Application SCR evaluation template

Name of activity, address and NGR	Brimsdown Catalyst Manufacturing Plant. 1 Jeffreys Road, Brimsdown, Enfield, Middlesex, EN3 7PN. NGR of the approximate centre of the site is 536580E, 196640N. Environmental Permit Reference EPR/EP3130BE/S006.

Document reference, date and version of application SCR	Application Site Report ref: 33889/01 dated July 2004 by STATS Limited. First Phase Reporting of the Site Protection and Monitoring Programme for the Brimsdown Catalyst Manufacturing Plant Where Reference Data is Required, report No.34973 dated June 2006 by STATS Limited.

1.0 Site details

Has the applicant provided the following information as required by the application SCR template?

Site plans showing site layout, drainage, surfacing, receptors, sources of emissions/releases and monitoring points.

The Operator provided a Site Condition Report (SCR) at the time the original application was made and baseline data in a report a few years after dated June 2006. Drawings were also provided by the Operator and reviewed and accepted by the Environment Agency at the original application stage.

2.0 Condition of the land at permit issue

Has the applicant provided the following information as required by the application SCR template?

a) Environmental setting including geology, hydrogeology and surface waters.
b) Pollution history including:
- pollution incidents that may have affected land
- historical land-uses and associated contaminants
- visual/olfactory evidence of existing contamination
- evidence of damage to existing pollution prevention measures.

c) Evidence of historic contamination (i.e. historical site investigation, assessment, remediation and verification reports (where available).
d) Has the applicant chosen to collect baseline reference data?

a) – the site is accessed via Jeffreys Road on its north-east boundary. The installation covered an area of about 1.7Ha in a location primarily used for commercial/industrial use. The geology, hydrogeology and hydrology at the site comprises:

- **Made Ground** of variable depth and thickness (4m to 8m) and of mixed lithologies including brick, concrete, glass, ceramics, slag, wood, wire, tar fragments, plastics. Perched water maybe present but this is an unproductive non-aquifer formation
- **Kempton Park Gravels** comprising coarse gravels between 1m and 2.5m thick. The gravels are classed as a Secondary 'A' aquifer
- **London Clay** comprising stiff silty clays with silty sand lenses between 2.5m and 5.5m thick. The clay is classed as unproductive stratum
- **Lambeth Group** dense very silty sands encountered at least 15m bgl. This Group tends to be classed as unproductive strata
- **Thanet Sands** expected to be between 16m and 34m bgl. The Thanet Sands are classed as a principal aquifer
- **Chalk**. The Chalk is classed as a principal aquifer.

The site is located within a 'Zone 2' groundwater source protection zone linked to a public potable water borehole abstraction point but there are other abstractions located within a 1km radius. During site investigations, groundwater was encountered at about 1.5m bgl and 2.6m bgl in the Made Ground and the Kempton Park Gravels respectively. Brimsdown Brook is the nearest watercourse which is a culverted under the sites' car park but to the north of the site becomes an open channel surrounded by vegetation. The River Lee Navigation is located approximately 110m east and the King George's Reservoir about 500m east of the site (this is also a Site of Special Scientific Interest). The site is located within a nitrate vulnerable zone.

2.0 Condition of the land at permit issue

Has the applicant provided the following information as required by the application SCR template?

b) and c) – a conceptual site model and potential pollution linkages were identified within the Application Site Report (ASR). The environmental setting and history of the installation was submitted with the original 2005permit application. The site and surrounding land was historically quarried for sand and gravels between 1920 and 1930 and was known locally as Mossops Hole. From 1942 onwards the gravel pit was infilled initially with building material from bomb-damaged buildings then with wastes from nearby factories and is now recorded as an historic landfill. After 1945 there was potentially fly ash and slag from blast furnaces deposited in the former pit with the last waste received on 31 December 1966.

In the 1950's, Universal-Matthey Products Limited built the first part of the Brimsdown plant. By around 1965 the majority of the site was constructed. Water that collected in a gravel pit to the south was understood to have been a green colour possibly indicating heavy metal contamination. In 1971, the drains in the vicinity of the site were reportedly leaking water containing elevated concentrations of nickel into groundwater near the site entrance. Around 1985, the UOP and Johnson Matthey sites were separated and the current site boundary was established for the UOP site. The site has since been sold by UOP to Kelly in 2017.

