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# Appendix:

# Clean Water

# Enhancement Scheme

# Cost Breakdown

YKY-PR24-DDR-26-CE-Clean water enhancement cost evidence - redacted



YorkshireWater

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# 1. Introduction

The purpose of this appendix is to outline the costing process that Yorkshire Water have completed in pulling together costs for most solutions included in the clean water enhancement and base programme for PR24. We have provided examples for the supply, drinking water quality and resilience enhancement cases.

We have provided examples of solution costs at 3 levels across our representation:

1. Total schemes cost included in representation document and in data tables.
2. Cost breakdown and process level (*the tables included in this appendix*).
3. Examples of our detailed, bottom-up breakdowns at equipment level (*In appendix internally known as ‘[Solution Information for Costing](#)’ or SIC*).

The cost evidence in this document provides additional assurance that our costs are efficient, not overengineered and qualify for enhancement investment.

# 2. Supply Scheme Cost Breakdown

## 2.1 YKY\_R3\_Increased River Ouse pumping capacity

The table below breaks down the components that have been costed as part of this scheme and their associated opex impact.

Table 2\_1: Breakdown of supply scheme: R3 Increased River Ouse Pumping Capacity

Category	CAPEX (£m)	OPEX per year (£m/yr)
Pipework	4.671	0.000
Power	1.318	0.000
Buildings and grounds	0.237	0.000
Water Pumping	6.026	2.307
Hydraulic Study	0.109	0.000
<b>Total</b>	<b>12.360</b>	<b>2.307</b>

## 2.2 YKY\_R13\_East Yorkshire groundwater Option 2

The table below breaks down the components that have been costed as part of this scheme and their associated opex impact.

Table 2-2: Breakdown of supply scheme: R13 East Yorkshire Groundwater Option 2

Category	CAPEX (£m)	OPEX per year (£m/yr)
Borehole	3.621	0.118
Instrumentation	0.237	0.000
Buildings and Grounds	1.323	0.000
Disinfection	1.201	0.134

<b>Chemical Dosing</b>	1.763	0.033
<b>Power</b>	0.436	0.000
<b>Total</b>	<b>8.581</b>	<b>0.285</b>

The detailed assets are listed in the annex entitled (YKY-PR24-DDR-57)

### 2.3 YKY\_R91\_East Ness full site throughput and feed to huby

The table below break down the components that have been costed as part of this scheme and their associated opex impact.

Table 2-3: Breakdown of supply scheme: East Ness Full Site Throughput to Huby- WRMP Components

<b>Category</b>	<b>CAPEX (£m)</b>	<b>OPEX per year (£m/yr)</b>
<b>Pipework</b>	2.483	0.000
<b>Service Reservoir</b>	3.958	0.000
<b>Distribution Pumps</b>	1.806	0.000
<b>Buildings and Grounds</b>	0.422	0.000
<b>Instrumentation</b>	0.080	0.000
<b>Total</b>	<b>8.749</b>	<b>0.000</b>

## 3. DWI Cost Breakdowns

### 3.1 Doncaster Boreholes – DWI - Addressing raw water quality and deterioration

PR24-DD-W-Raw-water-quality-deterioration Tab – **YKY (Doncaster BHS)**, Doncaster Boreholes Scheme – Total cost = £22.86m.

The table below breaks down the components that have been costed as part of this scheme and their associated opex impact.

Table 3.1 Breakdown of quality scheme: Doncaster Boreholes

<b>Category</b>	<b>CAPEX (£m)</b>	<b>OPEX per year (£m/yr)</b>
<b>Borehole</b>	5.061	0.270
<b>Building and Grounds</b>	7.115	0.000
<b>Chemical Dosing</b>	1.523	0.138
<b>Instrumentation</b>	0.348	0.032
<b>Nitrate Blending</b>	0.660	0.000
<b>Pipework</b>	2.803	0.000
<b>Power</b>	0.255	0.000
<b>Tanks</b>	0.519	0.000
<b>Water Pumping</b>	4.576	0.489

<b>Total</b>	<b>22.860</b>	<b>0.929</b>
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### 3.2 Ingbirchworth WTW – DWI - Improvements to taste, odour and colour

PR24-DD-W-Improvements to taste-odour-and-colour. Tab – YKY (Ingbirchworth).

