ABERDEEN CITY COUNCIL

COMMITTEE	ENVIRONMENT, PLANNING & INFRASTRUCTURE
DATE	7 September 2010
DIRECTOR	GORDON McINTOSH
TITLE OF REPORT	OPTIONS FOR RELOCATION OF INTELLIGENT TRANSPORT SYSTEMS
REPORT NUMBER:	EPI/10/199

1. PURPOSE OF REPORT

The report seeks to advise the Committee of the measures that require to be put in place to facilitate the relocation of the Intelligent Transport Systems (ITS) Unit into a new office facility within a Council owned building and that office space is still to be identified for the accommodation of the unit. In addition a suitable location also requires to be identified for the Real Time Passenger Information (RTPI) radio antenna, radio base station and system server.

2. RECOMMENDATION(S)

That members approve;

a. Option 2, the installation of a new PC in-station within a new office facility, subject to the funds being available in future capital budget allocation for the upgrade of traffic signal installations and to report back to the Committee should the funding not be available.
b. Officers work in partnership with First Aberdeen to identify a suitable location for the relocation of the RTPI aerial and communications hub.

3. FINANCIAL IMPLICATIONS

Funding will require to be identified to allow for the necessary communications infrastructure to be put in place for the ITS Unit traffic and transportation systems as part of the relocation.

4. SERVICE & COMMUNITY IMPACT

During the relocation of the ITS unit into a new office facility there is the potential for disruption to the travelling public leading to delays and congestion which would be much reduced through the installation of a new PC in-station within the new office accommodation.

5. OTHER IMPLICATIONS

None

6. REPORT

The Intelligent Transport Systems (ITS) Unit of the Council is currently located on the 2nd Floor within St Nicholas House and is primarily responsible for the operation, maintenance, design and installation of the city's traffic signal infrastructure. The Unit plays a vital role in the daily management of the road network. In addition to this the Unit also has responsibility for the bus Real Time Passenger Information system, Car Park Guidance System and variable message signs.

Prior to the redevelopment of the St Nicholas House site the unit will require to be relocated into a new office facility within a Council owned building. At this time an alternative location has not been identified.

The ITS unit has 3 computerised traffic and transportation systems that will require, as part of the move, to be re-housed and this report considers how this may be achieved whilst minimising the disruption to the travelling public. These systems are;

1. Urban Traffic Control System
2. Real Time Passenger Information System
3. Variable Message Signs & Car Parking Guidance System

The following discusses the relocation of the various systems.

1.   Urban Traffic Control System (UTC)

The primary system used by the ITS Unit and highly important to the efficient management of the cities road network is the Urban Traffic Control System (UTC). The UTC system controls and co-ordinates the majority of the traffic signals in the city centre and consists of a control PC located in the ITS office within St Nicholas House and connected to a communications hub in the basement of Woodhill House. Three options have been considered for the relocation of this system and these are presented below.

Option 1
The relocation of the UTC system will require the provision of a new communications line from Woodhill House to the location of the new ITS office at a cost of approximately £5,000 which must be in place and operational prior to the ITS Unit moving. On the day of relocation the existing control PC would be dismantled and re-assembled in the new office. Down time for the system has been estimated at 3 days, which will allow for testing to be carried out to ensure the system operates correctly when it is restored. During this time the operation of the traffic signals on the main corridors, such as Market Street, Union Street

etc, would be co-ordinated through the use of fixed time plans. However, whilst the fixed time plans will provide control to the city centre signals the signal timings will not be reactive to variations in traffic flows and therefore some additional delays to traffic on the road network will be experienced.

In addition the reporting of traffic signal related faults will not be possible and responsive maintenance will be limited for the duration of the down time. Whilst this will be a short-term issue and is not anticipated to cause any significant disruption some difficulties and delay in maintenance response will almost certainly occur while the system is re-housed in its new location.

Option 2

There are obvious concerns regarding the relocation of the control PC into the new office environment. Whilst in theory there should be few problems with moving the system into the new office, due to the age of the control PC, which was installed in 1992, unforeseen issues may arise due to the age of the system.

