



**Proposals for the approach to and scope of an
Environmental Impact Assessment to accompany
an application for a Development Consent Order
under the Planning Act 2008 (as amended) for the
proposed waste oil re-refinery at Eastham, Port
Wirral, Merseyside**

SCOPING REPORT

PROJECT REFERENCE WS010004

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This report has been prepared by MJCA with all reasonable skill, care and diligence, and taking account of the Services and the Terms agreed between MJCA and the Client. This report is confidential to the client and MJCA accepts no responsibility whatsoever to third parties to whom this report, or any part thereof, is made known, unless formally agreed by MJCA beforehand. Any such party relies upon the report at their own risk.

1. Introduction

- 1.1** Hydrodec Re-refining (UK) Limited (Hydrodec) proposes to prepare and submit an application for a Development Consent Order (DCO) for a new Nationally Significant Infrastructure Project at Eastham, Port Wirral. The proposed development site is located at Power House Road, Eastham, Port Wirral, Merseyside as shown on Figure 1. The proposed development comprises the construction and operation of a used oil re-refining plant together with associated and ancillary development.
- 1.2** Hydrodec is a global clean technology company founded in the UK in 2001. Hydrodec has been listed on the Alternative Investment Market of the London Stock Exchange since 2004 and also operates in Australia and the USA. It has established knowledge in the application of sustainable technology for the power, oil, petrochemical and hazardous waste industries. The established technology for the proposed base oil plant will be licensed from Chemical Engineering Partners. The used oil re-refinery process transforms used oil into a new product which comprises predominantly base oil.
- 1.3** OSS Group and Eco Oil are trading names of Hydrodec (UK) Limited and are established UK based waste oil collection and management companies. Hydrodec (UK) Limited operates a national service, having the largest waste oil collection fleet in the UK and transfer stations throughout the country. OSS currently delivers used oil to the Hydrodec facility in Stourport-on-Severn and the NuStar storage facility adjacent to the application site.
- 1.4** Since 2014 Hydrodec have been developing their proposals and consulting with statutory consultees and members of the public with a view to submitting an application for planning consent for the proposals. The application had been progressing in accordance with the Town and Country Planning Act. As the development has been identified as a Nationally Significant Infrastructure Project, the application must be made for a DCO in accordance with the Planning Act 2008 (as amended). The investigations, assessments and

consultations carried out to date as part of the initial development work have been incorporated into the current designs for the development and formal consultation is now being carried out of these amended proposals in accordance with the Planning Act 2008 (as amended).

- 1.5** The proposed development will be the subject of an Environmental Impact Assessment (EIA) and the application will be accompanied by an Environmental Statement (ES) carried out in accordance with The Infrastructure Planning (Environmental Impact Assessment) Regulations 2009 (as amended).
- 1.6** MJCA and a team of technical specialists are commissioned by Hydrodec to undertake the EIA and prepare and submit the application for the DCO. In this report the approach to the application and the proposed scope of the EIA are explained. The purpose of this report is to set out in general terms the nature of the proposed development and to explain the scope of the assessments that will be carried out as part of the EIA of the proposed development. The detailed designs of the elements of the proposed development are being progressed. The design development process is iterative and will continue throughout the consultation period up to the submission of the application.
- 1.7** This report together with a request for a scoping opinion is submitted to the Planning Inspectorate and will be circulated to the specified statutory consultees for their comments. The comments received to date from previous consultations as well as the responses to this scoping request will be reviewed and taken into account in the EIA and resulting Environmental Statement that will be prepared to report the findings of the EIA.

2. Site location and description

- 2.1** The proposed used oil re-refinery facility is located to the east of Eastham, approximately 4.8km north west of Ellesmere Port on the southern bank of the Mersey Estuary as shown on Figure 1. The centre of the site is located approximately at National Grid Reference SJ 36920 80599.
- 2.2** The site development area is approximately 7.4ha and is generally flat. The site development area is approximately square in shape as shown on Figure 2. Additional areas may be included in the site boundary as shown on Figure 2 in order to include the areas which will be needed to connect the site to appropriate services infrastructure including electricity, gas, water and sewer connections. The additional areas shown on Figure 2 cover 9.16ha. The site description and distances described in this report relate to the site development area. The main site area currently comprises rough grazing grassland with a grass football pitch in the east including fencing, goal posts, a small timber shelter and hardstanding used for parking. The football pitch currently is used by Manchester Ship Canal Eastham Football Club. Planning permission has been granted for the relocation of the football pitch to Bromborough and this relocation will take place before the site is developed.
- 2.3** A vacant site previously associated with port activities is located adjacent to the eastern site boundary. The Manchester Ship Canal is located to the east of the eastern site boundary beyond which is the Mersey Estuary. The Queen Elizabeth II (QEII) Docks and dockside areas are located immediately adjacent to the northern site boundary. A corridor of raised pipelines which run from the depots to the south to the QEII Dock are located adjacent to the western site boundary. A soil mound which is planted with trees is located immediately to the west of the pipeline corridor.
- 2.4** The site is bounded to the south by Power House Road and is located approximately 75m to the north of an oil and chemical storage tank farm (currently operated by NuStar) located to the south of Power House Road.

- 2.5** Access to the site will be from Power House Road which runs along the southern site boundary. Power House Road is a private road which serves the port and canal as well as the NuStar waste oil storage facility. Power House Road joins with Bankfields Drive approximately 185m to the west south west of the site. To the south east, Bankfields Drive provides access to the Eastham Oil Refinery which is located approximately 350m to the south and south west of the development site boundary and then runs through the industrial area to the south to North Road, West Road and Junction 6 of the M53 as shown on Figure 2.
- 2.6** To the north west of the junction with Power House Road, Bankfields Drive provides a connection to the residential areas of Eastham and Eastham Village Conservation Area via Ferry Road (Figures 2 and 3). This north western section of Bankfields Drive is owned by the Manchester Ship Canal Company. This section of the road is gated and is closed between the hours of 0615 – 0730 and 1445 – 1630 Monday to Saturday to coincide with shift change times at the Vauxhall car plant to the south of the site in order to stop any mass surge of staff from the car plant to the south of the site travelling through the Eastham Village Conservation Area.
- 2.7** Eastham is located to the west of the site with the majority of the developed area located to the west of the A41 New Chester Road. The closest houses to the proposed development site are located on Seaview Avenue and Ferry Road and Bankfields Drive with the boundary of the closest property on Seaview Avenue approximately 140m from the western site boundary. The boundary of the Eastham Village Conservation Area is located approximately 440m to the west of the site boundary (Figure 3). The land to the west of the site beyond the industrial areas is Green Belt with the closest point to the site boundary approximately 60m to the west of the site as shown on Figure 3. Eastham Lodge Golf Club is located to the west and north west of Ferry Road with Leverhulme Sports Fields beyond. Eastham Country Park is located beyond the QEII Docks approximately 620m to the north west of the site at the

closest point. The Country Park is also a Site of Biological Importance. A chemical complex at Brombrough is located approximately 2km to the north of the site boundary beyond the Country Park.

- 2.8** Immediately to the east of the site is a vacant area of land with the Manchester Ship Canal and associated docking facilities approximately 50m from the site boundary. The Eastham Channel of the River Mersey is to the east of the Manchester Ship Canal (Figure 3). The Mersey Estuary is designated as a Site of Special Scientific Interest (SSSI) with the mud banks designated as a Ramsar Site and Special Protection Area (SPA) due to the importance for feeding and roosting of water birds as well as habitat for wading birds. The closest point of the boundary of the protected site is approximately 205m from the eastern site boundary. Liverpool John Lennon Airport is located on the northern bank of the River Mersey approximately 5.4km to the east of the site.
- 2.9** The NuStar Eastham Terminal is located immediately to the south of Power House Road to the south of the site. The NuStar Terminal is a customs-approved bonded warehouse able to handle diesel, gasoline, biofuels, waste and other chemicals. The terminal currently handles around 1M-2M tonnes per annum. The facility is used for the import and distribution of chemicals and fuels into the north-west. The terminal is a Top-Tier COMAH site with approximately 150 storage tanks in sizes ranging in capacity from 25 m³ to 10,800 m³ and in height from 14m to 18.25m. The terminal is connected to sea by three berths in the QE II dock and one berth on the Manchester Ship Canal. The Vauxhall car production site is located approximately 1.6km to the south south east of the site and the large oil refinery complex at Stanlow, Ellesmere Port is located approximately 7km to the south east of the site.
- 2.10** The recently approved Biossence site lies beyond the NuStar site approximately 375m to the south of the site as shown on Figure 2. The site was granted planning consent for the development of an energy from waste gasification facility in September 2014. The application documents show a

gasification building / enclosure and superstructure approximately 48m high with fuel silos and a gas boiler enclosure up to 34m high and a stack approximately 80m high. At the time the application was made, construction was anticipated to commence in mid-2015 with the commencement of operations programmed for mid-2018.

- 2.11** Eastham is served by a number of bus routes and the closest bus stops to the site are on Ferry Road around 500m walking distance from the site. These services connect the site with Eastham Rake, Bebington and Birkenhead. Further bus services follow routes via the A41 New Chester Road connecting to Liverpool, Ellesmere Port and Chester.
- 2.12** Eastham Rake railway station is located approximately 2.5km to the west south west of the site. This station is on the Ellesmere Port and Chester lines which connect north to Birkenhead and Liverpool.
- 2.13** Approximately 9 km to the south west of the site is the Dee Estuary which also is a Ramsar site, a Special Protection Area (Inshore with marine components), a Special Area of Conservation (Inshore with marine components), and a SSSI. There are no other SSSIs within 2 km of the proposed development, although Dibbinsdale SSSI is located approximately 2.7 km to the north-west of the site.

3. Proposed development

Introduction

3.1 A Development Consent Order is being sought for the construction and operation of an oil re-refinery plant and associated development and ancillary works. The plant will be the first significant investment in the UK for a used oil re-refinery and will be operated in accordance with Best Available Techniques which will be specified in an Environmental Permit which will be sought from the Environment Agency. Similar plant and technology to that proposed is operated successfully elsewhere in the world.

3.2 Recovering a waste material for use as a product is positioned high on the Waste Hierarchy which is strongly supported in the European Waste Framework Directive and in UK Waste Policy and regulation. The National Policy Statement for Hazardous Waste (2013) and the Strategy for Hazardous Waste Management in England (2010) both identify the need for oil regeneration plant. The regulatory and policy support for the proposed development is strong and will be set out clearly in a Planning Statement which will accompany the DCO application.

Background to the process

3.3 Used oil re-refining is a process which removes impurities from used oil and regenerates it back to base oil which is the main ingredient of lubricant blends used in formulations for all industrial and automotive oils. The process regenerates waste oil, which in itself is derived from crude oil, into a product which meets an agreed specification and which can then be used in the same way as a newly refined product. The process of re-refining used oil uses less energy than refining crude oil to produce the same products and it can be carried out on the same used oil many times over. As most used oil is currently combusted to generate heat or energy, the proposed re-refinery process will mean that instead of contributing to greenhouse gasses by being

burned off, the oil can be re-used as an oil-based product which results in a reduced environmental impact.

