

The Wrexham (Gas Fired Power Station) Order

6.2.17 Volume 2: Environmental Statement Chapter 17: Health, Safety and Security

Planning Act 2008 The Infrastructure Planning
(Applications: Prescribed Forms and Procedure) Regulations 2009

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Chapter 17◆ Health, Safety and Security

INTRODUCTION

17.1 Energy generation has the potential to affect the health of the local population through the construction, operation and decommissioning of energy generation plant and the subsequent distribution of energy through electricity distribution infrastructure. This chapter therefore identifies those health, safety and security measures which are addressed within the design of the Scheme in line with relevant legislation and stakeholder requirements, before going on to consider any cumulative issues (including any arising as a result of the Electrical Connection). It also provides a summary of the assessments relevant to health, safety and security that have been undertaken in connection with the Scheme and are included within other chapters of the ES.

Key Policies and Guidance

17.2 The following policies and regulations are relevant to health, safety and security in relation to projects of this scale within the UK:

- Overarching National Policy Statement for Energy (NPS EN-1);
- National Policy Statement for Gas Supply Infrastructure and Gas and Oil Pipelines (NPS EN-4);
- Control of Major Accident Hazards Regulations 2015 (COMAH);
- The Construction (Design and Management) (CDM) Regulations 2015;
- Health and Safety at Work Act 1974 and topic specific secondary legislation under this Act;
- The Planning (Hazardous Substances) Regulations 2015;
- Part III of the Environmental Protection Act 1990, as amended (statutory nuisance);
- Environmental Permitting (England & Wales) Regulations 2010, as amended (EPR); and
- Demonstrating compliance with EMF public exposure guidelines: A voluntary Code of Practice. Department for Energy and Climate Change (DECC). March 2012.

17.3 According to Section 4.15 Security Considerations, of NPS EN-1:

'Overall responsibility for security of the energy sector lies with DECC. It works closely with Government security agencies including the Centre for the Protection of National Infrastructure [...]' (paragraph 4.15.1).

'Government policy is to ensure that, where possible, proportionate protective security measures are designed into new infrastructure projects at an early stage in the project development. Where applications for development consent for infrastructure covered by this NPS relate to potentially 'critical' infrastructure, there may be national security considerations.' (paragraph 4.15.2).

17.4 Potential health effects are considered in Section 4.13 of NPS EN-1, which states that:

'where the proposed project has an effect on human beings, the ES should assess these effects for each element of the project' (paragraph 4.1.32).

17.5 It also states that:

17.6 *'The direct impacts of health may include increased traffic, air or water pollution, dust, odour, hazardous waste and substances, noise, exposure to radiation, and increases in pests.'* (paragraph 4.13.3)

Consultation

17.7 Public Health England (PHE) wrote to PINS on 23 April 2014 in response to the WPL's Scoping Report, stating that:

[PHE will] 'only consider information contained or referenced in a separate section of the ES summarising the impact of the proposed development on public health'

The EIA should include consideration of the COMAH Regulations (Control of Major Accident Hazards) and the Major Accident Off-Site Emergency Plan (Management of Waste from Extractive Industries) (England and Wales) Regulations 2009: both in terms of their applicability to the installation itself, and the installation's potential to impact on, or be impacted by, any nearby installations themselves subject to the these Regulations

There is evidence that, in some cases, perception of risk may have a greater impact on health than the hazard itself... PHE supports the inclusion of this information within EIAs as good practice'

17.8 PHE's letter is within Appendix 2 of the Secretary of State's Scoping Opinion, itself located at Appendix 5.1 to this ES).

- 17.9 PHE also wrote to WPL on 15th August 2014 as part of the PA 2008 Section 42 Consultation. The letter notes PHE's satisfaction with the proposed approach and reiterates the request for a dedicated public health section in the ES.
- 17.10 The Health and Safety Executive (HSE) did not provide a response to WPL's Scoping Report. However, it did respond to the PA 2008 Section 42 Consultation on 22nd August 2014, and made the following observations:
- The Site does not fall within the Consultation Zones of hazardous installations or Major Accident Hazard Pipelines (MAHP).
 - The Gas Connection pipeline may be a MAHP requiring notification under the Pipelines Safety Regulations 1996.
 - That WPL should consider whether Hazardous Substances Consent is required (see the Planning (Hazardous Substances) (Wales) Regulations 2015 section below).
 - Electrical safety would need to be considered, with reference to the Health and Safety at Work Act (1974), Electricity at Work Regulations (1989) and the Electricity, Safety, Continuity and Quality Regulations (2002).
 - The Site does not impinge on any separation distances of any explosives licenced site.
- 17.11 The Civil Aviation Authority (CAA) in its response to WPL's scoping request noted that:
- 'the tallest associated structures are expected to be 1 or 2 chimney stacks that would each have a height of up to 40-50 m. On that basis I believe [sic] the following (potential) issues are worthy of consideration'.*
- 17.12 The CAA goes on to note the need to check for local aerodromes. With regard to aviation warning lighting, the stack height being well below the height at which such lighting is required by Article 219 of the UK Air Navigation Order (150 m), lighting would not be required unless there was a specific issue with a local aerodrome. It has been separately confirmed that the closest aerodromes are Hawarden Airport (Chester Airport) and Chirk Airstrip, both approximately 14 km away meaning that neither would be affected by the proposed height of the stacks.

