

Application SCR evaluation template

Name of activity, address and NGR	<p>Didcot A Power Station. Didcot, Oxfordshire, OX11 7HA.</p> <p>National Grid Reference (NGR) of the approximate centre of coal store area - SU 50781 91511.</p> <p>Environmental Permit Reference EPR/YP3030LR.</p>
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Document reference of application SCR	Application Site Report (ENV/080/2006).
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Date and version of application SCR	March 2006.
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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. Drawings have been provided by the Operator and reviewed and accepted by the Environment Agency at the 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?	
<p>a) Environmental setting including geology, hydrogeology and surface waters.</p> <p>b) Pollution history including:</p> <ul style="list-style-type: none"> • 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. <p>c) Evidence of historic contamination (i.e. historical site investigation, assessment, remediation and verification reports (where available).</p> <p>d) Has the applicant chosen to collect baseline reference data?</p>	
<p>a) - A Conceptual Site Model was provided for the site in the 'Verification Plan for the Land Remediation Works at Didcot A Power Station, Didcot, Oxfordshire' (September 2014), Appendix 3. The power station was originally consented under earlier regulatory regimes and an investigation was not undertaken at the time of conversion to PPC Regulations.</p> <p>The condition of the site at permit issue has been assumed to be as described within 'Didcot Power Station Coal Stockpile Environmental and Geotechnical Assessment' undertaken by Jacobs during 2008. The Application Site Report (ASR) comprised a desk study identifying the environmental setting.</p> <p>A review of the hydrogeology shows that given the depth and impermeable nature of the clay, any groundwater present in the overlying permeable deposits constitutes a distinct aquifer. There is likely to be a shallow water table present beneath the site within these materials and their relative permeability means mobile contaminants present could potentially migrate laterally off-site. The deeper Gault Clay which underlies the whole site is of low permeability and would act to retard the vertical migration of such contaminants entering the deeper water bearing strata.</p> <p>b) and c) – The ASR included the site history as well as a site reconnaissance to identify substances and/or activities which may lead to land pollution. Before the site was developed for power production, the site and surrounding area formed part of a MoD Central Ordnance Depot holding between 1915 and 1961.</p>	

2.0 Condition of the land at permit issue

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

It is therefore possible that this historic land use may have had an impact upon the underlying conditions of the site including from fuels, lubricating and hydraulic oils. Extensive railway sidings and associated workshops existed on the southern area of the former coal stockyard. The onset of WW2 saw a significant increase in depot building numbers.

By 1964 the site was no longer used as an ordnance depot and by 1970 Didcot A Power Station had been constructed. Operational activities mainly comprised the storage and handling of coal and the stockpiling of surplus PFA. No other significant sources of contamination or pollution incidents were identified in the desk study for the site.

d) - No targeted intrusive investigations were undertaken to support the original application. Primarily, the surrender area was used for coal storage on hard standing, cooling towers area, sealed surface water lagoons and, as such, major areas of contamination were unlikely. Soil samples tested in 2007 had relatively low levels of contamination. No metals were detected above the commercial/industrial Soil Guideline Values (SGVs), no asbestos was identified, pH ranged from 7.9 to 10.4, Total Petroleum Hydrocarbon (TPH) levels up to 147mg/kg were recorded in a number of trial pits mostly in the C21-35 banding and benzo(a)pyrene up to 36.5mg/kg.

Groundwater was not present during the initial borehole drilling in 2007. However, it recovered after a period of days and is likely to be perched water. Groundwater samples were taken and analysed for BTEX (benzene, toluene, ethylbenzene, xylene), TPH, VOC (volatile organic compounds), beryllium, cadmium, mercury, arsenic, barium, chromium, copper, lead, nickel, vanadium and zinc. None of these determinands were above EQS and drinking water standards. Selenium was detected above the UK Drinking Water Standard of 10ug/l with levels recorded at 15ug/l and 19ug/l. Anthracene was detected at 23ng/l and 20ng/l.

