

# Managing the water cycle for the mining industry, community and environment

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# OUR BUSINESS

Veolia designs, deploys and manages solutions in water, waste and energy, which contribute to the sustainable development of cities and industries.

**\$46 Bn**  
2022 Revenue



WATER



Management of the global water cycle, from the production and distribution of drinking water, to the collection, treatment and recovery of waste waters.

**95**

MILLIONS OF PEOPLE SERVED WITH DRINKING WATER

**62**

MILLIONS OF INHABITANTS CONNECTED TO SANITATION

**3 362**

DRINKING WATER PRODUCTION PLANTS MANAGED

**2 737**

WASTEWATER TREATMENT PLANTS OPERATED



WASTE



Management of liquid, solid, ordinary or special waste. Control of the entire life cycle, from collection to recycling, to final recovery in the form of material or energy.

**40**

MILLIONS OF INHABITANTS SERVED BY COLLECTION ON BEHALF OF LOCAL AUTHORITIES

**47**

MILLION TONNES OF WASTE PROCESSED

**464 948**

INDUSTRIAL CLIENTS

**685**

PROCESSING PLANTS OPERATED



ENERGY



Energy efficiency, effective management of heating and cooling networks, production of green energy.

**43**

MILLION MWH PRODUCED

**45 806**

MANAGED THERMAL INSTALLATIONS

**2 137**

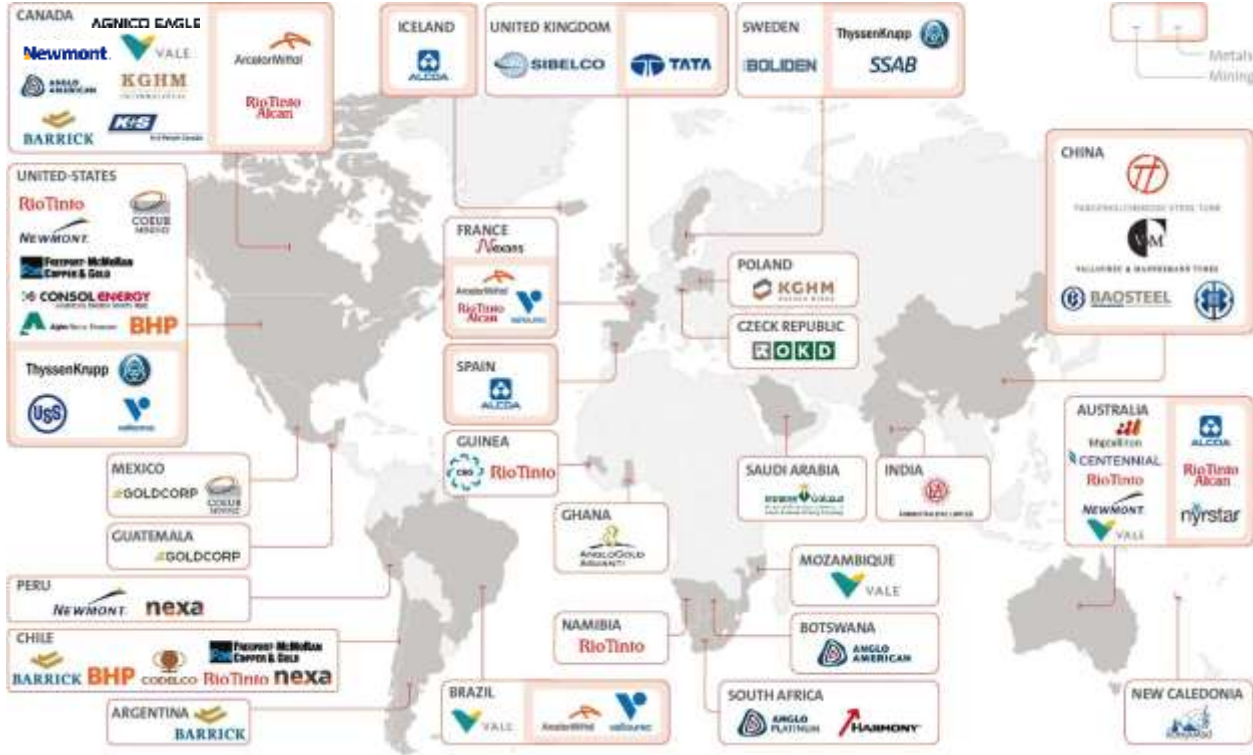
INDUSTRIAL SITES SERVED

**611**

HEATING AND COOLING NETWORKS OPERATED



# VEOLIA IS A LEADING PARTNER FOR MINING AND METALS COMPANIES



## WE DELIVER VALUE IN MANY WAYS:

- Delivering cost efficiency
- Improving yield to support competitiveness
- Securing the license to operate
- Responsibly planning for closure

