The logo for Laing O'Rourke is centered in the upper half of the slide. It consists of a black rectangular background. At the top of this rectangle is a horizontal yellow line. Below the line, the text "LAING O'ROURKE" is written in a white, bold, sans-serif font. At the bottom of the rectangle is a horizontal red line.

LAING O'ROURKE

Offsite Construction Show at ExCel

11TH OCTOBER 2017

DAVID BENNETT



Davyhulme WwTW Overview

Built in 1894



1.2m PE (>12% of UU) Site Over 200 acres

FTFT = 8264l/s

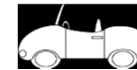
103 x baths/sec



1914 - Activated Sludge invented (Arden & Lockett)

Max storm flow = 30,000l/s

500 x cars re-fuelled/sec



1958 – Last of 14 steam trains stop working

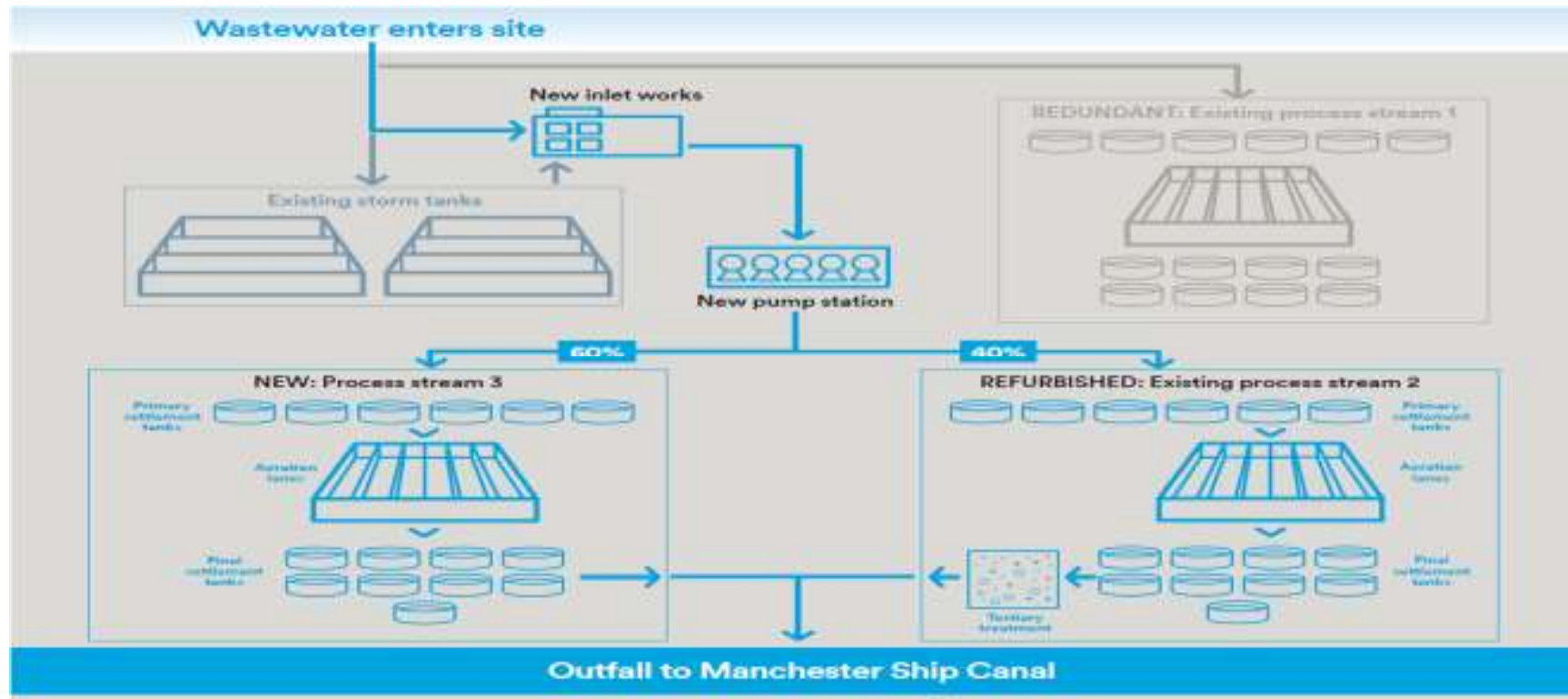
60 GWh/yr of energy produced onsite (45% of UU)