Approach

- 17.13 This chapter covers the following aspects:
- the health, safety and security aspects which are largely governed by health and safety legislation and guidance and are inherent in the design of and operational procedures for the Scheme; and

- the health and safety aspects assessed within various chapters of the ES during construction, operation and decommissioning of the Scheme.

ASPECTS GOVERNED BY HEALTH AND SAFETY LEGISLATION

Methodology

17.14 The legislation, policies, and permits which govern the health and safety of employees and of the general public, and security of the Scheme, are presented in this chapter with commentary on how the measures inherent in the design and operational procedures for the Scheme will comply with such legislation, policies and permits.

Security

17.15 The security of the Scheme has been considered during the construction, operation and decommissioning stages.

17.16 During construction and decommissioning, the Power Station Complex Site will be fenced off and there will be no public access to the Site which will be manned by 24-hour security. During operation of the Scheme, the Power Station Complex Site will be secured by fencing and manned 24-hour security will be present.

17.17 The Gas Connection Route is c.3.5 km long and crosses an area of agricultural land which is predominantly pasture and hedgerows, with pockets of woodland, numerous ponds and isolated properties. From the Power Station Complex Site, the Gas Connection Route crosses Public Right of Way (PRoW) ISY / 18, Oak Road a further 1.2 km to the south, and a further 1.2 km to the south-west it crosses a track to the north of Parkey Lodge Lane which is also a footpath (PRoW SESS / 25). During construction it will be secured with fencing providing crossings for PRoWs and farm access. During operation the Gas Pipeline will be underground for its entire length. For decommissioning purposes, the Gas Pipeline will be purged of any residual gas and will remain in situ.

Health and Safety

17.18 The key health and safety aspects to be considered during the design, operation and decommissioning of the Scheme include:

- Construction Design and Management; and
- Operational Health and Safety.

Construction Design and Management

- 17.19 The Construction (Design and Management) Regulations 2015 (CDM Regulations) will apply to the construction and decommissioning of the Scheme, and require the design of the Scheme to eliminate foreseeable risks to health and safety during construction and operation of a project, as far as is practicable.
- 17.20 The design of the Scheme has taken account of the health and safety implications for construction, operation and demolition in accordance with the CDM Regulations. This is a legal requirement and includes the general construction and operational safety requirements from the relevant topic-specific legislation and HSE guidance. For all aspects of the design of the Scheme, a Design Risk Assessment will be developed as the detail of the design evolves, demonstrating how health and safety risks have been eliminated and providing information on residual risks and how these risks will be managed during the construction phase.

Environmental Permitting

- 17.21 In accordance with the EPR, the Scheme will operate under an Environmental Permit (EP) from Natural Resources Wales (NRW). The EP will only be granted once it has been demonstrated that emissions to the environment that could affect public health and the wider environment have been addressed. The EP application will demonstrate that Best Available Techniques (BAT) are used in the operation of the Scheme, and that the storage and use of all hazardous materials is appropriate to prevent emissions to the environment. It will confirm that management systems are in place to avoid or minimise the potential environmental risks of the Scheme under normal operational conditions, and that contingency arrangements have been made for dealing with abnormal conditions such as accident and incidents, and periods of planned and unplanned shutdown.

Health and Safety at Work Act

- 17.22 In addition to the effects on the environment, the Scheme has the potential to impact on health and safety, and will fall under the general legal requirements of the Health and Safety at Work Act 1974 for the protection of employees and visitors to the premises.

The Planning (Hazardous Substances) (Wales) Regulations 2015

- 17.23 The Planning (Hazardous Substances) (Wales) Regulations 2015 are concerned with the storage and use of substances which could present a major off-site risk.
- 17.24 The Regulations cover the storage and use of natural gas. The threshold over which an establishment (defined in Article 3 of Directive 2012/18/EU as the whole location under

the control of an operator where dangerous substances are present in one or more installations, including common or related infrastructures or activities)] will require a Hazardous Substances consent under the Regulations is 15 tonnes of natural gas (Schedule 1, Part 2). Hazardous Substances consent is not required for the presence of a hazardous substance where it is being transported in a pipeline, including a pumping station, outside any land in respect of which there is (or there is required to be) a hazardous substances consent for any substance (paragraph 2 of Schedule 2 of the Regulations). The amount of gas stored at the Power Station Complex will not exceed the threshold set out in the Regulations therefore a Hazardous Substances consent is not required for the Power Station Complex. The Gas Connection is capable of transporting (when operating at a maximum pressure) 16.9 tonnes of natural gas. However, a Hazardous Substances consent is not required for the Gas Connection as the above mentioned exemption applies. Explosion risks will be managed through the appropriate design and operation of the Scheme, which will comply with all relevant legal requirements and best practice guidance.