The site is understood to have been used for similar activities since its construction. Historically, significant volumes of oils were used as a carrier for the catalyst. However, over the lifetime of the permit the use of oils was much reduced, although an oil separator remained in use at the site. Site processes and products were understood to have remained similar having gradually reduced since 2005.

d) - the site condition (background soil and groundwater baseline data) was set out in the 'First Phase Reporting of the Site Protection and Monitoring Programme for the Brimsdown' report No.34973 dated June 2006 by STATS Limited. Several reports by Dames and Moore and Geraghty and Miller were also undertaken prior to the site coming under Environmental Permitting Regulation (between 1989 and 2001).

The Dames and Moore and Geraghty and Miller reports concluded that there was elevated concentrations of arsenic, copper, lead, nickel, boron, cadmium, chromium and zinc throughout the made ground beneath the site. The STATS Limited report concluded that there was elevated concentrations of antimony, arsenic, boron, iron, mercury, nickel, selenium, sodium, sulphate and nitrate in the groundwater under the site.

The STATS ASR concluded that the only site area with the potential for significant impacts was the site's chemical drainage system leading to the effluent pits in the north of the site. A CCTV survey identified potential leaks in the chemical drains and a defect to the lining in the settling trench at the back of the tank farm. A suite of metals as well as poly aromatic hydrocarbons (PAH), total petroleum hydrocarbons (TPH), volatile organic compounds (VOC) and benzene, toluene, ethyl-benzene, xylenes (BTEX) were tested for in soil and in groundwater samples from the site investigation. The report concluded that all elevated levels of pollutants identified within the ground or groundwater were attributed to either historical or off-site activities.

3.0 Permitted activities

Has the applicant provided the following information as required by the application SCR template?	Response (specify what information is needed from the applicant, if any)
a) Permitted activities b) Non-permitted activities undertaken at the site	

a) The Environment Agency determined that the installation comprised catalyst manufacture and associated activities primarily for use in the petroleum refining and petrochemical industries using the metals platinum, nickel and silver. Rejuvenation of waste catalysts was also undertaken. Two of the processes required a permit under the Integrated Pollution Prevention and Control (IPPC) Regulations which has now been superceded by the Environmental Permitting Regulations (EPR):

Oxidation of catalytically active metals (mainly platinum, copper and nickel) to metal oxides - 4.2A(1)(a)(v) - producing inorganic chemicals such as non-metals, metal oxides, metal carbonyls or other inorganic compounds such as calcium carbide, silicon, silicon carbide, titanium dioxide.

Oxychlorination (chlorine treatment) of catalysts to promote or restore catalytic activity including rejuvenation of waste catalyst - 4.2A(1)(b) - any manufacturing activity which is likely to result in the release into air of any hydrogen halide (other than the manufacture of glass or the coating, plating or surface treatment of metal) or which is likely to result in the release into air of any halogen or any of the compounds mentioned in paragraph (a)(vi) (other than the treatment of water).

b) Directly Associated Activities (DAA) at the site included catalyst sulphiding and reduction, water treatment

3.0 Permitted activities

Has the applicant provided the following information as required by the application SCR template?	Response (specify what information is needed from the applicant, if any)

plant for producing deionised water, gas fired furnace and boilers (steam raising), cooling towers, coke and hydrocarbon removal, liquid scrubber (caustic soda) and raw material and waste (hazardous and non-hazardous) storage areas including catalyst intermediates and products in steel drums. There was an effluent treatment plant to treat site process effluent prior to discharge to foul sewer (emission point S1). A drain then collected the treated effluent from the plant and this was then discharged manually to sewer via underground effluent collection pits and an oil:water interceptor.

3.0(a) Environmental Risk Assessment

The H1 environmental risk assessment should identify elements that could impact on land and waters, cross- referenced back to documents and plans provided as part of the wider permit application.

The Environment Agency reviewed the Operator's environmental risk assessment (H1) including the potential for environmental impact from emissions to air and water. The H1 was reviewed at the time of the original permit determination and accepted as satisfactory. The ASR identified the chemical drains as the only significant zone with respect to the likelihood of land pollution. The effluent was identified as being likely to contain metals (e.g. platinum and silver) in solution.

The site operated in accordance with a health, safety and environmental management system, a quality management system generally conforming to ISO 9001 and an Incident Control Plan developed to provide the UOP with a single resource for responding to and cleaning up oil and chemical spills at the facility. Records of spillages or releases along with investigation/close out details were maintained throughout the lifetime of the permit.

3.0(b) Will the pollution prevention measures protect land and groundwater?

Are the activities likely to result in pollution of land?

Conditions were set within the permit to ensure all plant, equipment and technical operations were in good working condition. It was concluded that there was little likelihood of pollution arising from the operation of the installation provided that it was operated and maintained correctly. There were no direct discharges of hazardous substances or non-hazardous pollutants to groundwater from the site.