Powers 18,181 homes / year





Davyhulme WwTW Project Scope



- Design & Build Fixed Price Contract
- Awarded Jan 2015 to Laing O'Rourke/Imtech JV
- Project Completion July 2018
- > 1,000,000 man-hours worked accident free

Project Financials	
Project Value	£139m
FY17 Forecast Spend	£81.9m
Current Monthly Spend	c£8m



Davyhulme WwTW Scale of the Project

- ◆ **56,000m³ of concrete**
Enough to almost fill Ewood Park football stadium.
- ◆ **3,923 precast panels**
- ◆ **6,980 tonnes of rebar**
Equivalent to 7 million bags of sugar
- ◆ **6,000 concrete piles**
- ◆ **100 staff and 280 direct operatives**
- ◆ **19,284m of pipe, ranging from 150mm to 3.5m**
Equivalent to going from ExCel to Big Ben and back again
- ◆ **38,568m of cable**
Equivalent to laying a cable from the East to West tip of Anglesey
- ◆ The pumps that provide flow to ASP3 could fill over **2 million bathtubs a day** (5500l/sec – 225litre bath)
- ◆ The aeration plant for ASP3 can easily hold **London Eye lay on its side** (135m)
- ◆ A single aeration lane can hold over **22 million pints of milk** (12500m³ – 568ml pint)
- ◆ The blowers that service the aeration system have the capacity to **fill a hot air balloon every 2 minutes** (80,000m³/hr – 2,200m³ balloon)
- ◆ Over 8000 m³ of sludge being treated a day, at that rate it would only take **4.5 months to fill Wembely Stadium to the brim.**

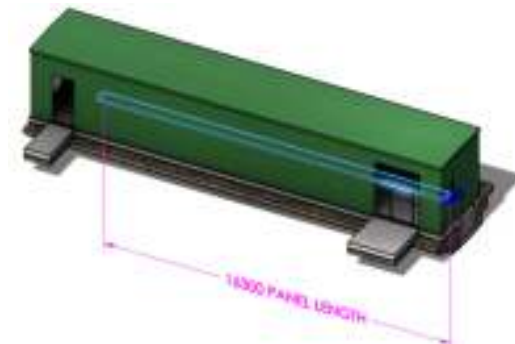
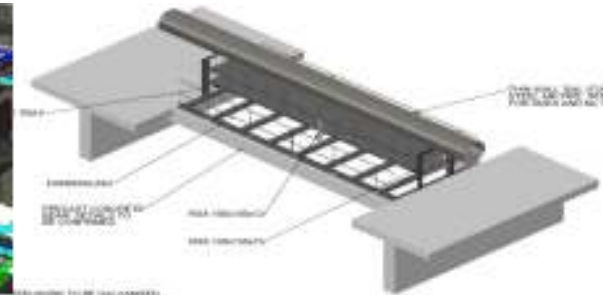
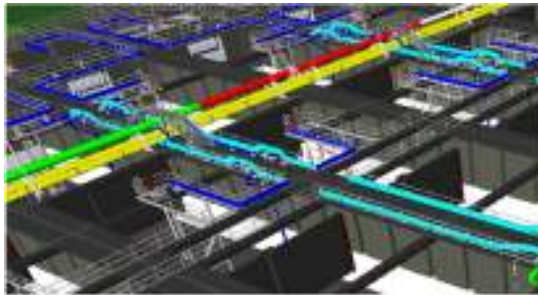


DfMA Examples



Davyhulme WwTW DfMA Examples

- ◆ MCC's
- ◆ Culverts
- ◆ Pipe Bridges
- ◆ Splitter Chamber
- ◆ Twinwall
- ◆ Walkways
- ◆ Tie Beams
- ◆ Columns
- ◆ Abetong Panels
- ◆ Launder
- ◆ Booster Sets
- ◆ Transformers