A study undertaken by Jacobs in 2009 identified a number of potential sources of contamination and concluded that it was likely to be localised with contamination primarily restricted to the following sources:

- Made Ground with potential to impact on perched water
- a small area to the west of the former coal stockyard
- fuel storage tanks
- areas of historic rail sidings
- areas of former MoD use.

The report 'Didcot A Power Station Report on Ground Investigations (Pre-Demolition)' by ESG, May 2014 indicates made and landscaped ground of uncertain thickness and composition across the whole of the power station site. Preventative measures and the likelihood of land pollution occurring were assessed and no issues found.

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 the following activities as listed in Part 1 of Schedule 1 of the PPC Regulations at the time of the original application determination:

- Section 1.1 A(1)(a) - Burning any fuel in an appliance with a rated thermal input of 50MW or more
- Section 3.5 B(f) - Pulverised Fuel Ash (PFA) handling and storage.

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)
<p>Directly Associated Activities at the site include:</p> <ul style="list-style-type: none"> ➤ Water treatment - to supply and treat water ➤ Surface water drainage and process effluent - handling and storage of site drainage from rainwater collection system, settlement lagoons, sumps and drains to discharge to the Moor Ditch ➤ Waste handling and storage. <p>PFA waste generated by the installation was collected by Generation Aggregates to supply to the bulk fill market. PFA was historically supplied as lightweight aggregate to BS EN 13055-2 and utilised for engineering fill in the construction of large-scale engineered structures.</p>	

3.0(a) Environmental Risk Assessment
<p>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.</p>
<p>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. An Improvement Programme was set within the original permit to ensure that the identified required improvements were undertaken over specified timescales at the installation.</p>

3.0(b) Will the pollution prevention measures protect land and groundwater?
<p>Are the activities likely to result in pollution of land?</p> <p>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. To ensure the continued effectiveness of pollution prevention measures to protect the land the Operator was required to implement and operate under a Site Protection and Monitoring Programme.</p> <p>The coal stockyard is a predominantly concreted but in part by cement stabilised PFA. Utilising established techniques for stockpiling and compacting coal the percolation of water through the stockpiles was minimised and the majority of the coal stock surface water run-off was captured by the coal plant ring/perimeter drainage system. All surface water run-off within the historic coal storage area was channelled via surface culverts into a number of interconnected 'catch pits'. These were pumped into the perimeter drain into two circa 1,200tonne capacity concrete lined Coal Plant Lagoons where the water was impounded prior to final discharge.</p> <p>Although Outlet 2 was routinely monitored it was proposed that the water in Moor Ditch was also routinely analysed upstream and downstream to assess the potential for coal stock runoff impact. Moor Ditch was routinely sampled on a monthly basis where it enters and leaves the site boundary. The coal plant area activities did not appear to have negatively impacted on Moor Ditch.</p>
<p>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?</p> <p>The Environmental Management System included a comprehensive suite of operational procedures covering all aspects of the generation process and associated activities undertaken across the wider site. This included fuel management and associated activities (including drainage) within the proposed surrender area. All station procedures were regularly reviewed and audited in line with the stations normal self regulation practice. Processes were designed and measures continually taken to avoid pollution risk which could result from the operations on site.</p>

All tanks were inspected in line with company Technical Procedures which were written according to appropriate standards and industry best practice. Tank thickness checks and internal inspections were undertaken on a five yearly cycle and the results recorded within the company 'Tank Database'. The last non destructive thickness checks for Tanks 1 and 2 to 4 were undertaken in November 2010 with no issues found. Tank condition surveys and associated bund and pipework checks were recorded and managed via the Tank Database system. Day to day defects and remedial actions were undertaken and recorded via a maintenance and defect management system. At about five yearly intervals the wider site was also subject to a detailed Civil Asset Survey during which the condition of the whole station's civil infrastructure was assessed.

