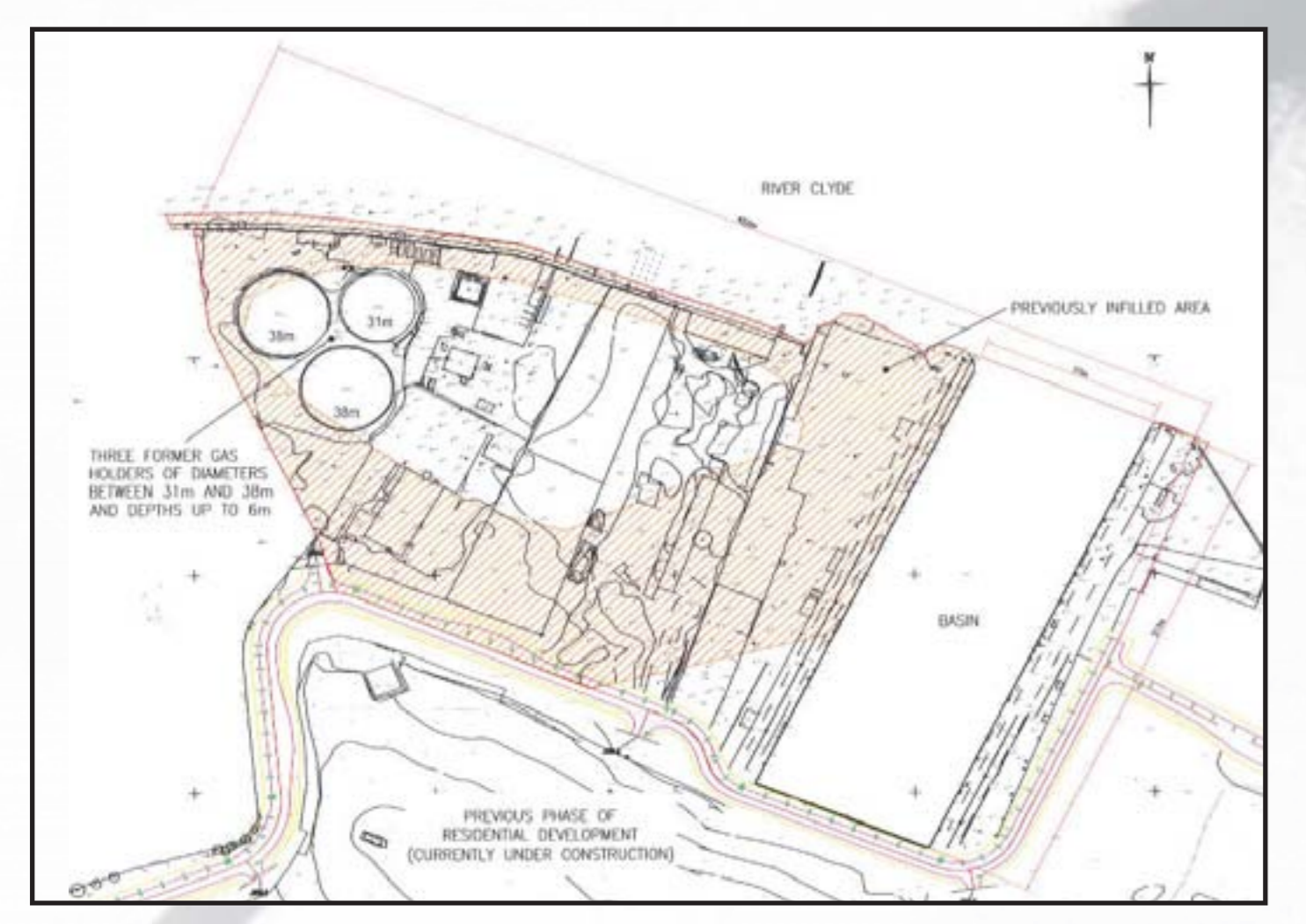


# SCOPE OF WORKS

- Removal of hardstanding and underground obstructions
- Infilling of three 31 to 38m diameter, 6m deep gas holders
- Construction of a basin closure bund adjacent to the Clyde Estuary
- Infilling of the basin with approximately 227,000m<sup>3</sup> of dredged sand
- General site upfilling for flood protection purposes
- Cutting down of sheet pile quay walls around the basin
- Diversion/construction of storm water drainage system with outfalls into the River Clyde
- Remediation of contamination present on the site to suit a residential end use



## PLAN OF KINGSTON DOCK



# OVERVIEW

- £3.2m - Approximate Contract value of enabling works
- Site works commenced April 2008
- Works completed November 2008
- Services provided by W. A. Fairhurst & Partners under the enabling works contract included site monitoring and supervision of the infrastructure related works, the aim of which was to prepare the site for a residential housing development
- Services provided by Envirocentre included input in relation to remediation and the dredging works.