3.4 Re-refining breaks used oil into three main products – the base oil, fuel and an asphalt product. The process results in approximately 60% to 80% base oil, approximately 15% asphalt and approximately 10% fuel. Impurities are present in used oil, most of which comprise the additives which typically are mixed with the virgin oil products to achieve performance improvements. The impurities in the used oil make up only a tiny fraction of the total volume of used oil. The impurities are removed by a mixture of chemical reactions and physical separation processes and are incorporated predominantly in the asphalt product. Trace amounts of impurities are present in waste water which is treated prior to discharge to the environment.

3.5 The proposed plant will produce the highest grade base oil from used oil, exceeding the quality of many other European oil re-refineries. The initial capacity of the site will be an input of approximately 75,000 tonnes per annum (tpa) for the first phase base oil plant, which will increase to approximately 180,000 tpa including a second 75,000tpa base oil plant and a 30,000tpa transformer oil plant once the site is fully developed and operational. It is intended that the facility will be manned for 24 hours per day all year round and will operate for 24 hours per day for a total of approximately 325 days per year allowing for periods when routine maintenance activities are carried out.

Proposed layout and description of the plant, infrastructure and buildings

3.6 In terms of built form, the iterative design process has included the testing of various preliminary design layouts before selecting the identified option that provides the best combination of operational, technical and environmental protection standards. Whilst the arrangement and size of the various site structures and the site layout have been constrained primarily by the requirements of the proposed technology, one of the primary considerations

of the design has been a desire to mitigate the potential environmental and visual impacts of the proposal. For example, a priority objective in the design has been to locate the taller structures that make up the base oil plants closer to the canal and further away from residential receptors, with the shorter structures to the west of these. As explained in Section 2 of this report the detailed designs of the elements of the proposed development are being progressed and the design development process will continue throughout the consultation period up to the submission of the application.

- 3.7** The development is shown on Figures 4 and 5 and will be built in two phases commencing in the south-east. Phase 1 will be constructed in the southern half of the site over a period of approximately 18 months and is anticipated to be ready for operation in 2017. Phase 2 will be constructed in the northern half of the site over a period of approximately 18 months which it is anticipated will commence in 2018 with the plant ready for operation in 2020.
- 3.8** Phase 1 will comprise an initial base oil plant with a capacity of approximately 75,000tpa in the south-eastern corner of the site including an emergency flare stack. Tanks up to 12m high and 8m in diameter for the storage of materials will be located in a main tank farm island to the north of the base oil plant and a hydrogen generation plant will be located to the east of the main tank farm area. Hydrogen is used in the process to improve the chemical saturation of the hydrocarbon molecules which improves the quality of the base oil product and to reduce the levels of sulphur in the oil. A mains gas fired boiler will be used to generate heat and steam for use in the process. Mains gas is also used for the hydrogen plant. Waste gases from the re-refining process which could potentially have an unacceptable impact on air quality will be captured and directed to a thermal oxidiser for destruction and energy created by the thermal oxidation process will be captured by an energy recovery system to reduce the amount of fuel required by other site processes including the thermal fluid heater and potentially the boiler. Additional atmospheric emission abatement equipment will include boiler and thermal heater flues,

condensers, scrubbers and vapour balance lines, fractionating columns, wiped film evaporator and thermal oxidiser.

- 3.9** The flare stack located in the south east corner of the site will be a maximum of 50m in height and a maximum of 1.5m in diameter. The flare will not be used routinely but is a safety feature for use in the event of abnormal operating conditions or emergencies therefore is likely to be used only rarely. A pilot light will be present in the emergency flare at all times so that it is available to light the emitted gases should it be necessary.
- 3.10** The materials acceptance plant and equipment will be located to the west of the base oil plant and main tank storage area as shown on Figures 4 and 5. Waste oil feedstock will be received and stored in tanks up to 7m high and 6m in diameter located adjacent to the southern site boundary. Tanks up to 12m high and 8m in diameter for the storage of waste water, asphalt, fuel and base oil will be located to the immediate west of the base oil plant tank farm together with utilities buildings. The utilities buildings will be two stories high.
- 3.11** Tanker loading and parking facilities will be located in the western and south-western areas of the site together with a fire water storage tank a maximum of 10m high and 9.5m in diameter. The tanker parking areas will be open. The tanker offloading area will be covered with a roof typical of those constructed at petrol stations which will be open at the sides for the circulation of air. The roof height will be approximately 7m. Two two-storey buildings including a laboratory, offices and maintenance and warehouse areas will be located north of the tanker parking area. A single storey gate house and an electricity sub-station will be located adjacent to the main site entrance at the south west corner of the site. An emergency access will be constructed at the south eastern corner of the site. The site access points will be constructed with wide bell-mouths able to accommodate articulated trucks and will be completed with lockable gates of metal palisade construction approximately 8m in height.

- 3.12** Phase two of the development will comprise the construction of a second base oil plant in the east of the site with associated emergency flare stack a maximum of 50m in height and associated plant similar to that described for the first base oil plant. The storage tanks and plant will have dimensions similar to those described for the first base oil plant. A transformer oil plant will be located to the north of the second base oil plant. The transformer oil plant is formed of similar plant and carries out similar processes to the base oil plant and the overall footprint and size will be similar to that for the base oil plant.
- 3.13** As part of the second phase of the development a two storey office block will be built in the north-western corner of the site, together with further warehousing, a two storey research and development building and additional car parking as shown on Figures 4 and 5.
- 3.14** A number of piping corridors and pipe bridges will be located at the site with the main corridor and bridge locations shown on Figures 4 and 5. In general the maximum height of the pipe corridors will be no more than 6m above the ground and each corridor will be no more than 6m in width. The pipes will vary in diameter and will be formed of steel with a typical maximum diameter of 0.5m. The pipe bridges will be constructed to provide at least 6.5m of clearance beneath for trucks and at the top will be a maximum of 7.5m above ground level. The pipes will vary in diameter and will be formed of steel with a typical maximum diameter of 0.5m. One of the pipe bridges will be constructed across Power House Road to the adjoining NuStar terminal as a significant amount of the feedstock for the plant will be delivered to the site from the NuStar depot.
- 3.15** The site will be connected to appropriate utility supplies and discussions are continuing with the utility suppliers. Depending on the capacity of the existing supplies to the site and adjacent areas it may be necessary to upgrade the electricity, gas, water and sewerage links as part of the development. The

possible routes along which it may be necessary to upgrade services links are shown on Figure 2. The details of the improvements to services which will be necessary will be confirmed and the potential short term impacts associated with these works will be assessed as part of the EIA.

- 3.16** The site will be the subject of full time security. The site will be surrounded by security fencing formed of approximately 8m high steel palisade fencing. As the facility will be manned 24 hours a day there will be lighting over areas of the site which are used for access and for security purposes. All lighting units will be designed to emit light in a downward direction wherever possible to minimise any upward light. The lighting will be designed in accordance with the principles set out in the Guidance Notes for the Reduction of Obtrusive Light (Institute of Lighting Engineers) and BS EN12464:2007, Lighting of work places – Outdoor work places.
- 3.17** The surface of the operational site area will be formed of concrete and surface water runoff will be captured and managed through a surface water management system. Storage tanks and operational plant areas will be contained in bunded areas designed with the capacity and structural integrity needed to contain any contaminated water that might result from spills and leaks. The surface water management system will be designed to retain fire fighting water in the event of a fire.
- 3.18** At the commencement of construction at the site, the soil will be stripped and retained in a bund between approximately 1.5m and 3m high and a minimum of 8m wide located along the western site boundary and in the north western corner. Materials at the site will be used to create a level construction formation level. Tree and shrub planting will be carried out along the western site boundary and at the north western site corner at the earliest possible stage. Native hedgerow planting will be carried out along the northern and eastern boundaries. An open area of grassland will be retained in the north eastern part of the site.

Delivery and removal of materials to and from the site

- 3.19** The used oil will be delivered to the plant via road and pipeline. It is anticipated that a significant proportion of the feedstock to the plant will be delivered to the site from the adjacent NuStar storage facility via the pipe bridge that will be constructed over Power House Road. The NuStar facility has the necessary consents and receives waste oil currently by road and by sea from ships berthed in the QEII Dock as well as on the Manchester Ship Canal.
- 3.20** Based on the probable proportion of used oil that will be delivered to the site by road and by pipe, and the quantities of product that will be removed from the site it is estimated there will be a maximum of 40 HGVs coming to the site each day. To ensure minimal disruption to residents of Eastham, none of the HGVs associated with the plant will pass through residential areas. All HGVs will approach and leave the site from Power House Road and Bankfields Drive to Junction 6 of the M53 to the south east along the route shown on Figure 1. This routeing will continue the existing operations of OSS which have been operating to and from the NuStar terminal for 10 years and have been effective in avoiding routeing HGV traffic through the residential parts of Eastham.

Other consents that will be needed

- 3.21** Safe operation of their facilities and the protection of their neighbours and the environment are of the utmost importance to Hydrodec. The site will be designed and operated using established tried and tested technology which will comprise Best Available Techniques. The construction works will be carried out in accordance with an agreed Construction Environment Management Plan and will incorporate best practice. The impacts associated with the construction activities will be assessed as part of the EIA for the proposed development. The proposed facility represents a very substantial development investment and is designed and will be constructed to operate for the very long term. Accordingly decommissioning of the facility is not anticipated within at least the next 50 years. Any impacts associated with

decommissioning are not considered as part of the EIA for this development but will be the subject of an EIA at the appropriate time if and when consent is sought for decommissioning.

- 3.22** Due to the nature of the operations proposed at the site and the types and volumes of materials which will be stored at the site, in order to operate the facility Hydrodec will need to obtain the DCO which is being applied for but will also need to obtain a Hazardous Substances Consent from the Health and Safety Executive and an Environmental Permit from the Environment Agency. The site will also have to be operated in accordance with the regulations and best practice relating to the Control of Major Accident Hazard Regulations which are regulated jointly by the Health and Safety Executive and the Environment Agency. Discussions have been taking place with these regulatory organisations and will continue throughout and beyond the DCO application process.

4. Assessment of effects

4.1 The proposed operations at the site will be the subject of a Development Consent Order (DCO) and an Environmental Permit. As part of the preparation of the design and applications for both these consents a number of studies have been and are being undertaken to establish the baseline environment and conditions at and in the vicinity of the site and preliminary assessments have been carried out to assess the potential impacts of the proposed development.

4.2 The baseline for the Environmental Impact Assessment (EIA) is the current undeveloped site with the existing surrounding activities and land uses. The EIA for the proposed development will comprise an assessment of the proposed activities when carried out together with the existing activities and land uses in the area. The cumulative impacts of the relevant activities will be assessed. It is anticipated that the key issues which must be assessed in order to determine the environmental impacts of the proposals are traffic and transport, landscape and visibility, water resources and flood risk, nature conservation and biodiversity, archaeology and cultural heritage, noise and vibration, air quality, climate change, protection of health and socio-economic impacts.