ALMOST  
**1**  
BILLION DOLLARS  
REVENUES  
IN THE MINING &  
METALS SECTOR

PRESENT IN  
**ALL 6** CONTINENTS,  
VEOLIA WORKS  
WITH THE MOST  
IMPORTANT COMPANIES  
IN THE WORLD

# OUR RANGE OF SERVICES FOR OPERATING MINES

## Water Management



## Byproduct Recovery & Recycling



## Industrial Cleaning



## Total Waste Management



## Energy



## Sulfuric Acid Plant

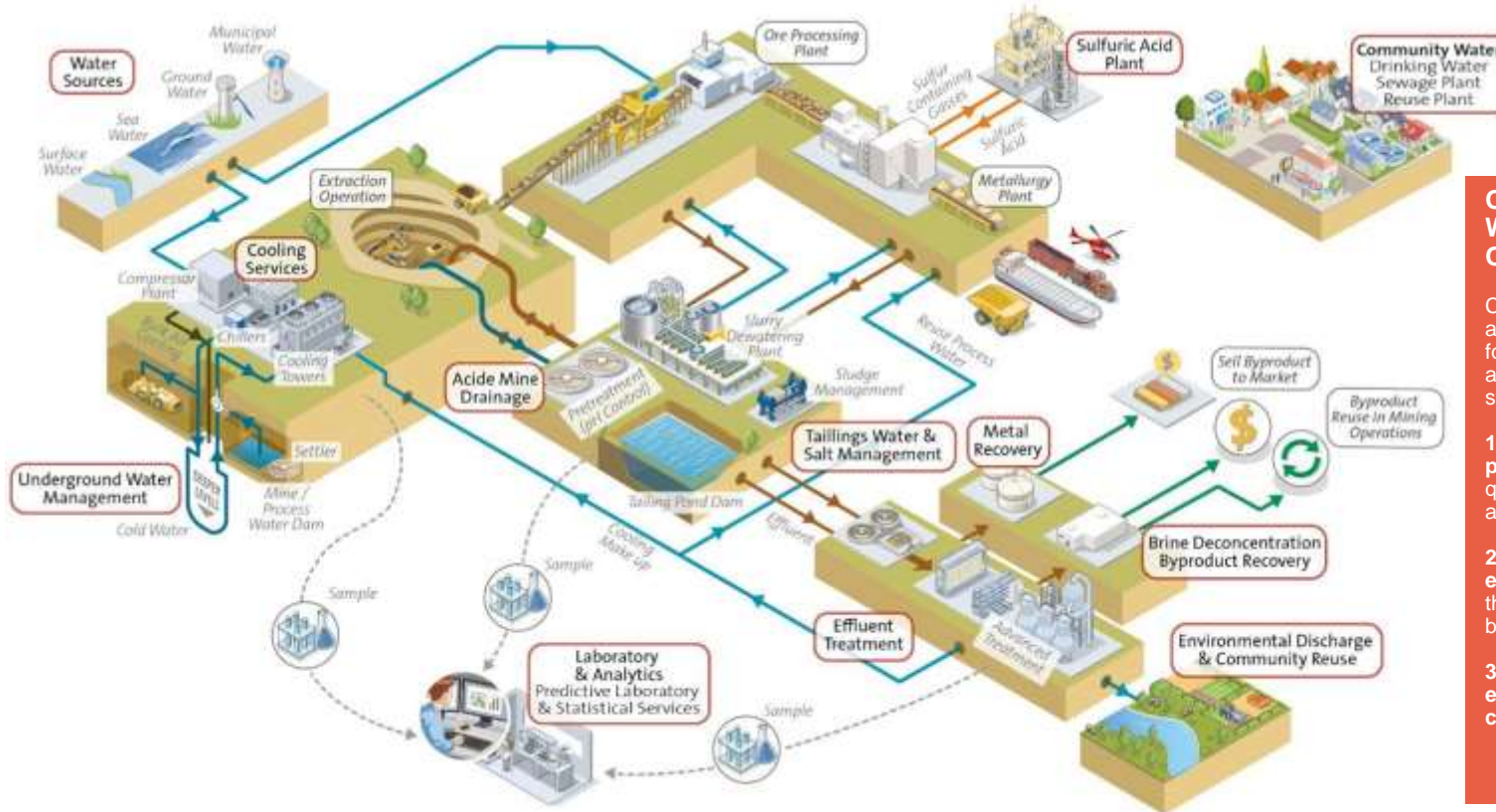


## Smart Monitoring

Operational Data Monitoring  
& Online Dashboard Reporting



# INDUSTRIAL SALT & WATER CYCLE MANAGEMENT FOR OPERATING MINES




## OPTIMIZING YOUR WATER CYCLE OPERATIONS

Creating optimal solutions and long term operations for process water, tailings and effluent treatment systems.

- 1. Guaranteed performance** e.g. water quantity, quality & availability
- 2. Reduce environmental impact** through water reuse & byproduct recovery
- 3. Guarantee environmental compliance**

# Managing the water cycle for the mining industry, community and environment

The background features a blue gradient with two hands. The left hand holds a small green plant in a mound of soil, while the right hand holds a blue-tinted globe of the Earth. The overall theme is environmental stewardship and water management.

