



Gateway Energy Centre

UNDERGROUND GAS PIPELINE AND ASSOCIATED ABOVE GROUND INSTALLATION



ENVIRONMENTAL STATEMENT Volume 2

Prepared by



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APPENDIX A

RELEVANT PLANNING POLICIES

A. RELEVANT PLANNING POLICIES

Contents Summary

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A.1 Relevant Planning Policies

A.1 Relevant Planning Policies

East of England Plan The Revision to the Regional Spatial Strategy for the East of England (May 2008)

Policy Number	Policy - Written
SS1: Achieving Sustainable Development	<p>The strategy seeks to bring about sustainable development by applying:</p> <p>(1) The guiding principles of the UK Sustainable Development Strategy 2005:</p> <ul style="list-style-type: none"> – living within environmental limits; – ensuring a strong, healthy and just society; – achieving a sustainable economy; – promoting good governance; and – using sound science responsibly. <p>(2) The elements contributing to the creation of sustainable communities described in Sustainable Communities: Homes for All:</p> <ul style="list-style-type: none"> – active, inclusive and safe in terms of community identity and cohesion, social inclusion and leisure opportunities; – well run in terms of effective participation, representation and leadership; – environmentally sensitive; – well designed and built; – well connected in terms of good transport services; – thriving in terms of a flourishing and diverse economy; – well served in terms of public, private, community and voluntary services; and – fair for everyone. <p>Local Development Documents and other strategies relevant to spatial planning within the region should:</p> <p>(a) help meet obligations on carbon emissions; and</p> <p>(b) adopt a precautionary approach to climate change by avoiding or minimising potential contributions to adverse change and incorporating measures which adapt as far as possible to unavoidable change</p> <p>In particular, the spatial strategy seeks to ensure that development:</p> <ul style="list-style-type: none"> – maximises the potential for people to form more sustainable relationships between their homes, workplaces, and other concentrations of regularly used services and facilities, and their means of travel between them; and – respects environmental limits by seeking net environmental gains wherever possible, or at least avoiding harm, or (where harm is justified within an integrated approach to the guiding principles set out above) minimising, mitigating and/or compensating for that harm.

SS2: Overall Spatial Strategy	<p>In seeking the more sustainable relationships described in Policy SS1 the spatial strategy directs most strategically significant growth to the region's major urban areas where:</p> <ul style="list-style-type: none"> • strategic networks connect and public transport accessibility is at its best and has the most scope for improvement; and • there is the greatest potential to build on existing concentrations of activities and physical and social infrastructure and to use growth as a means of extending and enhancing them efficiently. <p>Within this context Local Development Documents should develop policies which:</p> <ul style="list-style-type: none"> • ensure new development contributes towards the creation of more sustainable communities in accordance with the definition above and, in particular, require that new development contributes to improving quality of life, community cohesion and social inclusion, including by making suitable and timely provision for the needs of the health and social services sectors and primary, secondary, further and higher education particularly in areas of new development and priority areas for regeneration; and • adopt an approach to the location of major development which prioritises the re-use of previously developed land in and around urban areas to the fullest extent possible while ensuring an adequate supply of land for development consistent with the achievement of a sustainable pattern of growth and the delivery of housing in accordance with Policy H1. <p>The target is for 60% of development to be on previously developed land.</p>
SS5: Priority Areas for Regeneration	<p>The priority areas for regeneration are:</p> <ul style="list-style-type: none"> • areas with generally weak economic performance and significant areas of deprivation: Essex Thames Gateway; Lowestoft and Great Yarmouth; King's Lynn and West Norfolk; the remote rural areas of Norfolk and Suffolk, and the Fens; • areas with significant areas of deprivation: Luton/ Dunstable/ Houghton Regis; Bedford/ Kempston; Harlow and the Lee Valley; Haven Gateway (Ipswich/ Harwich/ Colchester/ Clacton); Peterborough; Norwich; and Stevenage. <p>Local Development Documents and relevant non-statutory plans should set out policies to tackle the problems of economic, social and environmental deprivation in these areas and other places with locally significant regeneration needs.</p>