All of the bulk diesel tanks within the permit surrender area were housed within concrete bunds with greater than 110% capacity. The only exception was the newer smaller domestic supply tank adjacent to the main coal plant control building which was of an integrally bunded tank construction. All diesel deliveries were supervised by trained and competent RWE staff with reorder frequency directly linked to tank level to ensure that an overfill situation could not occur. An informal visual inspection of associated tank bunds and pipework was taken during delivery events with any required remedial actions requested via in-house systems.

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.
Date and name of reviewer:	Liz Ebbs 10/12/2014

Operational phase SCR evaluation template

Sections 4.0 to 7.0 may be completed annually in line with normal record checks.

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.	
<p>The Didcot A permitted area is bisected west to east by Moor Ditch and divides two managed site surface water drainage systems as follows:</p> <ul style="list-style-type: none">➤ main station area to the north via Outlet W3➤ coal plant to the south via Outlet W2. <p>An agreement has been reached for the purchase of the southern section and it is this permitted section of the site that RWE Generation UK plc is seeking to surrender. There were no changes to the specified activities within the permit surrender area during the stations operation.</p> <p>The permitted activities within the surrender area remained as detailed within Environmental Permit EPR/YP3030LR until the cessation of generation at the site as below:</p> <ul style="list-style-type: none">➤ S1.1 A(1)(a) – burning any fuel in an appliance with a rated thermal input of 50MW or more➤ S3.5 (B)(f) - Pulverised Fuel Ash (PFA) handling and storage. <p>The predominant historic activities undertaken within the permit surrender area included:</p> <ul style="list-style-type: none">➤ receipt, handling and storage of coal➤ receipt and storage of ash from the combustion process prior to its sale/removal from site➤ distribution of cooling water for use in the three natural draft cooling towers➤ handling and storage of site drainage from the rainwater collection system, settlement lagoons, sumps and drains and discharge to Moor Ditch. <p>Other than the storage of the coal combustion by-product PFA no other waste was stored within the permit surrender area. No hazardous pollutants have been used within the surrender area or produced as a result of the permit activities undertaken other than the bulk storage of fuels in Tank 1 and Tanks 2 to 4. No non-permitted activities were undertaken within the permit surrender area.</p>	

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?	
<p>Records of any incidents, accidents and near misses were recorded, investigated and corrective and/or preventative actions taken where appropriate. Later records were held on the MADISON13 system. Emergency procedures were in place for actions to be taken in the event of a loss of containment. There were no records made during the operation of the site of specific incidences of diesel spillage or leakage within the permit surrender area. It is not believed that the diesel contamination found during the intrusive investigation works for site surrender was related to poor environmental performance of the site during operational activities as the concrete around both the tank delivery locations and mobile plant filling pumps was visually in a good and clean condition at station closure.</p>	

For stability and dust management the construction of the PFA working stockpile area included a constructed PFA bund and cement stabilised 'biscuit' base structure. Ash was then stockpiled or removed within this banded area as per operational requirements.

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 recorded pollution incidents exist for the permit surrender area during the stations regulation. Therefore, no remediation activities were required during the stations operation. As part of the stations pre-demolition assessment the diesel storage areas were intrusively investigated and the presence of hydrocarbons within the soil at and adjacent to the two bulk diesel tank locations was found. It was found that a possible long term 'slow' leak of fuel into the surrounding granular material had occurred and this has been remediated and therefore will not lead to pollution from this area after permit surrender.

Site investigation results from the ESG delineation survey indicated that hydrocarbon fractions found adjacent to the tanks were generally from the heavier less mobile fractions indicating contamination was less likely to migrate once in the ground and are less volatile. Further investigation into the area's history indicate that historically the Coal Plant Control Building domestic heating system was fuelled by a direct underground pipeline from the bulk diesel tanks (area of Tanks 2 to 4). Due to concerns over the integrity of this route (and the volume of head that supplied it) a stand-alone diesel supply tank was commissioned in 2003 alongside the coal plant control building thereby removing the need for this direct pipeline. The underground pipeline was disconnected and blanked off but left in situ. The area of significant contamination associated with Tanks 2 to 4 is believed to be predominantly associated with this pre-PPC pipeline/use.