- 17.25 No more than two days' supply of fuel oil will be stored on the Power Station Complex. This will be used to operate equipment in the event of an emergency and for generation of emergency electrical power for safe run-down of the Power Station Complex at times when electricity may not be available either from the Electrical Connection or the Power Station Complex itself. The specification for this fuel oil (BS 2869:2010+A1:2011 Part 2: Class D – Middle distillate fuels for stationary applications) means that it is not covered by the Regulations; the relevant category of flammable liquid covers only those liquids with a flash point (the lowest temperature at which it can vaporize to form an ignitable mixture in air) of less than 21°C, and the fuel oil to be used has a flash point of 56°C.

COMAH Regulations

- 17.26 Schedule 1 of the COMAH Regulations indicate that for a site to constitute a lower tier installation based on natural gas storage 50 tonnes or more but less than 200 tonnes must be stored at the site, including any pipeline necessary for the operation of the installation. The total gas inventory of the Scheme, including gas in the Gas Connection at maximum pipeline pressure, would be approximately 18 tonnes, so these regulations are not applicable. No other chemicals used on site would approach the applicable COMAH thresholds.

Electromagnetic fields

- 17.27 Electromagnetic fields (EMFs) arise whenever electrical energy is used, whether it be through electrical appliances in homes or through the generation and transportation of electricity. There is a potential health impact associated with EMFs around substations and the associated connecting cables and lines. The health effects that can occur depend on the frequency of the electromagnetic radiation.

17.28 The specific parts of the Scheme which are likely to give rise to the largest EMFs are:

- the transformers;
- switchgear room;
- switchyard; and
- the underground cables within the Power Station Complex.

17.29 As explained above, there will be no public access to the Power Station Complex Site and hence there would be no public health risk arising from EMFs. Although there is currently no legislation covering the potential health effects of EMFs, there has been research into the effects of EMFs on human health. The European Commission published Directive 2013/35/EU on the minimum health and safety requirements regarding the exposure of workers to the risks arising from EMFs. The UK has until July 2016 to adopt the Directive. The Directive *“covers all known direct biophysical effects and other indirect effects caused by electromagnetic fields. However, the Directive currently only addresses short-term effects and does not concern possible long term effects”*¹⁷⁹. *“The EMF Directive contains exposure limit values (ELVs) and action levels (ALs) in order to facilitate EMF exposure assessment”*¹⁸⁰. The Directive states that *‘the employer shall assess all risks for workers arising from electromagnetic fields in the workplace’* in pursuance of the Framework Directive 89/391/EEC on health and safety of workers, which applies to all sectors, including energy generation

17.30 Guideline levels are published by the International Commission on Non-Ionizing Radiation Protection (ICNIRP) on limiting public exposure to EMFs¹⁸¹. In March 2004 the National Radiological Protection Board (NRPB) (now part of PHE) published advice on limiting public exposure to EMFs and recommended the adoption of the guidelines published by ICNIRP¹⁸². In March 2012, DECC published a voluntary Code of Practice¹⁸³ for demonstrating compliance with EMF public exposure guidelines from Power Lines and confirmed that current government policy on EMF is that power lines should comply with the ICNIRP guidelines on exposure.

17.31 The 2012 DECC Code of Practice (CoP) states that underground cables at voltages up to and including 132kV are unlikely to be capable of exceeding the guideline levels. As the occupational guideline levels are unlikely to be exceeded and public access to the

¹⁷⁹ <https://osha.europa.eu/en/legislation/directives/directive-2013-35-eu-electromagnetic-fields>

¹⁸⁰ <http://emfdirective.org/general.htm>

¹⁸¹ ICNIRP. Guidelines for limiting exposure to time-varying electric, magnetic and electromagnetic fields (up to 300GHz) Health Phys, 74(4), 494-522. 1998

¹⁸² NRPB. Advice on Limiting Exposure to Electromagnetic Fields (0-300 GHz).

http://grouper.ieee.org/groups/scc28/sc4/NRPB.limits_15_2.03.04.pdf

¹⁸³ Department for Energy and Climate Change. Power Lines: Demonstrating compliance with EMF public exposure guidelines. A voluntary Code of Practice. March 2012

Power Station Complex Site will be restricted, evidence of compliance with the guidelines is not required by the CoP, and therefore the effects of EMFs on public health as a result of the Scheme are considered to be negligible and no further assessment has been undertaken.

