

## **Appendix B**

### **Cathedral and Quay Multi-storey Car Park Structural Repairs**

#### **Reasons for the report**

If these structural repairs are not undertaken the four decks which are currently closed will have to remain closed due to health and safety risk. Water seepage will continue further into the car park over time and further decks will need to be closed until the entire car park has to be shut due to potential for structural failure. The current closure of the upper four decks is already reducing the Council's income potential and adversely impacting on local businesses.

Whilst the car park is closed to complete the essential structural repairs it would be an effective use of the down time to improve the overall user experience and seek to address long standing anti-social behaviour issues. For this reason there is a second recommendation to refurbish the remainder of the car park. As well as upgrading the facility this scheme will provide secure access control for pedestrians and vehicles and will substantially reduce anti-social behaviour issues occurring at this car park, which include; graffiti; vandalism to parking equipment, lights and lifts; rough sleepers; drug use; under-age drinking; skateboarding; noise; groups of motorists congregating and revving engines and playing loud music. These behaviours can deter genuine customers and thereby reduce income and impact directly on the quality of life for those residents living nearby.

#### **Resource implications**

Proceeding with both recommendations would provide an enhanced parking experience from this asset. Based on projected income provided by Car Parks it is anticipated that income would increase from an average income of £270,000 by up to £50,000 per annum as a direct result of these improvements.

Due to the nature of the car park structure and coverings it is not possible to accurately determine the full extent of the repairs required until work commences and the deck surface coatings are removed and defects opened up.

An estimate of £1,500,000 million is anticipated to cover a significant proportion of the works to the upper four decks, but it is likely that further funding will be required as the full extent of the issues is determined.

The further works to refurbish the remainder of the car park, including providing secure access control for pedestrians and vehicles, will cost an additional estimated £2,400,000.

As this project will necessitate a multi-disciplinary approach, including professions that the Council does not have within internal resources, an external consultancy will need to

be appointed to design and oversee the delivery of the project. The cost of this are included within the budget.

## **Recommendation One**

The Council became aware of structural issues at Cathedral and Quay MSCP in late 2019. At this time a structural engineer was appointed. During the course of the subsequent survey it became apparent that a risk of collapse existed due to the presence of structural defects and the upper four decks of the car park were closed. The Council received the full structural survey report in February 2020.

Failure of surface coatings due to a legacy of insufficient maintenance or planned replacement programmes of deck coatings has resulted in water seepage throughout the car park structure. The majority of the water ingress and resultant defects are on the top two decks, but continue through lower decks.

Water seepage has caused corrosion and expansion of reinforcement within the structure, particularly at construction joints, which has resulted in spalled concrete. Signs of further areas that have a likelihood of spalling due to corroded reinforcement within the structure have been identified.

The corroded reinforcement reduces the structural effectiveness of the waffle slabs that form the decks of the car park. With original design utilising 65-85% for worst case mid-span bending moment, corrosion of tension reinforcement in the bottom of the slab ribs will reduce the cross sectional area of the reinforcement until the slab rib becomes over-utilised under ultimate limit-state conditions.

In plain terms, if water is permitted to continue to enter the structure, more reinforcement will corrode. As more reinforcement corrodes the less capable the structure becomes in resisting loads, especially the live loads of vehicle traffic. When loading exceeds remaining structural capability, collapse is likely to occur.

As a result of the concerns raised by the structural engineer, the top four decks of the car park have been closed, which is impacting on the income potential of this asset as well as having a detrimental impact on local businesses and activities.

To resolve the identified issues a programme of investigation and repairs has to be undertaken including; deck coatings to decks showing signs of water ingress or structural damage will be removed; decks will be intrusively assessed by a structural engineer; decks will be sealed and recoated; drainage improvements undertaken to upper decks including perimeter drainage runs, surface falls and deck ramps; corroded waffle slab reinforcement to be removed and replaced; spalled and damaged concrete to be removed and replaced; any further structural issues found during the course of the works to be rectified; protective coatings will be applied to the concrete.