Although the bulk of the hydrocarbon contamination associated with the diesel storage areas is likely to be pre-PPC in origin the fact that it can be associated with the power station's diesel storage meant that RWE Generation UK plc was keen to undertake remediation activities. The remediation of the tank areas is detailed within Sections 8.0 and 9.0.

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?

No soil and groundwater monitoring and/or testing was carried out for the original application. No intrusive soil and groundwater background data was collected for the application made in 2006. Some soil monitoring has been carried out since. Weekly monitoring of water quality from the site's discharge into controlled waters has been carried out and reported to the Environment Agency in accordance with the Environmental Permit requirements.

Surrender SCR Evaluation Template

If you haven't already completed previous sections 4.0 to 7.0, do so now before assessing the surrender.

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?

The following reports and data have been submitted by the Operator as part of the partial surrender application and surrender process:

- 'Verification Plan for the Land Remediation Works at Didcot A Power Station, Didcot, Oxfordshire' (September 2014).
- 'Validation Report for the Land Remediation Works at Didcot A Power Station' (October 2014).
- Sampling and analysis results for bio-remediation stockpiles prior to commencement of the excavation area re-instatement, 28/11/2014.

Didcot A Power Station was opted out under Article 4(4) of the Large Combustion Plant Directive 2001/80/EC and reached its prescribed operational limit in March 2013. Since, the site has undergone about six months of decommissioning to allow final demolition and remediation works to be completed. The southern section of the site (35Ha) is to be released for alternative end use redevelopment and comprised:

- Coal Yard Area - predominantly concreted, drained by a ring/perimeter drainage system that discharged to two settlement lagoons
- Coal Plant Lagoons - discharge to a culverted stream under the coal yard area and connects to a culverted section of Moor Ditch
- un-surfaced ash storage areas at the western/eastern ends of the coal yard
- rail siding loop and unloading point to the north of the yard
- coal transfer system, handling equipment and ancillary buildings
- Three South cooling towers, associated sluices return cooling water culverts
- bunded above ground Fuel Tank 1 and Fuel Tanks 2 to 4 - contained red diesel for power station vehicles and domestic heating (drawings in Verification Plan, Appendix A)
- below ground fuel lines - connected Tank 1 to Tanks 2 to 4 (Verification Plan, Appendix A drawings), a second fuel line ran towards the power station Coal Plant Control Building but was decommissioned in 2003
- Contactors Compound which historically housed portable cabins and associated welfare facilities.

All these structures and the large mobile plant have been removed, and demolition included the clearance of all sub-basement equipment (basement voids remain in situ). The bulk diesel tanks were fully drained before removal during May 2014 prior to the remediation works commencing. The removal of the underground balancing lines was completed as part of this remediation scheme. The residual coal stocks were transferred to external parties for reuse (around 19Kt). Only trace levels of coal remain upon the site on the coal stockyard hard-standing and within basement areas.

After the controlled removal of all internal structures by specialist contractors, the three cooling towers were explosively demolished in July 2014. In agreement with the local authority, the concrete from the towers was processed to provide around 32Kt of class 6F2 crushed concrete for future use by the new landowner during the redevelopment of the surrender area. The pre-remediation combined area of the two main treatment areas was estimated to be circa 0.034Ha.

