By Products and Ancillary Buildings Demolition
Planning Application Stage
Method Statement and Phased Sequence of Works

Overview

Following the safe demolition of the Ammonia Plant, Keltbray Decommissioning has been appointed to clear all plant and structures on the South Bank Coke Ovens (SBCO) area of the site as highlighted on the plan opposite.

Works will be phased, with the sequence of operations in each area ordered as below:

1. Characterisation of Hazardous Materials to identify Type, Location and Quantum.
2. Structural Assessment of all Plant and Buildings.
3. Identification of demolition options considered to be practicable for each individual item of Plant and Buildings, taking account of Hazardous Materials and potential Hazardous Environments.
4. Where practicable, Hazardous Materials will be removed in advance of demolition in accordance with established industry standards and working methodologies.
5. Preparation of Comparative Risk Assessments of all Plant and Buildings to establish the safest practicable demolition methodology.
6. Preparation and submission of task specific Risk Assessments and Method Statements, for all Plant and Buildings.
7. Preparation of Construction Stage:

- Programme – coordinated in with surrounding works
- Health and Safety Plan
- Traffic Management Plan
- Site Waste Management Plan
- Environmental Management Plan
- Pollution Incident Response Plan
- Noise Dust and Vibration Monitoring Plan

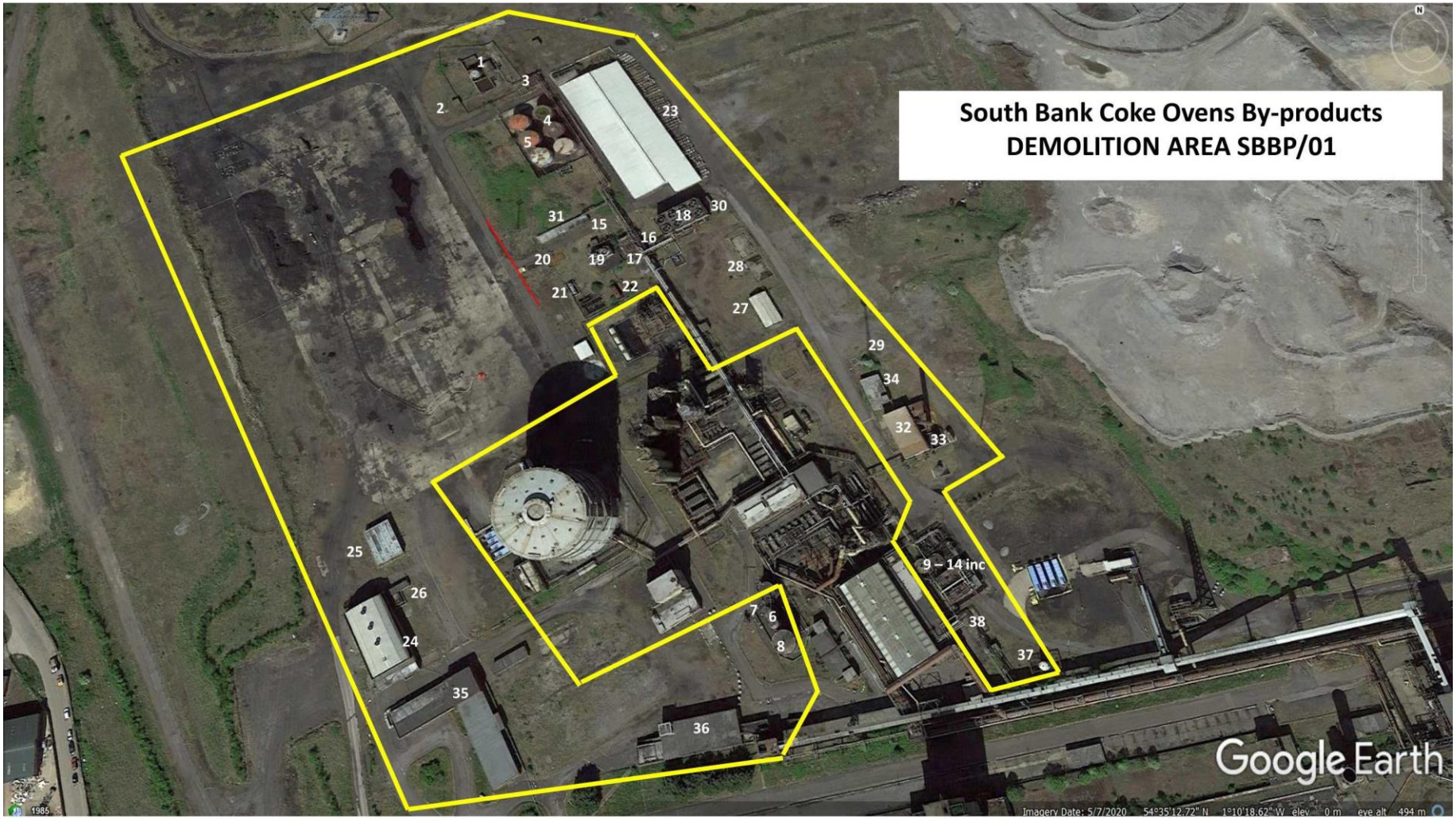
8. All works will be carried out in strict compliance with Keltbray's Operational Safe Systems of Work.