SS7: Green Belt	<p>The broad extent of green belts in the East of England is appropriate, and should be maintained. However, strategic reviews of green belt boundaries are needed in the following areas to meet regional development needs at the most sustainable locations:</p> <ul style="list-style-type: none"> • Stevenage, involving land in Stevenage and North Hertfordshire; • Hemel Hempstead, involving land in Dacorum and probably St Albans District; • Harlow, involving land in Harlow, East Hertfordshire and Epping Forest Districts; and • Welwyn/Hatfield, involving land in Welwyn Hatfield District and potentially St Albans District. <p>A more local review will be required in Broxbourne.</p> <p>These reviews will have to satisfy national criteria for green belt releases, accord with the spatial strategy, and ensure that sufficient land is identified to avoid the need for further review to meet development needs before 2031.</p> <p>Where reviews cover more than one local authority, they should be undertaken through a joint or co-ordinated approach. The reviews at Harlow and Stevenage should identify compensating strategic extensions to the green belt in East Hertfordshire and North Hertfordshire respectively.</p>
SS8: The Urban Fringe	<p>Local authorities should work with developers and other agencies to secure the enhancement, effective management and appropriate use of land in the urban fringe through formulating and implementing strategies for urban fringe areas, working across administrative boundaries where appropriate.</p> <p>Local Development Documents should:</p> <ul style="list-style-type: none"> • ensure that new development in or near the urban fringe contributes to enhancing its character and appearance and its recreational and/or biodiversity value and avoids harm to sites of European and international importance for wildlife in particular; • seek to provide networks of accessible green infrastructure linking urban areas with the countryside; and • set targets for the provision of green infrastructure for planned urban extensions.

**E1:
Job Growth**

The following indicative targets for net growth in jobs for the period 2001-2021 are adopted as reference values for monitoring purposes and guidance for regional and local authorities, EEDA and other delivery agencies in their policy and decision making on employment. Local Development Documents should provide an enabling context to achieve these targets. They may be revised through the review of RSS taking account of the Regional Economic Strategy or testing through development plan document preparation.

Bedford / Mid Beds	27,000
Luton / South Beds	23,000
Bedfordshire & Luton	50,000
Cambridgeshire	75,000
Peterborough	20,000
Essex Thames Gateway (Thurrock / Basildon / Castle Point / Southend-on-Sea / Rochford)	55,000
Essex Haven Gateway (Colchester / Tendring)	20,000
Rest of Essex (Braintree / Brentwood / Chelmsford / Epping Forest / Harlow / Maldon / Uttlesford)	56,000
Essex & Unitaries	131,000
Hertfordshire	68,000
King's Lynn & West Norfolk	5,000
Great Yarmouth	5,000
Breckland	6,000
North Norfolk	4,000
Greater Norwich (Norwich / Broadland / S Norfolk)	35,000
Norfolk	55,000
Suffolk Haven Gateway (Ipswich / Suffolk Coastal / Babergh)	30,000
Waveney	5,000
Rest of Suffolk (Mid Suffolk / ST Edmundsbury / Forest Heath)	18,000
Suffolk	53,000
EAST OF ENGLAND	452,000