4.3 The principles of the development together with the proposed method of constructing, operating and managing the site are summarised in the earlier sections of this report and will be described in further detail in the application documents. Wherever there is uncertainty over the detail of the final designs, in order to ensure that a robust environmental impact assessment is carried out reasonable worst case assumptions will be made regarding the potential environmental emissions and aspects of the proposed development. The information presented and assessed will be sufficient for development control purposes and for the assessment of environmental impact. Further detailed impact assessments will be carried out in accordance with the pollution control

regime and submitted to the Environment Agency for approval as part of the application for the Environmental Permit for the site operations.

4.4 The EIA will be reported in an Environmental Statement (ES) which will accompany the application documents. Each chapter of the ES will follow a common structure relating to each of the subject areas as follows:

- Introduction and approach (which will include assessment methodology)
- Baseline information including establishment of the sensitivity of the site and setting relevant to the issue which will be assessed
- Assessment of potential impacts (Construction and Operational) including identification of relevant cumulative impacts
- Mitigation (Construction and Operational)
- Assessment of residual impacts (Construction and Operational)
- Conclusions

4.5 Paragraph 18 of Schedule 4 of the EIA Regulations specifies that the developer shall/should include an outline of the main alternatives considered and an indication of the main reason for choosing the proposed scheme, taking into account the environmental effects in the ES. In the ES consideration will be provided of the alternatives considered to the current proposals for the development of the site. An explanation will be provided of how the potential impacts associated with the construction and operation of the site has been considered in designing the overall layout. The background and merits of this site and the proposed design of development will be compared with the alternative approaches which have been considered in settling on and developing the details of the proposed scheme.

5. Traffic and Transport

Introduction

5.1 The purpose of the traffic and transport section of the ES is to describe (and, where possible, quantify) the likely impact that the proposed development will have on the highway network. The assessment will be carried out by the Traffic, Transport & Highway Consultancy (TTHC) and will comprise a Transport Assessment and Travel Plan.

5.2 One of the reasons for the choice of the site location is that much of the used oil feedstock for the site will be received by pipeline from the adjacent NuStar terminal. The NuStar terminal already has consents and infrastructure in place and receives waste oil by road and by sea. Accordingly only a limited number of additional vehicle movements will be generated as a result of the proposed development. The site is located within an established industrial area with easy access to the motorway network.

Assessment

5.3 Details will be provided of the anticipated HGV activity associated with the proposed development based on the anticipated throughput of the facility. Daily movements in and out of the site and the spread of movements over the day will be considered. Traffic movements will include those associated with the construction activities at the site as well as the operational stage when the site is fully developed. Traffic movements will include vehicles associated with the delivery of used oil feedstock and the removal of product and any waste materials from the site. The assessment will consider also staff related traffic movements.

5.4 The assessment will focus on:

- Identification of movements (HGVs and cars) likely to be generated during the construction and operational phases;

- Consideration of the effects on the local highway network due to traffic generated during the construction and operational phases based on the likely agreed routeing strategy;
- Consideration of the environmental effects of traffic during the construction and operational phases, if traffic increases are likely to be significant;
- Consideration of the need for and details of any further mitigation necessary.

5.5 The assessment will be undertaken generally in accordance with published guidance including the Department of the Environment Good Practice Guide (1995), 'Guidelines for the Environmental Assessment of Road Traffic' published by the Institute of Environmental Assessment (now the Institute of Environmental Management and Assessment) (1993), Design Manual for Roads and Bridges Volume 11 (Department for Transport 1994) and the 'Guidance on Transport Assessment' (Department for Transport 2007).

5.6 The assessment of construction and operational effects will be based on a quantitative assessment of increases in traffic flows. Where significant increases are predicted, consideration will be given to any effects on junction capacity and delay on the highway network.

5.7 In considering whether effects are likely to be significant in environmental terms, the following tests in the guidelines will be taken into account:

Test 1: include highway links where traffic flows will increase by more than 30% (or the number of heavy goods vehicles will increase by more than 30%); and

Test 2: include any other specifically sensitive areas where traffic flows have increased by 10% or more.

- 5.8** If these thresholds of significance are likely to be exceeded, consideration of the potential impacts of traffic will be assessed, including:
- Severance;
 - Driver delay;
 - Pedestrian delay and amenity;
 - Accidents and safety;
 - Hazardous loads.
- 5.9** Where relevant, assessment of the impacts on air quality or noise as a result of traffic will be included in relevant other assessment areas of the EIA.
- 5.10** Scoping discussions have been held and will continue to be held with the highway authorities, at Wirral Borough Council, Cheshire West and Chester Council and Highways England in order to agree the approach to the impact assessment.
- 5.11** The impacts associated with the installation of the necessary utility connections will be considered once the requirements and routeing of these works have been established. If appropriate these impacts will be assessed as part of the construction traffic impact assessment.

6. Landscape and visibility

Introduction

6.1 A Landscape and Visual Impact Assessment (LVIA) will be carried out by Randall Thorp Chartered Landscape Architects which will identify and assess the anticipated effects of change resulting from the proposed development on the character and features of the landscape and on views and visual amenity.

6.2 The LVIA will be prepared in accordance with Guidelines for Landscape and Visual Impact Assessment (GLVIA), Third Edition, 2013, Landscape Institute and the Institute of Environmental Management and Assessment.

6.3 The principal objectives of the assessment will be:

- To describe and evaluate the existing landscape character and components likely to be affected by the proposed development (baseline description);
- To identify visual receptors with views of the proposed development (baseline description);
- To identify and describe the effects of the proposed development and to assess the significance of these effects on landscape character and components and on visual receptors taking into account the measures proposed to mitigate any of the effects identified, during both the construction and operational phases.

6.4 Key issues which it is considered are important or relevant for the proposed development and the construction methods proposed include:

- The effect that the development could have on local landscape character, including the 'Eastham Former Wooded Estate Landscape Character Area' as identified within the Wirral Landscape Character

Assessment (2009) and consideration of how the development will successfully interface with the various local landscape character areas;

- The overall effect of the development on landscape character in the context of the wider Mersey Estuary and coastline;
- Local visual effects in the immediate vicinity of the site, particularly to the northwest in the vicinity of Eastham and Eastham Ferry, and
- Long distance visual effects from areas on the northern banks of the River Mersey.

Baseline Analysis

6.5 The baseline studies will identify the landscape character and components of the site and surrounding landscape, and receptors with potential views of the development within an agreed study area. Baseline information on the landscape will be gathered through a combination of desk studies, consultation and field surveys.

6.6 The following documents will form part of the desk study:

- Wirral Unitary Development Plan (2000)
- Natural England National Landscape Character Area 58 – Mersey Conurbation Character Area
- Wirral Landscape Character Assessment 2009

6.7 A computer generated Zone of Theoretical Visibility will be developed to establish the possible extent of visibility. Site observations taking into account the existing terrain, vegetation and intervening development will verify the visibility of the proposals.

6.8 Field work will be carried out to gain a first-hand understanding of the landscape, its character and condition, and to confirm the landscape elements

that give a distinct sense of place. Field study to establish the visual baseline has been undertaken during the winter months when leaves are not on the trees to establish the worst case scenario.

- 6.9** Following initial studies it is proposed that a broad scale study area which extends a minimum of 6km from the site is adopted in order to establish the landscape character and full extent of potential visibility of the site, taking into account views from roads and major public viewpoints. A more detailed study area which extends approximately 2km from the site boundary is proposed for a more detailed visual assessment which will include views from Public Rights of Way and buildings. A plan illustrating the proposed landscape and visual study area is presented at Appendix A.
- 6.10** Key viewpoints will be agreed during the consultation. The viewpoints will be representative of potentially sensitive receptors within the study area at varying distances and directions. Views from public viewpoints, such as users of Public Rights of Way and roads in the vicinity of the site, as well as private viewpoints such as residential properties will be considered. These representative viewpoints will be used to assess the potential visual effects of the development on the different range of views of the site and different receptor groups.
- 6.11** Photographs taken from publicly accessible locations will be used to demonstrate the character and components of the site and to demonstrate existing views from the agreed viewpoints. Photographs will be taken in accordance with the guidance set out within the Landscape Institute Advice Note 01/11 (2011) - Photography and photomontage in landscape and visual impact assessment.

Assessment

- 6.12** In line with published guidance the assessment will be based on consideration of the sensitivity of landscape character, landscape features and

views/viewers to the type of development being proposed and on the magnitude of change likely to occur. The sensitivity and magnitude will then be considered together and conclusions drawn on the likely significance of effects on the landscape or on visual amenity.

6.13 The considerations which will inform the judgement relating to the establishment of significance of landscape effects are illustrated in Table 1. The considerations which will inform the judgement relating to the establishment of significance of visual effects are illustrated in Table 2.

6.14 As stated above the key viewpoints will be agreed with Wirral Borough Council. The approach to the LVIA will also be agreed with Wirral Borough Council and other consultees as necessary.

6.15 The assessment of the significance of effects will take into account all the variables set out in Tables 1 and 2 including:

- The sensitivity of the landscape or visual receptor – i.e. their value and susceptibility to change;
- The magnitude of change experienced by the landscape or visual receptor – i.e. the degree of alteration of the baseline;
- The scale at which any effects will be felt – i.e. site level, at the immediate setting of the site, at the scale of landscape character area etc;
- The visual qualities of the development itself and,
- The changes which will occur over time with the development in place.

6.16 The significance of landscape and visual effects will be assessed both during the construction, at the year of opening and after 15 years operation of the development when vegetation has matured.

- 6.17** The effects on the landscape and visual receptors will be described as being of substantial, moderate, slight, or negligible significance, and the scale at which any effects may be considered to be significant will be identified. Effects may be either beneficial (positive), adverse (negative) or neutral.
- 6.18** Depending on the visual qualities of the proposals and the setting of the development major changes in the landscape or view may not always be judged as significant. Slight or negligible effects are not considered to be of significance.
- 6.19** Table 3 illustrates the general relationship between sensitivity, magnitude and significance of effects. The table will not however be applied mechanically and conclusions regarding significance will in all cases be modified by reasoned professional judgement which will be explained in the text.
- 6.20** The landscape and visual effects of the development will be assessed cumulatively with the Biossence development at Hooton Park and any other committed developments where there are likely to be significant effects.
- 6.21** Representative views from the publically accessible areas within settlements and on public rights of way will be considered. In respect of private residential properties photographic viewpoints will be selected at nearby publically accessible locations to provide representative views sufficient to enable assessment.
- 6.22** The assessment will consider effects in the day. Effects of extended night lighting on the landscape character will be considered and detailed night time effects will be considered in a separate section on the impacts of lighting.
- 6.23** The assessment of impacts will include consideration of the effects on the landscape features and visual amenity as a result of the installation of connections to services and utilities.

- 6.24** Landscape mitigation is generally more effective if considered as an integral part of the site layout and designed to avoid, reduce or offset any adverse effects on the environment. Following review of the landscape and visual baseline a landscape opportunities and constraints plan will be prepared which sets out any areas required for landscape mitigation, features which require protection and important views which require consideration as part of the iterative process of project planning and design.
- 6.25** Where it is not possible to avoid an adverse effect, mitigation in the form of protection of landscape features, and visual screening (using landform and/or vegetation) will be employed and will be described in the assessment.