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CASE STUDIES

# MANAGING THE MINE WATER CYCLE FOR THE COMMUNITY AND ENVIRONMENT

## Typical Key Stakeholders

- Mining and Primary Metals Companies
- Shareholders / Investors
- Finance Community
- Local Communities
- Indigenous & First Nations
- Employees
- Provincial / State Regulators
- Federal Regulators
- Engineering partners & Contractors
- Special Interests
- Supply Chain Integrations

**Stakeholder engagement is critical when identifying and overcoming sustainability challenges with your environmental projects**

# MANAGING THE MINE WATER CYCLE FOR THE COMMUNITY AND ENVIRONMENT



*Assisting mine operators engage the local community*





# CASE STUDY #1

## PILBARA WATER SCHEME



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# CASE STUDY #1 PILBARA WATER SCHEME

Pilbara iron ore mines with respect to geology

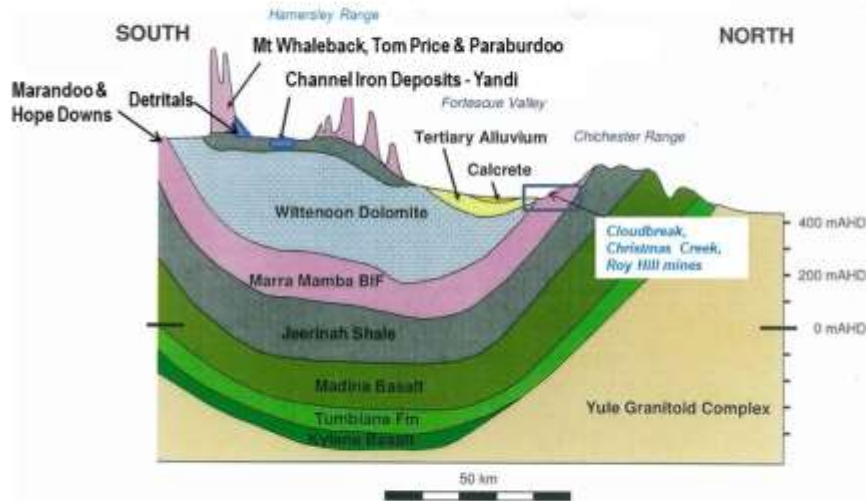


Figure 1. Schematic geological cross-section

(Acknowledgement to Pennington Scott, 2008)