Other Major Installations

17.32 The Site does not fall within the zone of influence of a Major Hazard Site as defined by the HSE, or within the zone of influence of an HSE licensed explosive site and therefore there are no specific considerations for construction and operation of the facility in this respect. Neither is it near to any sites covered by the Major Accident Off-Site Emergency Plan (Management of Waste from Extractive Industries) (England and Wales) Regulations 2009.

SUMMARY OF HEALTH AND SAFETY ASPECTS ASSESSED ELSEWHERE WITHIN THE ES

17.33 The purpose of this section is to collate and summarise those environmental impacts associated with health and safety. This section reviews:

- the health and safety aspects associated with the Scheme;
- impacts and mitigation measures;
- residual effects identified on receptors elsewhere within the ES;
- the potential cumulative effects with other developments and proposed developments in the vicinity of the Scheme (including the Electrical Connection); and
- potential effects on receptors identified elsewhere within the ES.

Health and Safety Aspects

17.34 The health and safety aspects addressed elsewhere in the ES are summarised below.

Traffic

17.35 Chapter 7 of this ES (Transport and Traffic) considers several potential impacts of Scheme traffic on receptors, including accidents and safety, and residential amenity, both of which are relevant to health and safety:

- “accidents and safety” assesses the potential effects of construction and operational traffic on the likelihood of accidents occurring; and

- “residential amenity” encompasses “elements of noise, dust and dirt, visual effects and air pollution in broad terms relating to the benefit enjoyed from physical external space”. Air quality, including pollution, and noise have potential human health implications, and these are assessed in the respective specialist chapter – chapter 8 (Air Quality); chapter 9 (Noise) so residential amenity is not considered further here.

Air Quality

17.36 Chapter 8 of this ES (Air Quality) has assessed the potential effects of the Scheme on ambient air quality. This includes the effects of the following pollutants on human health:

- oxides of nitrogen (NOx) and carbon monoxide (CO) emitted from the gas turbines via the Stack during operation;
- NOx and particulate matter (PM10 and PM2.5) associated with vehicle movements during construction, operation and decommissioning of the Scheme; and
- dust emitted from the Site during construction and decommissioning of the Scheme.

Noise and Vibration

17.37 Chapter 9 of this ES (Noise and Vibration) has assessed the effects of noise and vibration impacts to human receptors from:

- equipment associated with the construction, operation and decommissioning of the Scheme; and
- traffic related to the construction, operation and decommissioning of the Scheme.

Ground Conditions

17.38 Chapter 13 of this ES (Ground Conditions) has assessed the impacts of disturbing historical contamination and how humans may be exposed to this. The assessment identified the following pathways for human exposure to contaminated soil and soil derived dust:

- through dermal contact, ingestion and inhalation of contaminated soil and soil derived dust; and

- through dermal contact and ingestion of surface water runoff (from areas where contaminated soil is exposed) and shallow groundwater where excavation takes place below the groundwater table.

Water

- 17.39 Chapter 14 of this ES (The Water Environment) notes that the Site is within the River Dee catchment, the groundwater of which is an important source of drinking water.

SUMMARY OF HEALTH, SAFETY AND SECURITY IMPACTS FOR THE TOPICS REFERRED TO ABOVE

Traffic

Impacts

- 17.40 The analysis of accident data in chapter 7 of this ES did not suggest that construction traffic would specifically impact on any existing accident hotspots. However, due to the general change in traffic composition and the increase in traffic flows (particularly HGVs) in the area, the general risk of accidents may slightly increase during construction. On the basis of this assessment of the magnitude of impact, the significance of effect can be concluded to be no more than **slight adverse**.

Mitigation Measures

- 17.41 A Construction Traffic Management Plan (CTMP) will be prepared by the approved contractor to detail a number of initiatives and measures to mitigate the impact of the construction traffic. In addition to the inherent mitigation measures related to construction traffic access routes and delivery timing, the CTMP will include the following measures:
- An HGV booking / management system – A management system for vehicles 10T and over, which will require drivers to book pre-determined time slots for deliveries, will be implemented to ensure there are no peaks during the construction period. This will ensure that arrivals and departures are spread evenly over the course of the working day. It is acknowledged that road conditions and delays that are not foreseen may cause drivers to miss their allotted time slot on occasion; however, an effective management system will ensure that significant peaks in the day do not occur.
 - All construction plant and vehicles will be parked on-site and not on the public highway.

- A member of construction site staff will be made available to members of the public to report any issues or concerns relating to the construction activities. This will allow non-compliance with agreed access routes and inappropriate driving to be reported and addressed. A 24hr contact number will be provided.
- Deliveries involving abnormal loads will be notified to the authorities. These will be identified in advance to allow liaison with interested parties. The use of police escorts and temporary road closures will be used where required.
- The use of an on-site concrete batching plant will be considered to reduce the number of HGVs requiring access to the site during construction of the foundations for the Power Station Complex.
- In addition to the above measures a Construction Travel Plan (CTP) will be produced by the contractor and implemented to further reduce the impact of construction traffic, particularly staff trips, on the local highway network.