In general, the results of successive ground intrusive investigation surveys showed no widespread contamination within the permit surrender area. Analysis had shown only two localised areas with hydrocarbon contamination located in the shallow granular Made Ground associated with the former diesel tank area. The identified remediation areas therefore comprised the shallow hydrocarbon impacted soils in the vicinity of above ground bulk red diesel storage tanks used for re-fuelling power station vehicles. The two main areas identified as requiring remediation to remove hydrocarbon contamination were:

- Former Tank 1: located in the northern part of the Didcot A Coal Yard Area and south of the former coal unloading train loop with associated underground pipe work connections
- Former Tanks 2 to 4 Area: located north of the Coal Yard Area and to the north of a rail loop around the Coal Yard Area with associated underground pipe work connections.

The verification plan was produced under the 'CLR-11 Model Procedures for the Management of Land Contamination' and the Environment Agency Report SC030114/R1 'Verification of Remediation of Land Contamination' (2010). The aim was to return the soils to a level that is protective of human health with regard to the proposed future use of the area as a commercial plot. Commercial/industrial land-use SGVs for this purpose were agreed with the Environment Agency. Human health remedial target soil criteria were accepted by the Local Authority Contaminated Land Officer based on the anticipated commercial end land-use were incorporated into the land remediation scheme.

The remediation works design, sampling and testing regime, method statements and risk assessments, and the verification targets for the excavation and backfill testing were agreed with both the Environment Agency and Local Authority Environmental Health Officer. Details are provided within the Verification Plan, Appendices B, C and E as well as in the Validation Report (October 2014) Sections 2.0 and 5.0. The remedial strategy to address the hydrocarbon and priority-16 selected polycyclic aromatic hydrocarbons (PAHs) contamination in the remediation areas comprised:

- excavation of and stockpiling for treatment of identified hydrocarbon impacted soils - removal of hydrocarbon impacted Made Ground deposits from the two main remediation areas utilising visual/olfactory evidence and photo-ionisation detection equipment. All excavation arisings were managed in line with CL:AIRE Definition of Waste Development Industry Code of Practice (DoWCoP) and the Materials Management Plan (MMP) which was provided prior to excavation works commencing
- removal of below ground fuel lines - in a controlled manner during the excavation works
- verification of excavation bases and sides using agreed target criteria
- physical screening to remove oversize debris - all material >100mm removed prior to loading onto windrows, a formal deployment plan was submitted to the Environment Agency by Eneotech for the use of a mobile treatment plant
- on-site dedicated above-ground ex-situ bioremediation/treatment stockpile area to treat hydrocarbon impacted materials to agreed remedial target criteria – treatment was by ex-situ aerobic bioremediation using a windrow technique
- excavation drainage control and treatment - continual dewatering of the dig area was managed in line with the site's Environmental Permit discharge. All excavation drainage was passed through a mobile water treatment plant (WTP) adjacent to the remediation area. The WTP comprised a bulk settlement tank, 3-stage gravity separation, fine sediment filter and granular activated carbon (GAC) filtration to remove suspended solids or diesel residues before discharge via the coal plant surface water drainage system
- reuse of appropriately verified site-won materials as engineering fill and that meet the agreed criteria primarily comprised of treated soils from the bio-remediation stockpile – reused under DoWCoP. This was achieved by using appropriate engineering fill comprising site-won treated materials for the reinstatement of the excavation in the vicinity of Tank 1 and Tanks 2 to 4

- site-won materials that were non-compliant with agreed criteria - reused under the MMP in the Verification Plan, Appendix F after further treatment until the materials complied with the agreed criteria and/or reused under the MMP or removed from site and appropriately disposed of. Relevant disposal documentation was provided in the Verification Report. Imported materials that were not suitable for use due to non-compliance with the required specification were documented and removed from site for final disposal at an externally licenced waste site.

The PFA working stockpile area included a constructed PFA bund and cement stabilised 'biscuit' base structure. Ash was then stockpiled or removed within this bund area as per operational requirements. Although the area has been cleared this engineered bund structure still remains in-situ and has been independently surveyed as containing 63,220m³ of PFA. The unbound PFA contained within this structure has been identified for reuse by the future landowner. Precipitation runoff from the PFA stockpile area has been managed via the coal plant surface water drainage system. The retention of the PFA bund has been discussed with the site's Environment Agency Inspector who recently confirmed that the PFA had been there so long and has evidently had no environmental impact so a working plan is to be developed for its management.