E2: Provision of Land for Employment	<p>Local Development Documents should ensure that an adequate range of sites/premises (including sites within mixed-use areas and town/district centres) is allocated to accommodate the full range of sectoral requirements to achieve the indicative job growth targets of Policy E1, or revisions to those targets as allowed in that policy, and the needs of the local economy revealed by up-to-date employment land reviews. Where development proposals and issues cross local authority boundaries this approach should be applied across the whole urban or development area.</p> <p>Sites of sufficient range, quantity and quality to cater for relevant employment sectors should be provided at appropriate scales in urban areas, market towns and key rural centres at locations which:</p> <ul style="list-style-type: none"> • minimise commuting and promote more sustainable communities by achieving a closer relationship between jobs and homes; • meet the needs of the region's sectors and clusters identified in Policy E3, the Regional Economic Strategy or through Local Development Documents; • provide appropriately for identified needs for skills-training and education; • maximise use of public transport; • minimise loss of, or damage to, environmental and social capital and, where necessary, substitute for any losses and secure positive enhancements. This will often mean giving preference to the re-use of previously developed land and the intensification of development within existing sites over the release of greenfield land; and • avoid any adverse impact on sites of European or international importance for wildlife.
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E3: Strategic Employment Sites	<p>Local Development Documents should identify readily-serviceable strategic employment sites of the quality and quantity required to meet the needs of business identified through the employment land reviews referred to in Policy E2. Sites should be provided particularly, but not exclusively, at the following regionally strategic locations:</p> <ul style="list-style-type: none"> • Bedford, Harlow, Stevenage, Hemel Hempstead and the Luton conurbation – to assist regeneration and ensure growth in key sectors and clusters; • Thames Gateway, linked to the strategies for the key centres at Basildon, Southend on-Sea and Thurrock Urban Area; • Cambridge Sub-Region, to secure its full potential as a centre for world-class research and development; • Peterborough, to achieve regeneration, attract business activities and key sectors and clusters including environmental services; • Norwich, to support regeneration and its role in bio-technology; • Haven Gateway, to support growth and regeneration at Colchester and Ipswich, including the latter's role in ICT, and development associated with port expansion at Harwich and Felixstowe; • Great Yarmouth and Lowestoft, to support development associated with port expansion, regeneration and economic diversification; • Hertfordshire, at locations (other than those noted above) where this would support strong, continued growth of mature and emerging clusters and sectors, or support regeneration of the Lee Valley; and • other key centres of development and change, including Chelmsford, to meet needs identified in Local Development Documents.
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E4: Clusters	<p>Local Development Documents should support the sustainable and dynamic growth of inter-regional and intraregional sectors and business clusters including:</p> <ul style="list-style-type: none"> • the life-science regional super-cluster with concentrations in the Cambridge sub-region, Hertfordshire, Cranfield and Norwich; • the energy cluster on the Norfolk/Suffolk coast; • the environmental technologies cluster stretching from Essex to Cambridgeshire with a particular focus on Peterborough; • the motor sports cluster with a focal point at Hethel in Norfolk linking to Cranfield; • the multimedia cluster from London to Hertfordshire and in Norfolk; • the ICT cluster in the Cambridge area; and • the ICT/telecommunications cluster around Ipswich <p>Local Development Documents should also support and provide guidance for locally important clusters defined by local economic partnerships in collaboration with local authorities and EEDA by:</p> <ul style="list-style-type: none"> • ensuring the availability of a sufficient quantity, quality and choice of sites including provision for incubator units, grow-on space and larger facilities for established business clusters; • addressing accommodation needs close to key institutions, such as universities; and • addressing the need for user restrictions to secure the use of premises for specific activities.
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T1: Regional Transport Strategy Objectives and Outcomes	<p>To implement the vision and objectives of the Regional Spatial Strategy, the following objectives of this RTS give a clear priority to increase passenger and freight movement by more sustainable modes, while reflecting the functionality required of the region's transport networks:</p> <ul style="list-style-type: none"> • to manage travel behaviour and the demand for transport to reduce the rate of road traffic growth and ensure the transport sector makes an appropriate contribution to reducing greenhouse gas emissions; • to encourage efficient use of existing transport infrastructure; • to enable the provision of the infrastructure and transport services necessary to support existing communities and development proposed in the spatial strategy; • to improve access to jobs, services and leisure facilities. <p>The successful achievement of the objectives will lead to the following outcomes:</p> <ul style="list-style-type: none"> • improved journey reliability as a result of tackling congestion; • increased proportion of the region's movements by public transport, walking and cycling; • sustainable access to areas of new development and regeneration; • safe, efficient and sustainable movement between homes and workplaces, education, town centres, health provision and other key destinations; • increased proportion of freight movement by rail; • safe, efficient and sustainable movement of passengers and freight to and from the region's international gateways; • economic growth without a concomitant growth in travel; • improved air quality; and • reduced greenhouse gas emissions.
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T2: Changing Travel Behaviour	<p>To bring about a significant change in travel behaviour, a reduction in distances travelled and a shift towards greater use of sustainable modes, regional and local authorities, transport providers and other delivery agencies should implement policies to:</p> <ul style="list-style-type: none"> • raise awareness of the real costs of unsustainable travel and the benefits and availability of sustainable alternatives; • encourage the wider implementation of workplace, school and personal travel plans; • introduce educational programmes for sustainable travel; • invest in business initiatives, including but not limited to tele-working, and other means of decoupling economic activity from the need for travel; • investigate ways of providing incentives for more sustainable transport use; and • raise awareness of the health benefits of travel by non-motorised modes.
T6: Strategic and Regional Road Networks	<p>The strategic and regional road networks identified on the key diagram should be improved, managed and maintained in accordance with priorities for the strategic and regional functions of the region's motorway, trunk road and primary route network with the aim of achieving the following outcomes:</p> <ul style="list-style-type: none"> • improved journey reliability as a result of tackling congestion • improved access to key centres for development and change, strategic employment locations and priority areas for regeneration; • efficient movement of freight which cannot be carried by rail or waterway so as to minimise its impact on the environment and local transport networks; • improved safety and efficiency of the network; • mitigation of environmental impacts; • maintenance of the benefits from managing traffic demand; and • the effective operation of ports and airports which act as international gateways.
T9: Walking, Cycling and other Non-Motorised Transport	<p>Provision for walking, cycling and other non-motorised transport should be improved and developed as part of an integrated strategy for achieving the RTS objectives. Pedestrian, cycle and other non-motorised transport networks should be managed and improved to enhance access to work, schools and town centres, and provide access to the countryside, urban greenspace, and recreational opportunities. Support should be given to completing the National Cycle Network in the region by 2010, and to linking it to local cycle networks.</p>