All on-site process discharges were collected in a 'chemical drain' drainage system and discharged into the on-site effluent treatment plant. Treated effluent (pH adjustment) was then discharged under licence to foul sewer via emission point S1. Site surface water run-off was routed to surface water drains which discharged into Brimsdown Culvert at two locations (W1 and W2). Both these surface water discharge points had sluice gates and interceptors prior to discharge. The sluice gates were manually operated once a month releasing water into Brimsdown Brook following confirmation of no spills occurring on site.

For dangerous and/or hazardous substances only, are the pollution prevention measures for the relevant activities to a standard that is likely to prevent pollution of land?

The installation was a lower tier COMAH site. Approximately 650 tonnes/year of hazardous waste was generated of which 640 tonnes was scrubber liquor. Hazardous pollutants included ammonia, hydrochloric nitric and sulphuric acids, diesel, nickel, caustic soda, chlorine and liquid chloride, oils, paints, hydrogen sulphide, radioactive caesium-137, aluminium oxide, silver and copper nitrates, sodium bisulphite, cerium bezalkonium and potassium chlorides.

The effluent pits and oil separator were concrete lined and periodically emptied and cleaned and had concrete bases of a substantial thickness. The storage area was concrete lined and bunded with a containment gully around the perimeter. The tank farm area comprised an open, shallow bunded area with an 'ACO' style enclosed drain around the bulk tank offloading area providing containment of any spills and leaks.

Application SCR decision summary	Tick relevant decision
Sufficient information has been supplied to describe the condition of the site at permit issue.	Yes.
Pollution of land and water is unlikely.	Yes.
Historical contamination is present - advise operator that collection of background data may be appropriate.	Yes.
Date and name of reviewer:	Liz Ebbs 26/03/2018

4.0 Changes to the activities

Have there been any changes to the following during the operation of the site?	Response (specify what information is needed from the applicant, if any)
a) Activity boundaries b) Permitted activities c) "Hazardous pollutants" used or produced.	

Previous to regulation under EPR and IPPC, the site held various superceded licences:
AN 8488 – original permit issued November 1994.
BC 8988, BG 6871, BQ 2405 – varied permits November 1998, January 2000 and June 2002 respectively.

No amendments were made to the installation boundary or site layout during the lifetime of the permit. The permit was varied during its lifetime comprising the following:

V002 – CD72 plant improved abatement system. Two exhausts were then linked into the abatement system.

V003 – phasing out existing catalyst resulting in a new air emission point (silver nitrate and ammonia). Under the Industrial Emissions Directive scheduled activity 4.2A(1)(c) no longer existed and was altered to a DAA.

V004 – two new products resulted in H_2S being released via the reactor and molecular sieves exhausts. An improvement condition required emissions to be monitored and added H_2S as a parameter to the permit.

V005 - RZ-100 catalyst drying and oxidation moved to the R&S1 reactor. The reactor could not abate process NOx emissions therefore the unit was connected to the wet scrubber system to vent emissions for treatment.

A disused sewage treatment plant was located north of the effluent pits and included an empty sludge thickening tank and an empty solid separation tank. A 30,000 litre redundant above ground 35% ammonia tank was also located in this area.

No additional relevant hazardous substances were used within the installation boundary since the preparation of the baseline site report.

5.0 Measures taken to protect land

Has the applicant provided evidence from records collated during the lifetime of the permit, to show that the pollution prevention measures have worked?

A Site Protection and Monitoring Programme (SPMP) was prepared by STATS Limited in December 2005 which detailed how the activities within the installation would be managed throughout the lifetime of the permit to prevent any deterioration in the site condition. This included biannual groundwater monitoring, relevant infrastructure monitoring, bunds and storage areas assessed monthly (visual), process operator checks and manufacturers maintenance and integrity checks.

The site had a dedicated non-hazardous waste collection area and a separate hazardous waste storage area. The hazardous waste compound comprised a fenced concrete-lined shallow bunded area. Drums and IBCs were stored within a dedicated bunded area with a containment gully around its perimeter.

The chemical drain was lined between 1989 and 1990 with an expandable synthetic pipe. A CCTV survey was carried out in 2006 and identified potential leaks and a lining defect in the settling trench at the back of the former tank farm. Remedial works to repair identified significant defects were carried out in 2007 and comprised re-lining and repairs to the settling trench lining, brick lining of a defective chemical sump, new ACO channels in the impregnation area, replacement of a collapsed clay drain and replacement of the effluent treatment plant drain with an above-ground run. After another CCTV survey undertaken in December 2015 further remedial works were undertaken to the base of the manholes.