In preparation for final closure the site's fuel holdings and emergency stockpiles were continually reviewed and reduced as the station approached its final cessation date. This effectively minimised the volume of unutilised fuel left upon the site at closure without compromising national grid requirements. As part of the wider station decommissioning process, all the fuel and the ash working stockpiles, bulk oils and chemicals were removed from the site. All materials arising from demolition and clearance activities were removed from the permit surrender area for recycling or final disposal as appropriate. No on-site waste disposal has occurred within the surrender area. All asbestos containing materials (ACMs) were appropriately stripped and removed from the surrender area structures by an appointed licenced contractor prior to final demolition. The asbestos removal process was subject to routine inspection by the Health and Safety Executive.

Decommissioning of the surrender area, subsequent demolition and site clearance has not appeared to have had any negative impact upon the land. No further remediation of the surrender area was required as a result of the decommissioning and demolition activities. Subject to the completion of demolition and the associated works, the land will be available for future development by 2015.

The Validation Reports detail the extent of the bio-remediation contract works and the excavation validation sampling undertaken. These support the partial surrender process and the final excavation works have been completed and verified. All identified hydrocarbon contaminated material was removed for treatment as far as possible and physical constraints were removed where reasonable practicable. However, where this was not achievable the Environment Agency was consulted. In a couple of areas excavation was terminated to protect the structures present as well as ensure the safety of Eneotech's personnel. The two areas of concern were:

- 610mm diameter surface water drainage pipe – located south of the railway just north of the historic Tank 1. This forms part of the live surface water drainage system for the coal plant stockyard area it could not be physically removed. A minor exclusion zone directly beneath it was enforced
- Coal Unloading Hopper Building – located west of the excavation area associated with Tanks 2 to 4. The excavation was terminated for safety reasons.

It was agreed with the Environment Agency that additional trial pits were excavated to undertake verification sampling on the far side of the retained structures as detailed within Eneotech's Verification Report. All samples taken from these locations were compliant with the remediation target values showing that the contamination left in situ was minimal. For the sections of the excavation adjacent to the hopper building and surface water pipe, which failed the remedial targets and had physical limitations which restricted further excavation, the Environment Agency requested that a clay barrier to be constructed. This was requested to encapsulate these areas prior to the reinstatement of the void with remediated and validated fill material.

The validation sample for the small volume of soil removed from the excavation during the clay barrier works detected diesel range organics above the remedial targets. This material was separately stockpiled and subsequently removed from the Didcot site for off-site disposal at a suitable facility.

During the initial excavation works an unidentified liquid substance was encountered to the south of the railway line within the Made Ground (refer to Figure 1 within the Validation Report, October 2014). It was determined as not being diesel and three samples were taken for analysis and dispatched to different laboratories in an effort to identify the material. One laboratory identified dibenzofuran and carbozole. Based on the current permitted use of the site, there is no clear link between these substances and the power station activities. Based on knowledge and records of historical and current site activities RWE Generation UK plc believes that the dibenzofuran and carbozole contamination was pre-permit and pre-power station activities. This contamination was removed from the remediation area during the excavation works and removed from site for final disposal via a licenced waste facility.

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?

(Reference data for soils must meet the requirements of policy 307_03 Chemical test data on contaminated soils – quantification requirements). If the surrender reference data shows that the condition of the land has changed as a result of the permitted activities, the applicant will need to undertake remediation to return the condition of the land back to that at permit issue. You should not require remediation of historic contamination or contamination arising from non-permitted activities as part of the permit surrender.

