City of BRADFORD METROPOLITAN DISTRICT COUNCIL

Report of the Strategic Director of Place to the meeting of the Bradford South Area Committee to be held on 15th February 2024

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Subject:

SMART STREET LIGHTING – UPDATE ON PROJECT PROGRESS

Summary statement:

The following report seeks to provide Members with a progress on the Smart Street Lighting Project and the work undertaken to date in the Bradford South constituency.

EQUALITY & DIVERSITY:

There are no equality and diversity issues.

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Portfolio:

Regeneration, Planning and Transport

Overview & Scrutiny Area:

Regeneration and Environment

1. SUMMARY

- This report provides Members with an update on progress of the Smart Street Lighting project, specifically, the work completed in the Bradford South constituency replacing old street lighting luminaires, life expired columns and the installation of the Central Management system and LoRaWAN network.

2. BACKGROUND

- The Council approved an invest to save project in 2018 of £45m to update its current lighting stock, of approximately 56,500 assets, with the aim of significantly reducing energy consumption, maintenance costs and reducing CO^2 emissions. The project will replace the existing inefficient lighting with energy efficient LED's whilst retaining most of the existing lighting columns. It is envisaged that there will be a need for the replacement of approximately 15,600 life expired lighting columns which were identified during a survey of all existing assets (carried out in 2019-20). The new lighting solution will be controlled using a Central Management System (CMS) to control the lighting via a Low power wide area network (LoRaWAN) platform to facilitate Internet of Things (IoT) connectivity for a variety of sensors and devices.

- The project has been split into two work streams "In Scope" works around 48,300 assets which are the standard column replacements, connections and luminaire replacements on the majority of streets across the district and "Out of Scope" works around 8,200 which are the more challenging assets such as heritage and decorative assets, pole mounted and wall mounted luminaires, columns in back streets, overhead cabled columns etc.
- The "In Scope" works is being undertaken by the external contractor Amey OW Ltd. and the "Out of Scope" works will be a mix of the Councils in house delivery teams for the luminaire replacements and a further contract resource for the remaining column replacements and connections due to be tendered around the end of February 2024.

3. OTHER CONSIDERATIONS

- The project has been broken down into several work types which are referred to in the appendices, these are:

  LC - Lantern Change - this is the installation of a new LED lantern with a CMS node on an existing column which has been identified as structurally sound, these are predominantly relatively new steel columns.

  LCS – Lantern Change and Sleeve – this is the installation of a sheet steel bracket on an existing concrete to extend the life and anew LED lantern and CMS node, there are very few of these as there was sufficient funding to replace a large number of these concrete columns.

  CR – Column Replacement – this is the installation of a new steel lighting column to replace the existing concrete or steel column that the survey deemed to be life

expired, again this includes a new LED lantern and CMS node

OS/LC – Out of Scope Lantern Change – this is where the existing asset has been excluded from the main contractors work, in the main these are heritage and decorative assets, pole mounted, wall mounted, units in conservation areas etc. These will be either lantern replacements with decorative or heritage units, again LED with CMS nodes or retrofit LED gear trays. These will be completed by the in house street lighting teams.

OS/CR – Out of Scope Column Replacements – this is where the existing columns are replaced with new columns with an LED lantern and CMS node, many of these columns have access issues, are in back streets, footpaths or cast iron columns being retained/replaced with heritage embellished columns at the request of the conservation team.

- All the new lighting installations have been designed in accordance with the British Standards where possible to improve the lighting of the carriageway and footways.

- The table below shows the number of assets in each ward that require replacement, the number that have been completed up to receipt of the last payment application (early December 2023) and the percentage completion.

Ward	Total number of assets	Total complete in App 43	% Complete
Tong Ward	3537	1664	47.05%
Queensbury Ward	1818	1329	73.10%
Royds Ward	2095	1718	82.00%
Wyke Ward	2074	1584	76.37%
Wibsey Ward	1658	1311	79.07%
Great Horton Ward	1508	1063	70.49%
Total	12690	8669	68.31%

4. FINANCIAL & RESOURCE APPRAISAL

- There are no financial issues arising from the project to date. The funding was agreed by the PAG and is split as follows;
  £25,893,509 Prudential Borrowing
  £19,084,597 SALIX interest free Government Funding for carbon reduction projects.

- Upon completion of the project, it is projected that the Council will have reduced the annual energy consumption in Bradford South as outlined in the table in Appendix A.

5. RISK MANAGEMENT AND GOVERNANCE ISSUES

- Due to the size and nature of the project there are several risks in delivering the works, these are being effectively managed through the NEC contract with Amey OW Ltd. as well as the whole project being overseen by a governance framework and monthly project board meetings to ensure that risks are managed and mitigated effectively.

- The Smart Street Lighting Project Board reviews the risk register at each meeting and assesses whether escalation is required or whether the Project Executive is satisfied that the risks are being managed effectively.

6. LEGAL APPRAISAL

- There are no current legal issues.

7. OTHER IMPLICATIONS

7.1 SUSTAINABILITY IMPLICATIONS

- The Smart Street Lighting project forms part of the Council Plan in helping to deliver the priority area “A Sustainable District”. By replacing the old street lighting units with energy efficient LED’s this will reduce the Councils energy consumption for street lighting by at least 65% whilst providing lower maintenance requirements and costs.

- The installation of the Central Management System facilitates the dynamic control of the lighting enabling dimming and switching off lights, automatic fault reporting which saves on physical night inspections of lights to identify failures as well as pseudo energy metering so that the actual consumption of the units can be monitored and provided for billing purposes.