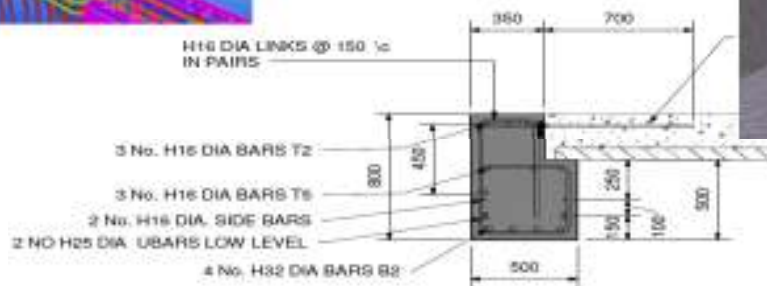
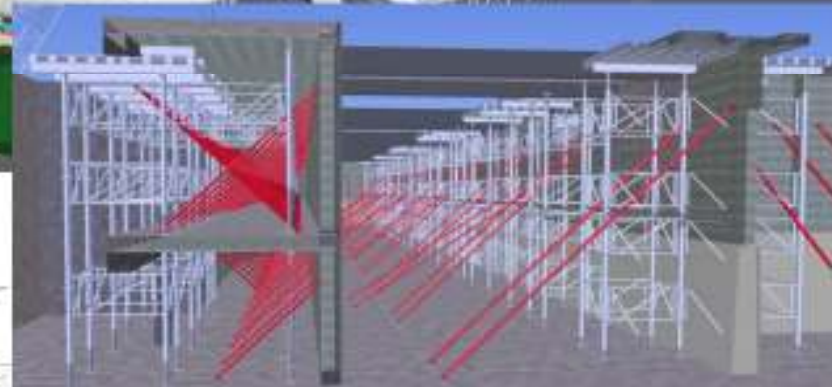
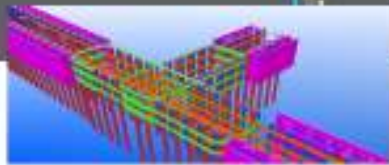
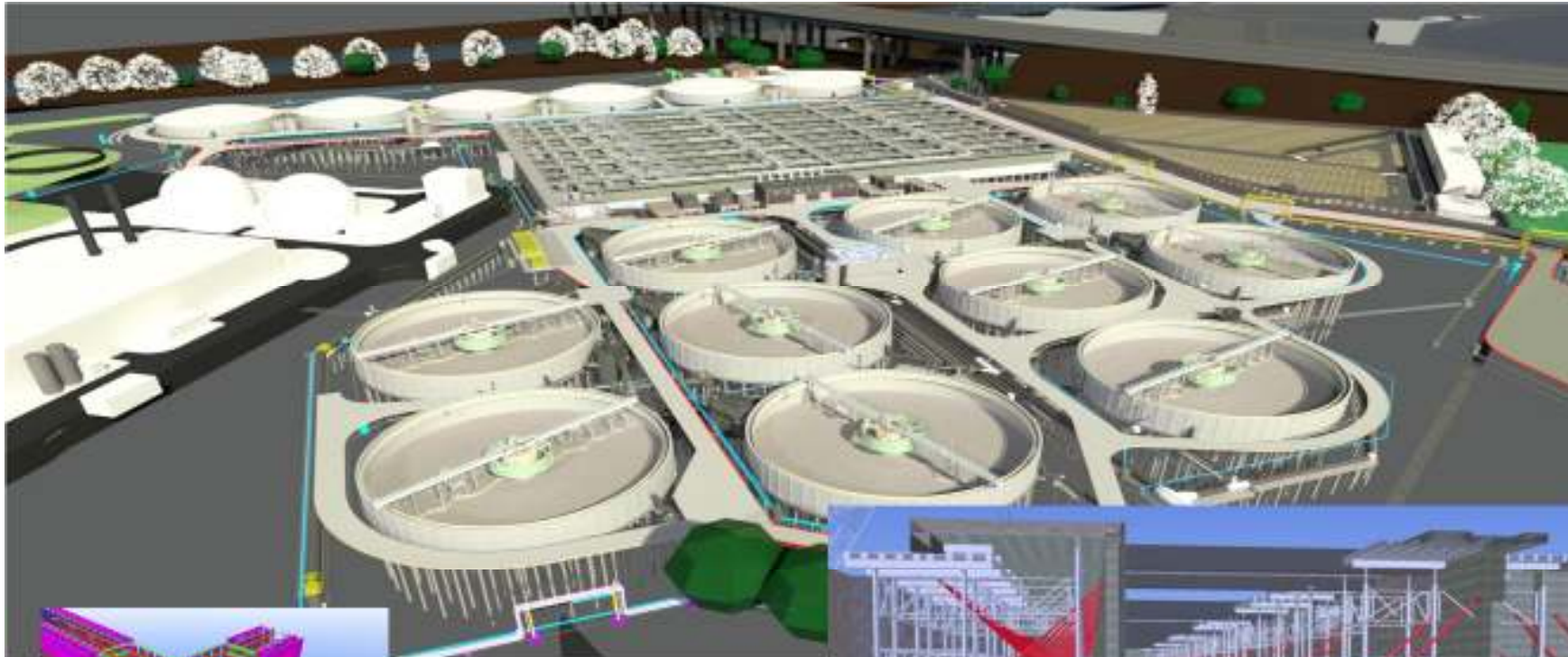