7. Land quality, water resources and flood risk

Introduction

- 7.1** The proposal will comprise the development of a site that currently is a greenfield site. Due to the industrial and potentially polluting nature of some of the materials handled at the proposed facility, the majority of the site will be covered with an impervious development surface, including buildings, hardstanding and roadways, although some areas of landscaping will be included in the site design.
- 7.2** The low permeability infrastructure proposed is an important component of the environmental protection measures but the water flow dynamics at the site will be affected by the development. The potential impacts on flood risk and surface water drainage and the potential impact on the local surface water and groundwater environment and resources will be assessed.
- 7.3** The assessment will consider the potential impacts during both the construction and the operation of the facility relating to surface water, groundwater and surface water drainage. Details of the proposed water use, treatment and discharges will be considered and compared against available guidance and current best practice.

Baseline Analysis

- 7.4** The proposed development site is currently in an essentially undeveloped state, being used in part by the Manchester Ship Canal Eastham Football Club as a grass sports pitch with associated small clubhouse / changing facilities.
- 7.5** The geological map suggests that the strata at the site comprises Made Ground above Devensian Till (sandy, gravelly, cobbly Clay) across approximately half of the site, and Alluvium (silty, sandy Clay) across the other half, although a small proportion of the site may have no superficial deposits.

The bedrock across the entire site is the Scythian age Wilmslow Sandstone Formation, which is likely to be highly permeable.

- 7.6** It is possible, although not confirmed that the Made Ground may comprise excavated soils from the construction of the Manchester Ship Canal or the adjacent QEII dock.
- 7.7** There are no mine workings or mineral extractions in the immediate vicinity of the site and the site is expected to have negligible to low natural ground subsidence potential with a moderate potential for compressible deposits.
- 7.8** Initial studies suggest that the site is located in a Zone 1 flood risk area which is defined as an area where there is less than a 0.1 percent (1 in 1,000) chance of flooding occurring each year. There is a very low risk of flooding on site as the nearby Manchester Ship Canal effectively acts as a flood plain for the River Mersey. The Environment Agency issue flood warnings for the Canal, however, the site is not considered by the Environment Agency to be in an area at risk of flooding from a canal breach. No historic flood events at the site are recorded by the Environment Agency. The developed site may however have the potential to be subject to some pluvial (surface water) flooding. There is considered to be no or limited potential for groundwater flooding to occur on the site.
- 7.9** Data reviews show that a number of local surface water emissions were discharged to the Manchester Ship Canal in the past, these now are limited to two, both of which are from the Power House Road Pumping Station and comprise effluent discharges or sewer storm overflows. All of the other discharge consents recorded on an environmental database within 320 m of the site appear to have been revoked. The current ecological quality of the QEII dock and the River Mersey is considered by the Environment Agency to be moderate, although the dock and the river both fail on chemical quality.

- 7.10** A review will be carried out of the water resources present at and in the vicinity of the site and the current quality will be assessed. A desk study of the potential impacts of the proposed development on water resources throughout the course of the construction and the on-going operation of the site will be carried out. Discussions will be held with the Environment Agency as part of this assessment.

Assessment

- 7.11** A comprehensive Phase I desk based study of the site will be provided, which establishes the land use history of the site and consequently the likely ground contamination history. This will include the examination of any detailed records held by the Local Authority, Environment Agency and others as appropriate and the acquisition of historical maps and environmental summary data sheets. The influencing factors and sensitive environmental targets of potential contaminative sources will be identified. The methodology to be employed will be broadly in accordance with current UK guidance: Model Procedures for the Management of Land Contamination (CLR11) 2004.
- 7.12** Once the potential for pollution or its effects have been identified, a conceptual site model will be created in tabular and diagrammatic form to show the possible pollutant linkages, and a Phase II site investigation can be devised to confirm or otherwise, the findings of the Phase I desk study and provide a baseline of pollution and geotechnical characteristics of the site.
- 7.13** The Phase II study will be presented as an interpretive report which will assess the current status of the land against relevant Generic Assessment Criteria (GAC) and Soil Screening Values (SSVs). Groundwater quality data will be compared with the general water quality guidelines from the UK, European Union, and World Health Organisation.

- 7.14** Details of the measures to be employed across the site by way of preventing or minimising the potential for future contamination of land or ground water during the construction and operation of the development will be provided.
- 7.15** In assessing the significance of the impacts of the development on water resources, reference will be made to the following relevant regulations and guidance:
- European Union and UK legislation;
 - Water quality standards and objectives;
 - Environment Agency Pollution Prevention Guidelines;
 - Policies relating to water body protection, including the aquifer protection policy of the Environment Agency; and
 - The protection of designated sites of nature conservation importance (local, national and international designations).
- 7.16** An initial review will identify the water resources in the area and establish where possible their current quality, with reference to, amongst other things, Environment Agency records and data retained by the British Geological Survey. A desk study of the potential influences of the proposed development will be made of the likely impacts on water resources and downstream receptors throughout the construction and operational stages of the site. The source, pathway, receptor methodology will be applied, and a baseline flood risk assessment will be produced. Account will be taken of the controls and mitigation measures that will be implemented at the site in accordance with best practice and the anticipated terms of the Environmental Permit that will be needed to operate the facility.
- 7.17** The assessment will consider the potential impacts on the development itself, and of the development on downstream receptors in the local area, specifically

relating to the potential impact of flood water contributions and the impact on local water quality from both normal site operations and site emergencies.

- 7.18** Surface water drainage during the site construction phase will be controlled through the use of a Construction Environmental Management Plan which will be prepared for submission with the application documents and will set out the proposed controls.
- 7.19** The principles of site surface water management and drainage will be prepared and submitted as part of the application documents. The management plan will maximise the opportunities for water recovery and re-use where practicable. The plan will include consideration of the drainage and flood impacts of the development with respect to hydrological connectivity to nearby features, overland run off etc, will consider the potential discharge locations for site surface waters, and will identify potential flow mitigation methods, such as rainwater harvesting and sustainable urban drainage schemes which can be incorporated into the development to control the release of site waters to acceptable levels for the receiving watercourse. It is currently expected that clean surface water run-off will be discharged to the Manchester Ship Canal under agreement with the landowner, and with all appropriate abatement and accident and emergency control measures incorporated.
- 7.20** Should the Phase II site investigation identify levels of contamination at the site which are considered to require remedial works prior to the site development, an options appraisal of the potential remedial methods will be provided within the ES. Remedial works will not necessarily be undertaken prior to the submission of the DCO application, but are likely to be carried out as part of the construction phase.
- 7.21** The likely impact of the development during the construction and operational phases will be considered by assessing the 'pollutant linkage'; that is the source, pathway and receptor of potential future pollution. Essentially, where

the source, pathway and receptor linkage is complete, the possibility for pollution to occur exists, and further mitigation measures will require consideration. Consideration will be given to the potential for changes to the pollutant linkages during the construction phase. Without a complete pollutant linkage either through a lack of source, pathway or receptor, there is no risk of contamination.

- 7.22** Consideration will be given to the need for any additional mitigation requirements identified by the potential impacts likely to be caused, and any residual risk will be detailed and the management plan adapted to ensure that these potential risks are managed appropriately.
- 7.23** The incorporation of new utilities at the site will require below ground pipelines and drainage to be installed. The routes for these services have not yet been finalised but the potential impact on land and water quality and any temporary impact on the flood risk of the site of utility routes being developed will be considered once the routes and work requirements have been identified.

8. Nature Conservation and Biodiversity

Introduction

- 8.1** The potential impacts of the proposed development on the existing ecology at and in the vicinity of the site will be assessed.

Baseline Analysis

- 8.2** Ecological survey work has been undertaken by Ecology Solutions between October 2014 and March 2015 inclusive. The collated information will provide an established and robust ecological baseline for the application site. The findings of the following will be incorporated in the assessment:

Surveys of the application site by Ecology Solutions in 2014 / 2015:

- Wintering bird surveys (covering low and high tide on two consecutive days in October 2014, single monthly visits in November and December 2014 and twice monthly visits in January, February and March 2015)
 - Phase 1 habitat survey including assessment of features for potential to support protected species undertaken between October 2014 – March 2015
 - Badger surveys undertaken between October 2014 – March 2015
 - Bird surveys of adjacent areas to the development site and adjacent sections of the Mersey Estuary protected site in 2014 / 2015
 - Wintering bird survey (covering low and high tide as for application site between October 2014 and March 2015 inclusive) undertaken from fixed vantage points in the vicinity of the site.
- 8.3** Baseline information about ecological features including sites of importance for nature conservation, species populations, species assemblages and habitats will be obtained from several key sources including existing data and

information relevant to the application site from published sources, databases and local recorders.

- 8.4** Information from the surveys will be used to provide a baseline for assessing the potential ecological impacts of the proposed development. This will result in an ecological impact assessment that provides a full ecological assessment of the potential impacts of the proposed development.

Assessment

- 8.5** The assessment will comprise:

- An ecological review of the existing situation with regard to any changes to the ecological conditions on site;
- Liaison with relevant organisations such as Natural England and the Merseyside Environmental Advisory Service (MEAS) where appropriate and relevant;
- Review of appropriate legislation, planning policy and published information in relation to the conservation status of species in the UK and at the local level (e.g. UK Priority species, Red List bird species of conservation concern, notable invertebrate species);
- Analysis of baseline data and evaluation of ecological receptors;
- Assessment of the potential impacts on the ecology at and adjacent to the site during the construction works and once the proposed development is operational;
- Measures, where appropriate, to mitigate potential impacts that are identified;
- Measures to enhance the ecological value of the application site once the proposed development is completed; and

- Best practice guidelines (e.g. Joint Nature Conservation Committee, Bat Conservation Trust); regard will be had to guidelines where appropriate and the impact assessment will be carried out with regard to 'Guidelines for Ecological Impact Assessment'¹.

8.6 The ecological assessment will focus on ecological receptors, or species and habitats present within the zone of influence of the proposed development that are of sufficiently high value that an impact upon them, as a result of the proposed development could be considered to be significant. The effects that will be considered will include the effects on sensitive species and habitats at and around the site that may result in particular from noise, lighting and atmospheric emissions from the proposed facility.

8.7 Detailed descriptions will be provided of the findings of the ecological surveys together with appropriate mitigatory measures as part of the development design.

Habitats Regulations Assessment (HRA)

8.8 The Conservation of Habitats and Species Regulations 2010 (the 'Habitats Regulations') provide a strict level of protection afforded to a number of sites which have been established as sites of European importance for nature conservation. The application site is not located within a European Site but is located approximately 200m west of the Mersey Estuary Special Protection Area (SPA), which is also a Ramsar Site. The results of the ecological impact assessment will be used as part of the assessment carried out in relation to the tests under Regulation 61 of the Habitats Regulations.

8.9 The scope of the issues considered as part of the Habitats Risk Assessment will be agreed in consultation with Natural England and MEAS and a screening

¹ Institute of Ecology and Environmental Management (2006) Guidelines for Ecological Impact Assessment in the United Kingdom (version 7 July 2006). <http://www.ieem.org.uk/ecia/index.html>

report will be prepared at an early stage for discussion and agreement with Natural England and MEAS.

- 8.10** The potential locations of services installations covers land that was not included in the survey work undertaken to date. These additional areas comprise roads, pavements and verges and will be subject to further surveys (Phase 1 habitat survey and Phase 2 faunal/botanical surveys) if appropriate.