# REMOVAL OF UNDERGROUND OBSTRUCTIONS

- Breaking out floor slabs and foundations of former buildings
- Breaking out of buried tanks/chambers and other structures
- Breaking down of upper portion of perimeter walls of three on-site gas holders
- Cutting down of sheet pile walls and breaking out of associated concrete structures adjacent to the dock/basin (see photo above right)



Breaking out of heavily reinforced structures adjacent to the dock



# GENERAL SITE INFILL

- Approximately 227,000m<sup>3</sup> (including 16% losses) gross quantity of dredged sand from the Clyde Estuary
- Approximately 15,000m<sup>3</sup> of surplus materials supplied from another Fairhurst run site at Marie Curie, Stobhill (NB:- this arrangement allowed the Cancer Care Hospice project to proceed on budget)
- Approximately 35,000m<sup>3</sup> of materials from other nearby/local sources including 11,000m<sup>3</sup> of silt from Riskend, 14,000m<sup>3</sup> from another nearby Clydeport site and 10,000m<sup>3</sup> from on-site stockpiles and/or other sources.

# KINGSTON DOCK PORT GLASGOW ENABLING WORKS CONTRACT



Engineer: **FAIRHURST**  
 Client: **CLYDEPORT**  
 Environmental Consultant: **ENVIRO Centre**  
 Main Contractor: **RJC LTD**  
 Magdalena Kowalczyk - Resident Engineer for W. A. Fairhurst & Partners

## INFILLING OF GAS HOLDERS

### Materials used to infill the gas holders

Approximate total capacity of all three gas holders - 17,000m<sup>3</sup>, of which:-

- Approximately 5,800m<sup>3</sup> comprised the surplus materials supplied from another Fairhurst run site at Marie Curie, Stobhill
- Approximately 11,300m<sup>3</sup> comprised silt materials from nearby Riskend site

Filling of 3 former gas holders up to 6m deep and of diameters ranging from 31m to 38m



## INFILLING OF BASIN WITH DREDGED SAND

- 227,000m<sup>3</sup> gross quantity of sand was dredged from the Clyde Estuary
- Approximately 16% "losses" resulted in 192,000m<sup>3</sup> net quantity of dredged sand delivered/supplied to the project (mainly to fill the 170,000m<sup>3</sup> Kingston basin)