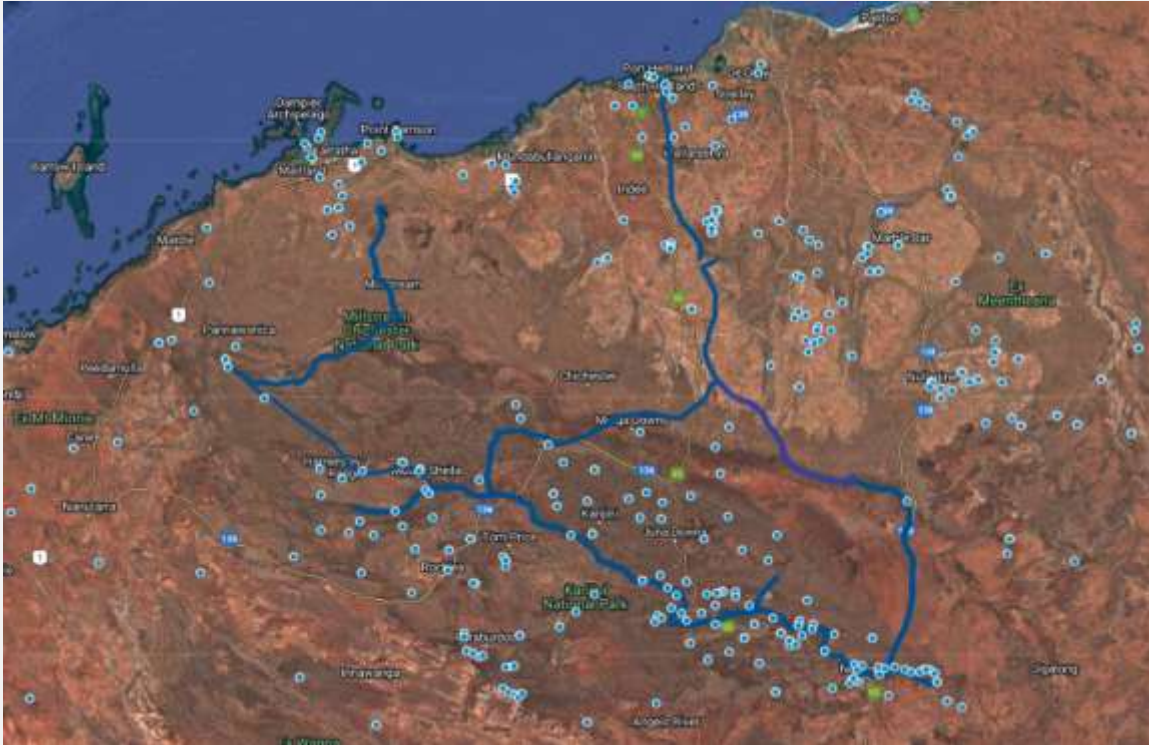
**26%**  
of world's iron ore

**~200**  
gigalitres per year  
disposal volume

# CASE STUDY #1

## PILBARA WATER SCHEME

*Initiative to Study a Regional Solution of Surplus Mine Water Management in the Pilbara, Western Australia*



Water surplus disposal solution allowing for **beneficial reuse** of surplus water

up to **1500 km** of potential pipework



# CASE STUDY #1

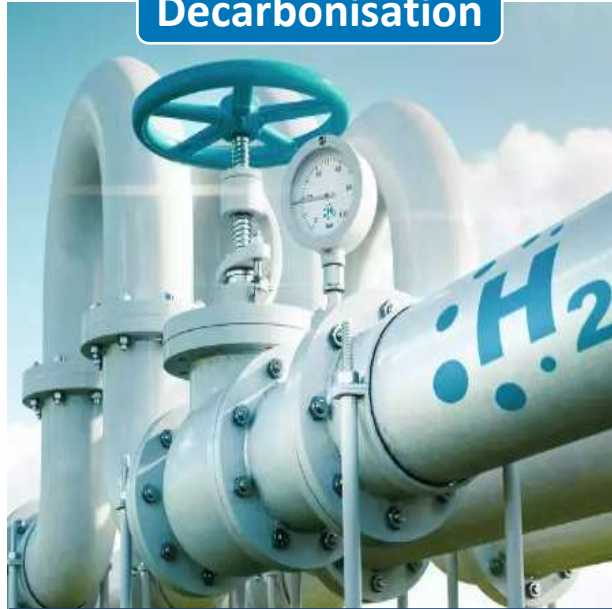
## PILBARA WATER SCHEME - ECONOMIC DIVERSIFICATION

### Mining



Iron Ore  
Gold  
Lithium  
Base Metals

### Decarbonisation



Green Steel  
Hydrogen  
Renewable Diesel

### Agriculture



Precincts  
Food Supply  
Stock Fodder  
Bio-fuel Feed

## CASE STUDY #2

# MAJOR COAL MINE AND POWER STATION

- The project was initiated to improve **environmental outcomes** and meet the requirements of a mine that provides coal to a power station
- The state-of-the-art facility **maximises water reuse** and **treatment of saline products**
- A long term **sustainable solution** and **three-way partnership** between a coal mine, a power station and Veolia

