## Application SCR evaluation template

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| Name of activity, address and NGR | Littlebrook Power Station, Manor Way, Dartford, Kent, DA1 5PT.<br><br>The NGR of the approximate centre of the site is TQ 5558 1766. |

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| Document reference, date and version of application SCR | • **Partial Surrender issued March 2017 operator RWE Generation UK plc EPR/CP3437SS/V005.**<br><br>Littlebrook Power Station Permit CP3437SS – Application for the partial surrender of an Environmental Permit: surrendering authorised activities which have ceased without the surrender of any associated land – supporting document to accompany Form EPE2 May 2016.<br><br>• **Permit transferred from RWE Generation UK plc to Bericote Properties Limited issued September 2017 - EPR/XP3837YZ/T001.**<br><br>• **Partial Surrender application 2018 - Bericote Properties Limited - EPR/XP3837YZ/S002.**<br><br>**Latest Application**<br><br>Partial surrender of land and discharge point from a permit where authorised activities were previous ceased.<br><br>Little Surrender Site condition report<br><br>PHASE 1 AND 2 SURRENDER SITE<br>CONDITION REPORT<br>Littlebrook Power Station; Permit EPR/XP3837YZ<br><br>PROJECT NO. 70037371-001<br>OUR REF. NO. 70037371-001 PS SSCR<br>DATE: OCTOBER 2018 |

| **1.0 Site details** |
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| **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 series of Environmental Reports and drawings at the time the original application was made but did not provide a standard Environment Agency SCR proforma. These reports and drawings provided by the Operator were reviewed and accepted by the Environment Agency at the application stage.<br><br>Refer to application documents on EDRM under reference<br>EPR-XP3837YZ |

## 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 Conceptual Site Model was provided for the site in the original application but no targeted intrusive investigations were undertaken to support the original application. The power station was originally consented under earlier regulatory regimes and an investigation was not undertaken at the time of conversion to the PPC Regulations either. Figure A11b 'Contaminated Land' presented in the original application in 2006 showed the location of some buried asbestos under a heavy fuel oil (HFO) tank at the site. No other significant sources of contamination or pollution incidents were identified in the desk study for the site.

## 3.0 Permitted activities

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

**a) Permitted activities**
**b) Non-permitted activities undertaken at the site**

The Environment Agency determined that the Installation comprised Section 1.1 A(1)(a) - Burning any fuel in an appliance with a rated thermal input of 50MW or more as listed in Part 1 of Schedule 1 of the PPC Regulations at the time of the original application determination. Directly Associated Activities at the site included surface water drainage, water treatment and fuel storage.

Littlebrook Power Station was a 2,160MWe power station comprising of 3 x 685MWe heavy fuel fired main boiler units, 3 x 35MWe open cycle gas turbines (for emergency start up and peak lopping duties) and 5 x 20MWth auxiliary boilers (for heating, fuel heating and atomising steam). Liquid biomass had been successfully trialled as a fuel. Of the three main boiler units, only two units were fully operational, the third was mothballed in the mid-1990s.

The main emissions to air were sulphur dioxide, oxides of nitrogen and particulate matter. The cooling water was abstracted from the River Thames and utilised in once through cooling water circuits (via the main condensers and also some auxiliary cooling). This cooling water was discharged back to the River Thames at a higher temperature than originally abstracted. Other auxiliary cooling was provided in closed loop systems with water from the towns main supply. Boiler blowdown, water treatment plant, boiler and chimney wash effluent also got discharged into the River Thames.

Operation of the water treatment plant involved the regeneration of ion exchange resins by using sodium hydroxide and sulphuric acid. Site drainage from the installation, transformer bays, turbine house etc were all discharged to the adjacent freshwater Little Powder Creek via oil/water separators. The main boiler units were classified as 'opted out' Large Combustion Plant (LCP) under the Large Combustion Plant Directive (LCPD). Therefore the LCP did not operate for more than 20,000 hours between 2008 and 2015, with the LCP closing by 31st December 2015.

## 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 including the potential for environmental impact from emissions to air and water. The environmental risk assessment 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.

| 3.0(b) Will the pollution prevention measures protect land and groundwater? |
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| **Are the activities likely to result in pollution of land?** |
| 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 (SPMP). |
| **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 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. 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.<br><br>The HFO storage facility comprised six tanks situated within a single bund. The HFO tank storage bund walls and floor were constructed of earth reinforced with pulverised fuel ash (PFA) and clay and as such aren't completely impermeable to oil and water. Due to the natural properties of HFO there is a low potential of migration of the oil and significant impact to the underlying ground and groundwater is likely to be negligible. Until the introduction of the Oil Storage Regulations earth bunds for HFO storage areas were considered best practice.<br><br>Any spills or leaks of HFO tended to remain within the immediate surface clay layer where it was scraped up and removed under licence. Regular inspections checked the integrity of the tanks, pipe work and bund as well as site procedures in place to manage the filling, storage and use of HFO. |