The drainage remedial works were not completed during the lifetime of the permit but no impacts to groundwater were directly attributed to leaks from these areas. The biannual groundwater sampling and monitoring was designed to identify the presence of chemicals from these drains during the permit lifetime.

Further details regarding the measures taken to protect land are discussed in the SCR dated 21 February 2018.

6.0 Pollution incidents that may have impacted on land and their remediation

Has the applicant provided evidence to show that any pollution incidents which have taken place during the life of the permit and which may have impacted on land or water have been investigated and remediated (where necessary)?

No significant environmental incidents were recorded at the installation during the lifetime of the permit and there were no reported incidents leading to a loss of relevant hazardous substances to soil or groundwater underlying the site during the lifetime of the permit. Incidents reported to the EA are listed below:

2005 - sulphuric acid leak into bund. Nine drums of dry R56 catalyst in drumming area. Treated water contained in evaporator pit.

2006 – oil from air compressor. Silver nitrate collected in spill tray. Liquid contained in evaporator pit. Scrubber alkaline water contained in building. Impregnation solution leak contained in evaporator pit. One drum of platinum sludge contained in bunded area in old base plant area.

2007 - oil leak from forklift truck in roadway. Copper nitrate in yard. Sodium bisulphite spill in bund. Six drums of dry product. Spill contained in evaporator pits. Dry catalyst spill from an elevator.

2008 - sodium bisulphite contained in bund. Scrubber washings contained in bund and chemical drain. Treated water spill into evaporator pits. Five drums of dry material in warehouse. Spill from dry product system. Drum of platinum sludge in main yard. Soft water line failure on cooling towers contained in bund. Nitric acid from IBC spill in main yard within the secondary chemical drain system (ACO drain).

2009 - HCl contained in evaporator pits. Condensate water contained in evaporator pit. Spill of dry catalyst. Trade effluent contained in drains. HCl leak from pipe in tank farm contained in bunded area.

2010 - 10kg solid dry product in warehouse. Diluted sodium bisulphite contained in the bunded area by chlorine shed. Silver washings 1 drum in main yard and contained in secondary chemical drain system (ACO drain). CPA spill 5kg contained in safe.

2011 - HCl leak contained in bunded area. Catalyst dry product. Scrubber washing contained in bunded area and secondary chemical drain system. Spill contained in bunded area and secondary chemical drain system. 100kg dry product. Sodium bisulphite contained in scrubber bund.

2012 - caustic spill contained in scrubber bund area. Caustic leak. Catalyst leak contained in scrubber bund. Catalyst CPA liquid spill. Catalyst leak. Hydraulic oil leak. Catalyst leak. Caustic leak contained in scrubber bund. Scrubber liquor contained in building.

2013 - oil leak from evaporator onto floor. Dry catalyst spill. Waste water spill from IBC into yard. Spill from hazardous waste spill tray. Spill tray overflow - waste water spilled into yard. Catalyst dry product.

2014 - sulphuric acid spill and sulphuric acid leak contained in scrubber bund.

2015 - dry product spill. Catalyst spill. Hydraulic hose on fork lift. Oil leak from panel. IBC puncture in main yard and within the secondary chemical drain system. Leak on chlorine inlet line contained in chlorine shed.

2016 – chemical drain blocked.

2017 and 2018 - None.

Remedial works were carried out on the chemical drain in 2007 to address identified potential leaks and a defect to the settlement trench lining. Soil samples were collected near to this location during the baseline assessment and also during the final investigation and submitted for laboratory analysis.

7.0 Soil gas and water quality monitoring (where relevant)

Where soil gas and/or water quality monitoring has been undertaken, does this demonstrate that there has been no change in the condition of the land? Has any change that has occurred been investigated and remediated?

Groundwater monitoring of seven boreholes across the site was undertaken on a 6 monthly basis in accordance with the SPMP between June 2006 and July 2017. Concentrations, specifically of heavy metals, were detected in the shallow groundwater over this period of the groundwater monitoring. The concentrations appeared to be highly variable with no distinct trends in the data set.

Groundwater flow directions varied between the north and south areas of the site and also over time. Free product (Light Non-Aqueous Phase Liquid or LNAPL) was identified during groundwater RSK in May 2010 and later identified as lube oil comprising predominantly aliphatic >C16 fractions. Chemical analysis also detected hydrocarbons in the groundwater with the highest concentrations being 4,937ug/l and 7,771ug/l. The presence of LNAPL was recorded in subsequent six-monthly interval groundwater monitoring until July 2014. The thickness of LNAPL ranged from 0.55m in 2010 to 0.004m in 2014. An absorbent sock was installed in November 2013 and removed in October 2014. No LNAPL has been identified on-site since July 2014.

