Item 5

19th March 2019

Glasgow City Council

Environment, Sustainability & Carbon Reduction City Policy Committee

Report by Executive Director of Neighbourhoods and Sustainability

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UPDATE ON THE TIDAL WEIR

Purpose of Report:

The purpose of the report is to update the Committee on the status of the Tidal Weir repairs.

Recommendations:

The Committee is asked to note the contents of the Report.

Ward No(s): Citywide: ✓

Local member(s) advised: Yes ☐ No ☐ consulted: Yes ☐ No ☐

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1. Introduction

1.1 At the meeting of the Environment, Sustainability and Carbon Reduction City Policy Committee on 9th October 2018, members considered a report regarding the Tidal Weir programmed repair work. It was agreed at this meeting that an update would be provided to a future Committee on the status of the repairs (see undernoted link).

https://www.glasgow.gov.uk/councillorsandcommittees/submissiondocuments.asp?submissionid=89960

1.2 The purpose of this report is to provide an update on the status of the Tidal Weir repairs.

2. Background

2.1 The Clyde Tidal Weir is located at the western end of Glasgow Green. The purpose of the Weir is to maintain the upstream water at a constant level which helps maintain bank stability and ensures the amenity of the adjacent land. The Weir is operated by the means of three gates which can be raised and lowered depending on tide and river conditions.

2.2 In August 2017, the north gate malfunctioned causing damage to the Tidal Weir and allowing the impounded upstream water to escape through the gate. As a result, the river level dropped drastically and large sections of banks were exposed, localised lengths of riverbank which proved unstable suffered significant damage which had a major impact on the adjacent road network.

2.3 At present the damaged North gate is in the down position however it is inoperable due to the damage incurred when it malfunctioned. The south and middle gates are operating properly and are able to be raised and lowered to maintain the upstream river level, ensuring bank stability and allowing passage for boats.

2.4 Going forward, it is crucial the Tidal Weir is brought back to full functionality in order to reduce the risk of a future failure which would destabilise the upstream river banks and significantly reduce amenity to the riverside cycle path\walkway and adjacent streets. The costs of such a failure are significant, it estimated that of up to £6M will be required to repair the damage to the network caused by the failure of the North Gate.

3. Design Commission

3.1 The principal aim of the commission is to bring the Tidal Weir back to full operational capacity and to introduce a “Smart System” upgrade to the mechanical and electrical control systems. This will significantly reduce the risk of future failures due to human operator error or mechanical breakdown.

3.2 The design commission was awarded on 13th of June 2018 to Fairhurst Consultants who submitted a tender valued at £112K.

3.3 The prestart meeting took place on 21st of June with the commission commencing 18th of July 2018. The programme is outlined in 7.

4. Weir Repairs

4.1 North Weir Gate Repairs

4.2 The north Weir gate cannot be removed or lifted out of the water for repair therefore the repairs require to be carried out in situ.

4.3 The main damage to the gate is located at its northern side. In order to carry out the repairs at this location access below water level is required for the works. The most effective and cost efficient method of achieving this is to create a localised steel dam, referred to as a cofferdam, around the gate at this location to exclude the water and allow access for repairs (see Appendix A for the General Arrangement Drawing).

4.4 To repair the wheeled lifting assembly on the gate, which allows it to be raised and lowered, the forces on the gate due to the upstream water need to be removed. Steel piles, driven into the riverbed, will be installed downstream of the northern side of the gate to temporary brace and support it.

4.5 The damage to the southern side of the gate is less severe and confined to the guide rail which the gate rollers slot into, this can be repaired from above without a cofferdam.

4.6 There are significant cost savings to the project utilising this methodology as the alternative is to build a dam along the full length of the gate which carries more project risk and is considerably more expensive.

5. Mechanical & Electrical Refurbishment

5.1 Mechanical Refurbishment

5.2 The twelve existing chains which are used to lift and lower the three gates will be replaced due to their age and condition. The chains are showing signs of wear with links which are locked together and unable to articulate. Chain failure has occurred in the past. Replacing the chains with more durable modern equivalents significantly reduces the risk of future failure.