- The specification for all new lighting columns has been developed to provide a useful life of 50 years rather than 30 years offered with standard specification columns, reducing the necessity to replace as frequently. Also, the LED luminaires are projected to have a 20-year life, again reducing the need for frequent replacement as opposed to the old lamps which had a 4 – 6-year life

7.2 TACKLING THE CLIMATE EMERGENCY IMPLICATIONS

- By reducing the energy consumption of the street lighting assets this provides a significant reduction in CO^2 emissions. It is anticipated that the savings will be around 6000 tonnes of CO^2 per annum when the project is complete. In addition to this by specifying materials with longer life this also reduces the Councils carbon footprint.

- The provision of the CMS and the LoRaWAN network enables the Council to control the lighting and provide connectivity of a plethora of sensors which could assist in providing data to support the Councils response to the Climate

Emergency. Refer to Appendix A for carbon reduction figures.

7.3 COMMUNITY SAFETY IMPLICATIONS

- The first phase of the project was to survey every asset in the District to ascertain both electrical and structural safety, this included non-destructive testing of all steel lighting columns. During the survey, columns were identified for replacement based on the results of the testing with many concrete columns proposed for replacement. Overall, the column replacements identified are in the region of 30% of the stock.

- Inevitably, during the survey around 700 columns were found to be structurally unsafe requiring immediate action. These units were cut down to just above the shoulder around 1.2m above ground level and made safe. Risk assessments were undertaken to identify those requiring urgent replacement based upon whether they were the only light in the street or multiple lights in the same street. The vast majority of these have been replaced with around 15 outstanding across the District.

- The provision of a safe, modernised, fit for purpose streetlighting infrastructure is an important service for ongoing community safety.

7.4 HUMAN RIGHTS ACT

- There are no human rights implications.

7.5 TRADE UNION

- There are no trade union implications.

7.6 WARD IMPLICATIONS

- As an all-District project, all wards in the Bradford South Constituency are affected by the project. This includes installation works resulting in traffic management measures, barriers on pavements and limited time disruptions in all streets as work is carried out.
- Ward specific data regarding the number of assets and completed works can be found in Appendix B.

7.7 AREA COMMITTEE LOCALITY PLAN IMPLICATIONS

- The project supports outcomes for safer neighbourhoods in all the Ward plans for the constituency by providing better street lighting, reducing carbon emissions and reducing lighting faults through more reliable LED lighting.

7.8 IMPLICATIONS FOR CHILDREN AND YOUNG PEOPLE

- There are no implications for children and young people.

7.9 ISSUES ARISING FROM PRIVACY IMPACT ASSESMENT

No issues arising.

8. NOT FOR PUBLICATION DOCUMENTS

- None

9. OPTIONS

- This report provides information on the progress of the Smart Street Lighting Project and therefore there are no options requiring a decision.

10. RECOMMENDATIONS

- That Members acknowledge the progress of the Smart Street Lighting project in Bradford South and welcome future updates.

- That Members endorse the project and the positive impact for the Bradford South constituency and its wards.

11. APPENDICES

- **Appendix A** – Charts outlining Load Reduction, Energy Savings and CO2 savings by ward.

- **Appendix B** – Charts identifying Smart Street Lighting works, by work type and completed works by ward to date.

12. BACKGROUND DOCUMENTS

- None

Appendix A

Chart 1

The chart below compares the load of the old equipment against the load of the new equipment – as an example consider it like changing a light bulb in your house from the old 100 watt bulb to a 35 watt LED bulb, a saving of 65%. Obviously kW (killowatts -1000 watts) are used as the load is for all the lighting that has been replaced in each ward.

The figures in this table only include the units that have been replaced up to the latest payment application from the contractor that informs the project team which assets have been completed.