8.0 Decommissioning and removal of pollution risk

Has the applicant demonstrated that decommissioning works have been undertaken and that all pollution risks associated with the site have been removed? Has any contamination of land that has occurred during these activities been investigated and remediated?

Operations at the installation were reduced in 2016 to just one production line and production ceased in December 2017. Decommissioning of site activities was undertaken on a progressive basis from 2016 with decommissioning work at the site being completed in early February 2018.

The following reports have been submitted by the Operator as part of the full surrender application:

- 'UOP Brimsdown Site Condition Report EPR EP3130BE' ref: 60561045/LORP001 by AECOM dated 21 February 2018.
- 'Soil & Groundwater Site Exit Report – Support for Application to Surrender Permit EP3130BE' UOP Limited, ref: 60495380/LOPR002 by AECOM dated 21 February 2018.

Operations were progressively reduced and the associated obsolete plant decommissioned. By mid 2016 only one production line remained producing RZ-100 catalyst which ceased in December 2017. The majority of decommissioning work was undertaken by in-house personnel, under the direction/supervision of the Plant Manager. Some minor items of plant associated with a scrubber plant were transferred to another UOP Facility. The following decommissioning activities were undertaken in accordance with written procedures for the periodic shut-down of equipment, supplemented with additional tasks/written procedures as necessary:

Evaporators:
Plant and tanks were emptied and washed with water, some plant was then vacuum cleaned. Filters were removed and disposed. The scrubber and silver nitrate systems were drained and flushed with water to neutral pH. The refrigeration package was de-gassed and glycol drained down. Oils from motors were drained.

Oxidiser and associated abatement control:
Plants and systems were emptied, vacuum cleaned and flushed with water until neutral pH achieved. Scrubber packing and air emission filters were removed and disposed of as hazardous waste at an appropriate off-site facility. Caustic lines were flushed with water. There was previously a DENOX unit associated which ceased to operate circa 2007. The associated catalyst was removed and disposed of off-site at that time.

Cooling towers and steam boilers:
Main cooling tower plant and the steam boiler system were drained, emptied and flushed with water to neutral pH. Wastewater was treated in the on-site effluent treatment plant and then discharged to sewer. Treatment chemicals were disposed of along with the small plastic tanks in which they were contained.

Reduction unit reactors:
Vessels were vacuum cleaned and rinsed with water. Oil and glycol were drained down. Filters/molecular sieves were removed for disposal. H_2S and chlorine systems purged with nitrogen. Scrubber unit was flushed with water, packing removed and disposed of as hazardous waste. Part of scrubber plant was transferred to plant in Japan for reuse. Tanks drained and flushed with water to achieve neutral pH. Glycol system de-gassed and drained down.

Spent catalyst, demineralisation water plants:
Spent catalyst plant was vacuum cleaned. Demineralisation plant was drained, emptied and rinsed with water to achieve neutral pH. Resin removed by an external contractor and disposed of as hazardous waste. The ball mill and hopper were emptied, vacuum cleaned and rinsed with water.

Radioactive caesium-137:
The site held a separate Environmental Permit for the sources, often referred to as a Radioactive Substances (RAS) licence (ref: CC9432). Eckert & Ziegler removed the radioactive sources on 03 May 2016. On 04 May 2016, the two sources were packaged and dispatched to Cavendish Nuclear Ltd. On 09 May 2016, Radman Associates tested both source areas for leakage in accordance with Regulation 27(3) and both source areas were found to be in a satisfactory condition. The site submitted a successful application to the EA for surrendering their permit (registration number BK7072/CC9423) on 23 May 2016.

Bulk gas storage, bulk tank farm, drums, IBC storage, pipework:
Gases were run-down to a residual level then were vented prior to the tanks being returned to the supplier in early February 2018. Chemicals stored in bulk were run down during the last production campaigns. All tanks and associated equipment were drained, and flushed with water to achieve a neutral pH.

The diesel tank was drained down, emptied and cut up for off-site disposal. No damage was observed to the ammonia tank bunded area and the former tank farm bunded areas.

Drums of surplus raw materials were returned to the supplier. Bulk tanks and oils in equipment were drained down into IBCs and drums for off-site disposal. All non-bulk chemicals were removed from site for off-site treatment and disposal. Consignment notes were obtained and are held on record.