Residual Effects

- 17.42 The CTMP will reduce the total amount of traffic accessing the Site during construction, and will put in place actions such as wheel washing and clearing debris from the road that will reduce the risk of accidents. The residual effects will remain unchanged comprising slight adverse (not significant) during the construction period. Operational effects remain negligible.

Air Quality

Impacts

- 17.43 A construction dust risk assessment for the Power Station Complex Site found that the dust emission magnitude was large for each of demolition, earthworks, construction, and track out. All receptors were identified as being of low sensitivity, by virtue of their distance, direction (e.g. not downwind based on the prevailing wind direction), or nature (e.g. the Kellogg's factory car park is close, but human receptors are only in it for short periods). As such there is a medium risk from demolition but a low risk from other activities. A similar exercise for the Gas Connection found a medium risk from track out and a small risk from other activities, with all receptors being of low sensitivity.
- 17.44 Traffic impacts from the construction of the Power Station Complex Site were deemed neutral (i.e. it was not deemed to have any significant effects on any receptors). Construction plant emissions during operation are not expected to be significant.
- 17.45 Operational stack emissions are considered to be insignificant to human health, as are emissions associated with operational traffic.

Mitigation Measures

17.46 Mitigation measures will be outlined in the Construction Environmental Management Plan (CEMP). A draft CEMP is submitted with the DCO application (Appendix 19.1). The CEMP includes dust mitigation measures specified from IAQM Guidance where they are identified as being “highly recommended” for the risk level determined through assessment. Implementation of such measures will ensure that the production and dispersion of dust during the construction of the Scheme is kept to an absolute minimum.

17.47 Site management measures should include:

- displaying the name of accountable persons (e.g. Site Environment Manager) and head or regional office information on the site boundary;
- recording all dust and air quality complaints, identify cause(s), taking appropriate measures to reduce emissions in a timely manner, and recording the measures taken;
- making the complaints log available to the WCBC EHO as required; and
- recording any exceptional incidents that cause dust and/or air emissions, either on- or offsite, and the action taken to resolve the situation in the log book.

17.48 Monitoring activities should include:

- carrying out regular site inspections to monitor compliance with the dust measures set out in the CEMP, recording inspection results, and making an inspection log available to the WCBC EHO as required; and
- increasing the frequency of site inspections by a nominated individual accountable for air quality and dust issues on site, when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions.

17.49 Preparing and maintaining the site should comprise:

- planning the site layout so that machinery and dust causing activities are located away from receptors;
- erecting solid screens or barriers around dusty activities or the site boundary that are at least as high as any stockpiles on site; and
- avoiding site runoff of water or mud.

17.50 Demolition (i.e. enabling works to remove existing structures and hardstanding) should include:

- ensuring effective water suppression is used during demolition operations. Hand held sprays are more effective than hoses attached to equipment as the water can be directed to where it is needed. In addition, high volume water suppression systems, manually controlled, can produce fine water droplets that effectively bring the dust particles to the ground; and
- bagging and removing any biological debris or damp down such material before demolition.

17.51 Operations should consider:

- only using cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, e.g. suitable local exhaust ventilation systems;
- ensuring an adequate water supply on the site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate;
- using enclosed chutes and conveyors and covered skips;
- minimising drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and using fine water sprays on such equipment wherever appropriate; and
- avoiding bonfires and burning of waste materials.

17.52 Mobile crushing equipment can be a source of dust and is regulated by the Unitary Authorities in Wales, under the EPR. If such equipment is used, then it should be designed and operated in accordance with the most recent version of DEFRA's Process Guidance Note 3/16(12) for Mobile Crushing and Screening.

17.53 With regard to the control of emissions from operating vehicle/machinery and sustainable travel, the following measures are proposed:

- ensuring all vehicles switch off engines when stationary - no idling vehicles; and
- avoiding the use of diesel or petrol powered generators and use mains electricity or battery powered equipment where practicable.

17.54 The above are the "highly desirable" measures only; the IAQM guidance contains other "desirable" measures such as the covering of vehicles entering and leaving site to prevent escape of materials during transport and the installation of wheel washing systems

17.55 Non-Road Mobile Machinery used on site should be fitted with a type approved engine which meets the emission standards set in the Non-Road Mobile Machinery (Emission

of Gaseous and Particulate Pollutants) Regulations 1999 (SI 1999/1053) (as amended). The placement of diesel or petrol powered generators should consider proximity to nearby receptors and ensure that the exhaust discharges vertically and is unimpeded.

