin@carillionplc.com</a>
Kevin Jolly	07891 566658	Commercial Director	<a href="mailto:kevin.jolly@carillionplc.com">kevin.jolly@carillionplc.com</a>

Carillion Energy Services’s Installation Manager’s duties will include:

- Ensuring good communication between stakeholders
- Mobilisation and site set-up
- Responding sensitively to queries from the General Public
- Ensuring that work areas are left safe, clean and tidy
- Arranging for Signboard, barriers for cordons and information signs
- Quality Assurance in accordance with Carillion’s procedures
- Risk Management and Cost control, in conjunction with the QS
- Maintaining the Health and Safety Plan and monitoring compliance
- Fire precautions including assess and egress routes
- H&S Toolbox Talks
- Environmental Management on site
- Attending weekly, minuted meetings with the building’s management

- Attending regular Site Progress Meetings with the Client
- Contract administration with support from the Project Director and QS
- Recording of Variations and changes on-site
- Arranging Sub-contractor and designer coordination meetings
- Ensuring agreed Method Statements are in place and adhered to
- Monitoring progress against Programme
- Arranging inspections and snagging/de-snagging of works
- Management of Testing, Commissioning and Handover,

### **Site Set-up**

It is proposed to utilise the existing unoccupied office accommodation as a site office. The use of welfare facilities will be agreed with the building's management.

Where existing equipment and materials are to be stripped out, they will be removed from site as soon as practicable. Where the storage of new equipment and materials is required, this will either be in dedicated spaces (e.g. Boiler Room) or in a lock-up store in a position to be agreed with the Client.

### **Client Interface**

All formal, contractual communications between Thameside Metropolitan Borough Council and Carillion will be with our Project Director. However, given that we will be working in an occupied building which is open to the general public, good communication between our Installation Manager, Council's Clerk of Works and the building's management is essential.

### **Document Control**

Carillion's standard document filing system will be used. It includes registers for key documents including Drawings Issued, Drawings Received, RFIs, Instructions and Minutes of Meetings. The contract files will be the single, complete master set of paper files for the contract.

### **Change Control/Variations**

Ideally, the planning of the works prior installation will avoid variations during the installation phase, especially given the short programme.

However, if a contract variation is issued, the Thameside Investment Partnership's procedures will be used to control the associated design, cost and programme implications.

### **Sub-Contractors**

Carillion Energy Services's Installation Manager will be responsible for managing the package Sub-Contractors. Each package Sub-Contractor will receive a written order with Carillion's terms and conditions and their programme dates. Each Sub-Contractor's responsibilities will include:

- Risk Assessment and Method Statement
- Health and Safety including PPE for their operatives
- Supply, delivery offloading and positioning of their equipment and materials
- Work area preparation, including protection and stripping out
- All tools and consumables

- Builder's work in Connection with their installation
- Installation in accordance with approved specifications and/or drawings
- Supervision
- Snagging/De-snagging
- Commissioning and Handover
- Operating and Maintenance Manuals
- As Installed Drawings

Requests for Permits to Work will be submitted through our Installation Manager who will pass them to the building's management, or as otherwise agreed.

### **Client Liaison**

#### **Installation Manager**

Carillion Energy Services's Project Director will be the principal point of contact for Tameside Metropolitan Borough Council. The Council's Project Manager will be kept fully informed of progress on site and any contractual issues as they arise.

#### **CDM Coordinator**

Carillion's Project Manager will be the principal point of contact for the appointed CDM Coordinator. The CDM-C will be kept fully informed any Health and Safety issues as they arise.

#### **Shut-Downs and Minimising Disruption**

The areas of work will be identified at the weekly coordination meetings, along with the access/egress routes, public cordons, information signs and Permit to Work requirements.

Any specific activities which would result in a disruption to operations would be identified together with a method for minimising the disruption. Our Permit to Work system will control the shut-down and start-up procedures, including during commissioning.

