NOTTINGHAMSHIRE
Fire & Rescue Service
Creating Safer Communities

Nottinghamshire and City of Nottingham
Fire and Rescue Authority
Finance and Resources Committee

VIREMENT REQUEST FOR REPAIR WORKS TO SDC FIRE HOUSE

Report of the Chief Fire Officer

Agenda Item No:

Date: 11 October 2013

Purpose of Report:

To seek the approval of Members to a virement to enable repair works to be carried out at the Service Development Centre, specifically to the fire house.

Informal approval to these works being carried out was previously given by the Chair of Finance & Resources Committee and therefore this report seeks ratification of that decision.

CONTACT OFFICER

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1. BACKGROUND

1.1 The Fire House Training Facility (the Fire House) located at the Service Development Centre (SDC) in Ollerton was built circa 1992. The Fire House is used to simulate live fire and hot smoke conditions where heat and flame are produced directly inside the building itself through the burning of combustible materials.

1.2 Due to the combustion and subsequent rapid cooling through dowsing with water, the fabric and elements of the building are subject to extremely harsh conditions.

1.3 Over the past 3 years the Fire House has been subject to a planned maintenance and inspection regime as part of the Multi Activity Contract and, prior to this period, the repair and maintenance was carried out on a reactive basis.

1.4 The Fire House was partially renovated in 2007 where substantial maintenance works were carried out.

1.5 It is now becoming apparent (through recent inspections) that some elements of the building are beginning to fail or show excessive degradation to the point where if not addressed could potentially fail. This came to light earlier this year when consultants carried out a survey of the building and a structural assessment revealing works that are required. A copy of the structural report is at Appendix A.

1.6 The estimated costs for these repair works are relatively high compared with existing planned and reactive maintenance expenditure budget for the NFRS estate.

1.7 The repairs are required as a matter of urgency to allow the Fire House to continue to be fit for purpose.

2. REPORT

THE COSTS

2.1 The full estimated cost for the repairs to the Fire House is shown at Appendix B. These prices have, where applicable, been subject to competition through the Multi Activity Contract. The exceptions to this are some of the specialist works in relation to the refractory lining and extraction plant. All of the costs in the attached have been independently validated by a Quantity Surveyor (Faithful & Gould). This quote includes optional works, which are covered in paragraph 2.3 below.

2.2 The cost of these works is estimated to be £98,554.

2.3 The detailed breakdown and explanation as to the requirement of these individual work items is at Appendix C.

THE ESTATES MAINTENANCE BUDGET

2.4 The estates planned maintenance budget includes for cyclic maintenance of the Fire House; these are the works that need to be carried out each year and include the maintenance of plant and ancillary equipment, the budget for this is £7,686.

2.5 The maintenance of plant and ancillary equipment is carried out throughout the year and isn't included as part of the costs at paragraph 2.2 above.

2.6 The reactive maintenance budget is used for the repair of defects, damage, breakdowns and the like across the NFRS estate; this is primarily to cater for the unexpected repairs. Within the current financial year £19,700 has already been expended on the Fire House from this budget; a major part of this cost was the replacement of the smoke extraction fan.

2.7 The reactive maintenance budget cannot sustain the impact of an £98.5k reduction this early in the financial year (from a total annual budget of £175k).

2.8 The money within the planned maintenance budget has already been set aside for the in-year cyclic maintenance works across the NFRS estate.

2.9 This work is regarded as both essential and urgent due to the deteriorating condition of the building and the requirement to continue this type of training in the autumn. It is proposed, therefore, that a virement be made available from the Capital Earmarked Reserve to cover this cost.

3. FINANCIAL IMPLICATIONS

The main financial implications are covered within the body of the report. However, Members will need to consider the impact of this decision on the Capital Reserve. This reserve currently stands at just over £1.8m and will reduce to £1.7m if this virement is agreed. The reserve was created to enable revenue financing of capital and whilst this item of expenditure is not strictly capital it would fall within the general intention of the reserve funds.