### Infilling basin using "Rain-Bowing" technique

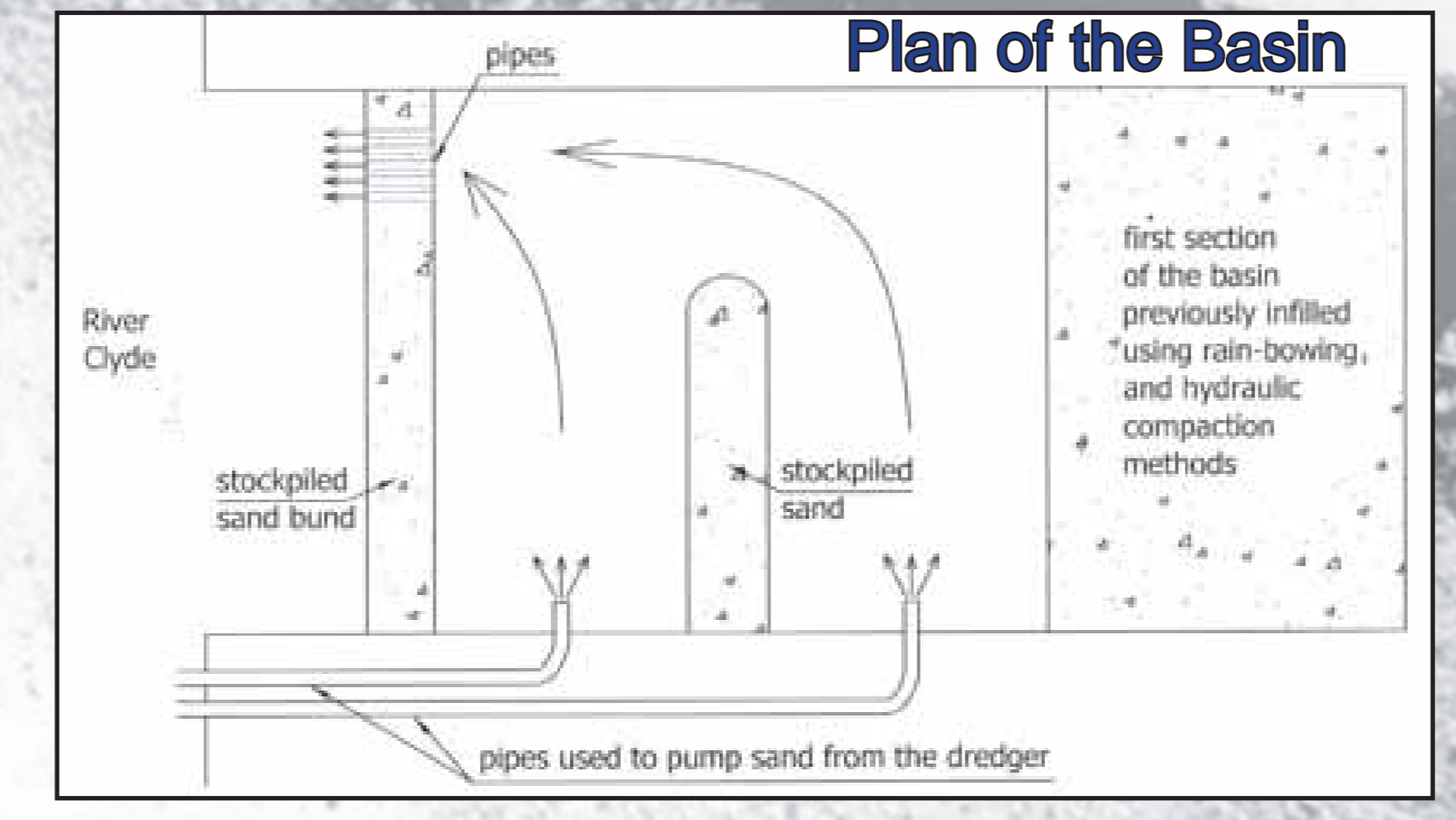


Infilling of the first section (south) of the basin



Infilling of the basin with dredged sand using "rain-bowing" method with the southern section of the basin now shown to be partly infilled

### Hydraulic Compaction Technique



Sand/water mix being pumped into one of the sections of the basin (the dredger is visible in the background)



Pipes used for draining the water



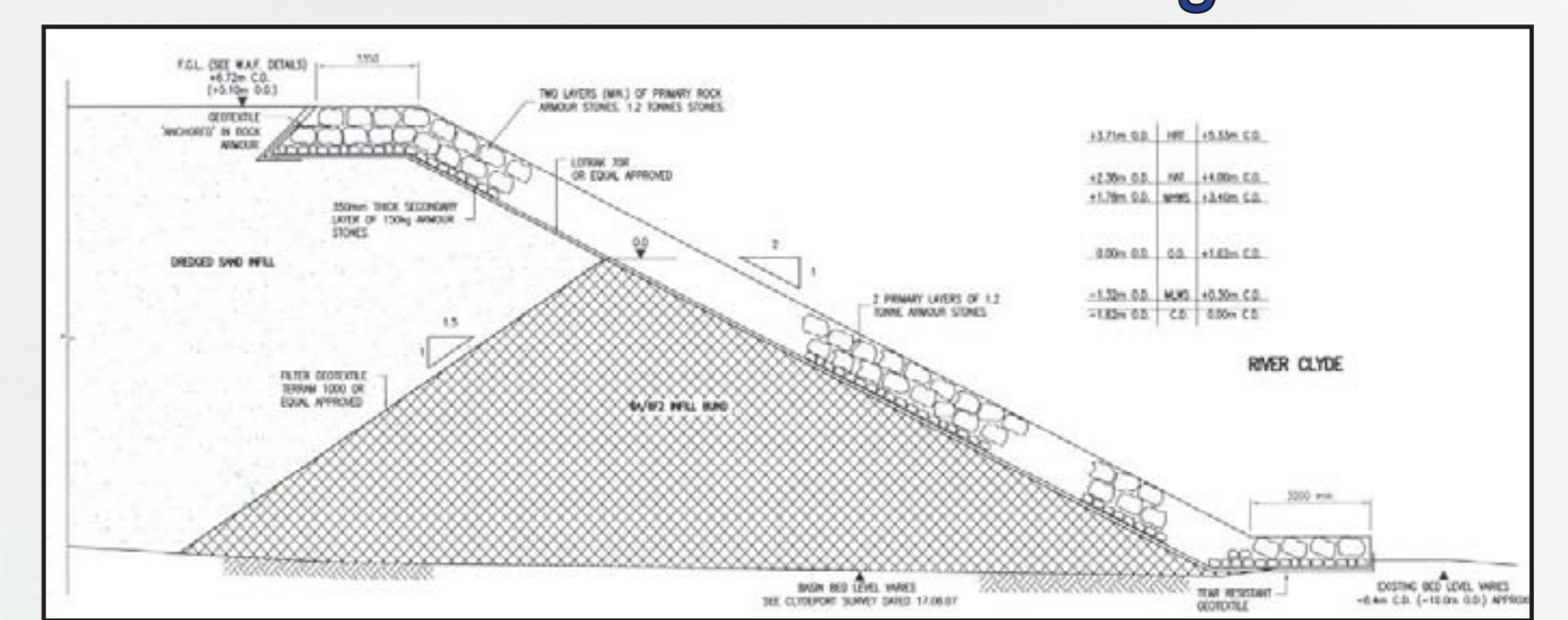
Earthworks within the central section of the basin



Removal of excess sand to create sufficient space to allow the next load of dredged sand to be delivered

## BASIN CLOSURE BUND

### Basin Closure Bund design



### Construction of the Basin Closure Bund



Placement of rock armour erosion protection on the face of the Basin Closure Bund



## SETTLEMENT MONITORING WITHIN THE BASIN

### Settlement monitoring point location plan and results