9. Archaeology and cultural heritage

Introduction

9.1 Based on historical maps, there is no evidence of significant development at the site since the mid 1800s other than the creation of a sports pitch. A desk-based assessment of existing information related to the archaeological potential of the site will be undertaken.

9.2 The desk based study will be drawn from discussions with and reviews of records held on the Merseyside Historic Environment Record, Wirral Archaeology, the National Monuments Record and online databases. Reference will also be made to the following policy notes and guidance:

- Planning Practice Guide – Conserving and enhancing the historic environment (March 2014).
- Conservation Principles: Policies and Guidance for the Sustainable Management of the Historic Environment (2008);
- Historic England guidance on the Setting of Heritage Assets (2011);
- Relevant national and local planning policy and guidelines.

9.3 The desk-based assessment will be compiled in accordance with the latest: Standard and Guidance Archaeological Desk-Based Assessment (Chartered Institute for Archaeologists). Discussions will be held with the County Archaeologist and Historic England to agree the scope of the archaeological and cultural heritage assessment.

9.4 Where the desk-based study indicates that archaeological remains may exist on the site it will be determined in consultation with the County Archaeologist whether it is necessary to undertake any archaeological field evaluation prior to the submission of the DCO application. This would aim to define the character and extent of the remains and to identify the appropriateness of

potential options for minimising or avoiding damage where development is to take place.

Assessment

9.5 An assessment will be made of the potential effects upon the setting of offsite designated heritage assets within the visual envelope of the proposed development.

9.6 The objectives of these assessments are to:

- Describe known and potential archaeological assets which may be affected by the proposed development;
- Describe the location and setting of offsite designated heritage assets in relation to the proposed development;
- Provide an assessment of the importance of these assets;
- Assess the range and magnitude of any impacts on the archaeological and heritage resource;
- Establish the significance of each identified heritage asset to determine its value (architectural, artistic, historic, cultural etc) and how sensitive it is to loss or damage.
- Outline suitable mitigation measures to avoid, reduce or remedy any significant adverse effects; and
- Provide an assessment of any residual effects remaining after mitigation.

9.7 The desk based study will be reported in advance of any significant development works at the site, including the laying of utilities, and will provide the information necessary for undertaking the field evaluation requirements before ground work progresses. Irrespective of the need or otherwise for further investigative works at the site, care will be taken during all site

development and construction works and any finds of potential archaeological or cultural interest will be reported to MEAS.

10. Noise and vibration

Introduction

10.1 The potential impact on nearby sensitive receptors of noise and vibration generated during the construction and operation of the facility will be assessed. The following potential effects shall be considered:-

- Noise and vibration impacts on nearby sensitive residential properties and protected habitats during site preparation and construction;
- Noise and vibration impacts of off-site construction traffic on nearby sensitive residential properties;
- Noise impacts of operational activities, machinery and fixed plant on nearby sensitive residential properties and protected habitats;
- Noise impacts of operational phase off-site traffic on nearby sensitive residential properties.

10.2 Noise from the existing adjacent industrial areas and the vehicular movement on the nearby M53 will form the basis of the background environmental sound levels to inform the noise impacts assessments. Potential impacts from vibration on sensitive nearby properties will be assessed based on current relevant industry standards and guidelines.

Baseline Analysis

10.3 Discussions have already been held with the Local Authority to determine the preferred survey and impact assessment methodology. The approach to the assessment and the methodology will be agreed with the Local Authority.

10.4 A baseline environmental noise survey has been undertaken by means of automated monitoring over a period of up to 96 hours. The baseline environmental noise survey has been used to establish the background noise

levels at the nearest noise sensitive receptors. The measurements were conducted in accordance with BS 7445:2003 'Description and measurement of environmental noise. Guide to quantities and procedures'. The noise monitoring locations are shown on Figure 2.

- 10.5** Where adequate manufacturer's data is not available for the plant and equipment that will be operated at the site, measurements will be taken of similar plant and equipment at existing sites and facilities where possible in order to determine source noise level data for use in the assessments. Vibration levels of machinery/equipment and operations will be taken from appropriate relevant industry standards such as BS 5228.

Assessment

- 10.6** The information collated during the noise surveys will be used to carry out a detailed noise impact assessment of the proposed development. The assessment will take into account the relevant legislation and standards, in particular BS 4142:2014 for operational noise impacts and BS 5228 for construction noise and vibration impacts.
- 10.7** For the construction phase impacts, the assessment will consider the proposed phasing of the construction works and the likely size, number and duration of working for the machinery used. This will include off site HGV movements, all relevant on-site activities and piling operations, where applicable, particularly in relation to vibration.
- 10.8** For the operational phase, the noise assessment will consider light and heavy vehicle traffic to and from the site, fixed equipment and plant, emergency plant (such as flares) and general site operations.
- 10.9** In the event that a significant noise impact is predicted suitable mitigation will be incorporated into the design to ameliorate the impact. Such measures may include site layout, operational times, screening at site boundaries, building fabric performance and noise and/or vibration attenuation at source.

10.10 The assessment will also consider the temporary noise impact associated with the need to bring services to the site. The impact of traffic off and on site shall be considered with noise mitigation measures proposed where necessary.

11. Air quality

Introduction

- 11.1** The proposed used oil re-refinery includes a number of activities which, in the absence of appropriate mitigation and control measures, have the potential to result in an impact on air quality and to generate odour. These activities include the storage of incoming and processed oils in tanks which will displace air and vapours when filled, heat and steam creation in boilers and heaters, processing used oil through chemical addition and heating, the thermal oxidation of waste gases and the operation of emergency flares.
- 11.2** Discharges to atmosphere will be abated appropriately taking into account the environmental significance of any emission, and based on the application of Best Available Techniques. Abatement systems may include condensers, scrubbers, thermal destruction or adsorption systems. The potential for emissions to air from operations across the plant will be considered taking into account their concentration, mass releases and nuisance potential (for example odour potential) and their impact will be assessed. The details of the construction and operation of the facility including in particular the controls on potential emissions to the environment will be the subject of an application to the Environment Agency for an Environmental Permit (EP). The facility will be operated in accordance with the EP which will include procedures, systems and controls to minimise emissions to the environment that are suitably protective of environmental quality and human health. Monitoring of the effectiveness of the controls will be specified as part of the EP. Although the emissions from the facility will be part of the assessment and regulation through the parallel pollution control regime, sufficient details will be provided as part of the EIA to demonstrate that the potential impacts on the environment will be adequately controlled through the EP and that the proposed development is suitable at this location.

- 11.3** The air quality and odour assessments will assess the baseline conditions already present or anticipated, the point source and potential fugitive emissions from the re-refining process and will confirm the appropriate stack heights to achieve effective dispersion of emissions from the discharge points. Additionally, the assessment will consider the potential for localised impacts during the construction phase of the development.
- 11.4** The main emissions associated with the re-refinery process may include carbon dioxide, carbon monoxide, oxides of nitrogen, particulate matter, volatile organic compounds (VOCs), methane, oxides of sulphur, hydrogen chloride, hydrogen fluoride and some concentrations of metals, with these final three pollutants only being associated with the destruction of off-gases. Many of these compounds are associated with the combustion processes required to facilitate the re-refining operation. Oil refineries are not generally considered to have significant potential to discharge dioxins and furans, however any combustion or heating process involving hydrocarbons with the presence of chlorine can have the potential to create dioxin and furan emissions, and as such, consideration will also be given to the potential for the discharge of dioxins and furans. All emissions from the process will be controlled in line with Best Available Techniques, as stipulated by the EU Industrial Emissions Directive, and the Environmental Permitting Regulations.
- 11.5** The process includes two emergency release flares, and these will be designed taking into account the necessary residence time and temperature control to ensure appropriate combustion. Residual emissions to the atmosphere will comprise carbon dioxide, carbon monoxide, oxides of nitrogen, oxides of sulphur and residual unburned hydrocarbons. The potential impacts associated with emissions of carbon dioxide and other greenhouse gases on climate change will be considered.
- 11.6** The construction phase of the project has the potential to result in an adverse impact on local air quality, principally through the generation of dust and the

release of vehicle exhaust fumes on and around the site (including carbon dioxide, carbon monoxide, oxides of nitrogen, particulate matter, sulphur dioxide and volatile organic compounds) from traffic movements.

Baseline Analysis

- 11.7** Existing ambient air quality and baseline conditions will be reviewed using available air quality monitoring data and the most recent local authority reports prepared in compliance with their Local Air Quality Management obligations to review and assess local air quality under the Environment Act 1995 Part IV. There are currently five diffusion tube monitoring sites for oxides of nitrogen located in and around Eastham, although there are no designated Air Quality Management Areas within the Wirral Borough.
- 11.8** Although emissions from existing operations in the vicinity of the proposed re-refinery will be taken into account in the available ambient air quality data, any proposed changes to emission sources in the area will be considered where identified. These may comprise proposed modifications to existing sources such as operations at the NuStar, Eastham Oil Refinery or Vauxhall facilities, or as a result of proposed development identified through the planning regime, such as the consented Biossence development. Consultation will be carried out with Wirral Borough Council and the Environment Agency in order that a definitive list of significant emissions sources is considered as part of the air quality assessment.
- 11.9** The nearest residential receptors to the proposed development are situated on Seaview Road, approximately 140m to the west (boundary to boundary). Other residential receptors include the wider Eastham Village and Brookhurst areas (west), Bromborough, approximately 1.5 km to the north-west and Hooton located approximately 1.8km to the south south west. Sensitive ecological receptors include the nearby Mersey Estuary parts of which are designated ecologically protected areas.

Assessment

- 11.10** Contributions to levels of atmospheric pollutants from the proposed development will be assessed using the Environment Agency H1 assessment methodology in the first instance, and will be supported by detailed atmospheric dispersion modelling (using the latest version of the ADMS model) where required. The H1 assessment is designed as an initial screening environmental assessment tool for use by industries regulated by the Environment Agency. As a result, the tool is relatively conservative and it is likely that detailed atmospheric dispersion modelling will be required. Any dispersion modelling assessment will be made using five years' worth of meteorological data to support the model, ensuring that varying weather patterns are assessed. The model will produce results across a defined grid in order that the maximum predicted ground level concentration can be identified, and will also identify the predicted concentration at specified sensitive receptors.
- 11.11** The use of these tools will confirm the necessary stack height of the process discharge points, comprising the boiler, thermal fluid heater and thermal oxidiser flues and the emergency flares, and will assess the impact of the releases to atmosphere from the process on the local environment. The level of process contributions and the overall predicted environmental concentrations will be assessed to ascertain their likely impact on human health. Consideration will also be given to any changes in nutrient nitrogen or acid deposition at sensitive ecological receptors in the area. The assessments will be made with consideration of other existing or potential sources, to ensure that the overall in-combination effect of the proposed process with other local sources is considered.
- 11.12** Details of the atmospheric emissions from the processes will be quantified by the design team, and will be assessed as a realistic worst case scenario. Background concentrations will be drawn from measured ambient monitoring

results where these are available, or from the estimated background air pollution maps from the UK Air Quality Archive website, where no more accurate data is available.