Given the age of the control PC it may be prudent to take advantage of the relocation to upgrade the current instation with a modern system installed and configured in the new office in preparation for when the ITS Unit moves across. Whilst this option would also require the provision of a new communications line from Woodhill House to the new ITS office it would have the advantage of much reduced system down time. As on the day of relocation the old system would simply be shut down and the new system booted up. The existing system is dated and has limited functionality and a new control PC system would offer increased functionality and the potential for utilising new technologies in the future. Quotes for the supply, installation and commissioning of a duplicate system have been obtained and are in the region of £55,000.

The installation of a new PC in-station would remove potential difficulties that may arise with the re-housing of the ageing control station, ensure that the responsive maintenance and network efficiency is unaffected and provide for future technological advances.

The projected Capital Budget for future years for the upgrade of traffic signal installations has a fund allocation of £400,000 and could accommodate the installation of the proposed PC in-station, permitting the current control PC to be replaced with a modern system. However should this funding allocation not be available, an alternative funding arrangement will require to be identified, and a submission made to the Capital Prioritisation scheme.

Option 3

The communications hub for the UTC System is located at Woodhill House. It may be considered appropriate at this time to take this opportunity to relocate the hub to the same location as the UTC control PC. This would bring the whole of this strategically important resource back within the full control of the City Council thereby improving both maintenance accessibility and security.

Due to the requirement to relocate over 100 BT data circuits, there would be a significant capital outlay required to take forward this option. An investigation carried out in 1999 indicated that the cost of this work would be in the region of £300,000. However this figure will have risen since that time and it is felt that currently a cost approaching £400,000 would be more representative.

Whilst this may not be an affordable option at this time allowance for the relocation of the communications hub should be considered for future years and space identified within City Council offices to house the equipment.

2.   Real Time Passenger Information System

Future Maintenance of RTPI

As members may be aware a proposal to terminate the term maintenance contract for the bus Real Time Passenger Information (RTPI) system as part of savings identified within the revenue budget was accepted by the Council at it's meeting of 11 February 2010. It was anticipated that following the termination of the maintenance contract, the maintenance of the system would be carried out on an "as required" basis with faults repaired depending on their impact on the systems accuracy provided funding was available. It should be noted that if system accuracy was adversely affected by faults that, due to limited funding, could not be resolved public confidence in the system would suffer. At that point a decision would have to be taken as to whether the RTPI system should remain in operation.

The RTPI system provides arrival information to bus passengers via passenger information displays located in bus shelters and public buildings in the city. Priority at traffic signals is also given to buses through a link into the UTC system.

The RTPI system is owned and operated in partnership with First Aberdeen. However the majority of the system architecture is located in St Nicholas House with communications lines to the system supplier in Cambridge and to First Aberdeen's King Street depot for monitoring and maintenance.

System hardware installed in St Nicholas House consists of a radio antenna and Digital Global Positioning System (DGPS) unit on the roof, a radio base station and system server in the 14th floor radio room and a system terminal in the ITS Unit office.

Members are advised that First Aberdeen rely on the radio system for their voice communications with drivers and that any loss of service has serious Health & Safety implications for them. In this respect it is vital that down time should be kept to a minimum.

The relocation into a new office facility will require a new site to be identified to accommodate the radio base station. The migration of equipment will require careful management in order to ensure minimal down time and loss of service.

A report was commissioned in late 2006 to examine the options for re-locating the base station and also what work would be required to upgrade the base station to enable effective operation for the future. The report considered several potential sites around the city, looking at the radio coverage available, site security, access and any applicable site costs e.g. site rental. The sites that were considered as possible options are noted and discussed within Appendix 1.

Whilst a decision has been taken to terminate the RTPI maintenance contract, it is recommended that roads officers continue to liaise with First Aberdeen to identify the most suitable site for the relocation of the radio base station and to investigate sources of external funding that will permit maintenance support for the RTPI system to continue at no cost to the Council.