4. HUMAN RESOURCES AND LEARNING AND DEVELOPMENT IMPLICATIONS

There are no human resources or learning and development implications arising from this report.

5. EQUALITY IMPLICATIONS

An equality impact assessment has not been undertaken because there are no equality implications arising from this report.

6. CRIME AND DISORDER IMPLICATIONS

There are no known crime and disorder implications relating to crime and disorder arising from this report.

7. LEGAL IMPLICATIONS

There are no known legal implications arising directly from this report other than those mentioned in the main body of the report.

8. RISK MANAGEMENT IMPLICATIONS

8.1 The urgent repairs required to the Fire House are needed to allow its continued use in the training of operational fire crews. The closure of the Fire House could impact on the training capability of NFRS.

8.2 In October 2010, the consolidated HSE report on the Fire & Rescue Service identified that effective BA and Compartment Fire Behaviour Training is provided to all firefighters and officers. The in-house facility is part of NFRS's compliance system to meet this obligation.

8.3 In order to ensure the continued operational use of the Fire House the repairs will need to be carried out as a matter of urgency. If these repairs are to be funded from the reactive maintenance budget then there is a high probability that there will be insufficient money left to carry out repairs needed to the remainder of the estate in the current year.

9. RECOMMENDATIONS

It is recommended that the decision of the Chair of Finance and Resources Committee to approve this expenditure is ratified by this committee and that the costs are met from the Capital Reserve.

10. BACKGROUND PAPERS FOR INSPECTION (OTHER THAN PUBLISHED DOCUMENTS)

None.

Frank Swann
CHIEF FIRE OFFICER

Ollerton Fire Station
Structural Appraisal Report
Concrete Floor Slab Remedial Works

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CONTENTS

1.0 Introduction

The following report has been undertaken to assess the structural integrity of the existing concrete floor slab within the fire training room at the Ollerton Fire Station. The primary reason for the inspection was that the concrete first floor over the control room has several cracks which can be seen on both the underside and top of the concrete floor slab, see photographs 1 – 4 within appendix A. Water was found to be penetrating through the slab during wash down after a training session and leaking onto the electrical equipment below in the control room. The objective of the report was to assess the structural integrity of the slab whilst ascertaining the necessary remedial works to repair the slab and prevent further water ingress.

2.0 Observations

A visual survey was carried out of the slab and cracking was found to be on both the underside and on top of the slab. Shown within appendix B is a sketch illustrating the random cracking on top of the slab at the first floor level. It is important to note that the control room under the training room is approximately a third of the size. The floor slab under question continues over another training room; however we do not have access to the soffit of the slab within this area as there are steel plates attached to the ceiling preventing a visual inspection. A portion of the floor slab directly above the control room was inaccessible as the staircase going between the first and second floor had the soffit blocked up. Consequently a hole was broken through the wall and therefore a second visual inspection was carried out, see photograph 5. From our observations temporary timber shuttering was still intact to the soffit of the concrete stair flight, however this showed signs of heavy decay due to the water ingress incurred during the wash down after training. Once the water entered this area there was no opportunity for egress, therefore causing the timber to rot. On viewing the area under the concrete staircase a build up of debris had collated and therefore it was recommended that a further survey was carried out after the floor had been professionally cleaned throughout. A third visual inspection was carried out which highlighted that numerous random cracks had occurred throughout the surface of the concrete.

Along with a visual inspection, 2 concrete cores were taken and tested for micro cracking by the use of a microscope. In addition the concrete could be checked for discolouration which in turn indicates the temperature to which the concrete was subjected.

3.0 Conclusions

The separate report carried out by CMT highlighted that the concrete had not sustained any significant damage and therefore retains its structural integrity. The top layer of concrete has been subjected to around 300 degrees centigrade, with the surface cracks migrating to around 40 – 50 mm deep. The objective is to repair the slab by preventing the water ingress through the top, whilst repairing the cracks from the underside. The existing concrete floor slab is around 200mm thick, the steel reinforcement in the top of the slab has been set around 70mm from the top surface. Typically reinforcement within buildings is approximately 30mm below the concrete surface. In this particular instance the reinforcement has been lowered ensuring the top section of concrete can be sacrificial and therefore not affect the structural integrity of the slab. However, as a consequence the lowering of the reinforcement increases the possibility of cracking.