### Water Treatment Facility



*Water treatment services needed for mines to operate*

### Coal Mine



*Coal and water needed for power station to operate*

### Power Station



## CASE STUDY #2

# MAJOR COAL MINE AND POWER STATION

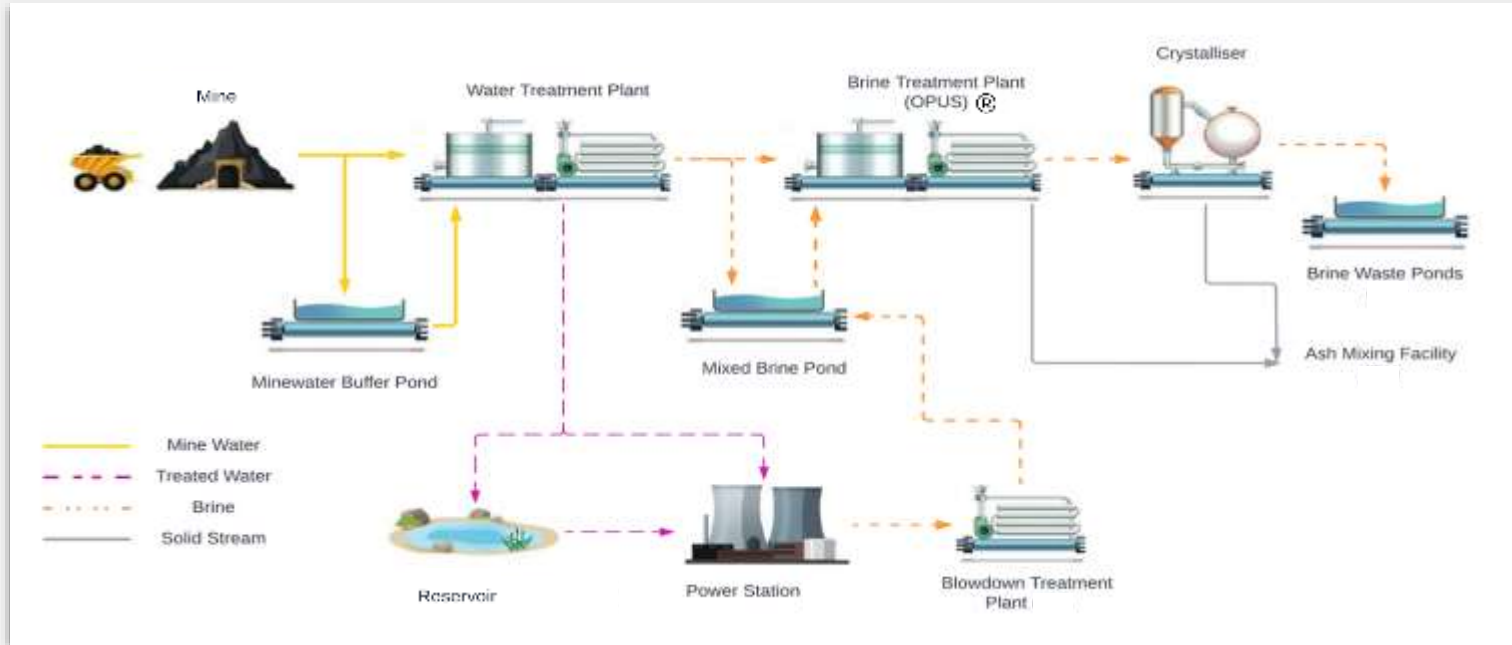
## Challenges

- Fast track project to manage underground coal mine water originally sent to the river
- River supplies drinking water to a major city's population and keeping the mine in operation
- Mine wants to expand but must meet new regulations to do so
- State critical project as the mine provides coal to a power station supplying 1400 MW or 15% of the state's demand