3. Variable Message Signs & Car Parking Guidance System

The Variable Message Signs (VMS) and Car Parking Guidance System (CPGS) provides drivers, shoppers and visitors to Aberdeen with information relating to operational issues affecting the road network, parking space availability and directional guidance to city centre car parks.

The VMS system consists of a remote operator station located in the ITS office connected to the central server located in the radio room on the 14th floor of St Nicholas House.

With regard to the infrastructure required in the new office to support the VMS system, all that will be required is the provision of a new communications line to allow the central server to communicate with the equipment on street, the system suppliers to install software patches, upgrades etc and allow officers to connect to the system remotely. The cost of installing a new communications line for the VMS system has been estimated at approximately £5,000. In addition space within the new office facility will require to be identified to house the central server and remote operator station.

Conclusion

In conclusion the relocation of the ITS unit into a new office facility will require a significant amount of planning and infrastructure to be put in place to ensure the disruption to the travelling public is minimised during the relocation process. In addition it provides the opportunity to update some of the systems that are vital to the efficient management of Aberdeen's road network and enable them to be expanded to make use of the latest technological advances. However funding sources require to be identified at the earliest opportunity to ensure that the required works can be completed in advance of the relocation. In addition office space that is sufficient to accommodate the PC in-station for the UTC system, the central server for the CPGS system and, possibly in the future, the communications hub for the UTC system, requires to be identified. A floor area of 70 square metres, which is equivalent to that currently allocated to the ITS unit, would be sufficient to accommodate the above systems.

In respect to the RTPI aerial and communications hub it is suggested that to minimise both relocation and future revenue costs a detailed design for relocation to the multi-storey flats on Forresterhill Road be carried out.

7. REPORT AUTHOR DETAILS

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8. BACKGROUND PAPERS

None

APPENDIX 1

Site Options for Relocation of Radio Base Station

a.   Multi-storey flats on Forresterhill Road

The Council owned multi-storey flats on Forresterhill Road were considered as a potential location for the radio antenna. This site would provide good radio coverage for the city centre and provide improved coverage along the A93 and A96 compared with the antenna in its current location. However site security and maintenance access were both highlighted as issues together with the potential for Health and Safety risks to contractor's staff. In addition accommodation would be required to house the radio base station and system server. If these items were not able to be stored securely within an existing plant room or alternatively an enclosure would have to be constructed for them on the roof. This would require planning approval and structural surveys to ensure the fabric of the building would not be adversely affected. Whilst there would be no external costs for this location there would be approximately £400 of power usage charges per annum. The capital cost for relocating the antenna onto the multi-storey flats on Forresterhill Road was estimated at £25,000.

b.   Multi-storey flats at Gallowgate

The Council owned multi-storey flats on Gallowgate were also considered as a potential location for the radio antenna. The radio coverage at this site is similar to the Forresterhill Road site above in that the city centre receives good radio coverage. However along the A93 and A96 coverage levels drop off more quickly with limited reception.

Also in common with the Forresterhill Road location site security and maintenance access were both highlighted as issues together with the potential for Health and Safety risks to contractor's staff. Again accommodation would be required to house the radio base station and system server, which if not available within the existing structure would have to be provided, with all of the previously outlined issues of planning and structural surveys to be taken into account. Again there would be no external costs for this location there would be approximately £400 of power usage charges per annum. The capital cost for relocating the antenna onto these multi-storey flats was also estimated at £25,000.

c.   Brimmond Hill Radio Mast

The commercial radio mast on Brimmond Hill was identified as the preferred site for the radio antenna as it offered excellent radio coverage for both the city centre and along the A93 and A96. Site security is not considered an issue and maintenance access is available at all times. The capital cost for relocating the antenna onto the Brimmond Hill mast were estimated at £45,000 with a further £6,000 of lease rental fees per annum.

Given the shared ownership of the Aberdeen real time system it would be appropriate for the cost burden to be shared between the partner organisations. The exact cost split would have to be the subject of discussions between the partners based on ownership and operational requirements.