Traditional concrete repair products are limited with regard to their use as they operate satisfactorily up to temperatures of around 60 degrees centigrade. Therefore the cracks can only be treated from the underside, which will be carried out by pressure injection. The objective is to fill the cracks from the underside up to around 70mm below the top surface, which will ensure that the concrete repair product will not be damaged by the increase in temperature. In addition to this a concrete repair sealant is to be applied to the soffit of the concrete slab throughout the extent of the control room.

The top of the concrete slab is to be covered with a 13mm thick fire heat proof screed, which is to be applied throughout the extent of the fire training room. This particular product is used for repairing refactories and is capable of resisting temperatures of up

to 1400 degrees centigrade. The perimeter of the floor including around the base of the staircase is to be sealed with a flexible sealant which is capable of resisting temperatures of up to 300 degrees centigrade.

4.0 Recommendations

1. Remove decaying timber from the underside of the existing concrete stair soffit.

2. Clean the existing floor slab including within the stair void ensuring the slab is free from all deleterious material to enable the relevant compounds to bind to the slab.

3. Pressure inject concrete repair product from the underside of the existing concrete slab within the control room into all visible cracks. Concrete repair product to be installed in accordance with the manufacturer's instructions.

4. Apply concrete repair sealant throughout the underside of the concrete slab within the control room. Concrete repair product to be installed in accordance with the manufacturer's instructions.

5. Apply 13mm coating of heat proof screed throughout the full extent of the training room above on top of the existing concrete floor in accordance with the manufacturer's requirements. The existing floor slab is to be recessed 12mm over the extent of the existing door opening to ensure a flush finish at the door thresholds, whilst enabling the door to open and close.

6. Provide heat proof sealant around the perimeter of the first floor concrete slab & at the junction between the masonry walls and the flight of the concrete stairs.

7. Introduce a fire proof door to enable access to the underside of the existing concrete stairs between the first and second floor.

5.0 Summary

Should these works be carried out this should overcome the issues with the water leaking through the ceiling. However cracking was noted throughout the extent of the floor slab and assessment has only been undertaken within the control room from the underside. It is important to note that the soffit of the concrete slab in the adjacent room has not been assessed due to restricted access as previously discussed. In view of the fact that cracks have appeared throughout the full depth of the slab we feel that it would be prudent to assess the existing slab within the adjacent room with regard to cracking. Consequently this would involve the existing metal ceiling plates being removed to assess the condition. Evidently cracking has occurred in the top of the slab, therefore it would be advisable to check if any of these cracks have migrated through to the underside.

Consideration should be given for further inspection throughout the building. It is important to note that this problem has only arisen due to water seeping through the cracks in the floor slab. Other areas such as the second floor concrete slabs will be subjected to greater temperatures than the first floor currently in question. Any cracking within the soffit of the second floor will not be visible due to the heavy sooting created when carrying out training exercises.