The table below breaks down the components that have been costed as part of this scheme and their associated opex impact.

Table 3-2: Breakdown of quality scheme: Ingbirchworth

<b>Category</b>	<b>CAPEX (£m)</b>	<b>OPEX per year (£m/yr)</b>
<b>Building and Grounds</b>	3.748	0.000
<b>Chemical Dosing</b>	4.243	0.041
<b>GAC Filters</b>	5.139	0.140
<b>Instrumentation</b>	0.321	0.000
<b>Pipework</b>	0.924	0.000
<b>Power</b>	1.611	0.000
<b>Raw Water</b>	2.799	0.042
<b>Tanks</b>	1.179	0.000
<b>Wash Water</b>	1.754	0.061
<b>Water Pumping</b>	1.384	0.041
<b>Total</b>	<b>23.101</b>	<b>0.325</b>

The detailed assets are listed in the annex entitled (YKY-PR24-DDR-57)

### 3.3 East Ness – DWI Addressing raw water quality and deterioration

PR24-DD-W-Raw-water-quality-deterioration Tab – YKY (East Ness WTW).

Table 3-3: Breakdown of supply scheme: East Ness Full Site Throughput to Huby- Quality Components

<b>Category</b>	<b>CAPEX (£m)</b>	<b>OPEX per year (£m/yr)</b>
<b>Borehole</b>	5.893	0.240
<b>Buildings and Grounds</b>	2.195	0.000
<b>Instrumentation</b>	0.405	0.000
<b>Power</b>	1.385	0.000
<b>Total</b>	<b>9.878</b>	<b>0.240</b>

## 4. New WTW – DPC

### 4.1 New WTW DPC Cost Breakdown

The table below outlines the components that have been costed as part of this scheme and their associated opex impact.

New WTW – Total cost = £214.99m.

Note the individual capex and opex breakdown and does not account for risk, overheads and optimism bias.

Table 4-1: Breakdown of New WTW & 150MLD Storage

Category	CAPEX (£m)	OPEX per year (£m/yr)
Storage	58.759	0.000
Treatment	39.082	0.353
Building	11.842	0.000
Raw Water	9.379	0.000
Chemicals	5.452	1.524
Pumping	2.754	0.894
Mechanical & Electrical	2.721	0.010
Other	1.385	0.000
<b>Total*</b>	<b>130.545</b>	<b>2.781</b>

The detailed assets are listed in the annex entitled (YKY-PR24-DDR-57)

## 5. Loftsosome Bridge

### 5.1 Loftsosome Bridge cost breakdown

Case study of Loftsosome Bridge WTW as detailed in **Case Study 2 - Loftsosome Bridge WTW RGF – page 60.**

This section gives detail on the costing for the proposed solution to resolve the issues which have been detailed within this case study.

Loftsosome Bridge WTW – RGF refurbishment and replacement, including filter washing facilities.  
**Total cost of £14.99m**

High level asset breakdown costs:

Table 5-1: Breakdown of scheme: Loftsosome Bridge

Category	CAPEX (£m)	OPEX per year (£m/yr)
Building and Grounds	0.804	0.000
Chemical Dosing	0.836	0.000
Pipework	0.887	0.000
RGF	6.948	0.102

<b>Wash Water</b>	5.524	0.384
<b>Total</b>	<b>14.999</b>	<b>0.485</b>

The detailed assets are listed in the annex entitled (YKY-PR24-DDR-57)

## 6. Closing Statement

This appendix provides example cost breakdowns for each of our non-infra enhancement cases. We completed a similar cost breakdown process for each of enhancement schemes and if required through the query process, further detail of cost breakdowns can be provided.