Teesworks Demolition Project 2021

South Bank Coke Ovens By-products
Demolition Area SBBP/01

1. Benzole storage tank, drains pot, associated pipework & road tanker loading facility
2. Benzole storage/loading Fire Deluge Valve house & associated pipework
3. Tar pumphouse, transfer pumps, associated pipework & Tar Sump
4. Tar storage tanks L & M & associated pipework
5. Effluent liquor storage tanks [no.4 off.], transfer pumps & associated pipework
6. North & South tar storage tanks & associated pipework
7. N tar storage tank & associated pipework
8. Virgin Nh3 liquor storage tank & associated pipework
9. Tar/liquor decanter tanks [no.2 off.] & associated pipework
10. Tar/liquor decanter tanks drainage sump & associated pipework
11. Liquor pump tanks [no.2 off] & associated pipework
12. Liquor transfer pumps [no.3 off] & associated pipework
13. Liquor transfer diesel alternator & associated pipework diesel
14. Tar pump tank & associated pipework
15. Industrial water pump tank
16. Cooling water sand filter vessel
17. Primary & Secondary cooling water pumphouse, transfer pumps & associated pipework
18. Primary water cooling tower & associated pipework
19. Secondary water cooling tower & associated pipework
20. Benzole plant effluent/steam plant blowdown Pit, transfer pumps & associated pipework
21. Benzole plant secondary contaminated water tank, transfer pumps & associated pipework
22. Benzole plant reclaim oil tank & associated pipework
23. Silica refractories storage shed
24. Rail wagon maintenance/repair shop
25. Rail wagon maintenance/repair shop garage
26. Rail wagon maintenance/repair shop diesel storage tank
27. Plant spares storage shed
28. Oil Storage compound
29. Lighting Towers x 2
30. East Davenport 440V substation
31. Davenport substation

32. Steam raising plant [no.3 off boilers] water treatment, water tank, pumps & associated pipework
33 Heavy Fuel Oil tank & associated pipework
34 Operatives Welfare facilities block
35 Administration offices & welfare facilities
36 Site welfare facilities
37 Liquid N2 Cryotank
38 Cylinder gasses storage compound


South Bank Coke Ovens By-products
DEMOLITION AREA SBBP/01
1
2
3
4
5
23
31
15
18
30
16
20
19
17
28
21
22
27
29
34
32
33
25
9 – 14 inc
26
7
6
38
24
8
37
35
36
Google Earth
Imagery Date: 5/7/2020 54°35'12.72" N 1°10'18.62" W elev 0 m eye alt 494 m

Teesworks Demolition Project

Inventory of COMAH substances within South Bank Coke Ovens By-products DEMOLITION AREA SBBP/01

Plant item	Dwg No	Dimensions (m)	Substance	Estimated Residue [t]
Effluent storage tank No 1	CO 11830	11 dia x 12 H	Tar/Naphtha/Nh3 Liquor	105 [liq] + 27 [Tar]
Effluent storage tank No 2	CO 11733	11 dia x 12 H	Tar/Naphtha/Nh3 Liquor	105 [liq] + 29 [Tar]
Effluent storage tank No 3	CO 11830	11 dia x 12 H	Tar/Naphtha/Nh3 Liquor	105 [liq] + 62 [Tar]
Effluent storage tank No 4	CO 11830	11 dia x 12 H	Tar/Naphtha/Nh3 Liquor	114 [liq] + 105 [Tar]
Effluent surge tank	N/A	1 x 2	Tar/Naphtha/Nh3 Liquor	0.25
"L" Tar tank	N/A	15 dia x 11 H	Tar/Naphtha/Nh3 Liquor	248 Coal tar residue
"M" Tar tank	N/A	15 dia x 11 H	Tar/Naphtha/Nh3 Liquor	251 Coal tar residue
"N" Tar tank				
North Tar tank				
South Tar tank				
To be continued				
Bz storage tank	CO 10996	5 dia x 9.4 H	Crude Benzole	Nil [Decontaminated 20019

Working Standards – Key Activities

Demolition

Keltbray Decommissioning will carry out all demolition works strictly in accordance with the requirements of BS6187:2011 Code of Practice for Full and Partial Demolition. Key demolition activities that will be subject to Keltbray standards include:

- All site based personnel will be fully SQEP for their designated roles.
- All plant and equipment will be fully serviced and maintained.
- Works will be planned, with daily safety, sequencing and coordination briefings carried out.
- Hazardous Materials Removal – Asbestos by Keltbray Environmental Solutions, other Hazardous Materials by Approved Specialist Subcontractor
- Pollution - Works will be carried out strictly in accordance with the project Pollution Prevention Plan.
- Asbestos - Works will be carried out strictly in accordance with Control of Asbestos Regulations : 2012
- Temporary Works – will be carried out strictly in accordance with BS5975:2019 Code of practice for temporary works procedures and the permissible stress design of falsework

Hazardous Materials Characterisation and Removal

A Process Hazard Review (PHR) will be carried out to assess the risks associated with remaining COMAH dangerous and hazardous substances on site post closure in January 2016. The aim is to:

- Assess information contained in the Hazardous Materials Characterisation Surveys.
- Determine the mitigation measures required to maintain integrity of the remaining SBCO assets to prevent any incidents or accidents in advance of hazardous materials removal.
- The assessment will take into consideration the risks associated with Health, Safety, Environment.
- Where practicable, Hazardous Materials will be removed in advance of demolition.
- Where this is not possible, the demolition methodology will be developed to reduce risk to levels ALARP.

Pollution Control

Keltbray will prepare and implement a Pollution Prevention Plan on the SBCO By Products project, this will include for at source control measures to prevent any contaminants being discharged into the site surface water drainage system via road gullies etc.

- All mobile plant will be in well maintained and good condition prior to arriving on site.
- Diesel refuelling area will be set up in a sealed and bunded location with drip trays and plant nappies used at all times.
- All COSHH materials will be stored in a sealed container and labelled accordingly.
- All inducted members of staff will be briefed on the Keltbray Pollution Incident response plan, and made aware of procedures should a spill be identified.
- All surface water road gullies will be covered with sand bags to provide a final last line of defence filter to prevent contamination of the surface water drainage system.