As part of the station's pre-demolition survey requirements, intrusive investigations were undertaken in a number of locations within the permit surrender area by ESG in May 2013 to:

- obtain baseline pre-demolition geo-environmental information
- supplement the baseline data obtained from the Jacobs 2008 report so as to provide additional detailed ground information on the site of the former coal stockyard.

ESG undertook a detailed delineation assessment to clarify the extent of the hydrocarbon contamination identified during the earlier investigations carried out in 2013 and in January 2014. Investigations found that the hydrocarbon fractions were generally from the heavier less mobile/volatile fractions indicating that the contamination was likely to migrate slowly once in the ground. This combined with the impermeable nature of the underlying clay geology further prevents migration to a deeper depth. A comparison of this and previous TPH survey data indicated that the Made Ground and the top of the natural strata (above the Gault Clay) were impacted by elevated TPH concentrations.

The hydrocarbons present were mostly of the mid to heavy fractions within the C12 to C16 and C16 to C21 bands. The highest total TPH concentration of 18,400mg/kg at a depth of 0.8m was located adjacent to Tank 1 (south of the railway line, associated with BH35). Samples in proximity to Tanks 2 to 4 (north of the railway line, associated with BH31) had a maximum concentration of 13,500mg/kg at a depth of 1.2m. A potentially significant contamination migration pathway was identified from BH31 going in a south-easterly direction into an area with thicker granular Made Ground deposits associated with the construction of Coal Plant Structures. TPH concentrations within the Made Ground increased in both south-easterly and south-westerly directions from BH31 with elevated TPH levels present to the north-west. Plan UKP/DCA/0763/A shows the location of the exploratory boreholes and the extent of the contamination identified in the delineation survey and UKP/DCA/0752/S1 and UKP/DCA/0752/S2 show contamination zoning within the remediation working area including the diesel pipeline routes.

A small area of hydrocarbon contamination was recorded in the south-east of the former coal stockyard (adjacent to BH22 and BH36). Soil sample analysis recorded maximum TPH concentrations of 575mg/kg at 1.5m in BH22 and 1,689mg/kg at 0.6m in BH36. The higher carbon range hydrocarbons (greater than 64% in the C21-C35 banding) identified here were not believed to be associated with power station activities but most likely originate from the former MoD ordnance depot use of the area. UKP/DCA/0762/A shows the location of these boreholes in relation to historic rail sidings which the intrusive investigations are on or adjacent to.

Analysis of recorded contamination levels within cores from both BH22 and BH36 and earlier investigations show that the contamination shows a different carbon banding distribution to that identified with the former tanks described above. BH37 which lies immediately to the west of BH36 had much lower TPH levels (75/mg/kg). This is in line with the Jacob trial pit data from 2008 from TP5 (122mg/kg), TP6 (46mg/kg) and TP7 (147mg/kg) which also lie along the southern edge of the site.

Analysis confirmed that the area was free of asbestos and ACMs and there were no elevated concentrations of metals recorded. The primary differences between samples analysed for the Jacobs 2008 and ESG 2013 surveys were decreases in the levels of boron (max 5.9mg/kg in 2008, 4.0mg/kg in 2013) and selenium (max 8.2mg/kg in 2008, 1.8mg/kg in 2013) detected in the western half of the coal stockyard.

There was very little evidence of any coherent groundwater body in the remediation area and in general groundwater appeared to only be present in isolated pockets within the Made Ground. This may reflect the fact that recharge/infiltration was minimal due to hardstanding being present across most of the site. Groundwater samples were taken and analysed in June 2013. Metals and TPH concentrations were low. However, PAHs were above drinking water standards in BH022. Additional samples were taken to ensure sufficient site characterisation and with the exception of BH37 and BH40 there were no obvious visual and olfactory evidence of contamination recorded at any of the boreholes. Both boron and selenium are present in the perched groundwater present on the coal stockyard between the concrete slab and the underlying impermeable clay. The levels recorded are low and are of no concern.

