

**Extract from Appendix One of 10 February 2016 Executive report :  
Multi-Storey Car Parks Condition Survey**

***The summary of Covent Garden's car park survey are as follows;***

- Chloride ion content in concrete is one of the most common initiators of corrosion of steel reinforcement embedded in concrete. There are negligible levels of chloride to the all decks and therefore the risk of corrosion from chloride is considered to be low.
- There is lack of concrete cover due to the design and age of the car park, modern standards suggest 30mm minimum cover in sections of the car park it is only 10mm. However this has not led to high levels of chloride ion ingress or affected the reinforcement bars.
- The failure of the top deck covering is allowing water to enter the structure and have caused extensive delamination of the concrete structure. Due to the water ingress from the top two floors there is corrosion to the rebar within the ramp to deck 7 and 8 which is cause for concern. As a result of these findings the top two decks have been closed to vehicles.
- Alkali-Silica Reaction occurs when the alkaline pore fluid and siliceous minerals in some aggregates react to form a calcium alkali silicate gel. This gel absorbs water, producing a volume expansion that blows open the concrete. This was noted in the initial testing and a further test was undertaken to assess the extent of the problem. ASR cannot be repaired and can only be slowed by preventative moisture ingress into the concrete and by continuous monitoring to assess the structure.
- The further testing has indicated that ASR is present throughout the structure but at a low level and does not pose an immediate risk. But treatment of the parapets is advised due the nature of the design and location.
- Carbonation to the concrete is not considered to be a cause for concern.
- The drainage system is main contributor to the water ingress to the building and should be refurbished as soon as possible.
- Vehicle impact protection on all decks is showing extensive failure to the paint coatings and rusting has occurred to the barrier and bolt fixings in many locations. It is also does not pass modern standards and would is unlikely to pass load testing against vehicle impact, these should be refurbished.
- The handrails are less than 1m high which is less than current building regulations allow. They are also showing signs of corrosion and should be replaced to meet modern day standards.
- The water ingress to open stairwell within the centre if the car park presents an ongoing health and safety risk and should also have a steel barrier installed to protect pedestrians from moving or parking vehicles.
- The report concludes that Covent Garden MSCP needs immediate remedial repairs if this is to be maintained as a public use car park.