Pipework and the chemical drainage system was flushed out with water. Washings and sediments were collected and drummed for off-site recovery of metals or disposed off-site via licensed waste contractors. Where appropriate some were discharged to the on-site effluent treatment plant prior to discharge to sewer. Where pipework remained on site any open ends were blanked. Holes were cut into a number of the process tanks and vessels to enable visual confirmation of the decommissioning work. The diesel tank was drained down, emptied and cut up for off-site disposal. Decommissioning completion certificates were completed as each tank/vessel was emptied and cleaned out.

Effluent treatment plant and chemical drain:
The effluent treatment plant will remain operational to manage storm water run-off. Process drains, interceptor pits and the effluent treatment plant pits were flushed through with water and sediments were collected into IBCs for off-site recovery of precious metals. The chemical and process drains were also subject to jet washing and a full CCTV survey in January 2018 with any sediments collected for off-site recovery/disposal.

9.0 Reference data and remediation (where relevant)

Has the applicant provided details of any surrender reference data that they have collected and any remediation that they have undertaken?

A final soil and groundwater assessment was undertaken in September 2017 as agreed with the Environment Agency. The scope of the assessment was designed to replicate the 2006 baseline assessment and comprised groundwater and soil sampling along the length of the chemical drain collected at depths replicating the baseline and analysed for a suite of compounds used on-site during the life of the permit.

Based on the data reviewed, the majority of compounds detected in groundwater are either below or equal to those detected in the baseline detected in 2006. Fluctuations observed within the data set were in the range observed during the life of the permit. The majority of compounds were found to be below or equal to those detected in the baseline and groundwater concentrations were generally lower than those detected in 2006.

Groundwater concentration data for September 2017 indicated increases of ammonia, nitrate, sulphate, pH, benzene and xylene. With the exception of benzene and xylene these materials were stored/used on-site during the permit lifetime. There were no recorded incidents indicating spills of ammonia and an increase in nitrate concentration in the groundwater is not in the vicinity of the nitric acid spill recorded in 2008. Concentrations of the monitored contaminants have fluctuated, with no apparent trends identified, over the permit lifetime.

The comparison of soil data from the baseline investigation to the most recent investigation shows variations and some exceedances of the comparable baseline results. Soil concentration data for September 2017 indicates increases of baseline concentrations of some metals (copper, nickel, potassium) as well as chloride, nitrate and pH. These materials were stored/used on-site during the permit lifetime. The majority of the locations where increases were identified were in areas where chemical drains were present and so this could represent a potential pathway to soil for these materials. Soils were sampled from close to the trench in both the baseline and final site investigations. The concentrations of nickel, potassium and pH in shallow soils at this location were identified to be higher in the final investigation when compared with the baseline results.

It is noted that some of the highest increases in copper and nickel located adjacent to a section of the chemical drain served an area where copper and nickel were not present during the permit lifetime.

The industrial history of the area as well as there being no clear evidence of significant releases of relevant hazardous substances from the permitted activities would suggest that any variation in the concentrations of compounds in the soil samples collected is more likely to be due to the variation in the soil type and historical land uses rather than any local release into the soil from the permitted facility.

10.0a and 10b Statement of site condition

Has the applicant provided a statement, backed up with evidence, confirming that the permitted activities have ceased, decommissioning works are complete and that pollution risk has been removed and that the land and waters at the site are in a satisfactory state?

No environmental incidents were reported during the decommissioning since completion of the final investigation. Drainage surveys completed at the site did not identified significant issues within the vicinity of the baseline monitoring wells located at the site.

The remaining boreholes represent a potential pathway for pollutants should a spill occur in the future. As such, these monitoring wells could be decommissioned at some stage in future, subject to discussion with the EA and once the environmental permit has been successfully surrendered. If decommissioning of the boreholes is required, this should be undertaken in accordance with the EA guidance document, "Good Practice for Decommissioning Redundant Boreholes and Wells", dated October 2012.

Whilst some damage to the chemical drainage system was observed during the final CCTV survey undertaken in January 2018, this was either in areas which carried little or no process effluent or the groundwater monitoring results demonstrated no significant impact which could be attributed to leaks from these areas.

It is considered that the operator's obligation with respect to the prevention of pollution of the soil and groundwater beneath the permitted installation during the permit lifetime has been fulfilled and based on the understanding that there have been no additional incidents during the decommissioning process and no additional investigation works are therefore proposed. This approach was agreed with the EA during the meeting on the 08 December 2017. The EA requested that a final round of SPMP monitoring be completed at the site in January 2018 and it was agreed that the results would be reported to the EA.

As all of the site activities have ceased and the site decommissioning has been completed adequately, the Environment Agency consider the site to be returned in a satisfactory state.