Davyhulme WwTW Identifying Opportunities

The image displays a Microsoft Excel spreadsheet titled "Opportunities Schedule" on the left and technical diagrams on the right. The spreadsheet is on "Page 1" and contains a table with columns for "Opportunity", "Description", "Priority", "Status", and "Action". The text "Page 1" is overlaid on the spreadsheet. The diagrams on the right include a 3D rendering of a wastewater treatment plant layout and a 2D schematic of a mechanical component, possibly a pump or motor, with various parts labeled.



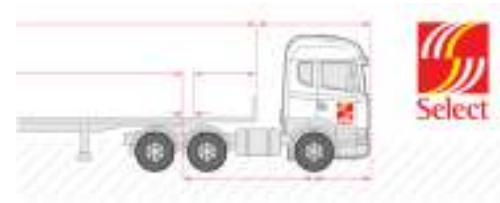
Davyhulme WwTW Early Design and Coordination





Davyhulme WwTW - Logistics

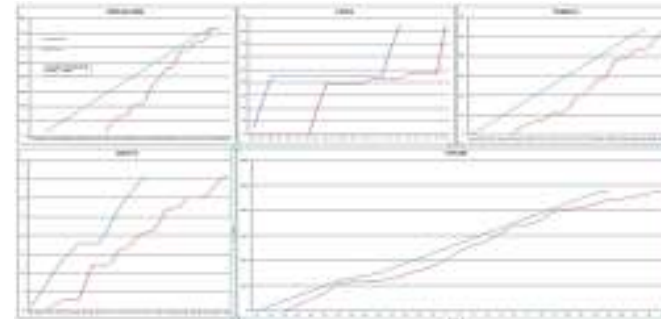
- ◆ 3923 precast elements
- ◆ Crainage strategy and transportation consideration taken into account in design
- ◆ Temporary works team and supply chain included in design process
- ◆ Construction programme optimised to minimise storage requirements
- ◆ Just in time delivery to minimise double handling delivery schedule programming used to reduce congestion at site and minimise waiting time



LGV load guide

LOGISTICS

03





Configurator



Configurator – Introduction

YOUR PERFECT JAGUAR AWAITS

Use our car configurator to build a Jaguar around your lifestyle, driving style and financial requirements. Simply select your chosen model from the range below to begin.



Jaguar I-PACE

The most advanced, efficient plug-in hybrid sports sedan that Jaguar has ever produced.