APPENDIX A

Photograph 1

Photograph 2

Photograph 3

Photograph 4

Photograph 5

APPENDIX B

TUNSTALL
CONSULTANTS
Civil & Structural Engineering Consultants
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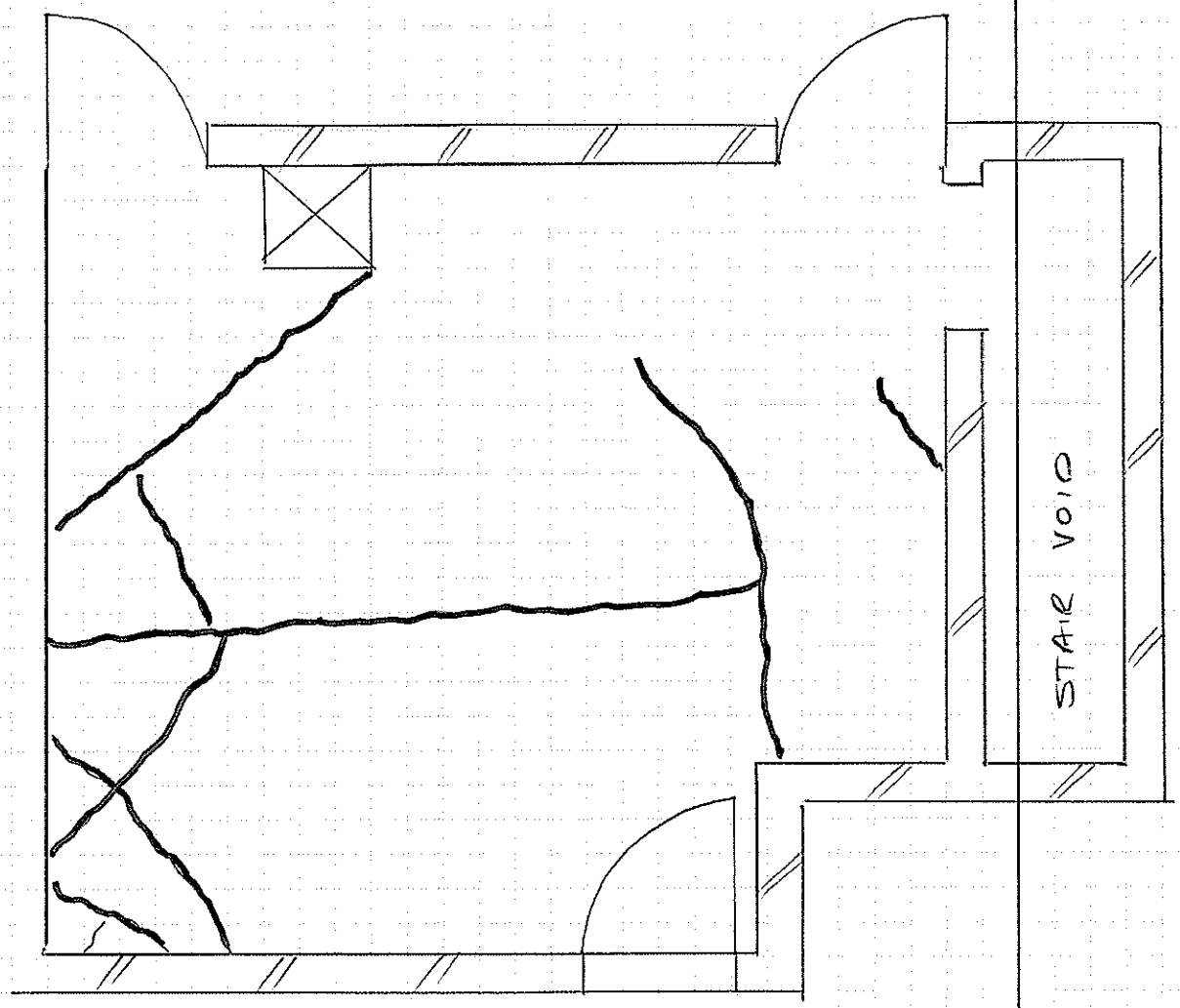
Nottinghamshire T : 07813 650464

Project:	OLLERTON FIRE STAT	
Project No:	212063	
Sheet No:	SK01	**Rev:**
Date:	OCT 12	
Section of Project:	FIRST FLOOR PLAN	

Ref	Calculations	Output



FIRST FLOOR LAYOUT
SHOWING CRACKING
SCALE 1:50

Checked:	Approved:

AMPTRON
ELECTRICAL SERVICES LTD.

CONSULTING & INSTALLATION ENGINEERS
FIRE & SECURITY SYSTEMS SPECIALISTS

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FAO: Roger Ward
Nottinghamshire Fire and Rescue Service
The Dukeries
Boughton Road
Ollerton
Nottinghamshire
NG22 9JE

Our Ref: Q17611

Date: 18/04/2013

Dear Roger,

Re: SDC- Fire House

Further to your recent enquiry, we have pleasure in submitting our quotation for the above project.