At the time of undertaking these works it will be necessary to remove M&E installations. Given the age of these M&E installations it will more than likely be necessary to install new rather than refit existing M&E installations and this has been allowed for within the budget.

Initial assessment of the processes and works involved indicate that it will not be feasible to reopen the decks currently closed off within this car park until at least late 2020, but possibly 2021.

## **Recommendation Two**

Cathedral & Quay car park is the prime destination for drivers visiting the city to explore major tourist attractions. The name of the car park and location make this a default site for visitors. The car park is open between 7am and 11pm and helps support both the daytime and evening economy on the Quay. The site is surrounded by residential properties, many of whom qualify for a concessionary residential permit for the car park due to lack of kerbside capacity in the vicinity.

Unfortunately the condition of the car park tends to underwhelm first time visitors and reflects poorly on the city and the Council. Despite previous lighting upgrades the site is not well lit and this, combined with other anti-social issues, can give the impression of the car park being unsafe and threatening. The poor lighting also detracts from the current CCTV coverage.

Anti-social issues occur mainly during the evenings and include, graffiti; vandalism to parking equipment, lights and lifts; rough sleepers; drug use; under-age drinking; skateboarding and youths congregating and being noisy; young drivers revving engines and playing loud music. These behaviours can deter genuine customers and impact directly on the quality of life for those residents living nearby.

Trials in locking the site earlier than 11pm have been attempted with mixed success due to the additional requirements to provide residents access to their vehicles and suitable parking provision for those visiting the wide range of restaurants and pubs around the Quay during the evening.

Providing on-site security patrols is expensive if buying in, or unsustainable if redeploying internal staff from other duties. The solution is a system whereby; there is a deterrent for vehicles to enter unless legitimately using the site for parking purposes e.g. shutter controlled and pay on entry/exit; access for pedestrians is restricted to those who have legitimately parked their car on site or hold a valid permit e.g. ticket issued at entrance shutter provides bar code pedestrian access through doors; the site remains secure outside of the above two means of entry/egress.

A refurbishment of the site to bring it to the same level as John Lewis car park and an investment in the above parking/security equipment would upgrade the car park to the premium level where we currently charge a higher tariff and up until midnight. These changes, as well as attracting new customers could reasonably increase income at this site by up to £50,000 per annum and better reflect the prestige and ambition of the city to visitors.

Whilst the car park is closed to complete the essential works set out above, it would be an effective use of the down time at this asset to improve the overall user experience and seek to address long standing anti-social behaviour issues and avoid additional lengthy closure to the car park in the future.

## **Further Benefits**

This decision will contribute to the Council providing value for money services, through both enabling the expansion of our commercial activity to generate more income and providing improved management of our built assets and maximising longevity.

Undertaking both recommendations will improve the overall energy efficiency of the asset through the use of more efficient services installations, for example LED lighting and presence detection.

## **Project Risks**

There are no risks in proceeding with the proposals.

Not proceeding with the first recommendation, for funding the structural repair works and associated refurbishment, will result in the need to leave the upper decks closed and, as water seepage continues, close the entire car park as the risk increases. Income will reduce as a result of not proceeding. If left unrepaired overtime there is the potential for complete collapse of the car park.

Not proceeding with the second recommendation, for refurbishing the remainder of the car park and adding security measures, would result in a stark contrast to the repaired and refurbished upper decks. This may exacerbate the current levels of anti-social behaviour, impact directly on the quality of life for those residents living nearby, further detract from the user experience of this car park and deter genuine customers with a resultant potential reduction in income.

## **Alternatives**

Works could be restricted to undertaking only the first recommendation of known essential structural works to the estimated value of £1.5 million. However, the remainder of the scheme would remain a requirement and would necessitate an additional lengthy closure to the car park in the near future.

In addition, the surface coverings to the car park decks prevent accurate assessment of structural issues until they have been removed, proceeding with only the known structural issues has the potential for structural issues that are yet to have deteriorated the structure as extensively as on the upper decks to be missed.

Author: Corporate Property Assets Manager

Documents used in compiling this report: Water Ingress and Defect Survey at Cathedral and Quay Multi-Story Car Park. 4 February 2020.