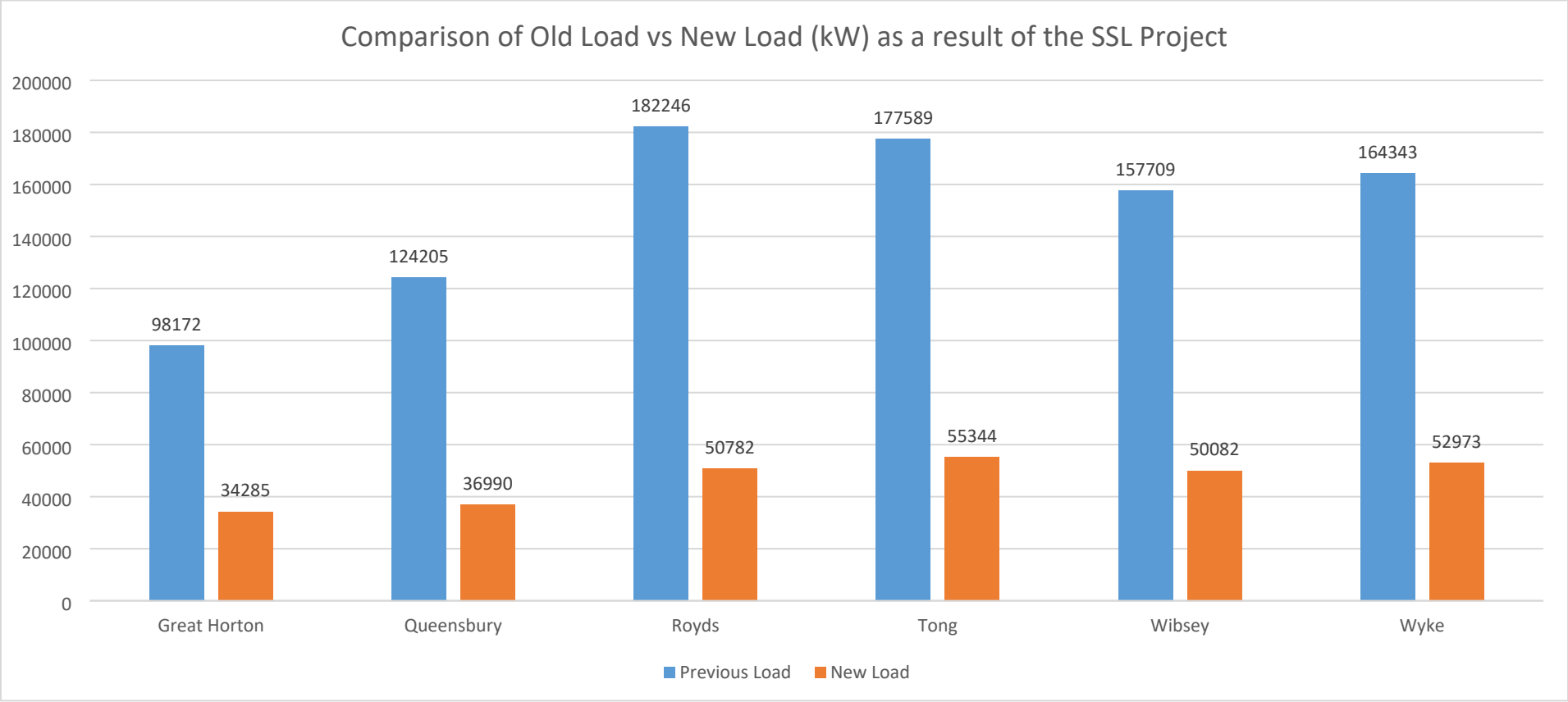


Chart 2

The chart below shows the ***estimated*** energy consumption of the old equipment compared with the new LED units, this is measured in kWh (kilowatt hours). The values in this table are calculated based on a 12 month period and are therefore indicative of the annual energy consumption.
To calculate the ***estimated*** consumption the average burn hours (the duration the lights are on) for 12 months have been used, in the case of the old equipment controlled by photocells the burn hours are 4,125 hours per annum multiplied by the load of the old equipment.
In terms of the new LED lights, these are controlled by the CMS which includes a dimming profile which effectively reduces the burn hours to 3,105 hours per annum – this is then multiplied by the load of the new LED units.

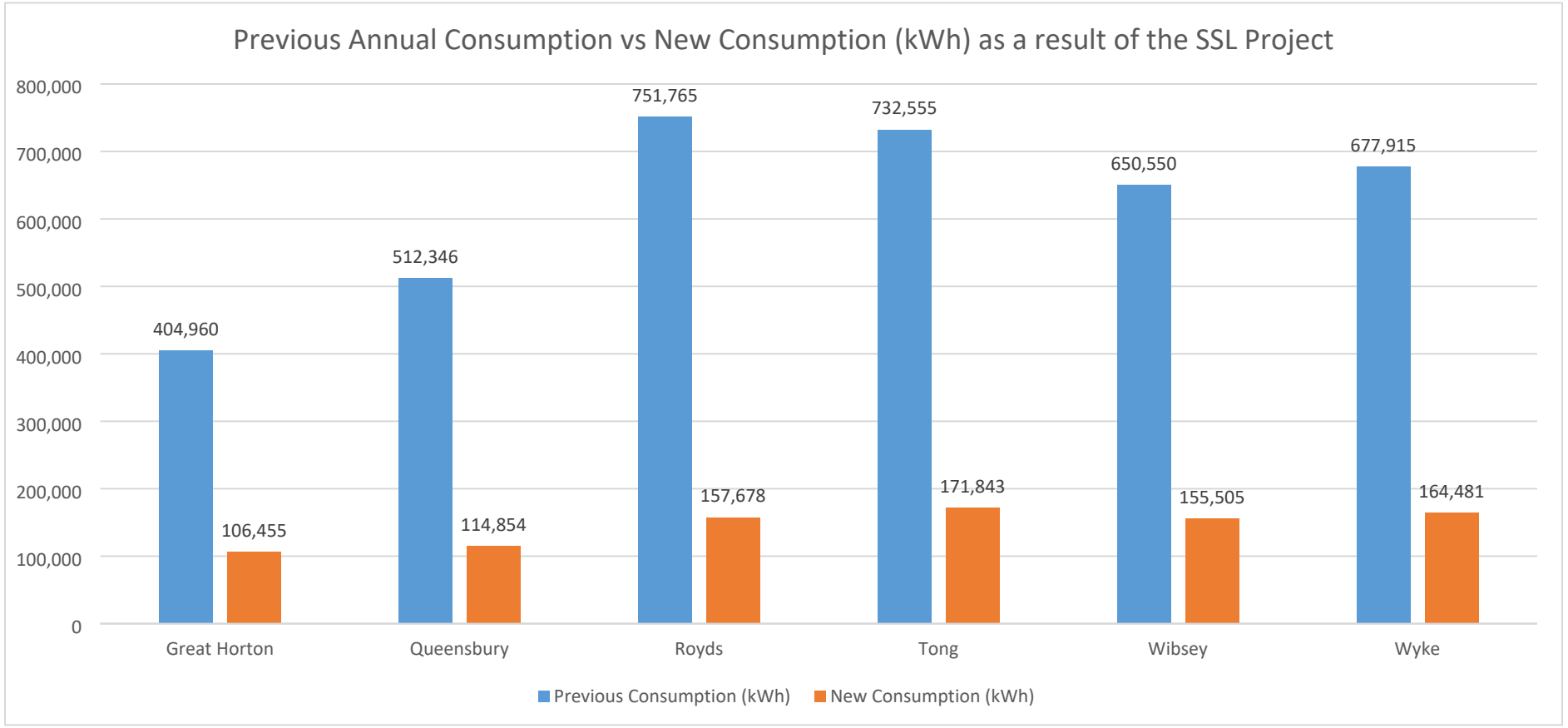


Chart 3

This chart provides a comparison of the ***projected*** reduction in the annual energy cost – again, this is based on the annual energy consumption estimated as shown in Chart 2 multiplied by the per unit rate of 31.5 pence per kWh.