ENV1: Green Infrastructure	<p>Areas and networks of green infrastructure should be identified, created, protected, enhanced and managed to ensure an improved and healthy environment is available for present and future communities. Green infrastructure should be developed so as to maximise its biodiversity value and, as part of a package of measures, contribute to achieving carbon neutral development and flood attenuation. In developing green infrastructure opportunities should be taken to develop and enhance networks for walking, cycling and other non-motorised transport.</p> <p>Local Development Documents should:</p> <ul style="list-style-type: none"> • define a multiple hierarchy of green infrastructure, in terms of location, function, size and levels of use, based on analysis of natural, historic, cultural and landscape assets, and the identification of areas where additional green infrastructure is required; • require the retention of substantial connected networks of green space in urban, urban fringe and adjacent countryside areas to serve the growing communities in key centres for development and change; and • ensure that policies have regard to the economic and social as well as environmental benefits of green infrastructure assets and protect sites of European or international importance for wildlife. <p>Assets of regional significance for the retention, provision and enhancement of green infrastructure include:</p> <ul style="list-style-type: none"> • the Norfolk and Suffolk Broads; the Norfolk Coast, Suffolk Coast & Heaths, Dedham Vale and Chilterns Areas of Outstanding Natural Beauty; and the Heritage Coasts (shown on the Key Diagram); • other areas of landscape, ecological and recreational importance, notably the Community Forests (Thames Chase, Marston Vale and Watling Chase), the Brecks, Epping Forest, Hatfield Forest, the Lee Valley Regional Park and areas around the Stour Estuary, and • strategically significant green infrastructure projects and proposals, such as the Great Fen Project, Wicken Fen Vision, the Milton Keynes to Bedford Waterway Park, and green infrastructure projects around the fringes of Greater London and associated corridors.
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ENV2: Landscape Conservation	<p>In their plans, policies, programmes and proposals planning authorities and other agencies should, in accordance with statutory requirements, afford the highest level of protection to the East of England's nationally designated landscapes (Figure 5) – the Norfolk and Suffolk Broads, the Chilterns, Norfolk Coast, Dedham Vale, and Suffolk Coast and Heaths Areas of Outstanding Natural Beauty (AONBs), and the North Norfolk and Suffolk Heritage Coasts. Within the Broads priority should be given to conserving and enhancing the natural beauty, wildlife and cultural heritage of the area, promoting public enjoyment and the interests of navigation. Within the AONBs priority over other considerations should be given to conserving the natural beauty, wildlife and cultural heritage of each area.</p> <p>Planning authorities and other agencies should recognise and aim to protect and enhance the diversity and local distinctiveness of the countryside character areas identified on Figure 6 by:</p> <ul style="list-style-type: none"> • developing area-wide strategies, based on landscape character assessments, setting long-term goals for landscape change, targeting planning and land management tools and resources to influence that change, and giving priority to those areas subject to most growth and change; • developing criteria-based policies, informed by the area-wide strategies and landscape character assessments, to ensure all development respects and enhances local landscape character; and • securing mitigation measures where, in exceptional circumstances, damage to local landscape character is unavoidable.
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**ENV3:
Biodiversity and
Earth Heritage**