| 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<br>30/01/2017 |

## Operational phase SCR evaluation template

| 4.0 Changes to the activities |
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| **Have there been any changes to the following during the operation of the site?** |
| **a) Activity boundaries**<br>**b) Permitted activities**<br>**c) "Hazardous pollutants" used or produced.** |
| There were no changes to the specified activity within the permit surrender area or installation boundary during the stations operation and upto the cessation of generation at the site. The permitted activity within the surrender area remained as S1.1 A(1)(a) – burning any fuel in an appliance with a rated thermal input of 50MW or more. Hazardous pollutants were used on the site as part of the energy generation process and included:<br><br>➢ hydrazine, ammonia, magnesium hydroxide, sodium hydroxide, sulphuric acid, sodium hypochlorite<br>➢ fire resistant fluids<br>➢ oils – lube, GT fuel oil, auxiliary boiler fuel oil<br>➢ lime silo.<br><br>The sodium hydroxide solution used to regenerate the ion exchange beds in the water treatment plant |

## 4.0 Changes to the activities

**Have there been any changes to the following during the operation of the site?**

contained traces of mercury and cadmium. The levels were controlled by the commercial production standards for sodium hydroxide. Transformers were also located on site and were a potential contaminant source.

## 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?**

Records of any incidents, accidents and near misses were recorded, investigated and corrective and/or preventative actions taken where appropriate. Records were held on the MADISON system. Emergency procedures were in place for actions to be taken in the event of a loss of containment.

## 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)?**

A few minor pollution incidents occurred during the operation of the plant as follows:

- 2010: rape seed oil pump seal failed during test. Contained and cleaned.
- July 2012: leaking boiler feed pump. Contained and cleaned.
- November 2014: leaking HFO heater – contained within drainage sump and cleared.
- May 2015: fuel leak in auxiliary boiler HFO system. Shut down and area cleaned. Also, wash water from gas air heater No.2A leaked from drainage pipework. Contained and cleaned.
- June 2015: minor leak from auxiliary boiler HFO pump No.2. Shut down and area cleaned.
- July 2015: gas oil spill (30 to 40 litres) during transfer. Drain covers in place as part of operation. Cleared and cleaned.
- August 2015: hydraulic leak from main jetty No.3 during HFO export. Contained within bund and cleared.
- October 2015: gas oil spill of about 3 litres. Contained and cleaned up with absorbents.

## 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.

# Partial Surrender issued March 2017 SCR Evaluation Template - EPR/CP3437SS/V005

## 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?**

Decommissioning was carried out by RWE including the removal from site of fuel and chemical stocks and the draining and cleaning of plant. Some potential sources of contamination, referred to as the 'Residual risks', will remain until after demolition in the form of small amounts of materials within buildings and plant. The presence of the residual risks will be reflected in the scope of the permit in particular the discharge of storm and drainage water.

A programme of ground investigation was carried out by RWE and draft Factual and Interpretive reports were submitted to the Environment Agency for comment in February 2016. Two further rounds of groundwater monitoring were scheduled and have been completed prior to the submission of a strategy for the remediation of any identified contamination associated with the permitted activities.

A site visit was undertaken by the Environment Agency on 07/06/2016 to review progress with site decommissioning following closure of the station in 2015. On the basis of the visit decommissioning appeared well managed and documented. Further removal of contaminant containing equipment will be undertaken in the future by demolition contractors. The point at which final permit surrender will be achievable will require further discussion and assessment.

RWE have yet to make a decision on future site ownership. No demolition is likely until at least Q3 2017. In anticipation of this, demolition activities have been organised by building number with each activity recorded on an activity sheet which will be signed off by RWE when decommissioning work is completed. Each sheet identifies residual risks which will be transferred to a Residual Risks Register. All decommissioning works were undertaken to minimise the environmental risk from the plant during the pre-demolition and demolition phases. The works are summarised below:

***Oils:***

All oil containing tanks, pipework and equipment were managed by the contractors Petrotec. Figure A7 'Oil-filled cables' presented in the original application in 2006 shows the location of all cable bridges, cable reserves and below ground cable-road crossings. Figure A8 'Fuel Oil Pipelines' shows the location of all fuel oil and gas pipeline at the installation.

The main units were cleaned (HFO Tank 2, No.1 diesel tank, HFO fuel oil pumphouse (pipework trench) and battery room). HFO Tanks 1, 2 and 3 had tank bottoms pumped to Tank 2. Tanks 1, 3, 5 and 6 have been cleaned. Tank 4 had been previously cleaned. Tank 2 had 250 tonnes of oily sludge removed from it and was then cleaned. Oil wastes were transferred to a treatment plant and centrifuged/heated to separate oil and sludge. Some localised oil staining of the ground around the treatment plant were observed and this area was cleaned up once works cease. The HFO sludge was exported to Aberthaw and incinerated and recovered HFO was sold to Inver (for marine use) as fuel/for further recycling or disposed of as a waste depending on quality. One tonne IBCs were used to store the HFO and sludge within the tank farm area.