11.13 The results of the detailed dispersion modelling will be presented as contour plots across a map of the area, which will identify the dispersion of the plume from the point source, and will be compared to the requirements of the European Air Quality Directive (2008/50/EC) and the UK Air Quality Standards Regulations (SI 2010 1001). An assessment of the significance of the process contributions will be made considering both the criteria defined in 'Development Control: Planning for Air Quality (2010 Update)', and the process prescribed by the Environment Agency which considers that:

Process contributions can be considered insignificant if:

- the long term process contribution is <1% of the long term environmental standard; and
- the short term process contribution is <10% of the short term environmental standard.

11.14 If the combination of the long term contribution to ground level concentrations or deposition rates, plus the background (known in combination as the predicted environmental concentration (PEC)) exceeds 70% of the assessment level for any pollutant, there is the potential for a significant effect.

11.15 The impact of contributions to air pollution from traffic and transport sources associated with the development will also be calculated where initial screening demonstrates that it is necessary.

11.16 Odours from refineries are largely created by sulphur compounds such as hydrogen sulphide, but may also be the result of hydrocarbon emissions. Without appropriate mitigation the main sources of odour from refinery processes generally can result from storage and handling, flaring and effluent

treatment operations. Details of the likely odour creation potential will be provided by considering the level of potential emissions to air and the duration over which these may occur. Details of the abatement measures which will be employed will be provided and the efficiency of these measures to reduce potential odour emissions from the processes will be assessed. An odour management plan will be produced for the site operations as part of the EP and will include:

- an odour management strategy;
- protocols for odour monitoring;
- protocols for responding to identified odour events;
- an ongoing odour prevention and elimination programme designed to identify the potential location, nature, emission and dispersion of on-site odours, to characterise the odours and to implement elimination and/or reduction measures in relation to these odours;
- an implementation timetable for all actions included in the programme;
- reporting procedures;
- a review programme.

11.17 Emissions abatement will comprise Best Available Techniques, in accordance with the Environment Agency Sector Guidance Note: Guidance for the Recovery and Disposal of Hazardous and Non Hazardous Waste (IPPC S5.06) 2013, and the European Commission Waste Treatment Industries Best Available Techniques (BAT) Reference Document (BREF). Consideration will also be given to other BREFs where relevant, such as the BREF which considers Common Waste Water and Waste Gas Treatment/Management Systems in the Chemical Sector, the Emissions from Storage BREF and the

latest version of the Refining of Mineral Oil and Gas BREF (2015) supported by the BAT Conclusions Document of October 2014.

- 11.18** The magnitude and risk of potential emissions of dust during the construction phase will be assessed in accordance with Guidance on the Assessment of Dust from Demolition and Construction (IAQM, 2014), and the potential impact of emissions from the increased number of vehicles during the construction and operation of the facility will be assessed using the methodology prescribed in the Department for Transport Design Manual for Roads and Bridges (DMRB) Volume 11 Section 3, Part 1: Air Quality, and the associated DMRB Screening Method developed by the Highways Agency.

Mitigation

- 11.19** Mitigatory measures in respect of the potential for significant impacts from construction activities will include best practice measures such as the use of a Construction Environmental Management Plan, the principles of which will be drafted for the submission with the application, strict housekeeping and daily dust, odour, noise and litter checks. Additionally, and as determined due to adverse weather conditions, lighter weight, stockpiled materials will be covered or dampened to reduce the potential for dust creation.
- 11.20** The incorporation of new utilities at the site will require below ground pipelines and drainage to be installed. These works are likely to have similar potential impacts on air quality as those from the wider site construction and will be assessed and controlled in a similar way.

12. Protection of health

Introduction

12.1 The proposed development will result in emissions to the environment which, if inadequately controlled, have the potential to affect the health of people who live and work in and use nearby areas. An assessment of the effects of emissions from the proposed development to reach and to affect people will be carried out as part of the EIA.

Assessment

12.2 The assessment of the impact of the proposed development on health will be carried out based on the source-pathway-receptor methodology. The potential sources of contaminants which may be harmful to the health of people will be identified. The pathways present at the site for the potential exposure of people to the contaminants will be identified. The sensitive potential receptors which may be exposed to contaminants from the proposed development will be identified. Based on the review potential exposure pathways will be identified.

12.3 The control measures proposed for the operation of the facility will be reviewed and their likely effectiveness assessed. The risk to the health of people will be assessed based on the exposure pathways identified and the control measures proposed. Where the assessment shows that the proposed development may result in an unacceptable risk to human health appropriate further mitigation measures will be proposed.

12.4 The perceptions of the impacts of hazardous waste management facilities on human health frequently give rise to concerns. The reasons for any perceptions of adverse impacts will be assessed together with the evidence regarding the perceived concerns. The assessment will include presentation of the methodology and conclusions of the health risk assessment.

13. Socio economic impacts

- 13.1** The proposed development may result in actual or perceived socio economic impacts at a local or regional level. It is proposed that a socio economic impact assessment is prepared in accordance with the guidance provided in the Hazardous Waste NPS. A section will be included in the ES which addresses the potential impacts on the local and regional area including job creation and training opportunities, the effects on tourism and the impact on local services. The socio economic assessment will comprise a review of publically available data only.

14. Cumulative impacts

- 14.1** The cumulative impacts of the proposed development will be assessed together with those from permitted or committed developments in the vicinity of the site. It is considered likely that it will be necessary to review cumulative impacts with respect to noise, landscape and visibility, traffic and air quality.

TABLES

Table 1
Considerations contributing to the establishment of the significance of landscape effects

Sensitivity of landscape receptor	Value attached to landscape receptor	Designations attached to landscape character types or areas which may be affected and their national, regional, local importance	
		Value of contribution made by the site to overall character	Landscape quality (condition)
			Scenic quality
			Rarity or representativeness
			Conservation heritage interests
			Recreational value
			Notable perceptual qualities
	Associations with art or literature		
Susceptibility of landscape receptor to change	The ability of the landscape receptor to accommodate the proposed development without undue consequences for the maintenance of the baseline and/or landscape planning policy or strategy		
Overall judgement in respect of sensitivity : This will be determined and explained as High, Medium or Low depending on the combination of circumstances			
Magnitude of landscape effects	Size and scale of changes	Extent of existing landscape elements that contribute to character that will be lost.	
		Degree to which the proposal fits in with or changes existing character	
		The contribution made to the landscape by the scheme by virtue of good design, and its relationship to existing character	
	Geographical extent	Extent of geographical area over which effects are felt: at site level; within the immediate setting of the site; at the scale of a landscape type or character area; effects spread over a wider area.	
Duration of effects	Short term: (0-5 years), medium term: (5-10 years), long term: (10-25 years); Consideration of reversibility		
Overall judgement in respect of magnitude of landscape effects: This will be determined and explained as Major, Moderate, Minor or Negligible depending on the combination of circumstances			
Judgement of significance of effects: Combines sensitivity and magnitude in a considered way and will be determined and described as Substantial, Moderate, Slight or Negligible , and as either Beneficial, Adverse or Neutral depending on the circumstances			

Table 2

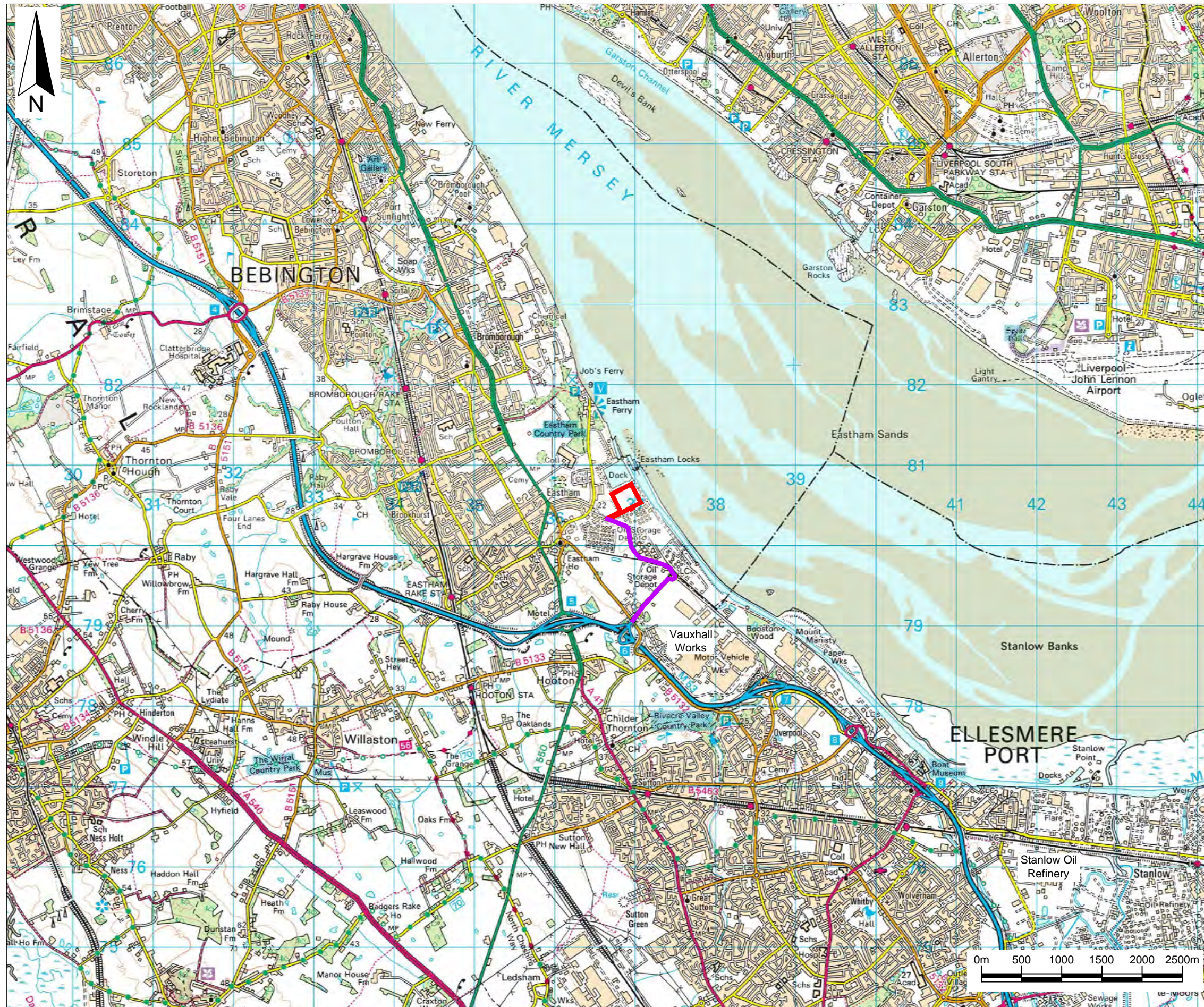
Considerations contributing to the establishment of the significance of visual effects