In addition to the O&M Manuals and Record Drawings provided by each of the specialist sub-contractors, Carillion will update the Building Log Book and Health and Safety File for each site. The systems will be demonstrated to the Client's representatives.

#### **Asbestos Management**

We have based our proposals on no asbestos being present in the building when the project works commence. No asbestos removal has been allowed for in our proposals.

## **4e. Commissioning**

### **Standards**

Pre-Installation Commissioning Checks and the commissioning of the new systems will be undertaken in accordance with the relevant BSRIA Commissioning Codes, including the new Code W 2010 for water systems commissioning (i.e. LTHW Heating).

### **Pre-Installation Commissioning Checks**

Carillion Energy Services will arrange for the mechanical and electrical installations to be checked prior to our works on site.

### **Commissioning Plan**

Carillion's Installation Manager will be responsible for planning and coordinating the commissioning of the equipment and systems, including performance testing, demonstrations, witnessing and sign-off. As an experienced M&E Engineer, our Installation Manager will oversee the commissioning.

The Commissioning Plan will be developed during the Pre-Commencement Phase, allowing sufficient time for comment and approval. The Commissioning Plan will be developed with input from our specialist Sub-Contractors on the sequence of activities and their timescales.

### **Shut-Downs**

It is likely that the Council will have to plan for shut-downs during the commissioning period. The process for agreeing shut-downs will be managed by our Installation Manager using Permits to Work and the coordination meetings with the building's management.

### **Quality standards**

Once the Sub-Contractors have completed their installation works, they will test the operation of their system in accordance with CIBSE Commissioning Codes or other agreed standard. The expected level of performance will be set down in the Commissioning Plan, with records kept of initial and final performance.

Any incomplete works or defects (snags) will be identified by Carillion Energy Services and the Council's Clerk of Works at this stage and remedied prior to offering the systems for Practical Completion. An electronic or paper system of snagging and de-snagging will be implemented.

On satisfactory demonstration to Carillion Energy Services, the Client's representative (Clerk of Works or others) will be invited to witness the commissioning of each installation and the integrated operation of the systems.

### **Performance Verification**

The energy consumption (gas and electricity) will be monitored either manually or by the BMS. This will enable comparison of the actual consumption with the baseline, subject to agreed adjustments (e.g. weather, occupancy periods, occupancy). This will allow both parties to measure and verify the savings.

## **Handover of equipment manuals and records**

The Operating and Maintenance Manuals, As Installed Drawings and updated Building Log Book will be compiled during the works and be ready for handover to Tameside Metropolitan Borough Council at Practical Completion. We have allowed for one hard copy of the documentation.

## **Demonstration and Training**

The operation of each new system will be demonstrated to the operational management. They will be asked to sign a form confirming their attendance.

## **Defects Liability Period**

During the 12 months Defects Liability Period, any latent defects which appear should be reported to Carillion without delay. We will then arrange for them to be rectified, either using our extensive network of maintenance staff or our suppliers/sub-contractors, as necessary.

Our suppliers and sub-contractors have been through a process to be included on our supply chain which includes commitments relating to responses to snags and latent defects. Post project evaluation is taken seriously by them, with poor performance potentially jeopardising their status on our supply chain in future.

## **4f. Health & Safety & CDM Regulations**

### **Plan, resource, manage and monitor works**

Carillion is fully committed to the promotion and management of health and safety and we are experienced in operating a structured approach to health and safety management for project delivery.

The CDM Regulations 2007 impose a duty on Carillion as Principal Contractor and our supply chain as Designers. These duty-holders are required to consider Health and Safety as an integral part of their design processes.

Our Solutions Team has considered Health and Safety matters at their Design Team Meetings and they have planned mitigation measures accordingly.

At the detail design stage, they will prepare Hazard Identification and Risk Assessments for each element of the works, particularly the risks associated with working in an occupied building which is open to the public such as Dukinfield Town Hall.