The HFO pipework was drained and de-lagged and was periodically redrained as oil settled. The HFO pumphouse was drained, lube oil was drained from main pumps. Lots of oil was found within the pumproom trenches which was cleaned and jet washed. Tun dishes were cleaned. A central trench along the basement floor had a substantial amount of oil/sludge residue and was cleaned. The HFO heater house was drained down.

HFO tank cleaning was achieved by a mixture of physical removal, the use of a diesel/HFO mix to clean floors and high pressure water jetting of floors and the lower 2m of tank sides. The tanks are being left in a state to allow reuse if required.

Open Cycle Gas Turbines (OCGT) and lube oil systems have been drained. The FRF has been drained and given a dilute caustic wash. Auxiliary boiler oil tanks have been drained. Some items of plant with resale value are being deliberately left containing lube oil for preservation. These will be listed on the Residual Risk Register.

***Water Treatment Plant:***
Usable chemicals were transferred to Didcot and all bulk tanks drained and washed, and washings tankered off where required. Chemical pipework was flushed and the flushings neutralised prior to discharge to W2. Ion exchange vessels were emptied but with small quantities of beads remaining. Ferric dosing and electrolyte systems etc were drained/flushed. Hydrazine drums were moved to Didcot and the dosing tanks flushed through to the effluent pit. All plant has been decommissioned, drained and flushed and internally cleaned.

***Combustion Plant:***
Boilers were cleaned internally. Air receivers drained and left open to the atmosphere. Ash was washed from the stack in summer 2015. Core samples of inner walls have been taken to determine disposal options. Vacuum plant was used to remove dust and ash from ESPs, boiler gas passes and dead spaces. There will be some ash deposits remaining within plant. Flue gas ducts internally cleaned.

A disconnection notice was served to National Grid for disconnection of supply cables. The 132kV substation and the 400kV substation are now under National Grid ownership. The 400kv transformers were sold to Drax who organised their degassing. Other refrigerant systems were degassed by contractors Complete Cooling. Propane and hydrogen systems were degassed and purged. Cooling water system was blanked at the intake and outfall culverts and pumps removed. Chlorination chemicals removed from site and equipment decommissioned.

***Drainage:***
The HFO tank farm spine drains and separator were cleaned. Transformer bunds were pressure washed. Bulk of drains around turbine hall and transformer road were pressure washed. No residual oil has been observed in the S1 drainage system.

***Wastes:***
Waste materials generated during decommissioning works were stored in skips within the Services Complex where possible. There are a large number of waste transfer notes, waste consignments notes and cleaning certificates held on site. These have been reviewed and checked by the Environment Agency on 30/01/2017.

***Asbestos:***
Very little found other than as CAF gaskets/tape/AIB. Some have been encapsulated. RWE do not intend to remove ACM as this will be left for demolition contractors to manage.

## 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?**

Ground investigation comprised groundwater sampling and monitoring. A second round of monitoring was undertaken in April with third round in September. RPS did a final site inspection after Petrotec had completed the works.

## 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?**

RWE Generation UK plc confirmed that 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. The Environment Agency has inspected the site during January 2017 to check and confirm that all aspects and requirements discussed in the above sections have been met and are completed satisfactory.

The Environment Agency confirms that the Littlebrook Power Station installation has been returned to a satisfactory state with regards to the requirements for the cessation of the operational scheduled activity and site decommissioning and monitoring for this partial surrender application. The full surrender of the permit will occur in the near future.

| 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. | X |
| Date and name of reviewers:<br><br>**Liz Ebbs (NPS) – 30/01/2017.**<br><br>**Kirsty Hobbs (NPS) – 02/03/2017.**<br><br>**GWCL were consulted but have not provided any response or commented on the application.** | |

# Partial Surrender Application December 2018 SCR Evaluation Template - EPR/XP3837YZ/S002

| **8.0 Decommissioning and removal of pollution risk**<br>To be completed by EM/PPC officers |
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| 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? |
| All permitted activities have ceased. Pollution risks from previous stored materials (eg oils in tanks, pipework etc) have been removed. No remaining pollution risk has been identified within the surrender area. |

| **9.0 Reference data and remediation (where relevant)**<br>To be completed by GWCL officers |
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| Has the applicant provided details of any surrender reference data that they have collected and any remediation that they have undertaken?<br><br>(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. |
| Surrender reference data covering soils and groundwater for the surrender area have been provided, and satisfactory demonstrates there has been no deterioration of land quality from permit issue; or where localised areas of deterioration were encountered these have been satisfactorily remediated. |

| **10.0a Statement of site condition**<br>To be completed by EM/PPC officers |
|---|
| 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? |
| Yes – a statement covering the above points with supporting evidence has been provided. |

| **10.0b Statement of site condition**<br>To be completed by GWCL officers |
|---|
| 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? |
| Yes – a statement covering the above points with supporting evidence has been provided. |

| **Surrender SCR decision summary**<br>To be completed by GWCL officers and returned to NPS | **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 | JDA<br>6/6/2019 |