Asbestos Removal

- Asbestos removal areas will be set up as exclusion zones using Heras fence panels as physical barriers with appropriate signage.
- All demolition personnel to be CAT B trained and have non-licenced asbestos medicals.
- KES personnel to be asbestos removal supervisor trained and hold a 2 year asbestos medical.
- All asbestos removal personnel to be face fitted for the correct mask.
- Excavators to be fitted with Hepa filters on the cab air inlets.
- Excavators fitted with shears and selective hand working will be used to remove asbestos clad ducting for stripping in the process area:
  - Continuous water mist spraying will be applied throughout the process.
  - Demolished plating will be scrapped using an excavator fitted with a selector grab and selective hand working to remove the insulation material.
  - Air monitoring and personal air monitoring will be carried out by an UKAS accredited analyst.
  - All asbestos waste will be placed directly into suitable containers for disposal.
  - All stripped metal will be checked by a Keltbray Licenced Asbestos Supervisor and removed from site as asbestos-free when declared clean.
- All personnel will undergo localised decontamination using H type vacuums and buckets of clean water when leaving the exclusion zone.
- On completion of demolition, a visual inspection of the exclusion zone will be carried out by an UKAS accredited analyst and the KES site supervisor.

Temporary Works

Keltbray Decommissioning's legal responsibilities under BS5975:2019 will be rigorously applied on the SBCO By Products project:

- Temporary Works Coordinator (TWC) must be formally appointed for each specific project by the Designated Individual.
- Temporary Works Register (TWR) must be in place and up to date listing out all temporary works for which we are responsible (including our subcontractors).
- Design Brief must be prepared, with adequate information to inform the designer of:
  - What the Temporary Works is being used for.
  - Plans and sketches showing temporary works location, gridlines, dimensions, and details of the makeup of the structure.
  - The site environment in the area of proposed temporary works.
  - Specific hazards, constraints, and risks that may influence and affect the temporary works.
  - Any plant or other loads that the temporary works need to take into consideration.

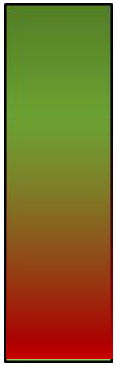
- Working Stage Design must be prepared that fully meets the Design Brief requirements.
- RAMS must be prepared to include details of any temporary works, specific sequencing, hold points and Permit to Load requirements.
- Works to be Managed to ensure that:
  - The Temporary Works design is correctly followed, including any sequence and constraints.
  - The information relating to temporary works and sequencing is communicated to the Supervisor and workforce carrying out the activity.
  - The correct materials (including section sizes and grades) are utilised as per the design documents.
  - Change Control is rigorously applied - raise any changes to the design (or changes to the constraints and information from the Design Brief) back to the designer for approval or remedial advice
  - Permits to Load are in place signed by the TWC holding the correct CAT authority level, for all items of temporary works

Demolition Methodology – Safety Hierarchy

Based on analysis of accidents and incidents, backed up by Comparative Risk Assessments of demolition methods considered practicable for a number of scenarios, Keltbray typically apply, as a baseline assessment, the following criteria when determining the safest option:

Keltbray Safety Hierarchy

Safest



Least Safe

- Machine Demolition
- Controlled Collapse
- Piece Large Dismantling
- Piece Medium Dismantling
- Piece Small Demolition

Keltbray Big 6 – Risks to be Avoided where Practicable

- Working at Height
- Falling Materials
- Contamination
- Electricity - Service Strikes
- Moving Plant
- Driving

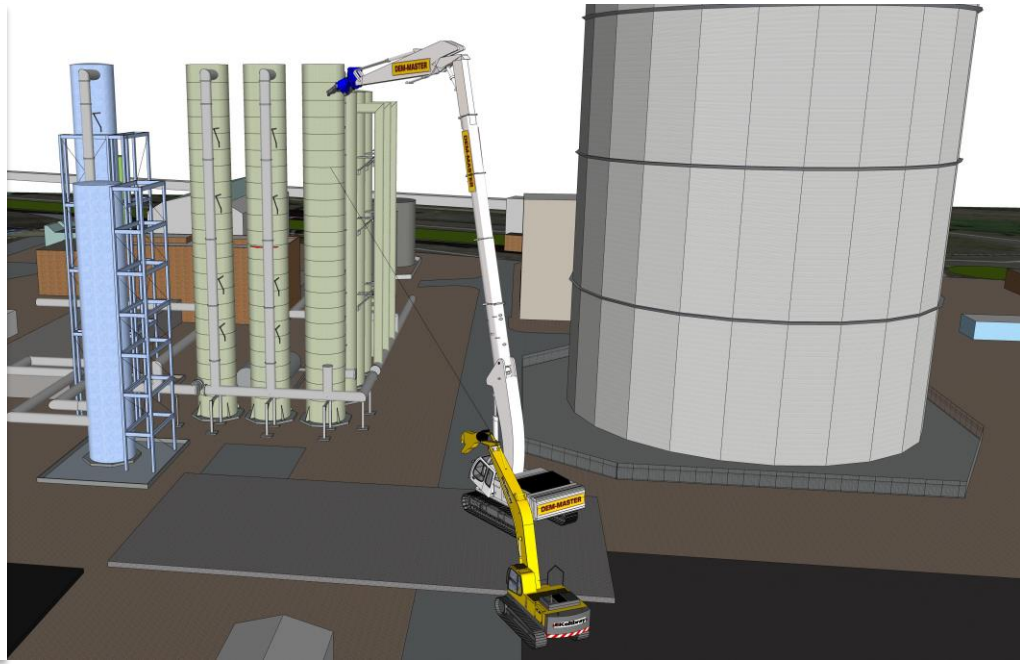
Demolition Methodology – SBCO

Planning Stage analysis and assessment has confirmed the following safety based Demolition Methodologies for the SBCO Plant and Buildings:

- Gas Holder — Controlled Explosive Demolition
- All Others — Machine DEmolition

Case Study – Machine Demolition - Ammonia Washers Vessels

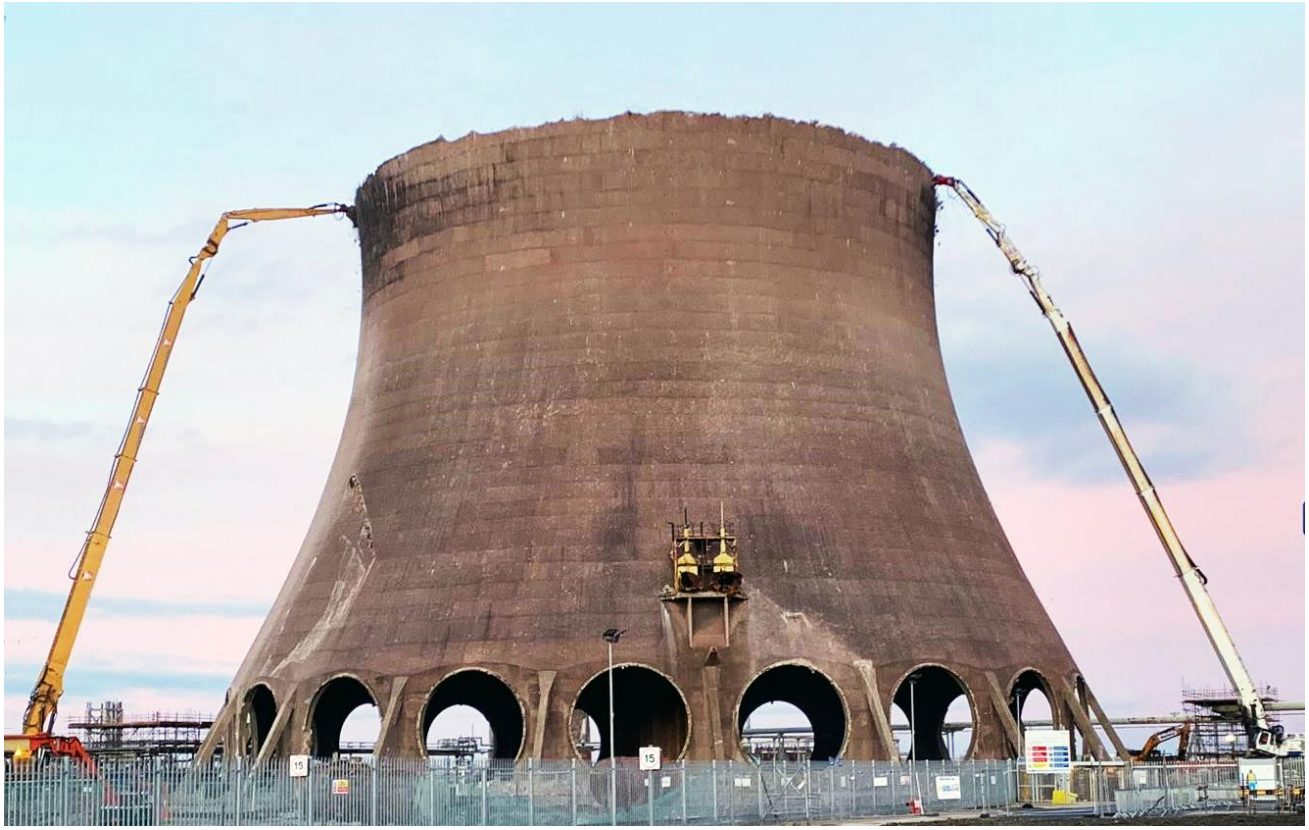
Keltbray Decommissioning's risk based selection process is supplemented by 3D Digital Modelling to carefully plan plant selection and placement for the demolition. The images below show the modelled sequence and actual machine working on the Ammonia Washers Vessels.



Accurate correlation between planned and delivered outcome provided additional assurance to Client on Keltbray's ability to deliver with safety and control as top priority.

Case Study – Machine Demolition – Petrochemical Plant, Teesside

Keltbray Decommissioning has recently completed demolition and site clearance on a live Teesside COMAH Petrochemical Plant.



Works involved primarily Machine demolition with no hot cutting permitted on site. The image above shows Super Long Reach machine demolition of a 62 metre high Cooling Tower.

Case Study – Machine Demolition – Petrochemical Plant, Teesside

Keltbray Decommissioning has recently completed demolition and site clearance on a live Teesside COMAH Petrochemical Plant.

Works involved primarily Machine demolition with no hot cutting permitted on site. The image above shows Heavy Medium Reach machine demolition of heavy steel plant.

Case Study – Controlled Explosive Demolition – Various Projects

Controlled Explosive Demolition is a highly efficient and safety proven method for demolition of large structures. The Keltbray Decommissioning team has extensive and on-going experience with this method – examples below:

Ferrybridge - Power Station Cooling Towers

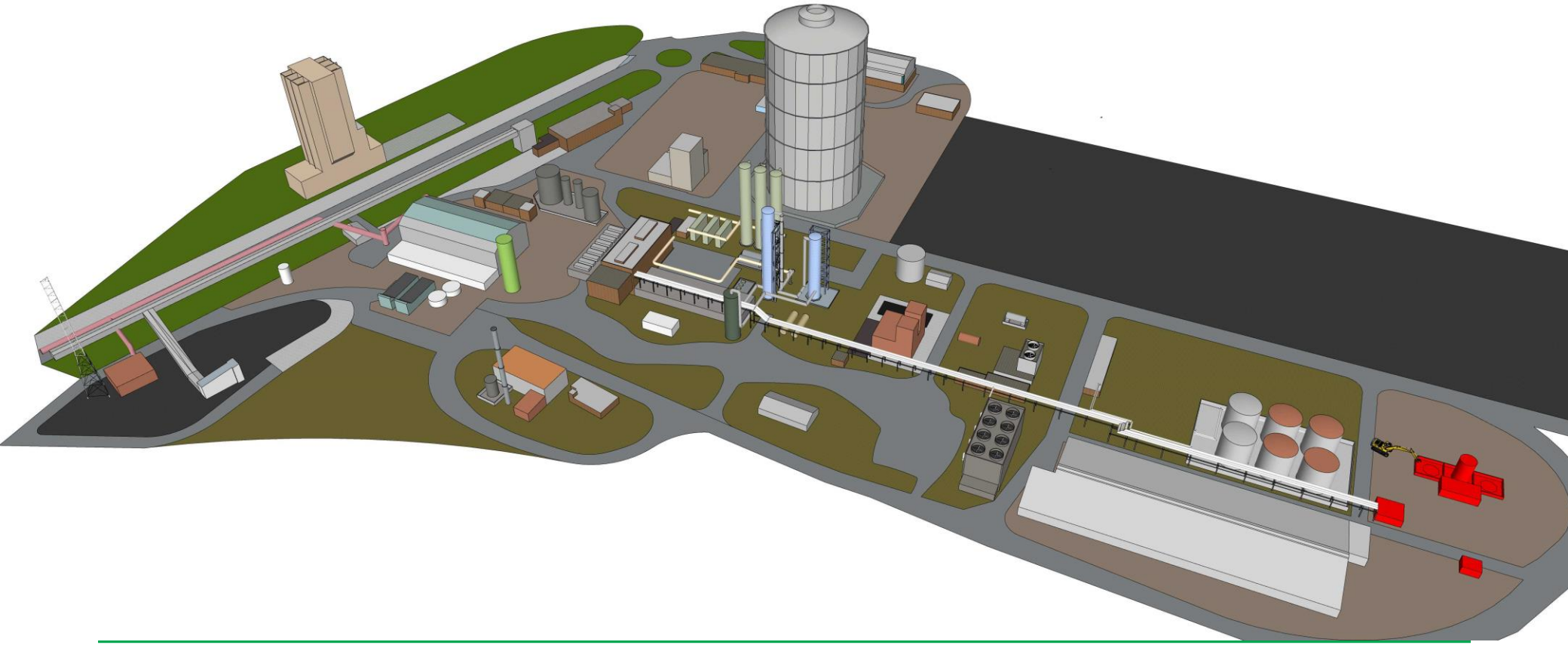
Hunterston - 177m Tall Wind Turbine

Demolition Sequence

The following images provide an overview of the SBCO demolition works sequence, with all works carried out mainly by heavy machine demolition, with the exception of controlled explosive demolition on the Gasholder.