The anticipated resources for these mitigation measures have been allowed for in our resourcing schedule and pricing. For example, work areas will be cordoned off from the public using barriers, with appropriate signage to explain the disruption.

Sub-Contractors will be required to complete Risk Assessments and Method Statements in good time before commencing work on site. They will be submitted to our Installation Manager for review and planning purposes.

Our Installation Manager will also conduct site inductions. A log book will be kept on site for reporting purposes under RIDDOR. All Carillion staff are aware of the company's 'Target Zero' campaign (i.e. zero reportable incidents) and 'Don't Walk By' initiative.

A Carillion Health and Safety Advisor will be nominated for this project. The advisor's reports will be entered into the Health and Safety Plan and be uploaded to Carillion's central 'on-line' Track Record system for monitoring and audit purposes.

Health and Safety information is regularly monitored by Carillion's management, and corrective action taken as necessary, including refresher training and amendments to procedures.

### **Health & Safety, welfare facilities and method statements**

Carillion's Installation Manager will be responsible for managing Health and Safety.

Designers' (specialist Sub-Contractors) Hazard Identification and Risk Assessments will be prepared. Our Installation Manager will ensure that these are addressed by the installers in preparing their Hazard Identification and Risk Assessments and their Method Statements.

Our Installation Manager will take ownership of the documents and be wholly responsible for populating them, including Induction Records, Method Statements, Records of Training, Tool Box Talks and the continuous development of the documents.

Health and Safety matters will be discussed at the weekly coordination meetings with the building's management team and at the Site Progress Meetings with the Client.

### **Asbestos**

In relation to asbestos, our Solutions Team has relied on their initial site surveys.

We have based our proposals on no asbestos being present in the building when the project works commence. No asbestos removal has been allowed for in our proposals.

### **Co-operation, co-ordination, communication and competency**

As part of our procurement processes, Carillion promotes cooperation and communication between designers, suppliers and Sub-Contractors on our supply chain. We also assess their competency and the adequacy of their resources through questionnaires and pre-order meetings.

The post-completion evaluation includes a review of the organisations on our supply chain, including Health and Safety performance. Any concerns are raised with their management team. Any unsatisfactory response puts their status as a preferred supplier in jeopardy.

Carillion Energy Services's Installation Manager will be responsible for coordination. This will include monitoring contract programme and commissioning programme to ensure each Sub-Contractor has sufficient time to complete their works safely in a way that doesn't impinge on other Sub-Contractors or building staff and users.

## Health and Safety - Design

Designers will consider:

- Occupied building with a history of unauthorised access by people suffering drug and/or alcohol abuse
- Public access, including the young, elderly and vulnerable people
- Existing materials
- Strictly controlled shut-downs using Permit to Work system
- Existing live systems, including fire alarm and electrical systems
- Access including the potential for working in confined spaces and working at height
- Manual handling during strip out and installation

Carillion's Installation Manager, supported by our H&S Advisor, will ensure that the Designers have gone through a rigorous process to arrive at their Hazard Identification and Risk Assessments and mitigation measures, and that they have cooperated during the design process.

## Health & Safety Files

The documentation from the specialist Sub-Contractors for the project will be collated by the Installation Manager. This documentation will be included or referred to in the existing Log Book and/or Health and Safety File.

Other handover documentation will comprise Operating Instructions, Maintenance Manuals and commissioning results. The documentation will be compiled in good time for the demonstrations and handover, with any gaps in information (e.g. commissioning results) completed within one week.

Once fitted, the DBMUs do not require maintenance. However, anyone undertaking maintenance on the boilers must ensure that the units and associated wiring and connections are left intact.

## 5. Investment Appraisal

### Net Financial Savings: Full Year

The evaluation of savings from new lighting and controls is based on an assessment of the annual hours of operation for each room, as stipulated below.