Sensitivity of viewer	Value attached to views	Relationship to heritage assets or planning designations
		Indicators of value in publications, maps, art etc
	Susceptibility of viewer to change	Occupation or activity of viewer
		Extent to which their attention or interest is focussed on the view
Overall judgement in respect of sensitivity: This will be determined and explained as High, Medium or Low depending on the combination of circumstances		
Magnitude of visual effects	Size and scale of changes	Loss or addition of features and changes in composition, including consideration of proportion of view affected
		Degree of contrast or integration with the landscape setting, including the design of the scheme and its visual qualities
		Permanence of the view and its changes over time, and whether it will be full, partial or glimpsed.
	Geographical extent	Angle of view compared to activity of main receptor
		Distance of viewer from the development
		Extent of area over which changes are visible (including lengths of footpaths etc)
	Duration of effects	Short, medium, long term and reversibility
Overall judgement in respect of magnitude of visual effects This will be determined and explained as Major, Moderate, Minor or Negligible depending on the combination of circumstances		
Judgement of significance of effects: Combines sensitivity and magnitude in a considered way and will be determined and described as Substantial, Moderate, Slight or Negligible, and as either Beneficial, Adverse or Neutral depending on the circumstances		

Table 3
Significance criteria

Magnitude	Sensitivity		
	High	Medium	Low
Major	Substantial beneficial or adverse effect , or Neutral effect	Substantial or Moderate beneficial or adverse effect, or Neutral effect	Moderate or Slight beneficial or adverse effect, or Neutral effect
Moderate	Substantial or Moderate beneficial or adverse effect , or Neutral effect	Moderate beneficial or adverse effect, or Neutral effect	Slight beneficial or adverse effect, or Neutral effect
Minor	Moderate or Slight beneficial or adverse effect, or Neutral effect	Slight beneficial or adverse effect, or Neutral effect	Slight beneficial or adverse effect or negligible effect
Negligible	Negligible effect	Negligible effect	Negligible effect

FIGURES



Key / Notes

- Site development area
- Proposed route for HGVs travelling to and from the site

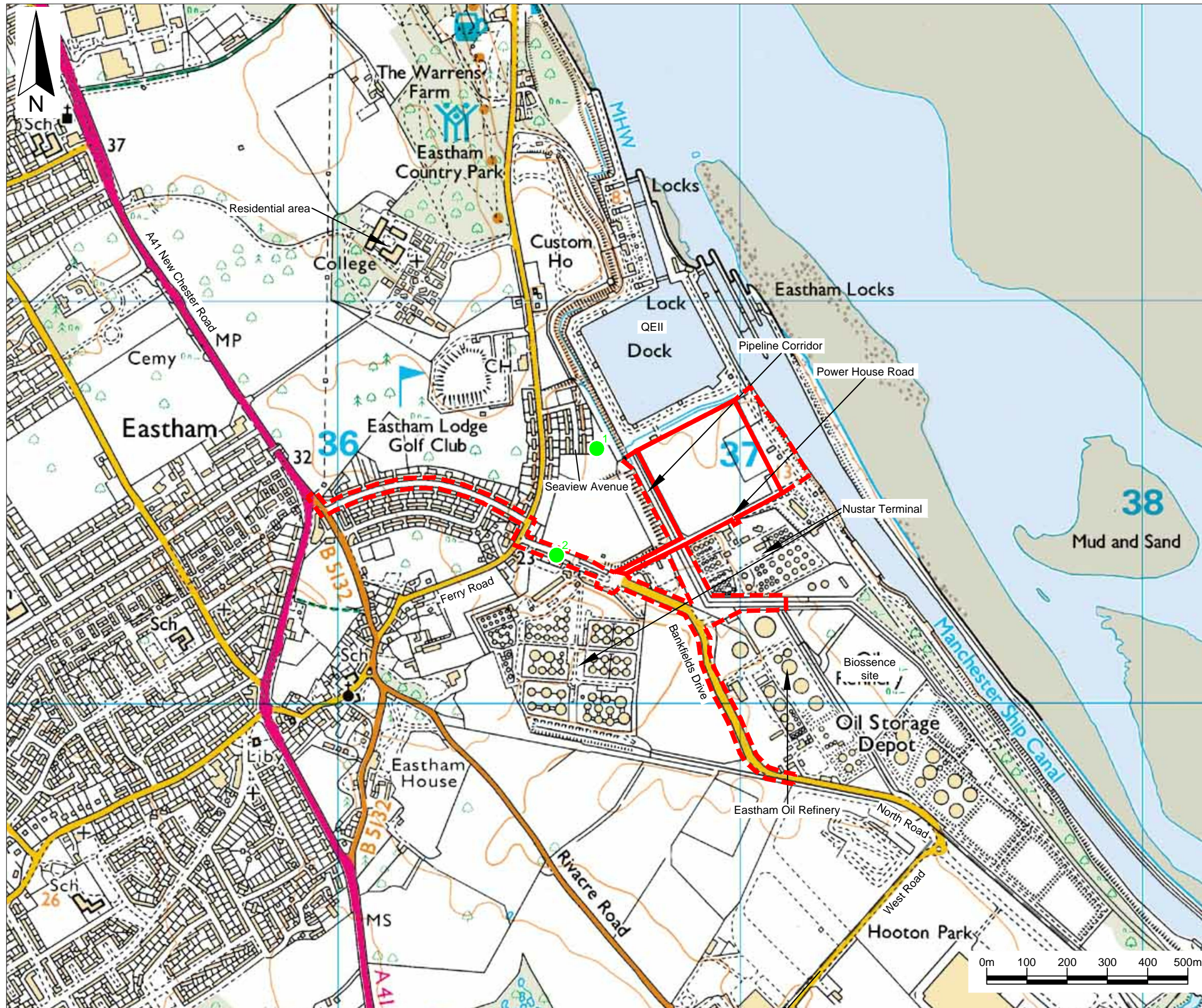


Rev	Final	KR	LZH	LH	29/06/15
	Status	Drn	App	Chk	Date




HYDRODEC OIL RE-REFINERY, EASTHAM
 Client: Hydrodec Re-refining (UK) Limited
 Title: Site location

Figure 1 Scale: 1:50,000@A3

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Key / Notes

-  Site development area
-  Possible extent of application boundary dependant on location of service connections
-  Approximate background noise monitoring locations



Rev	Status	Drn	App	Chk	Date
	Final	KR	LZH	LH	29/06/15

Site
HYDRODEC OIL RE-REFINERY, EASTHAM

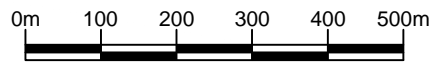
Client
Hydrodec Re-refining (UK) Limited

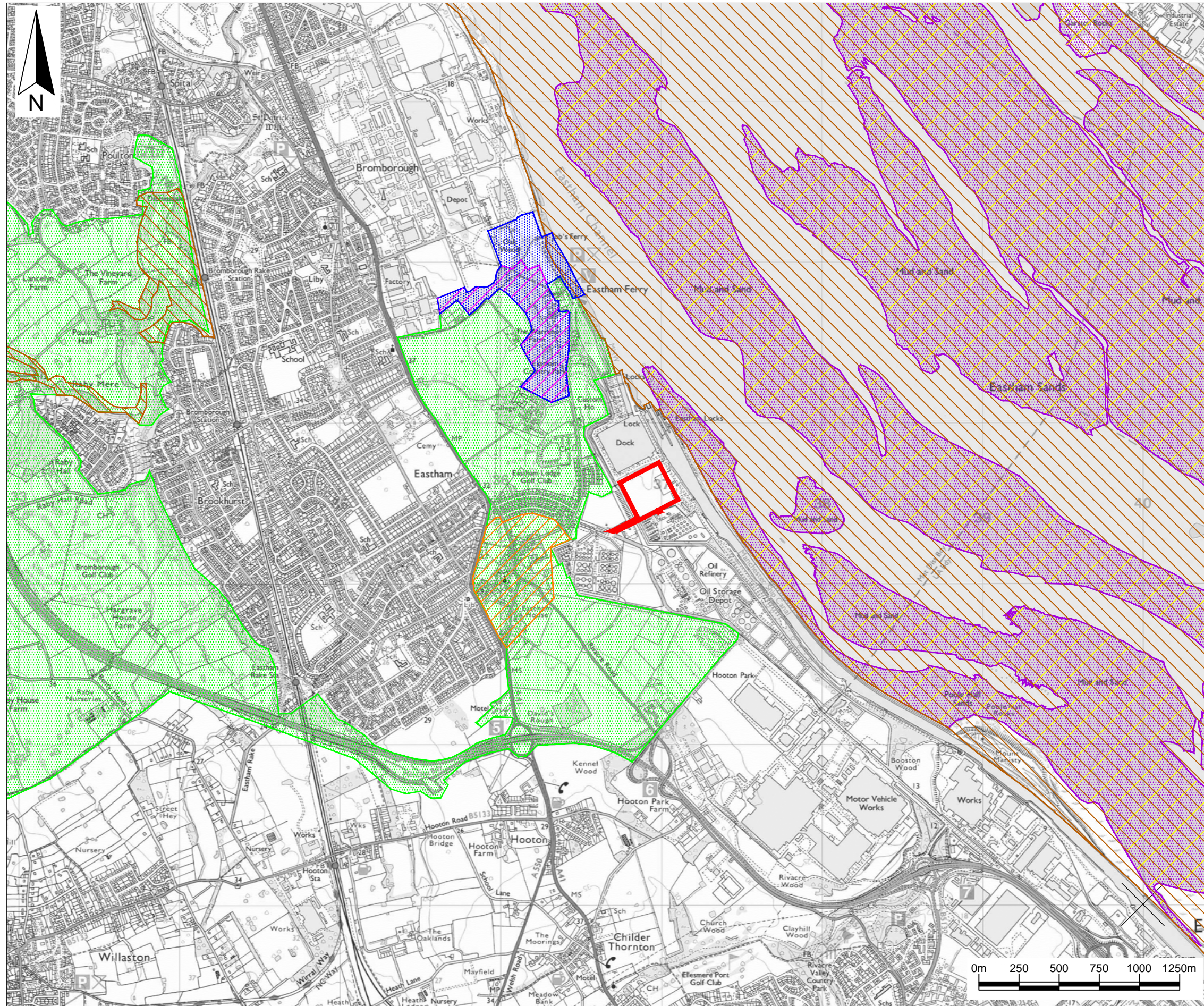
Title
The proposed application boundary

Figure 2 Scale
1:10,000@A3

Drawing Ref
HYD/EA/06-15/18734

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Key / Notes

- Site development area
- Approximate location of a Site of Special Scientific Interest (SSSI)
- Approximate location of a Special Protection Area (SPA)
- Approximate location of a Ramsar site
- Approximate location of a Local Wildlife Site (LWS)
- Approximate location of Eastham Village Conservation Area
- Approximate location of a Site of Biological Importance
- Approximate area of Green Belt