- 17.56 The dust mitigation methods will be incorporated into a CEMP, a draft of which is included within Appendix 19.1. It will include measures to control other emissions, be developed and approved by the WCBC EHO. The level of detail will depend on the risk, and will include as a minimum the “highly recommended” for the risk level determined through assessment. Further “desirable” measures may also be included as appropriate. The CEMP may include monitoring of dust deposition, real-time PM10 continuous monitoring and/or visual inspections.
- 17.57 The transport and traffic assessment (chapter 7 of this ES) determined that there would be a neutral effect on air quality due to additional construction traffic movements. The theoretical peak of up to 300 HGVs requiring access to the site per day (i.e. 300 arrivals and 300 departures or 600 HGVs as a two-way flow, over a two to three-day period, will be avoided if on-site concrete batching is employed). If this approach is employed, such operations will be undertaken using enclosed plant regulated in accordance with DEFRA’s Process Guidance Note 3/01(12) and permitted by the Council under the EPR.
- 17.58 No further measures are proposed in addition to those incorporated in the Scheme design. CCGT technology is inherently clean and the use of natural gas as a fuel ensures the stringent emission limits for NO_x and CO, as set in the Industrial Emissions Directive (2010/75/EC) (IED), will be met. The number of additional vehicle movements during the operational phase of the Scheme is negligible hence further mitigation beyond those measures at the national level to control vehicle emissions are not required.
- 17.59 The dust mitigation measures as outlined above for the construction phase of the Scheme should be put in place during site decommissioning to reduce the risk of transport of dust beyond the Site, particularly with regard to demolition activities including crushing. The mitigation methods would be incorporated into a management plan, in line with the legislation applicable at the time.

Residual Effects

- 17.60 There would be no significant residual effects arising from the Scheme.

Noise and Vibration

Impacts

- 17.61 The highest noise levels during the construction of the Power Station Complex Site are likely to be during piling activities and breaking out the existing concrete base. Based on reasonable assumed noise levels from different activities and the distance to noise

sensitive receivers, impacts are only deemed to be negligible even in the worst case (day time working was assumed).

- 17.62 Construction traffic noise will have negligible effects at all locations other than immediately outside the Power Station Complex Site entrance near the Kellogg's factory (minor) and on the access road to the Power Station Complex itself (moderate – hence significant) although in neither case would this affect residential receptors.
- 17.63 An assessment of the likely vibration effects due to percussive piling was undertaken for the nearest Noise Sensitive Receptor (NSR), the four properties on Bryn Lane. A worst case scenario was assumed with a hammer driven impact pile being used. The potential impacts from percussive piling works would be of 'negligible' significance only. This is because the vibration levels would be significantly lower than those which could result in only cosmetic damage to buildings, and hence a risk to safety.
- 17.64 For construction of the Gas Connection, the highest noise levels are likely to be during drilling activities. A worst case estimate of the hourly activity noise level during these activities is 77 dB $L_{Aeq,1 \text{ hour}}$ at 10m from the works (based on Table C.2 of BS 5228-1). Taking into account this and the distances to noise sensitive receivers, all impacts will be negligible.
- 17.65 During consultation with the EHO at WCBC it was agreed that an operational noise 'rating level', derived in accordance with BS 4142:2014, should not exceed the background noise levels at NSRs. As the detailed design of the proposed buildings has not been finalised, for the purpose of this assessment it has been assumed that the buildings will comprise a metal cladding structure with an R_w (weighted sound reduction index, effectively the reduction in sound levels caused by a barrier) of 43dB. The assessment shows that the noise impact due to the operation of the Scheme at night time will be 'negligible' or less at all (NSRs). Assessment of operational noise of residential receptors whilst they had a window open indicated that noise levels would meet BS 8233 design targets.
- 17.66 Maintenance works will be occasional and mainly carried out internally within the Power Station Complex, so no significant noise effects are anticipated.
- 17.67 Noise effects of operational traffic are expected to be negligible.
- 17.68 Given the large distances between the Above Ground Installation (AGI) and NSRs, and with appropriate design, it is expected that noise impacts will be negligible. No noise would arise from the pipeline itself.
- 17.69 Decommissioning of the Power Station Complex would produce similar effects to construction. However, the Gas Connection would be left in situ and hence no noise effects would be anticipated from this part of the Scheme.