The evaluation of the projected energy savings from the HVAC systems, and the consequential financial savings and reduction in Green House Gas emissions, are based on the following changes to the BMS time schedules at Dukinfield Town Hall, unless stated otherwise:

	Main Heating Circuit	Main Heating Circuit	Police Station Circuit	Police Station Circuit	Jubilee Hall Circuit	Jubilee Hall Circuit
	Existing	Proposed*	Existing	Proposed*	Existing	Proposed*
Mon	0600 - 2000	0800 - 2000	0600 - 2000	0800 - 2000	0600 - 2000	Weekly Schedule
Tues	0600 - 2000	0800 - 2000	0600 - 2000	0800 - 2000	0600 - 2000	Weekly Schedule
Wed	0600 - 2000	0800 - 2000	0000 - 2400	0800 - 2000	0600 - 2000	Weekly Schedule
Thur	0600 - 2000	0800 - 2000	0600 - 2000	0800 - 2000	0600 - 2000	Weekly Schedule
Fri	0600 - 2000	0800 - 2000	0600 - 2000	0800 - 2000	0600 - 2000	Weekly Schedule
Sat	0000 - 2400	0830 - 1500	0600 - 2000	0830 - 1500	0000 - 2400	Weekly Schedule
Sun	0600 - 2000	0830 - 1500	0600 - 2000	0830 - 1500	0600 - 2000	Weekly Schedule

#### Notes:

1. Kitchen air handling plant and hot water heater to be controlled locally (e.g. extension timer)
2. Proposed\* time schedules for heating zones to have override facility (e.g. head-end)

Electricity 217,983kWh  
Gas 264,523kWh

Gas purchase price: £0.0437/kWh  
Electricity purchase price: £0.10424/kWh

	Description	Energy Saving Calculation	Carbon Saving	Net Financial Saving
1	Building Fabric	The reduction in gas consumption is estimated to amount to <b>13,000kWh p.a.</b> based on weather data for the Baseline Year and an assessment of the proportion of heat loss through the Jubilee Hall undercroft and through sections of un-insulated roof.	13,000kWh p.a. x 0.1836kgCO <sub>2</sub> /kWh/1000 = 2.4tCO <sub>2</sub> p.a.  Based on 2012/13 CRCEES allowance prices (£12/tonne), this equates to carbon tax avoidance of £29 for a full year	13,000kWh x £0.0437/kWh = <b>£568 p.a.</b>  There are no additional maintenance costs.
2	Building Services Insulation	Insulating the valves and other fittings in the boiler room will save approximately 4% of the residual heat load.  Therefore: (264,523 – 13,000) x 4% = <b>10,061kWh p.a.</b>	10,061kWh p.a. x 0.1836 kgCO <sub>2</sub> /kWh/1000 = 1.8 tCO <sub>2</sub> p.a.  Based on 2012/13 CRCEES allowance prices (£12/tonne), this equates to carbon tax avoidance of £22 for a full year	10,061kWh x £0.0437/kWh = <b>£440 p.a.</b>  There are no additional maintenance costs.