Demolition Stage 1

Benzoyl Tank Loading Area
Methodology - Heavy Demolition Machine

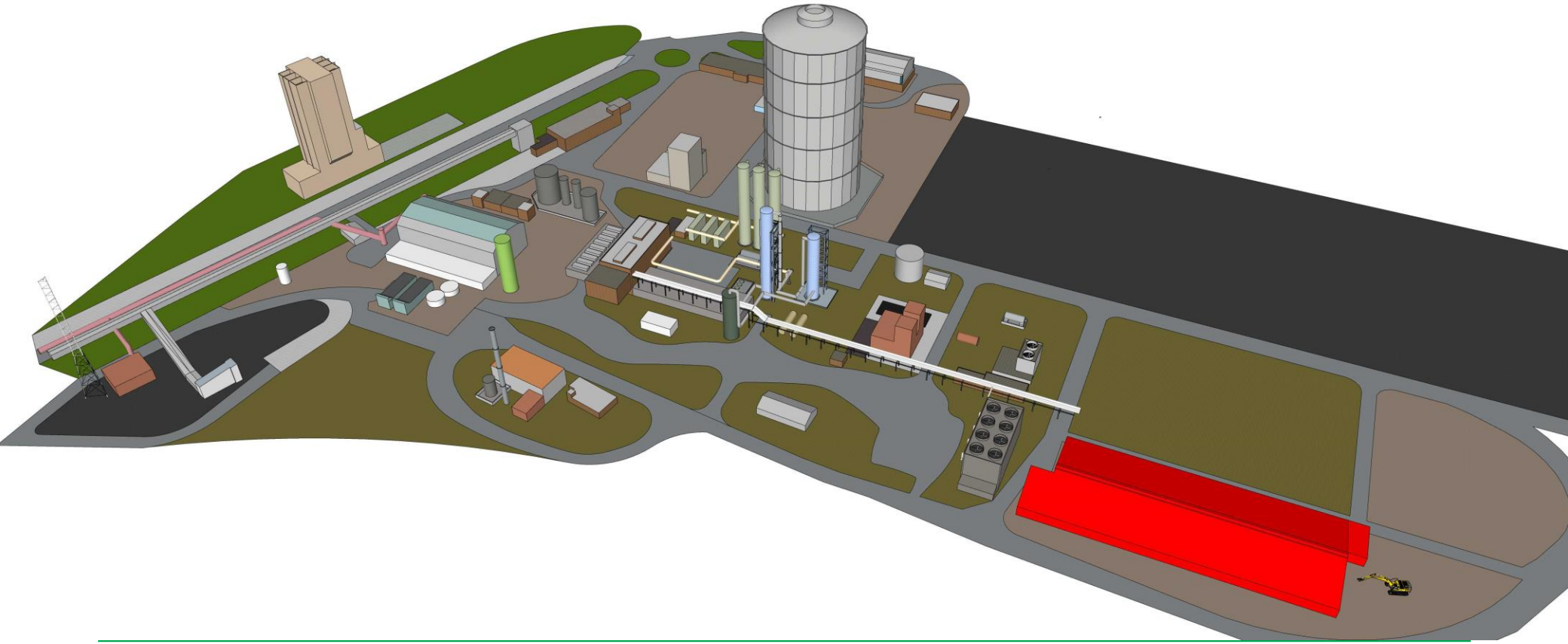


Demolition Stage 2

Effluent and L&M Tanks
Methodology - Heavy Demolition Machine

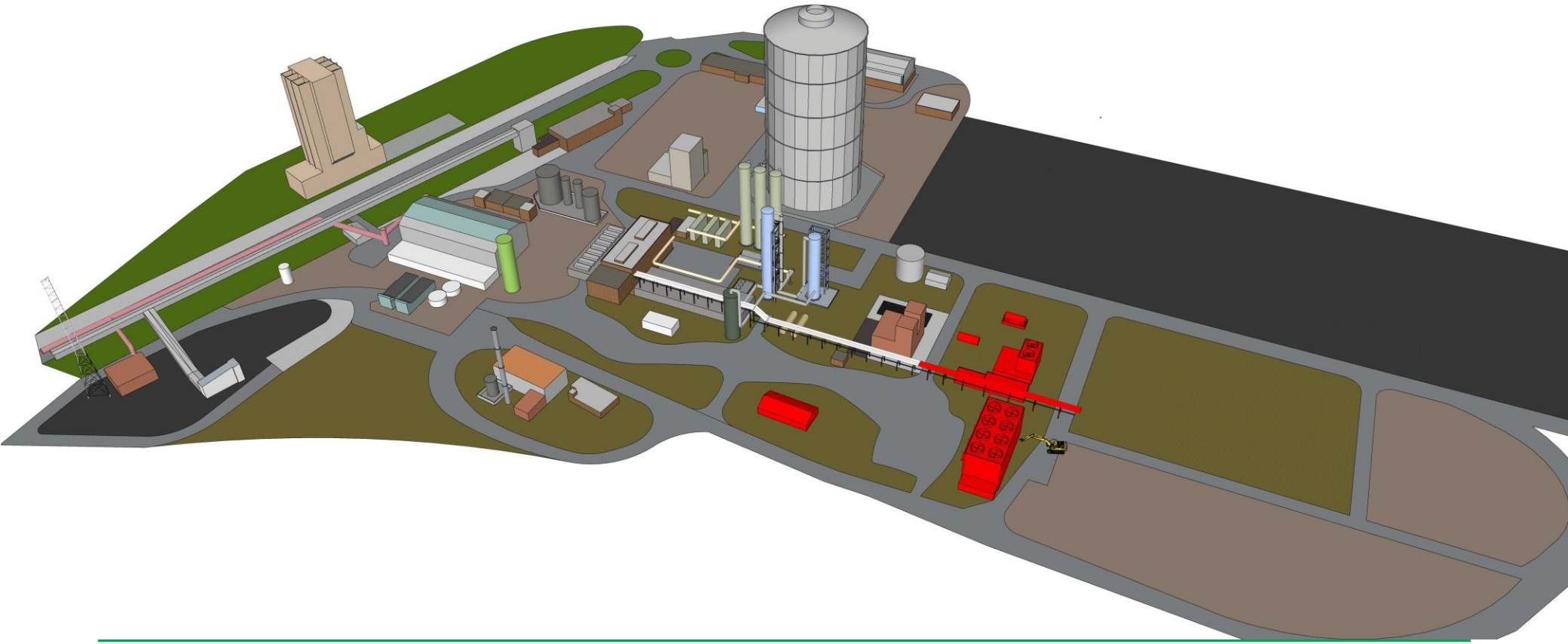
Demolition Stage 3

Furnace Brick Storage Building
Methodology - Heavy Demolition Machine



Demolition Stage 4

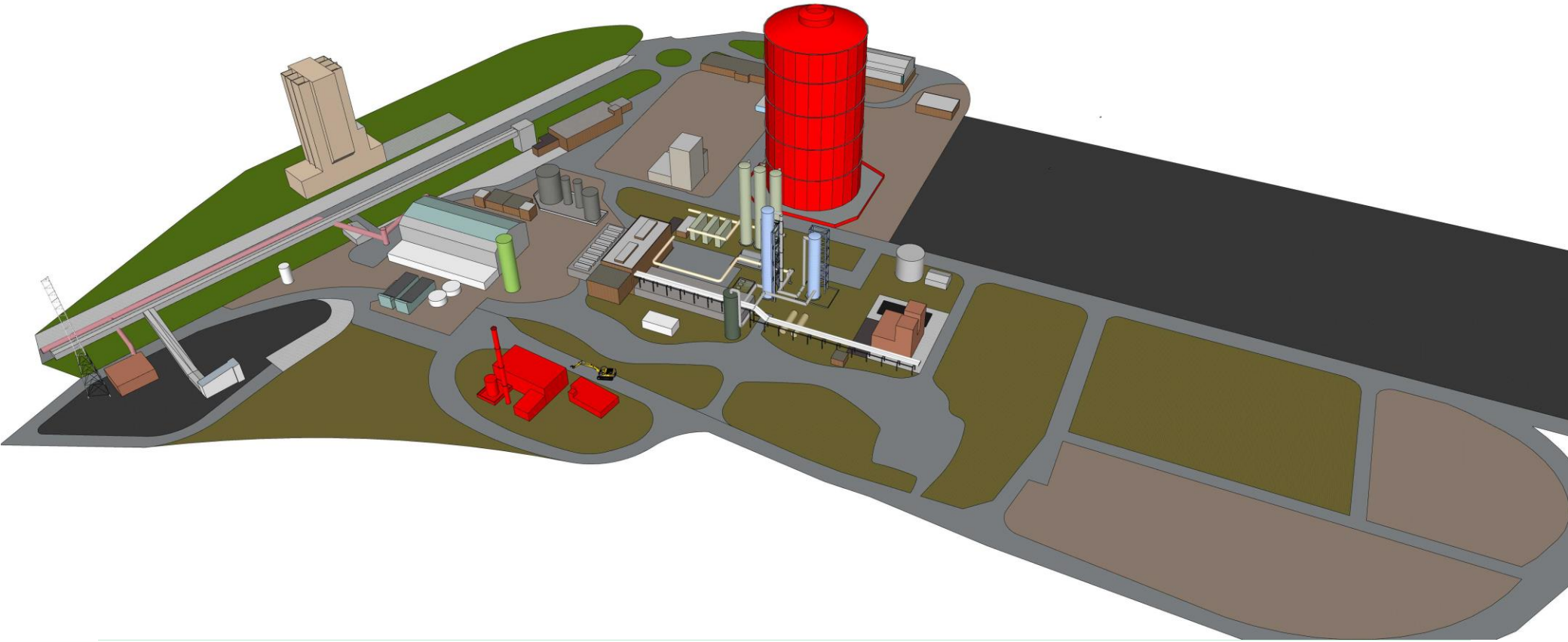
Equipment Store, Primary and Secondary Cooling Towers
Methodology - Heavy Demolition Machine