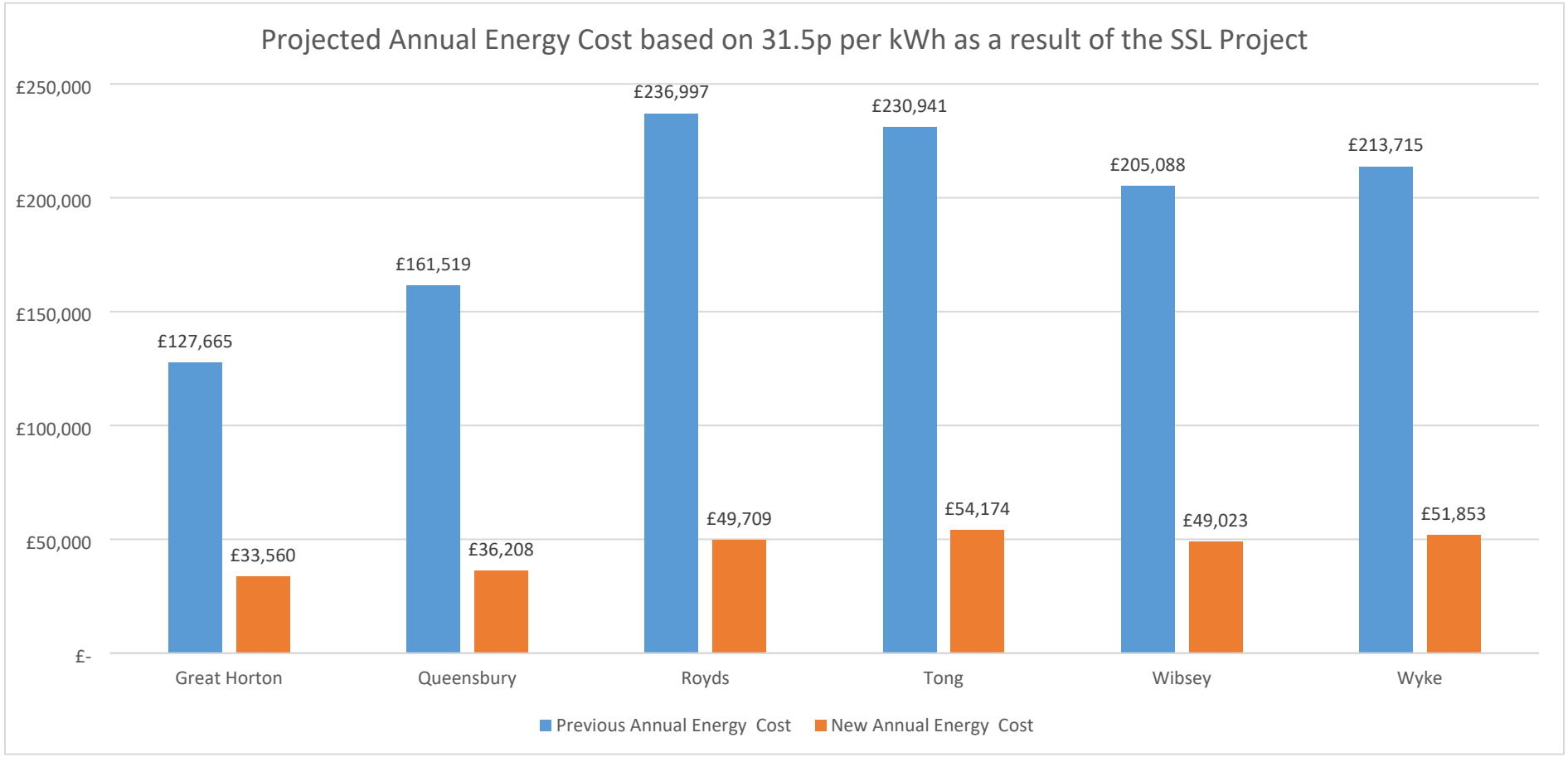


Chart 4

This chart provides the percentage load reduction as a result of the work carried out by ward, the reason for the fluctuation between wards is down to the quantities of units replaced and also the type of equipment in each ward, for example, where there are busy traffic routes higher wattage equipment is used.