5.3 The motors, gearboxes and drive shafts which power the chains to lift each gate are outdated and these will be replaced with modern equivalents. Installing new electric motors with a new electronic control system ensures that the gates will perform as required and reduce risk of motor failure. It will also offer more precise control of the gate levels.

5.4 Electronic Control System Replacement

5.5 The existing control system which allows the operators to monitor and operate the Weir is beyond the end of its service life. As part of the refurbishment, a new “Smart “Control System will be installed for all gates. This will utilise sensors on the Weir to monitor the gate heights and alignment, the river and tidal conditions and the new electric motor system. This system will allow the gate levels to automatically adjust to the river and tidal conditions and importantly continually monitor the weir for any signs of failure or fault.

5.6 The system is designed to have its own independent master controller for each gate to ensure continued operation in the event of a main controller software/hardware failure. There is also a backup electrical generator which will be programmed to start if there is a local power grid failure.

6. Progress

6.1 The detailed design of the gate repairs is 95% complete. Work on the production of the performance specification for the electrical and mechanical upgrade and the contract documents for the gate repairs is in progress and on programme to be completed in March 2019.

6.2 Site works are programmed to begin in June 2019 for completion November 2019.

7. Programme

7.1 The repair works are on programme to be completed on site by November 2019. The programme is detailed below.

Task Name	Duration	Start	Finish
Stage 1 - FEASIBILITY STUDY	14 wks	Completed	
Stage 2 - PRELIMINARY DESIGN	6 wks	Completed	
Stage 3 - DETAILED DESIGN	8 wks	Ongoing	
Stage 4A - CONTRACT PREPARATION	4 wks	Ongoing	
Stage 4B – PROCUREMENT	8 wks	March 19	May 19
Stage 5A - CONSTRUCTION PHASE	24 wks	June 19	November 19
Stage 5B - DEFECTS CORRECTION PHASE	104 wks	November 19	November 21

8. Funding

8.1 In April 2018 £2M Capital funding was approved for the repair and upgrade of the Tidal Weir. It is forecast that there will be a £160K spend in 2018/19 with the remaining £1.84M spend taking place in 2019.

9. Policy and Resource Implications

Resource Implications:

Financial:	Financial implications are detailed within the Report.
Legal:	None
Personnel:	The commission is being undertaken by Fairhurst Consultants and project managed from within the current establishment of Neighbourhoods and Sustainability.
Procurement:	Existing Consultancy Framework\Contractors Framework
Council Strategic Plan:	Investment in infrastructure supports economic growth, supports the delivery of a vibrant and sustainable city and improves accessibility for the city's most vulnerable people.
Equality and Socio-Economic Impacts:	
Does the proposal support the Council's Equality Outcomes 2017-22	Yes
What are the potential equality impacts as a result of this report?	An EQIA Screening was undertaken on 6th Sept 2018 which identified that repair of the Tidal Weir has no negative impacts and there are positive impacts as it ensures the amenity of Glasgow Green and the riverside walkway which are utilized by all citizens. The EQIA screening can be viewed via the following link: https://www.glasgow.gov.uk/CHttpHandler.ashx?id=44578&p=0
Please highlight if the policy/proposal will help address socio economic disadvantage.	N/A

Sustainability Impacts:

Environmental:	Maintain the amenity of Glasgow Green and the riverside walkway and the surface streets adjacent to the river banks.
Social, including Article 19 opportunities:	Encourage cycling and walking as a commuting, utility use, leisure activity and as a sport.
Economic:	Ensuring access along the riverbank, reducing river bank erosion and bank failure maintains amenity in the environs around the Clyde while providing an impetus for development.
Privacy and Data Protection impacts:	No data protection impacts identified as a result of the plan.

10. Recommendations

The Committee is asked to note the contents of the Report.