Mitigation Measures

- 17.70 Regular monitoring and investigation of noise complaints will be undertaken throughout the life span of the Scheme.
- 17.71 The assessment of the construction noise shows that in general the likely impacts would be 'negligible'. Although no specific mitigation measures would be required, in line with standard practice, Best Practicable Means (BPM) should be employed throughout the construction phase. A number of generic good practice mitigation measures are described in BS 5228-1:2009 +A1:2014 and are also included in the draft CEMP presented in Appendix 19.1.
- 17.72 Consideration will be given to using a batch concrete processor during the concrete pouring stages.
- 17.73 It is assumed the installed equipment will have similar or better noise emission characteristics to those presented in the noise assessment. It is also assumed that all installed equipment will be designed in a way to ensure tonal characteristics are minimised, since this affects the acoustic rating of noise. Where reasonably practicable, the use of quieter plant and equipment will be preferred, through selection and design of plant and equipment as appropriate. If necessary, plant and equipment will be fitted with silencing equipment (e.g. enclosures, baffles, attenuators) to ensure the levels specified in this chapter are achieved.
- 17.74 It is assumed that the construction of the Power Station Complex provides an overall Rw of 43dB or greater. This will apply to all buildings including the HRSGs. The overall sound reduction performance of the buildings is determined by the sound insulation performance of the individual building elements such as walls, roofs, doors, roof-lights and louvers as well as the presence of any gaps/weaknesses inherent in the construction. The walls, roofs, roof-lights and shutter doors of the process buildings will be acoustically designed to achieve high sound insulation through the building fabric.
- 17.75 Consideration will be given to the types of bypass and isolation valves used at the AGI in order to minimise noise generation.
- 17.76 Good operating practice will be employed for the control of noise. This includes adequate maintenance of any parts of plant or equipment whose deterioration may give rise to increases in noise, for example bearings or integrity of noise attenuation enclosures. When not in use, roller shutter doors will be kept closed.
- 17.77 Mechanical ventilation systems for supply or extraction of air to and from the process buildings will be designed to minimise noise emissions.
- 17.78 The assessment of decommissioning noise shows that in general the likely impacts would be 'negligible'. Although no specific mitigation measures would be required, in

line with standard practice, BPM should be employed throughout the decommissioning phase.

Residual Effects

- 17.79 With the application of appropriate BPM, which is included in the draft CEMP, the residual effects would be negligible at all residential NSRs. During the construction phase, residual impacts from temporary traffic will be less than 1dB which is a 'negligible' impact at all locations other than:
- the access road to the Power Station Complex Site (Site 6 in the Noise chapter 9), which is likely to have 'minor impacts'.
- 17.80 The noise at Site 6 is not expected to affect any NSRs.
- 17.81 With the application of appropriate design measures described in this chapter, the residual effects of operation would be negligible at all NSRs. The residual impacts from road traffic noise during the operation of the Scheme will be 'negligible'.
- 17.82 With the application of BPM in line with guidance and construction techniques current at the time, it is expected that residual impacts of decommissioning would be 'negligible' at all residential NSRs.

Ground Conditions

Impacts

- 17.83 The construction phase of the Scheme could potentially disturb existing sources of contamination. Construction activities may introduce new pathways for migration of existing contamination such as excavation and exposure of contaminated soil, remobilisation of contaminants through soil disturbance and the creation of preferential pathways for surface water run-off and gas migration pathways. Mobilisation along such pathways could affect human health, in particular workers on adjacent sites within the WIE, pedestrians on nearby footpaths, and construction workers. Without mitigation a moderate risk may be presented to these receptors during construction; with similar risks during decommissioning.
- 17.84 There would be no increase in risk during operation.

Mitigation Measures

- 17.85 Prior to construction an intrusive Ground Investigation (GI) will be undertaken to quantify the level of contamination at the Site (if any) and assess the risks this presents

to the identified receptors through construction of the Scheme. The GI will, as a minimum:

- identify the risk of unexploded ordnance being present on site through a specialist unexploded ordnance risk assessment (during the GI planning stage);
- characterise the areas of the Power Station Complex Site in terms of contamination, depth to groundwater, thickness of Made Ground and depth to bedrock;
- provide groundwater monitoring and chemical analytical data (including asbestos) specific to the Site to inform a quantitative land contamination assessment and remediation strategy (if necessary);
- provide chemical analytical data to inform appropriate design of foundations and services resistant to chemical attack; and
- obtain ground gas monitoring data to inform the building design.

17.86 During construction, mitigation measures for the Scheme include (but are not limited to):

- implementation of appropriate dust suppression measures (included in the CEMP) to prevent migration of contaminated dust as set out in chapter 8 of this ES (Air Quality);
- health and safety risk assessments, method statements and appropriate personal protective equipment (PPE) for the protection of construction workers; and
- development of a methodology to identify what remedial actions will be undertaken and how such actions will be validated and recorded if unexpected contamination is encountered during the works.

17.87 The agreed mitigation measures will be incorporated into the CEMP which is secured through a requirement contained in the draft Order for the Scheme.

17.88 Mitigation measures implemented during construction (including remediation, if required) will help to reduce or remove the potential for impacts during operation. No mitigation measures specific to the operation phase have been identified. However, it is assumed for the purposes of this assessment that those mitigation measures identified for the construction phase will be undertaken and will improve the condition of the site (with regards to contamination) for the operation phase and decommissioning.

17.89 With the exception of the GI and piling risk assessment the mitigation measures implemented during construction will be required during decommissioning of the Scheme.