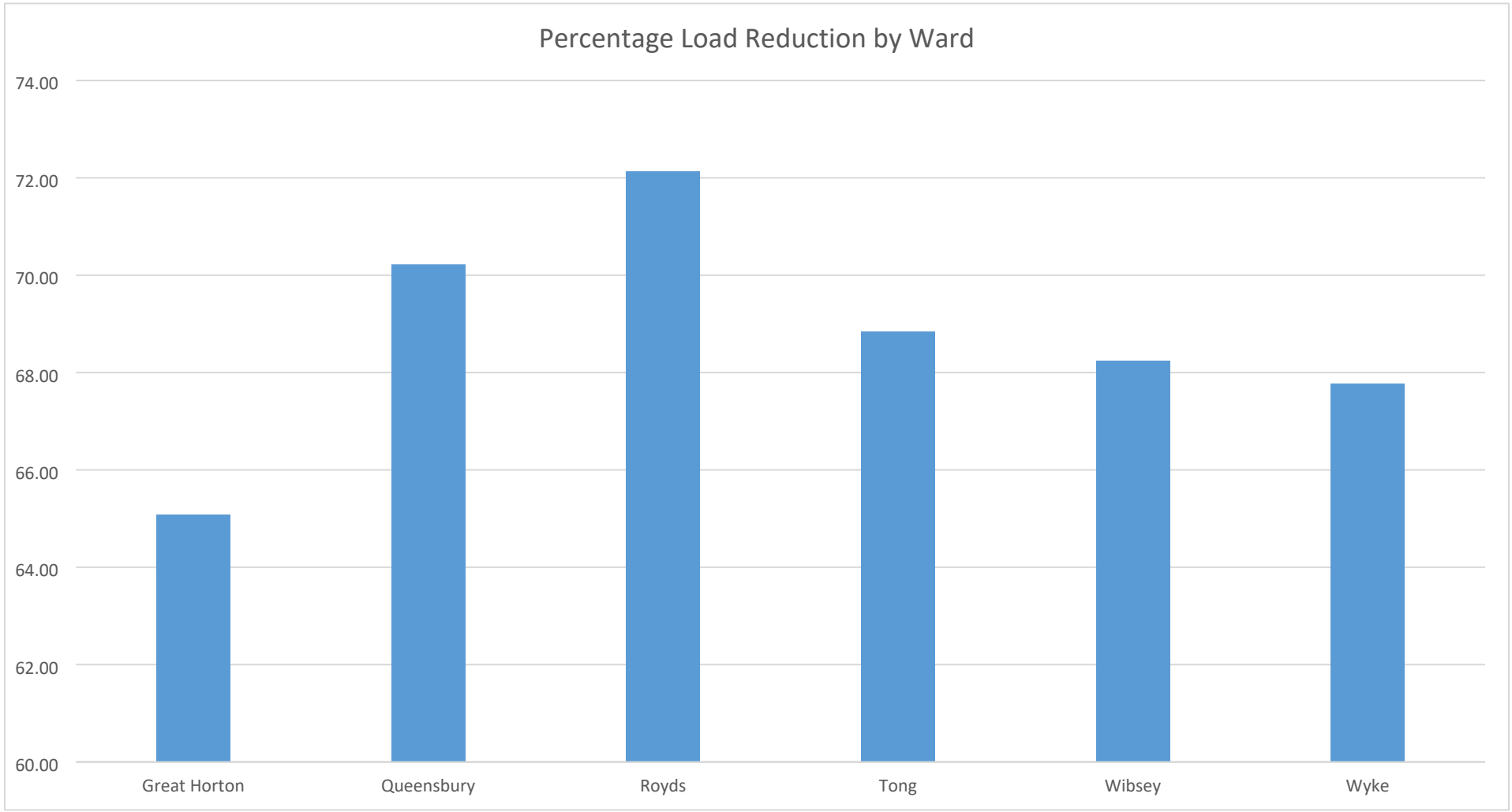
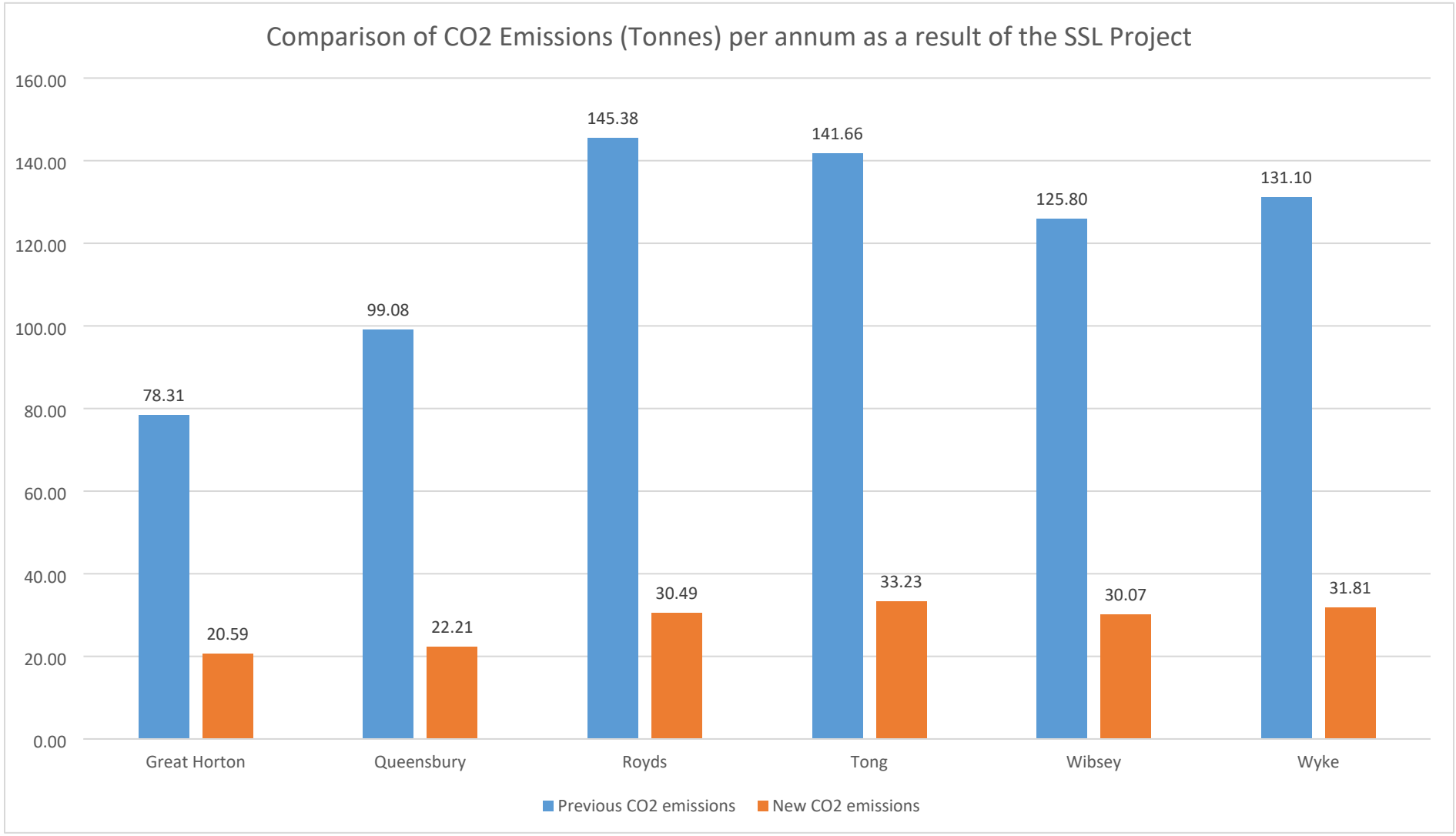


Chart 5

This chart provides the reduction in CO^2 emissions from the old equipment to the new equipment.