Surrender SCR decision summary	Tick relevant decision
Sufficient information has been supplied to show that pollution risk has been removed and that the site is in a satisfactory state – accept the application to surrender the permit.	√

Review of the application and of the CAR form dated 26/02/2018 Ref:EP3130BE/0302937 shows that the site has previously been quarried and backfilled with waste between 1920 to 1966. Universal-Matthey Products Limited have been using the whole site from 1954 until 1985 when the UOP and Johnson Matthey sites were separated and the current site boundary was established for the UOP site. The UOP site was sold to Kelly in 2017.

The DEFRA core guidance states: Satisfactory state

7.29 The regulator must ensure that the necessary measures have been taken to return the site of the regulated facility to a satisfactory state. This can only be achieved if operators aim to restore a site to the condition it was in before the facility was put into operation.

7.30 This may be significantly stricter than the 'suitable for use' test of the contaminated land regime in Part 2A of the EPA 1990 and similar controls on redevelopment. While 'suitable for use' is appropriate for pre-existing contamination, it is not the right test for the preventive environmental permitting regime. When applying to surrender a permit, applicants are advised to consider whether they might be required to carry out remediation under Part 2A and if so whether it would be more cost effective to undertake operations for both purposes at the same time.

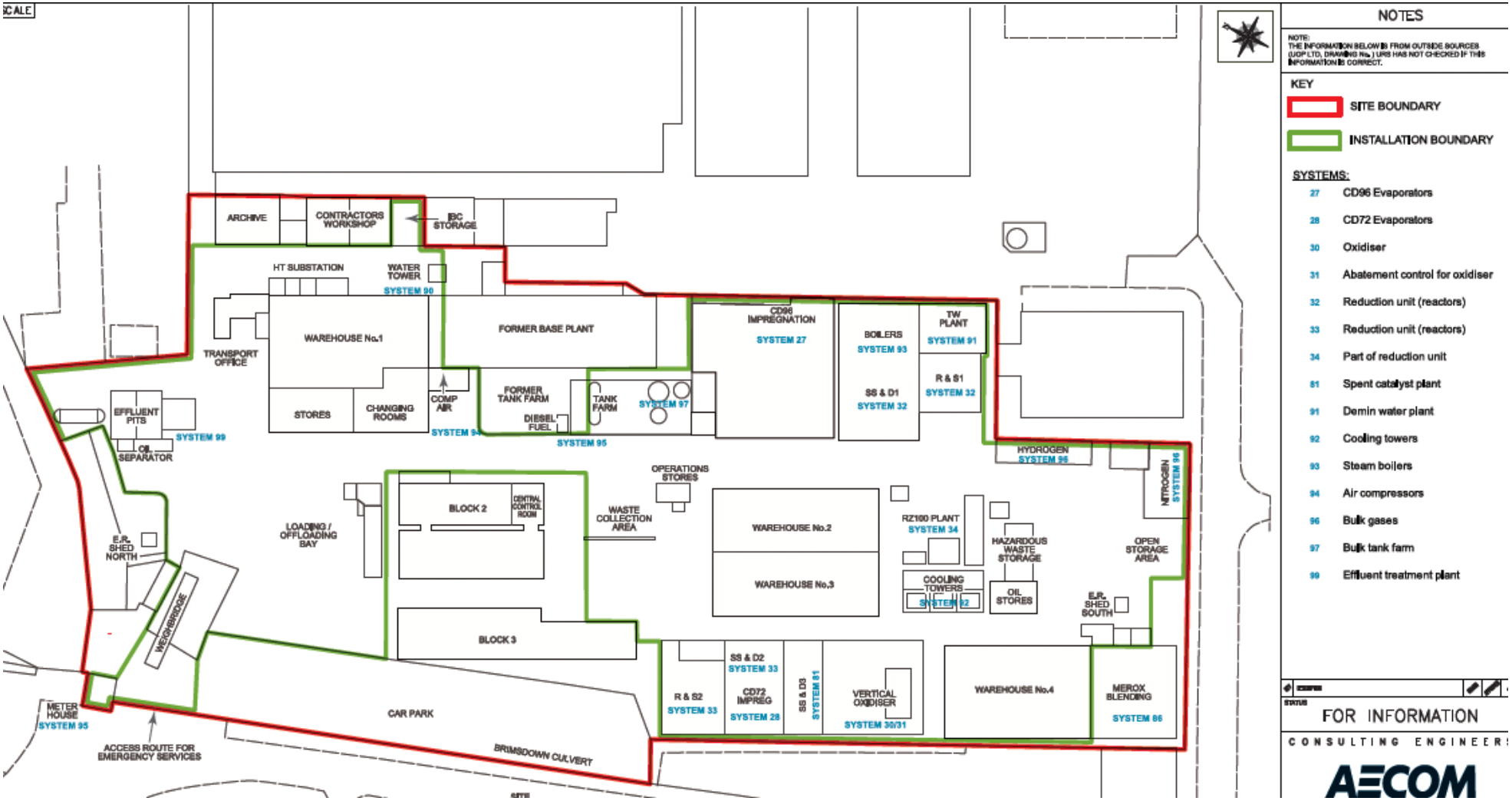
7.31 Other than in exceptional circumstances operators should remove any contamination and return the site to the original condition. However, where an operator can robustly demonstrate that is unsustainable or not practical to do this, then the contamination should be removed as far as practicable.