# CASE STUDY #2

## MAJOR COAL MINE AND POWER STATION SIMPLIFIED TREATMENT FLOW



### Water (RO) Treatment Facility

Design: 36 ML/d  
Actual: 33-36 ML/d

### Brine Management Facility

Design: 2.4 ML/d  
Actual: 4.7 ML/d





# CASE STUDY #3

## RANDLE REEF

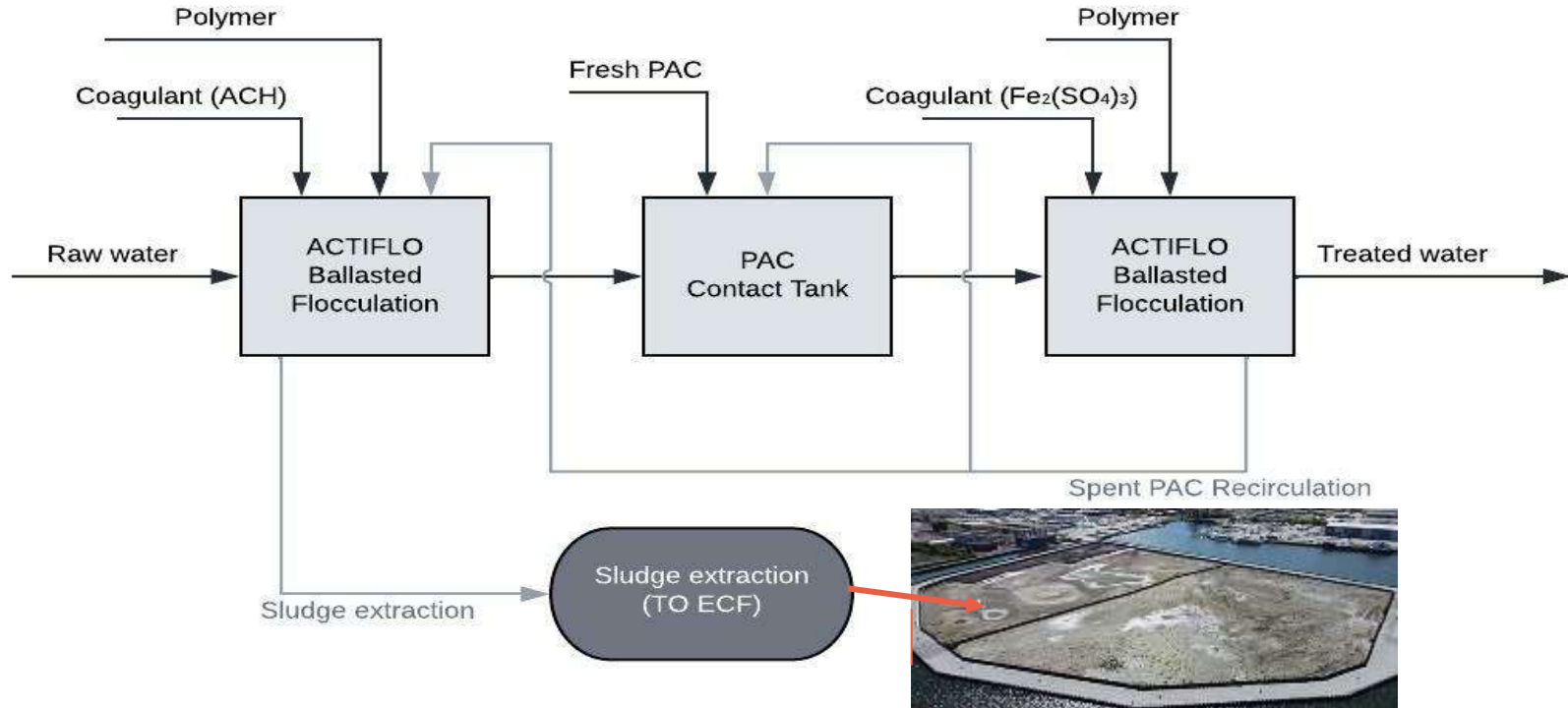
- Site was identified as a principal target of **harbour restoration objectives** in the late 1980s- 60 acres or approximately 120 football fields
- Multiple sources of contamination including **coal gasification, steel making, and others going back to the 1800's**
- 695 000 m<sup>3</sup> of sediment contaminated with polycyclic aromatic hydrocarbons (PAHs) metals and other toxic chemicals
- Construction of a **6.2 hectare engineered containment facility (ECF)** on top of a portion of the most contaminated sediment
- Dredging and placing the contaminated sediment in the facility
  - *Excess water needs to be treated before being discharged back in the harbour*
- Sediment will then be covered by a multi-layered environmental cap



# CASE STUDY #3

## RANDLE REEF

# Water Treatment Facility





# MANAGING THE WATER CYCLE FOR THE MINING INDUSTRY, COMMUNITY AND ENVIRONMENT



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