Appendix B

Chart 6

Based on the latest payment application detailing the work completed by the contractor this chart indicated the number of Lantern Changes to be carried out in each ward along with the quantities that have been completed.

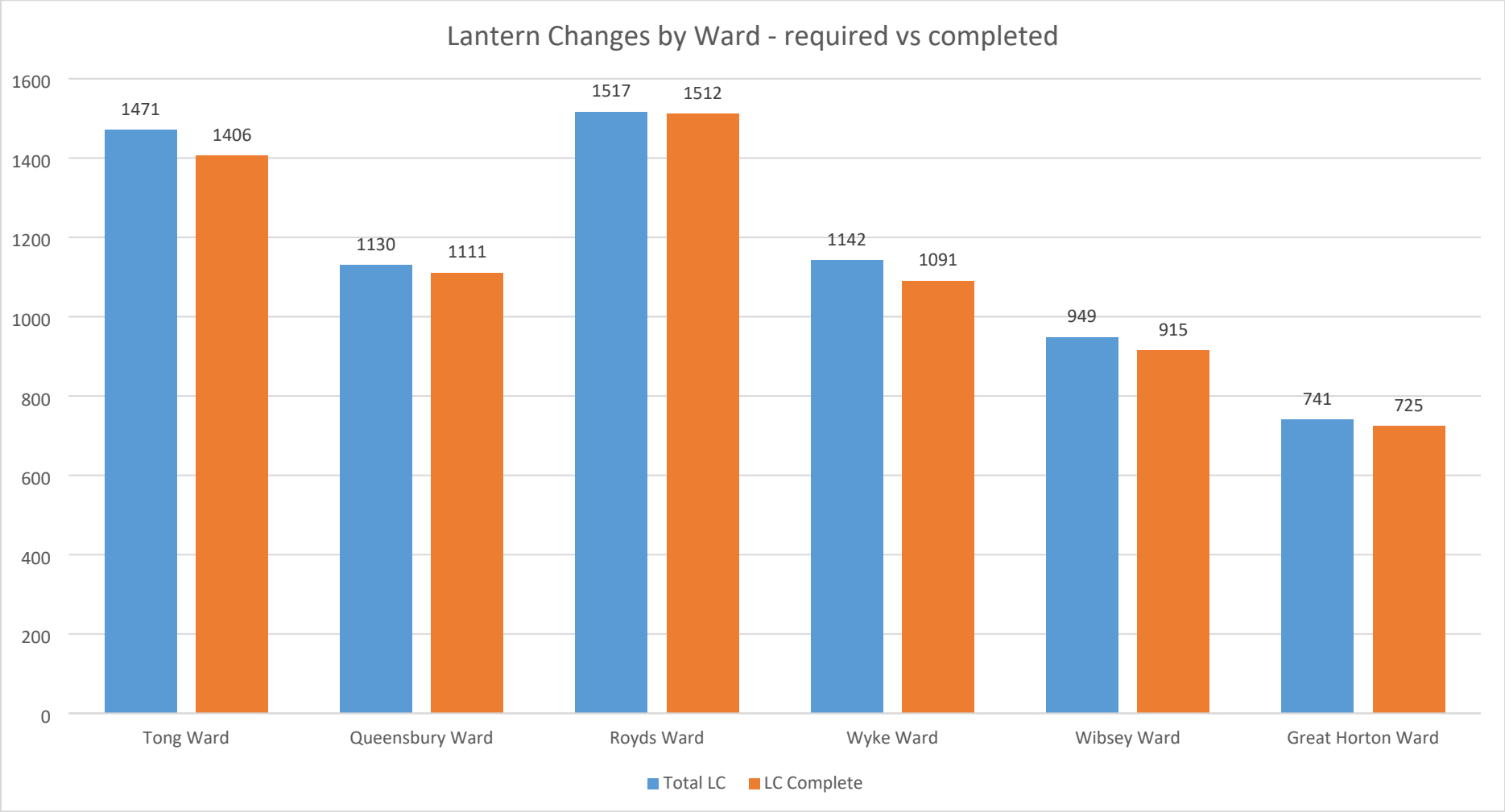


Chart 7

This chart provides the comparison between the number of Lantern Changes and Sleeves required and the number that the contractor has completed.