Demolition Stage 5

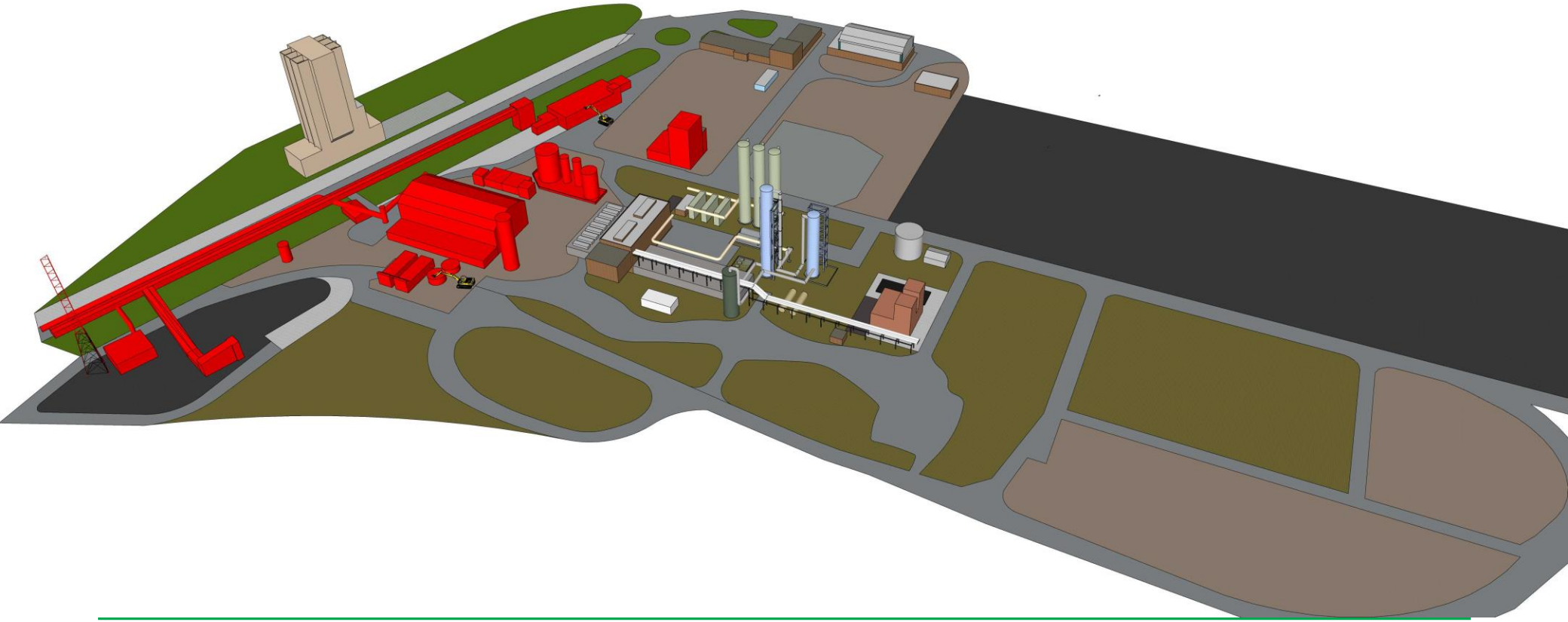
Boilerhouse
Methodology - Heavy Demolition Machine