3	Automatic Controls/BMS	<p>The reconfigured BMS system would control the residual loads on the HVAC systems more efficiently:</p> <p>Thermal Residual load: 264,523 – 13,000 (building fabric) – 10,061 (services insulation) = 241,462kWh</p> <p>Thermal energy savings due to BMS (optimum start, optimum off, set point adjustment, night setback, boiler sequencing, room influence, etc.):</p> <p>241,462 x 10% = <b>24,146kWh p.a.</b></p>	<p>24,146kWh p.a. x 0.1836kgCO<sub>2</sub>/Kwh / 1000 = 4.4tCO<sub>2</sub>.pa</p> <p>Electrical: 31,068kWh p.a. x 0.541kgCO<sub>2</sub>/Kwh / 1000 = 16.8tCO<sub>2</sub>.pa</p> <p>Based on 2012/13 CRCEES allowance prices (£12/tonne), this equates to carbon tax avoidance of £53 for a full year</p>	<p>24,146kWh x £0.0437/kWh = <b>£1,055 p.a.</b></p> <p>O&amp;M costs of BMS should not change as proposal is to adapt existing.</p>
4	Replacement Lighting and Controls	<p>Proposed replacement lights:</p> <ol style="list-style-type: none"> <li>1. 39 no. Linear Fluorescents: Replace with LED equivalent</li> <li>2. 142no. 600x600 lay-in ceiling grid luminaires: Replace with LED equivalent light panel</li> <li>3. 24no. rectangular lay-in ceiling grid luminaires: Replace with LED equivalent</li> <li>4. 112no. round compact fluorescents: Replace with LED equivalent</li> <li>5. 38no. GU10s: Replace with LED equivalent</li> <li>6. 28no. external light flood lights: Replace with LED equivalent (three different models to match existing)</li> </ol>	<p>89,680kWh.pa x 0.541kgCO<sub>2</sub>/kWh / 1000 = 48.5tCO<sub>2</sub>.pa</p> <p>Based on 2012/13 CRCEES allowance prices (£12/tonne), this equates to carbon tax avoidance of £582 for a full year</p>	<p>Therefore, savings: 89,680kWh x 0.10424£/kWh = <b>£9,348 p.a.</b></p> <p>Reduced life cycle costs likely from less frequent maintenance and extended equipment life.</p>
5	Boilers	<p>The new high efficiency, condensing boilers would reduce the residual gas demand by approximately 10%:</p> <p>(241,462 – 24,146) x 10% = <b>21,732kWh p.a.</b></p>	<p>21,732kWh p.a. x 0.1836kgCO<sub>2</sub>/Kwh / 1000 = 4.0tCO<sub>2</sub>.pa</p> <p>Based on 2012/13 CRCEES allowance prices (£12/tonne), this equates to carbon tax avoidance of £48 for a full year</p>	<p>21,732kWh p.a. x £0.0437/kWh = <b>£950 p.a.</b></p> <p>O&amp;M costs of boilers should not change as proposal is to replace existing. However, any planned repairs will no longer be required.</p>

In 2011, the site consumed 217,983kWh of electricity and 264,523kWh of gas.

Electricity is supplied by nPower. Their unit price is 9.73p/kWh (April 2012). Administration and settlement charges amount to approximately £38/month.

Gas is supplied by Corona. According to their 2011 bills, they charge a daily standing charge of £9.17 and a unit price of 2.2091p/kWh (December 2011).

Based on the latest invoices, this level of consumption equates to:

	Electricity	Electricity	Gas	Gas
Consumption	217,983kWh	£21,209.75	264,523kWh	£5,843.56
Climate Change Levy	0.4850p/kWh	£1,057.22	0.1690p/kWh	£447.04
Standing Charges	£38/month	£456.00	£9.17/day	£3,347.05
VAT (@20%)		£4,544.59		£1,927.53
<b>Total p.a. (2011)</b>		<b>£27,267.56</b>		<b>£11,565.18</b>
<b>Total p/kWh (excluding VAT)</b>		<b>10.424</b>		<b>4.37</b>

## 6. Price

Item	Description	Price
1	Building Fabric	£3,700.00
2	Services Insulation	£2,400.00
3	Automatic Controls/BMS	£7,000.00
4	Lighting and Controls	£53,773.00
	Sub-Total	£66,873.00
5	Boilers	£38,750.00
6.	CDM Fee	£1,800.00
	Total	£107,423.00
	VAT @20%	£21,484.60
	<b>Total</b>	<b>£128,907.60</b>

Carillion Energy Services's price for the energy efficiency retrofit works at Dukinfield Town Hall, including replacing two boilers which are out of service, is £107,423.00, excluding VAT.

Our price includes design, installation, all attendances, testing, commissioning and handover of the completed work.