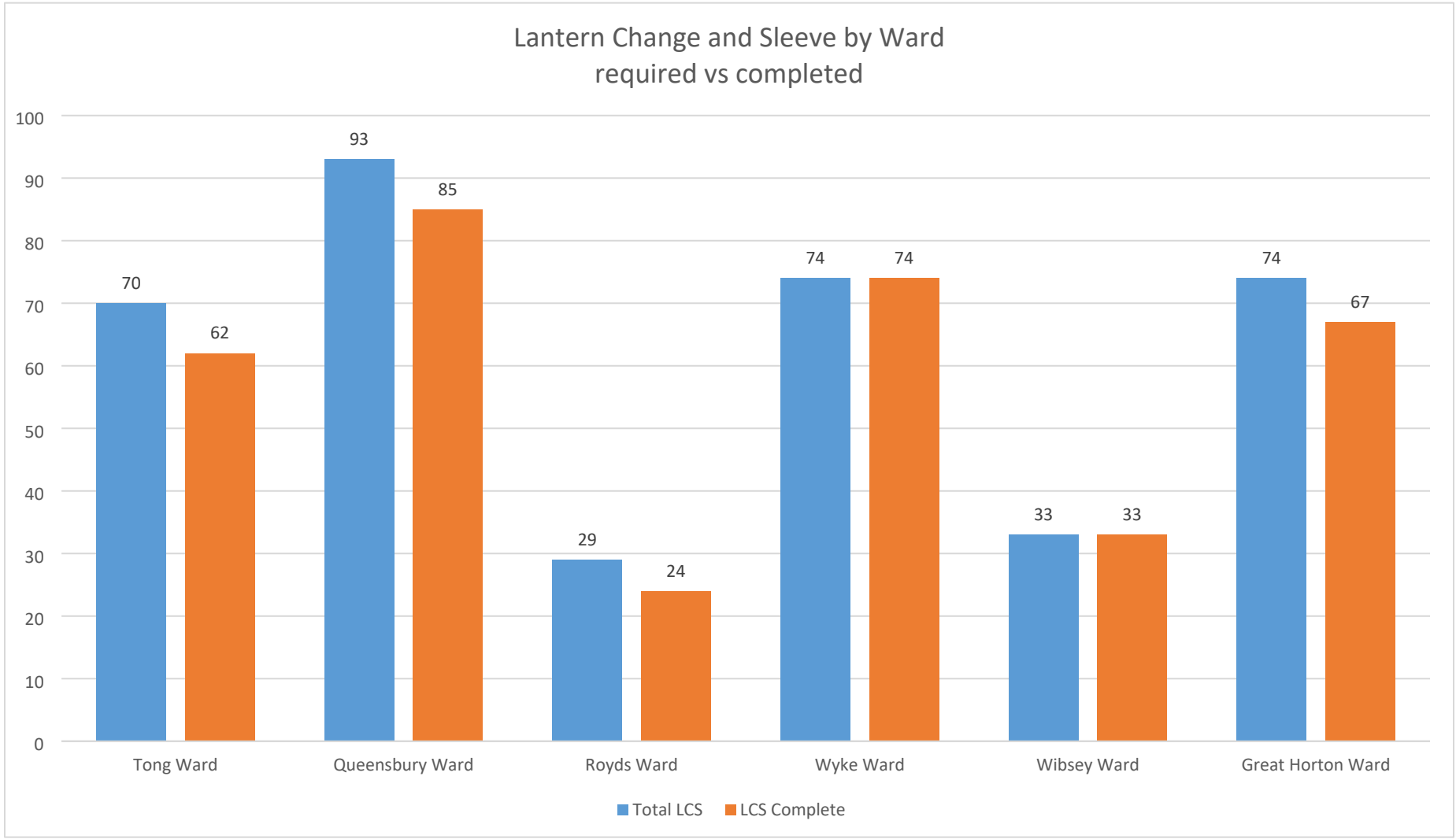


Chart 8

The chart below shows the number of Column Replacements (including new LED lantern) required to be undertaken by the contractor and the number completed.