Gasholder
Methodology – Controlled Explosive Demolition



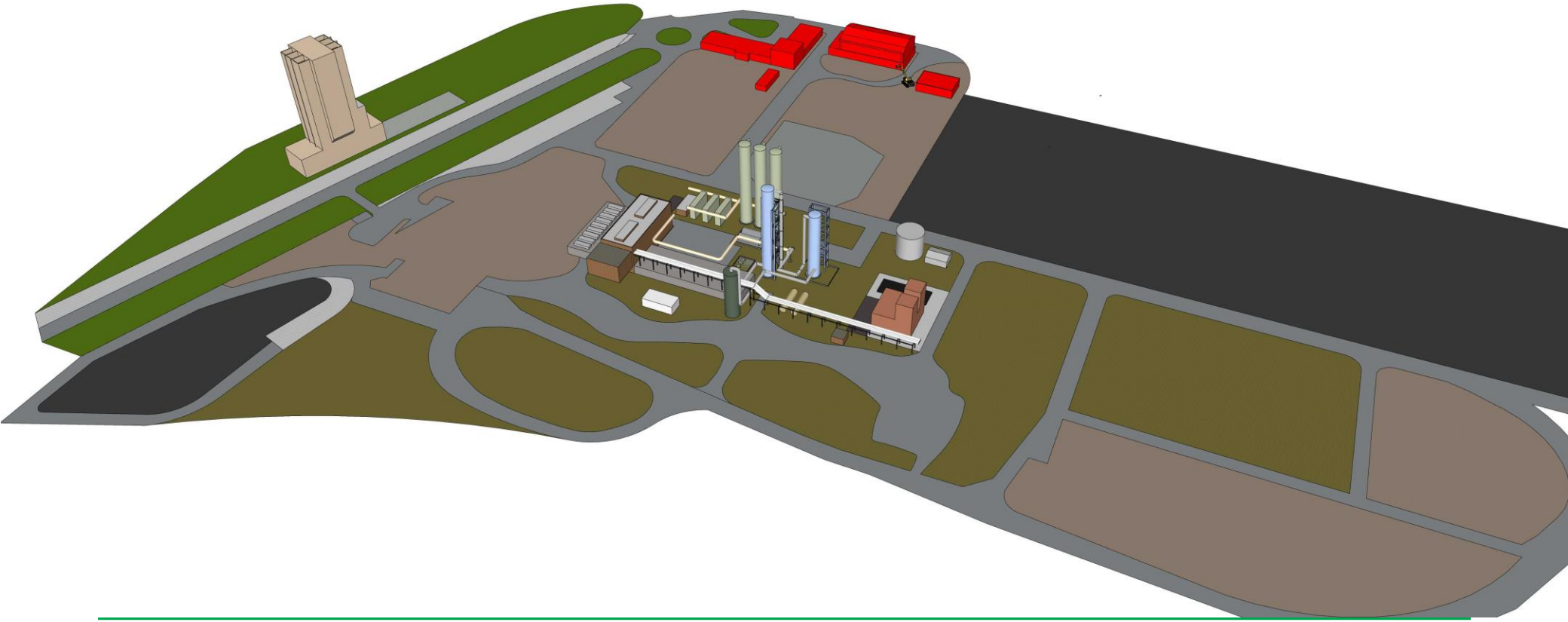
Demolition Stage 6

Workshops and Conveyor Gantry Plant Methodology - Heavy Demolition Machine



Demolition Stage 7

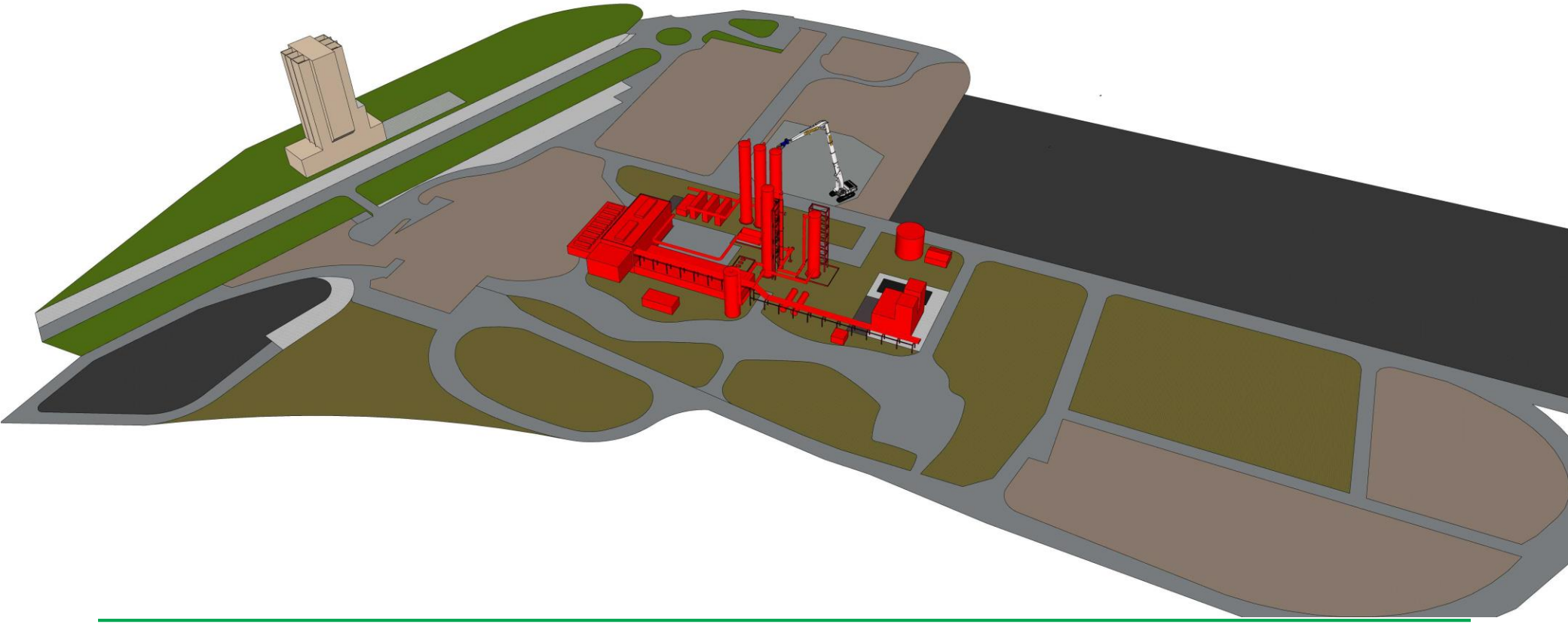
Offices and Ancillary Storage Buildings
Methodology – Heavy Machine Demolition



Demolition Stage 8

Area of highest potential risk of explosive atmosphere to be carried out as final phase of the works.

Napthalene Washers, Benzole Plant, Benzole Scrubbers, Secondary Ammonia Scrubber
Methodology – Heavy Machine Demolition



Site End State

The demolition works are down to slab level, with the site being left ‘at grade’. Any hazardous materials will be removed and disposed off-site, and residual materials (brick and concrete) crushed and set aside for re-use Ferrous and non-ferrous metalwork will be cut and processed on site before being taken off site.