Faint hydrocarbon odours were recorded at depths of 0.6m to 0.8m and 0.6m to 0.7m respectively in BH37 and BH40 and the corresponding analysis results were low at 75mg/kg and <28mg/kg respectively. In April 2014, groundwater samples were taken from BH19, BH22, BH31-2C, BH31-4D and BH35 and analysed for TPH and PAHs only. Slightly elevated TPH and PAH levels found in BH31-4D and BH35 in December 2013 were not seen in the April sampling results.

As well as the groundwater, there is another controlled water receptor at the site. Moor Ditch surface water course is culverted through the remediation area and as such the risk to this controlled water was deemed low/insignificant in its current condition. Within the outline acceptance from the Environment Agency for the EPR permit surrender remediation target values, it was not envisaged that significant additional remedial works were required within the coal storage area once the issues in the diesel storage/distribution area was resolved. Two surface water samples were taken January 2014 within the permit surrender area and no significant concentrations of contaminants were recorded. The underlying geology of the impermeable clay strata provides for very limited groundwater flow which in turn prevents contaminant migration. It is believed that this has prevented the impact of hydrocarbon contamination spreading to groundwater and moreover to Moor Ditch.

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?

During decommissioning and subsequent demolition all sources of potential pollution risk were removed. All materials associated with the regulated activities (with the exception of a PFA bund structure) were removed from site prior to the partial surrender application being submitted.

RWE Generation UK plc confirmed that in the identified partial surrender area all permitted activities have ceased, the decommissioning process is completed and all pollution risk has been removed. No deterioration of the area has occurred as a result of the power station's activities with the exception of that identified and remediated as detailed above. All demolition activities within the surrender area have been completed and the area has been returned to a satisfactory condition.

As of the results from 14 November 2014, all of the bio-remediation stockpiles had validation samples taken and these were within the agreed target values. The bio-remediated material has been transported back over to the surrender area where it has been put back into the validated excavation where the former tanks were located. In the excavations where clay battering was required due to sensitive structures being present, circa. 100m³ of contaminated soil was segregated in the bio-remediation area and removed from the Didcot A for offsite disposal at a suitably licensed facility.

The Environment Agency confirm acceptance of the verification and draft validation reports, subsequent final remediation validation analysis results and validation analysis of the bio-remediated stockpiles. The finalised validation report has yet to be produced but we are satisfied that the draft report with the subsequent validation sampling of the stockpile demonstrate compliance to the agreed target criteria. The site remediation has been completed to the agreed remedial criteria, the remediation excavations have been validated and these have then been backfilled with validated bio-remediated fill. The only remaining task is final compaction and CBR testing to be undertaken by the buyer.

The site has a historic legacy as a MOD site prior to the construction of the power station site. The potential for there to be areas of undetected contamination or located beneath the current concrete base cannot be completely excluded. It is therefore possible that further site investigation may be required depending on the type of any future site redevelopment proposals and any future changes in UK contaminated land legislation. The Environment Agency concludes that sufficient intrusive investigation has taken place to investigate and verify all areas of hydrocarbon contamination at the location of the former diesel tanks.

The Environment Agency confirm that the remedial works undertaken are satisfactory and do not believe that there would be any ongoing risk to the receptors identified as the site is not overly sensitive from a controlled waters perspective. While some pockets of impacted ground had to be left at depth these are in an area where significant obstacles restrict further excavation and further excavation would not be proportionate. It is unlikely that these will pose any significant risk due to the clay barrier works undertaken prior to backfilling and the relatively low sensitivity of the site.

The Environment Agency confirms that the southern area of the permitted Didcot A Power Station installation has been returned to 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; or	X
Insufficient information has been supplied to show that pollution risk has been removed or that the site is in a satisfactory state – do not accept the application to surrender the permit. The following information must to be obtained from the applicant before the permit is determined:	
Date and name of reviewer Tom Wickens 17/12/2014	