7.32 The return of the site of the regulated facility to a satisfactory state should include:

- the removal of any residual waste deposits (though clearly not for landfills or mining waste operations for the permanent deposit of extractive waste)
- removing as far as is practical any contamination to return the site to the original condition, and where removal is not practical - treating or immobilising contamination remedying any harm the contamination may have caused, and mitigating the effects of any harm.

RGN9 section A4 states " When operators apply to surrender these permits first issued as PPC permits with SPMPs, the Core guidance states we should not hold the operator responsible (under Environmental Permitting surrender requirements) for contamination on the site that we are convinced was caused before the PPC permit was issued for the installation – or in the case of former waste management licensed sites before it

was first licensed under the Environmental Protection Act 1990 or under Part 1 of the Control of Pollution Act 1974." The 60561045/LORP001, 21 February 2018 (AECOM) details that the infrastructure associated with the installation activities have been emptied and purged but not removed. However, as no site investigation fully characterises a site and not all of the site area was accessible during the investigations to date, a site investigation may be required to establish ground conditions as part of the redevelopment which may indicate that remediation may be required. It would appear from the submitted report, that the applicant has "treated or immobilised previous contamination remedying any harm the contamination may have caused, and mitigating the effects of any harm". Although the site has not been reinstated back to its original condition before the facility was put into operation, based on the information provided - the soil and groundwater data would probably not warrant actions under Part 2A in its current state, however should the conceptual model change (e.g. proposed change in land use, infrastructure, deterioration of current infrastructure & concrete hardstanding) then remediation may be required at a future date e.g: if a planning application was submitted for the site, based on the information provided I would recommend the use of the land affecting by contamination conditions to be used on the planning consent.	
Date and name of reviewers: Liz Ebbs (NPS) – 26/03/2018. Theresa Cory (Hertfordshire and North London GWCL Team) – 27/06/2018. Kirsty Hobbs (NPS) - 25/04/2018.	√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HYDROGEN
SYSTEM 96
NITROGEN
SYSTEM 96
OPERATIONS STORES
BLOCK 2
CENTRAL CONTROL ROOM
LOADING / OFFLOADING BAY
WASTE COLLECTION AREA
WAREHOUSE No.2
WAREHOUSE No.3
RZ100 PLANT
SYSTEM 34
HAZARDOUS WASTE STORAGE
COOLING TOWERS
SYSTEM 92
OIL STORES
OPEN STORAGE AREA
E.R. SHED NORTH
E.R. SHED SOUTH
WEIGHBRIDGE
BLOCK 3
R & S2
SYSTEM 33
S& D2
SYSTEM 33
CD72 IMPREG
SYSTEM 28
S& D3
SYSTEM 81
VERTICAL OXIDISER
SYSTEM 30/31
WAREHOUSE No.4
MEROX BLENDING
SYSTEM 86
METER HOUSE
SYSTEM 95
CAR PARK
ACCESS ROUTE FOR EMERGENCY SERVICES
BRIMSDOWN CULVERT
NOTES
NOTE:
THE INFORMATION BELOW IS FROM OUTSIDE SOURCES (JOP LTD, DRAWING No.) URS HAS NOT CHECKED IF THIS INFORMATION IS CORRECT.
KEY
SITE BOUNDARY
INSTALLATION BOUNDARY
SYSTEMS:
27 CD96 Evaporators
28 CD72 Evaporators
30 Oxidiser
31 Abatement control for oxidiser
32 Reduction unit (reactors)
33 Reduction unit (reactors)
34 Part of reduction unit
81 Spent catalyst plant
91 Demin water plant
92 Cooling towers
93 Steam boilers
94 Air compressors
96 Bulk gases
97 Bulk tank farm
99 Effluent treatment plant
STATUS
FOR INFORMATION
CONSULTING ENGINEERS
AECOM