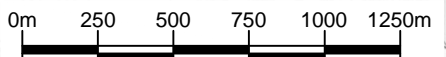


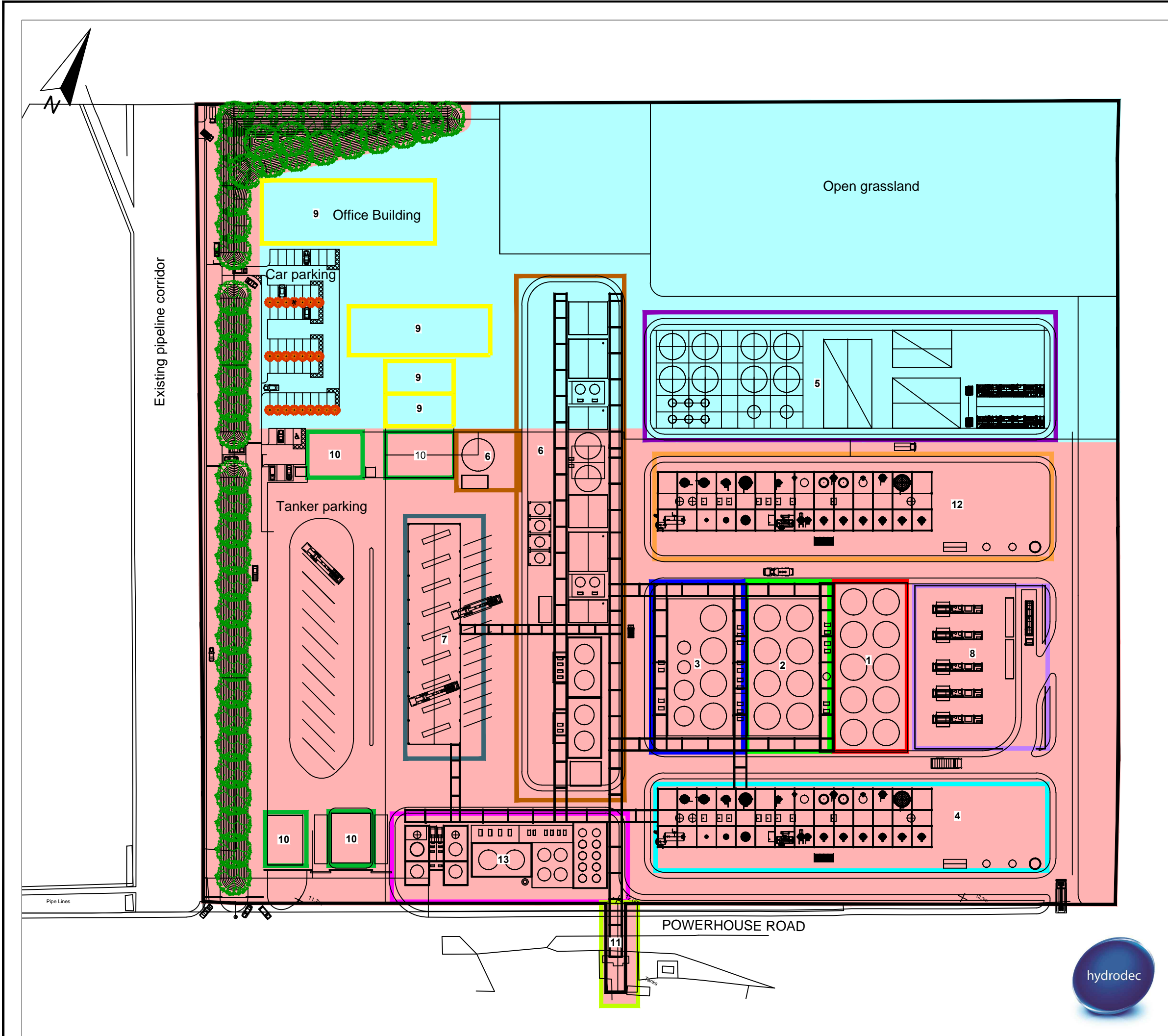
	Final	KR	LZH	LH	29/06/15
Rev	Status	Drn	App	Chk	Date

Site
HYDRODEC OIL RE-REFINERY, EASTHAM
 Client
 Hydrodec Re-refining (UK) Limited
 Title
 Designations in the vicinity of the site

Figure 3 Scale
 1:25,000@A3

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Key / Notes

- Phase 1 development
- Phase 2 development
- 1 Dewatering tank farm
- 2 Tank farm
- 3 Base oil tank farm
- 4 Base Oil Plant 1
- 5 Transformer Oil Plant island complete with own tank farm
- 6 Services plant comprising cooling water towers, steam boilers, hot oil plant, thermal oxidizer, product storage tanks, waste water tanks, water treatment plant, softened water plant
- 7 Tanker loading and offloading bay
- 8 Hydrogen production area
- 9 Office, warehouse and research & development facility
- 10 Process buildings including laboratory and control room, warehouse, gate house, transformer building
- 11 Pipe bridge to NuStar
- 12 Base Oil Plant 2
- 13 Feedstock receiving and blending tank farm

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Site: HYDRODEC OIL RE-REFINERY, EASTHAM
 Client: Hydrodec Re-refining (UK) Limited

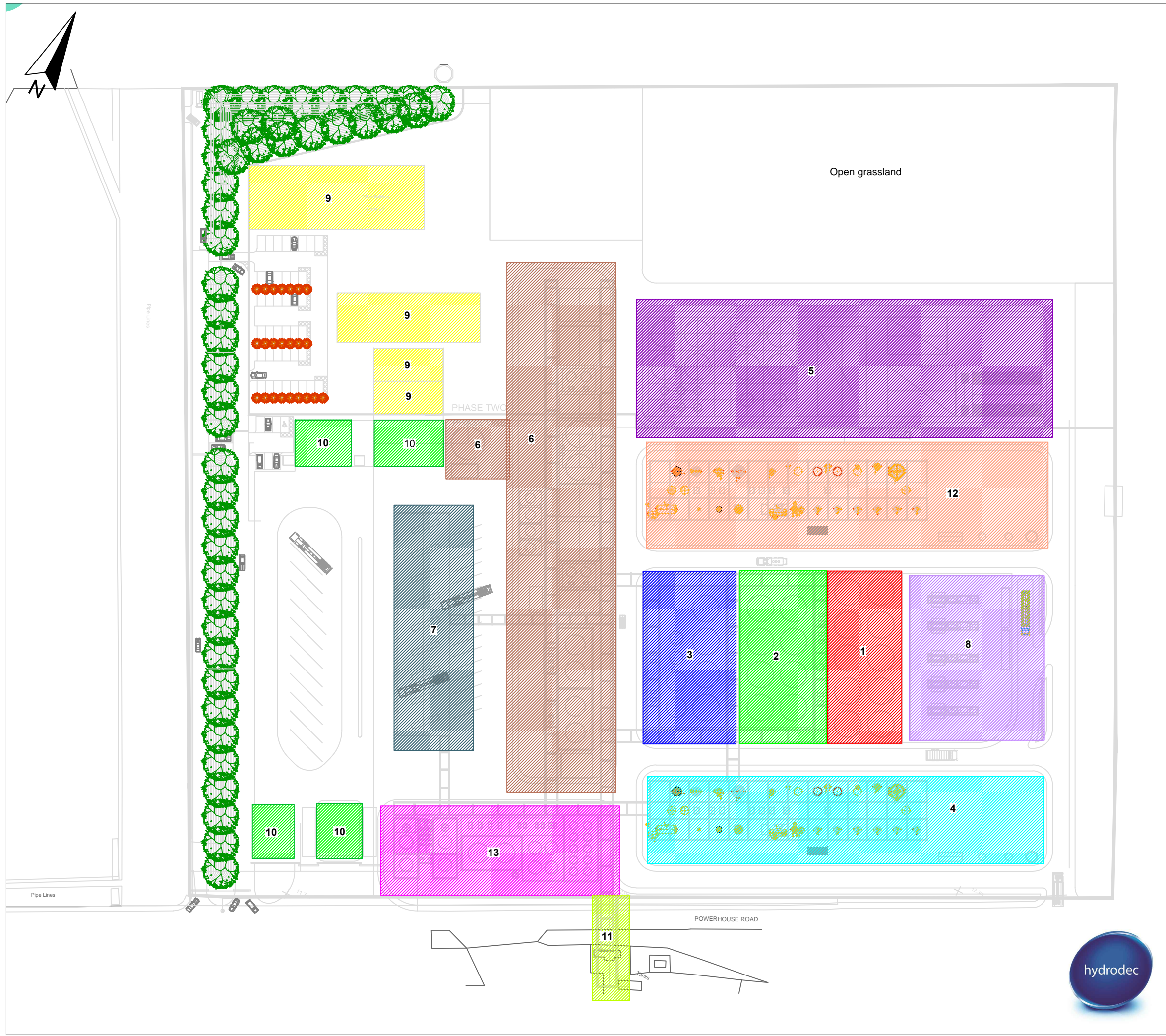
Indicative site layout

Figure 4 Scale: Not to scale

Drawing Ref: HYD/EA/06-15/18738

MJCA Baddesley Colliery Offices,
 Main Road, Baxterley, Atherstone
 Warwickshire, CV9 2LE.
 Telephone : 01827 717891
 Technical advisers on environmental issues Fax : 01827 718507





Key / Notes

- 1 Dewatering tank farm 23m x 50m
Max tank size 8m dia x 12m high
- 2 Tank farm 27m x 50 m
Max tank size 8m dia x 12m high
- 3 Base oil tank farm 28m x 50m
Max tank size 8m dia x 12m height
- 4 Base Oil Plant 1 capacity 75000 tonnes per annum. Size of each unit 120m x 30m. Largest structure no greater than 25m high except for the emergency flare stack which will be up to 50m high
- 5 Transformer plant island complete with own tank farm size 130 m x 42m. Overall height profile no higher than 12m encompasses tanks to a max volume of 250m³. Largest tanks typically 8m dia by 12m high
- 6 Services plant comprising cooling water towers, steam boilers, hot oil plant, thermal oxidizer, product storage tanks, waste water tanks, water treatment plant, softened water plant. Typically 160m x 30m area
- 7 Tanker loading and offloading bay comprising 10 spaces for tankers. The facility will be a typically "petrol station" type open sided construction with a roof up to 7m high typically 68m x 16m in area
- 8 Hydrogen production area 41m x 50m comprising 5 units
- 9 Office (53mx20m), warehouse (21mx21m) and reasearch & development facility(43m x15m). Each will be 2 storey
- 10 Process buildings including laboratory and control room (17m x 14m- 2 storey), warehouse (21m x 14m- 2 storey) gate house (16m x 13m- single storey) transformer building (11m x 15m- single storey)
- 11 Pipe bridge to NuStar. 6.5m above the ground and 1m high
- 12 Base Oil Plant 2 capacity 75000 tonnes per annum. Size of each unit 120m x 30m. Largest structure no greater than 25m high except for the emergency flare stack which will be up to 50m high
- 13 Feed stock receiving and blending tank farm 82m x 24m. Largest tank 6m dia x 7m high

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	Status	Drn	App	Chk	Date

Site
HYDRODEC OIL RE-REFINERY, EASTHAM

Client
Hydrodec Re-refining (UK) Limited

Indicative site layout showing development parameters

Figure 5 Scale Not to scale

Drawing Ref
HYD/EA/06-15/18735

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APPENDIX A

A PLAN SHOWING THE LANDSCAPE AND VISUAL STUDY AREA



HYDRODEC RE-REFINING

**QEII DOCK EASTHAM
DEVELOPMENT**

Figure 1

Scale: 1:50000 @ A3
**Landscape and Visual
Study Area**