Residual Effects

17.90 During construction, the only human health effect that is not “neutral” is a minor adverse effect on construction workers; this is due to there being no construction workers on site prior to the construction phase, so any risk is greater than no risk. Similarly, there is a very low risk to operational staff which is deemed minor adverse only because such staff are not present prior to operation of the Scheme.

Water

Impacts

17.91 There is a risk that construction of the Scheme could have a minor adverse effect on the principal aquifer in the Kinnerton Sandstone formation, which, whilst not a direct source of drinking water is within the River Dee Basin from which groundwater is abstracted for drinking water (the closest being 1.5 km to the south west of the Site). There would also be similar risks during decommissioning. Once operational, hard standing and the implementation of the approved foul and surface water drainage strategy (Appendix 14.3) will mean that the potential for the aquifer to be affected will be reduced – leading to an insignificant or even beneficial effect.

Mitigation Measures

17.92 The following mitigation measures are to be expected to be implemented during the construction phase of the Scheme, as part of BPM provided in the draft CEMP for the Scheme (Appendix 19.1):

- bunding of potential contaminant sources such as tanks and excavated soils;
- use of spill kits;
- obtainment of appropriate permits for discharge to surface water;
- capture of site runoff and attenuation of contaminants using sedimentation tanks/ponds prior to discharge to surface water;
- application of appropriate care to avoid disturbance or rupture of underground services such as sewers, waste water pipes or fuel lines;

- production of a piling risk assessment to prior to commencement of any piling construction;
- implementation of all works subject to Environment Agency's Pollution Prevention Guidance (PPG);
- implementation of all works in line with the Environment Agency's '*Groundwater Protection: Principles and Practice*' document¹⁸⁴, which sets out their position on a range of activities, including the storage of pollutants and hazardous substances;
- laydown areas are situated within the Order Limits, which are entirely outside of the zone designated as Principal Aquifers or SPZ1; and
- implementation of the foul and surface water drainage strategy (document ref xx).

17.93 The following operational mitigation measures would be implemented as part of BPM:

- bunding of potential contaminant sources such as fuel/ chemical tanks;
- obtaining appropriate permits for discharge to surface water in accordance with the foul and surface water drainage strategy;
- use of spill kits, particularly during maintenance activities; and
- the use of a Hydrobrake, on the drainage system means the system can be easily shut off in case of a large spillage to prevent contaminated water discharging to the surface water drains and subsequently the River Dee.

Residual Effects

17.94 Following mitigation, all residual risks arising from the Scheme will be insignificant.

17.95

RISK PERCEPTION, CUMULATIVE AND IN-COMBINATION EFFECTS

Risk Perception

17.96 As was noted by PHE in its letter to PINS dated 23 April 2014, the perception of risk can be as important as actual risk. The size of the Scheme has reduced considerably from initial proposals and the Scheme does not have unusual or opaque aspects that are likely to lead to a disproportionate perception of risks by local residents.

¹⁸⁴ Environment Agency, 2013. <https://www.gov.uk/government/publications/groundwater-protection-principles-and-practice-gp3>

17.97 As such it considered that the perception of risk is insignificant for the Scheme.

Cumulative

Traffic

17.98 It is considered that the cumulative traffic considered in the cumulative assessment in Chapter 7 of this ES does not significantly increase the impact on the WIE highway network, so effects detailed above for the Scheme will remain unchanged.

Air Quality

17.99 It was found in the cumulative effects assessment in Chapter 8 that the dust risk category for the Site would not increase even if all proposed and under current construction developments were to be constructed concurrently with the Scheme. Cumulative effects of traffic movements on air quality are considered to be neutral. Pollutant concentrations at all receptors, including at the new North Wales Prison, which is anticipated to be operational in 2017 will remain well below Air Quality Strategy (AQS) objectives and cumulative effects of the Scheme emissions are hence considered to be insignificant.

Noise and Vibration

17.100 As identified in the cumulative effects assessment in Chapter 9, there is not expected to be any significant effect from the Scheme in combination with any of the cumulatively assessed schemes, including construction noise, construction traffic, and operational noise and traffic.

Ground Conditions

17.101 As set out in the cumulative effects assessment in Chapter 13, the cumulative effects of the assessed schemes will not change the significance of effect already reported for the Scheme in isolation.

Water

17.102 Chapter 14 makes clear in its cumulative effects assessment that the cumulative impacts of the assessed schemes are negligible and would pose an insignificant effect to the overall water environment (including the Principal aquifer).

In-Combination

17.103 An in-combination effect of accidents and safety, visual amenity and noise on drivers using Bryn Lane has been identified in Chapter 18 but this is not considered to be significant given the temporary and transient nature of drivers passing along a road and the fact that the visual and noise effects from the Scheme will be peripheral to the driver's awareness.

CONCLUSION

17.104 This chapter has assessed the health, safety and security impacts of the Scheme, and has concluded that there are no significant effects arising from the Scheme either in isolation or in combination with the other developments assessed as part of the cumulative assessment.