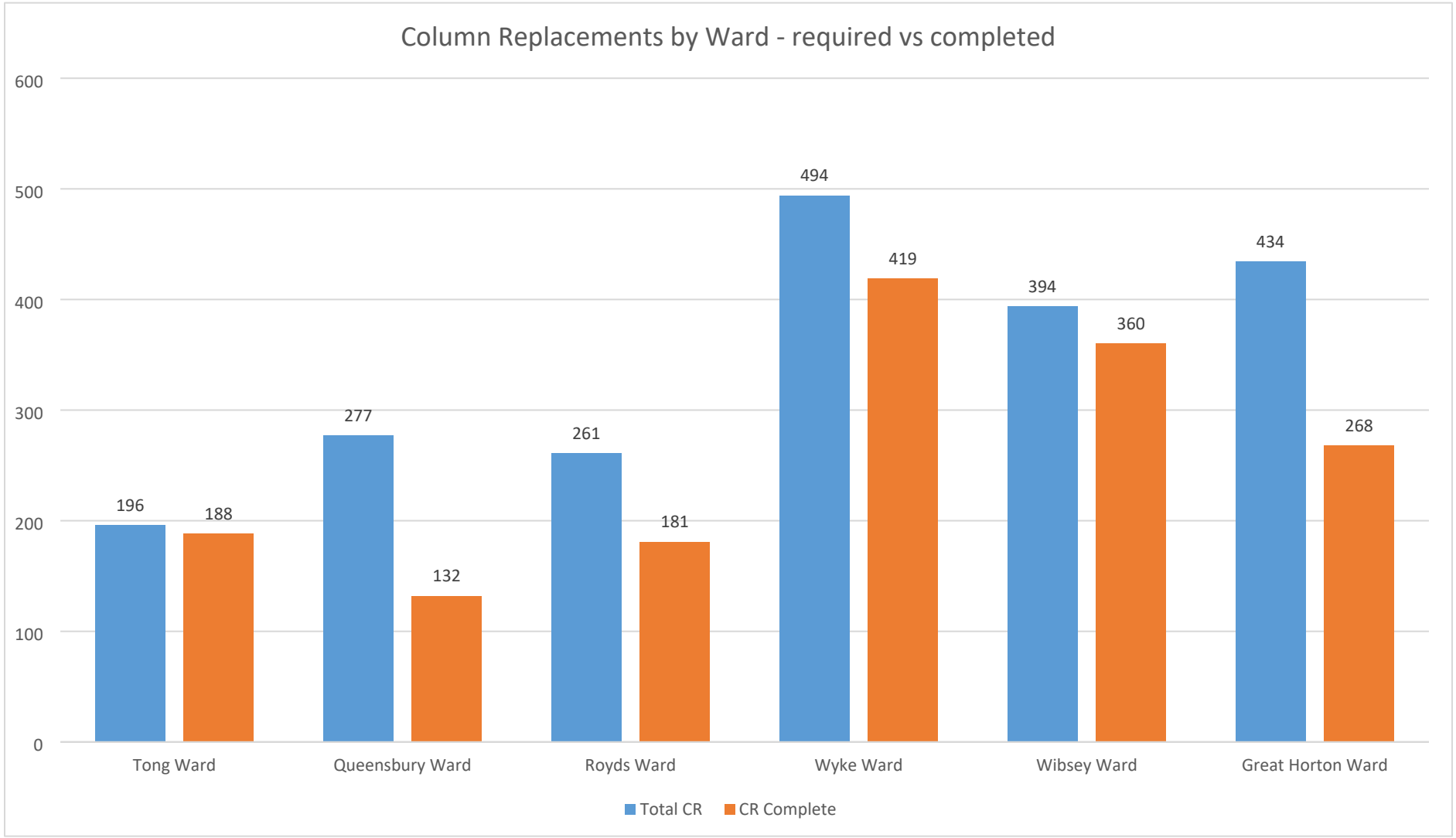


Chart 9

This chart details the number of Out of Scope Lantern Changes required for each ward. This work has not yet commenced but will do over the next month or so and will be carried out by the in house operational teams. It is clear that Tong has a significant number of this work type, this is due to the decorative equipment installed in Holme Wood, where there are decorative brackets on existing columns the lanterns for these will be retrofitted with LED gear trays.

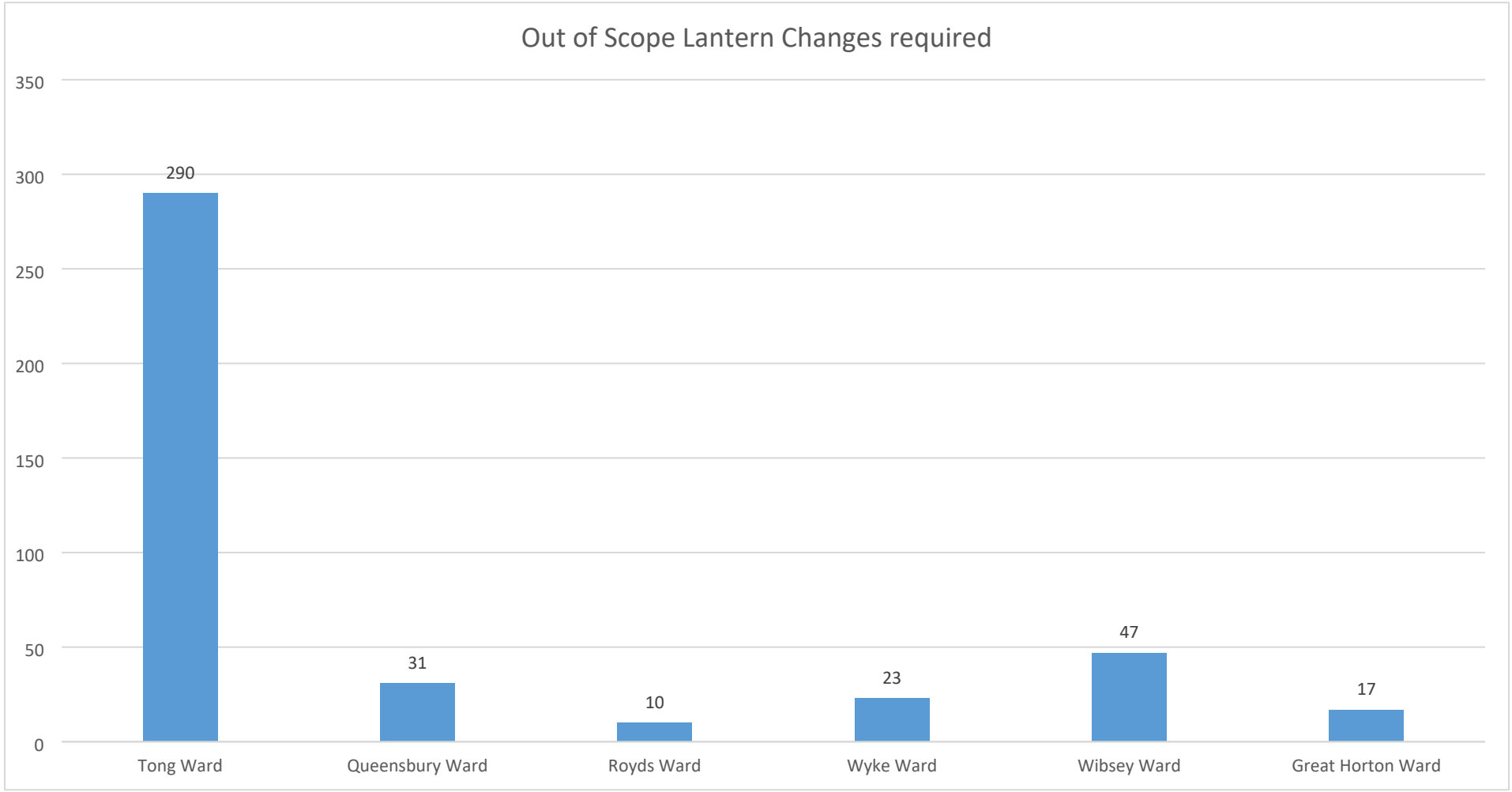


Chart 10

This chart shows the quantity of Out of Scope Column Replacements in each ward, again this work has not commenced and a separate tender for a contractor to complete this work is due to go out towards the end of February 2024.