Please refer to the specification for more details.

All materials and workmanship are guaranteed for twelve months from the date of completion.

This quotation is based on current rates for labour and materials, is open for acceptance up to 30 days.

We shall be pleased to carry out work upon receipt of your official order.

This quotation is based on the information supplied within the specification and drawings.

All work to be carried out during normal working hours (Monday – Friday 8am – 5pm), subject to availability of the site access.

V.A.T. will be added at the time of invoicing.

For the sum of.....**£ See breakdown**

If you have any queries at all, please do not hesitate to contact the sender of this quote at the above address.

Yours faithfully,

Simon Huntbach
Electrical Estimator

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Specification for Q17611 SDC Fire House.

Item One-Initial Clean.

To undertake an initial full clean of the fire house, this will enable other works to be undertaken. Scrapers, pressure washers and chemical are to be used.

ART Cleaning Price **£5650.00**
Amptron Mark-up @ 7.5%.....**£423.75**
For the sum of.....**£6073.75**

Item Two-Secondary Clean.

To undertake a secondary clean after the gas bed, louvre's and pipework has been removed. Scrapers, pressure washers and chemicals are to be used.

ART Cleaning Price **£2750.00**
Amptron Mark-up @ 7.5%.....**£206.25**
For the sum of.....**£2956.25**

Item Three-Refractory Coating and Dry Out.

To remove the existing tiled ceiling within the fire room. Drill and fix stainless steel threaded V anchors at 200mm centres. Form construction joints. Gunite Spray a 1400c gunmix into panels at a thickness of 75mm.

Price includes a 360cfm compressor and a dry out price to prolong the lifespan of the installation.

S.H.L. Refractories Price.....**£21659.00**
Amptron Mark-up @ 7.5%.....**£1624.43**
For the sum of.....**£23283.43**

Item Four-Replacement of 6no Louvre's.

To remove and replace 6no louvre's, remove and replace air control pipework and remove and replace air dump system-Modified to 3no control circuits by floor.

Kidde Fire Price.....**£18,536.67**
Amptron Mark-up @ 7.5%.....**£ 1390.25**
For the sum of.....**£ 19926.92**

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Item Five-Replacement of 15no Louvre's.

To remove and replace 15no louvre's, remove and replace air control pipework and remove and replace air dump system-Modified to 3no control circuits by floor.

Kidde Fire Price.....**£27,000.00**
Amptron Mark-up @ 7.5%.....**£ 2025.00**
For the sum of.....**£29025**

Item Six-Installation of Gantry for Fan Maintenance.

Manufacturer and install an aluminium walkaway and galvanised handrail-complete with steel access ladder to provide access to all four sides of the fan tower.
Existing steel tower and platform is to be removed prior to install.

TVR Group Price.....**£6350.00**
Amptron Mark-up @ 5%.....**£317.50**
For the sum of.....**£6667.50**

Item Seven-Decommission of Gas Bed and Reinstate.

Remove first floor gas bed and GMS sensors to allow the concrete floor to be re-screeded.
Reinstate all once floor work is complete.

Kidde Fire Price.....**£1931.67**
Amptron Mark-up @ 7.5%.....**£144.87**
For the sum of.....**£2076.54**

Item Eight-Glazed Window.

Replace the Louvre in the control room (this is to be removed by others) and replace with 1no brown (wood grain) UPVC window c/w stub cill, toughened glass, trickle vent, 1no top opener and brown UPVC board internally.
We have allowed for this to be secured with 18mm ply until the window is ready for install to maintain the security of the building site.

Vaughandale Fire Price **£625.00**
Amptron Mark-up @ 5%.....**£ 31.25**
For the sum of.....**£ 656.25**

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Item Nine-Concrete Repairs.

To repair concrete flooring as per Tunstall Consultants Appraisal Report and Structural specification report.

Data-Contracts Price.....**£2780.00**
Amptron Mark-up @ 7.5%.....**£ 208.50**
For the sum of.....**£ 2988.50**

Item Ten-Replacement of Defective Control Panel.