[Build your Jaguar I-PACE](#)



Jaguar XF

Using exclusive design with distinctive styling, superb road and driving characteristics.

[Build your Jaguar XF](#)



Jaguar XE

Discover boundary-breaking.

[Build your Jaguar XE](#)

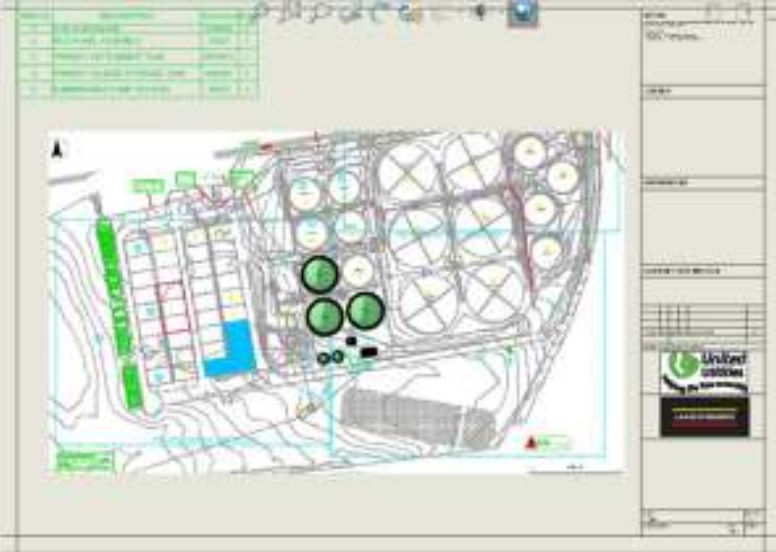


- Blower Building
- Boiler
- Centrifuge
- CHP
- Degassing Tank
- Digested Sludge Buffer Tank
- Digested Sludge Dewatering
- Digester
- Dosing
- Drawing Sheet
- ENWL substation
- Filter
- Flare Stack
- Flash THP Blending Tank
- FST
- Gas Storage
- GAS TO GRID
- Ground Profile
- Heat Exchangers
- Heated Final Effluent Tank
- Imported Liquid Storage
- Inlet Works
- Inlet Works Balance Tank
- MCC
- Nereda
- Nereda Pump station
- Nereda Sludge Tank





Configurator – Benefits



£2,339,830

Ref.	No.	Description	Quantity	BIM Data			Comments	Material Properties				Mechanical Properties						
				1	2	3		Material	Property	Material	Property	Material	Property	Material	Property			
1		...																
2		...																



LT Size and Property Data		
Total no. of zones	2	2nd fl.
No. of zones cooling components	2	2nd fl. (2)
Area (sq. m)	100.0	100.0 m²
Total Rooms	2	2nd fl. (2)
Required conditioning from	100.0 m²	2nd fl. (2)
Supply/Exhaustion	100.0 m³/h	2nd fl. (2)
Total production	1000 kg/h	2nd fl. (2)
Total discharge flow	100.0	2nd fl. (2)
Conditioning flow rate (CF)	100.0	2nd fl. (2)
Exhaust capacity	100.0 kg/h	2nd fl. (2)
Mass of the unit	100.0 kg	2nd fl. (2)
Exhaust capacity	100.0 kg/h	2nd fl. (2)
Exhaust capacity	100.0 kg/h	2nd fl. (2)
Exhaust capacity	100.0 kg/h	2nd fl. (2)

E1 (fl. 1)			
Design Flow	10000 m³/h	(from above)	
Flow Diameter (mm)	100.0	(fl. 1)	
Flow Height	10.0	(fl. 1)	
Velocity	10.0 m/s	(from E.L. & E.L. (fl. 1))	
Exhaust Capacity (kg/h)	100.0		
Exhaust Capacity (kg/h)	100.0		
Exhaust Capacity (kg/h)	100.0		
Exhaust Capacity (kg/h)	100.0		

Informing Design With Cost, not Costing Design



www.laingorourke.com