To attend site and replace the lighting/power control panel and the defective fan control panel in the old control room.

Kidde Fire Price.....**£15414.67**
Amptron Mark-up @ 7.5%.....**£ 1156.10**
For the sum of.....**£ 16570.77**

Item Eleven-Rewire of Final Circuits.

To attend site and replace all out going cables from the control panel throughout the building.
All light fittings and socket outlets are to be replaced.
Cable is MICC and therefore has a high labour time to install.
Light fittings within the fire house are to be ATEX approved, intrinsically safe as existing.
Kidde are required to make final connections within the control panel.

For the sum of.....**£ 30120.80**

Item Twelve-Periodic Inspection.

To undertake a periodic inspection and test of the fire house.
Allowing a presumed 10% of defective equipment to be replaced (cabling and accessories).

Inspection for the sum of.....**£ 1867.50**
Assumed defects for the sum of .....**£ 3012.08**

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Item Thirteen-Building Works.

Associated building works required for this project.
This includes fire seals to all 48no door frames, re-rendering the external walls where trunking needs to be removed and re-instating the door way previously taken out.

Vaughandale Price.....**£1960.00**
Amptron Mark-up @ 5%.....**£ 98.00**
For the sum of.....**£ 2058.00**

Item Fourteen-Locksmiths.

To replace the locks and mechanisms on 39no doors as per the recent site visit made by Stapletons.

Stapletons Price **£6139.91**
Amptron Mark-up @ 5%.....**£ 306.99**
For the sum of.....**£ 6446.90**

Preliminaries and Contract Management.

For site management and temporary supplies/lighting of the above project.

For the sum of.....**£ 1540.00**

Schedule – Detailed Breakdown and Explanation

Note: The Price column in the table below is a result of the Estimate and the need (or for expediency) to carry out these individual items, the Comments provide an explanation where necessary and indicate if the work is required as a matter of urgency.

Item	Work Description	Estimate	Comments and Explanation	Price
1	Initial Clean	£6,073.75	Works required.	£6,073.75
2	Secondary Clean	£2,956.25	Works required.	£2,956.25
3	Refractory Coating and Dry Out	£23,283.43	This is the replacement of elements of the refractory fire lining where large areas of degradation have occurred.	£23,283.43
4	Replacement of 6 No Louvre's	£19,926.92	There are 15 fire louvres within the Fire House; 6 louvres require replacement as they have now become defective. This leaves the remaining 9 louvres which although working will require replacement over the next few years	
5	Replacement of 15 No Louvre's	£29,025.00	This is the price for the replacement of all 15 louvres. The overall price for the replacement of all louvres is lower than if carried out on an ad-hoc basis ie as they become defective over the next few years.	£29,025.00
6	Installation of Gantry for Fan Maintenance	£6,667.50	This is to provide a working platform for access to the fan housing and although will be of assistance for future maintenance it is not essential it is carried out at this point in time. This item can be added to the Back-Log maintenance schedule.	
7	Decommission of Gas Bed and Reinstate	£2,076.54	Works required.	£2,076.54
8	Glazed Window	£656.25	Works required.	£656.25
9	Concrete Repairs	£2,988.50	Works required (see structural report).	£2,988.50
10	Replacement of Defective Control Panel	£16,570.77	Works required.	£16,570.77

Item	Work Description	Estimate	Comments and Explanation	Price
11	Rewire of Final Circuits	£30,120.80	From further discussions with the electrical contractor and although initially highlighted as a potential requirement this item can be discounted.	
12	Periodic Inspection & Circuit Replacement	£4,879.58	This item is to allow the testing of all electrical circuits with an assumption that only an estimated 10% will require replacement or rectification.	£4,879.58
13	Building Works	£2,058.00	Works required.	£2,058.00
14	Locksmiths	£6,446.90	Works required as all door locking furniture required replacement.	£6,446.90
15	Preliminaries and Contract Management	£1,540.00	Works required as main contractor management of specialist sub-contractors.	£1,540.00
			Total	**£98,554.97**