In their plans, policies, programmes and proposals planning authorities and other agencies should ensure that internationally and nationally designated sites are given the strongest level of protection and that development does not have adverse effects on the integrity of sites of European or international importance for nature conservation.

Proper consideration should be given to the potential effects of development on the conservation of habitats and species outside designated sites, and on species protected by law.

Planning authorities and other agencies should ensure that the region's wider biodiversity, earth heritage and natural resources are protected and enriched through the conservation, restoration and re-establishment of key resources by:

- ensuring new development minimises damage to biodiversity and earth heritage resources by avoiding harm to local wildlife sites and, wherever possible, achieving net environmental gains in development sites through the retention of existing assets, enhancement measures, and new habitat creation;
- promoting the conservation, enhancement, restoration, re-establishment and good management of habitats and species populations in accordance with East of England regional biodiversity targets (Appendix B) and the priorities in the East of England Regional Biodiversity Map (Figure 7);
- identifying and safeguarding areas for habitat restoration and re-establishment, in particular large-scale (greater than 200 ha) habitat restoration areas which will deliver human and wildlife benefit;
- identifying, safeguarding, conserving, and restoring regionally important geological and/or geomorphological sites and promoting their good management;
- ensuring the appropriate management and further expansion of wildlife corridors important for the migration and dispersal of wildlife;
- having regard to the need for habitats and species to adapt to climate change; and
- establishing networks of green infrastructure, maximising their biodiversity value, as provided for under Policy ENV1.

The East of England Regional Assembly and its partners should work with authorities in neighbouring regions on strategic natural resource and biodiversity issues in areas such as the Chilterns, the Wash and Thames Estuary.

ENV6: The Historic Environment	<p>In their plans, policies, programmes and proposals local planning authorities and other agencies should identify, protect, conserve and, where appropriate, enhance the historic environment of the region, its archaeology, historic buildings, places and landscapes, including historic parks and gardens and those features and sites (and their settings) especially significant in the East of England:</p> <ul style="list-style-type: none"> • the historic cities of Cambridge and Norwich; • an exceptional network of historic market towns; • a cohesive hierarchy of smaller settlements ranging from nucleated villages, often marked by architecturally significant medieval parish churches, through to a pattern of dispersed hamlets and isolated farms; • the highly distinctive historic environment of the coastal zone including extensive submerged prehistoric landscapes, ancient salt manufacturing and fishing facilities, relict sea walls, grazing marshes, coastal fortifications, ancient ports and traditional seaside resorts; • formal planned settlements of the early twentieth century, including the early garden cities, and factory villages; • conservation areas and listed buildings, including domestic, industrial and religious buildings, and their settings, and significant designed landscapes; • the rural landscapes of the region, which are highly distinctive and of ancient origin; and • the wide variety of archaeological monuments, sites and buried deposits which include many scheduled ancient monuments and other nationally important archaeological assets.
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ENV7: Quality in the Built Environment	<p>Local Development Documents should require new development to be of high quality which complements the distinctive character and best qualities of the local area and promotes urban renaissance and regeneration.</p> <p>New development should:</p> <ul style="list-style-type: none"> • provide buildings of an appropriate scale, founded on clear site analysis and urban design principles; • make efficient use of land; • in the case of housing development, achieve the highest possible net density appropriate to the character of the locality and public transport accessibility; • provide a mix of uses and building types where appropriate; • have regard to the needs and well being of all sectors of the community; • address crime prevention, community safety and public health; • promote resource efficiency and more sustainable construction, including maximum use of re-used or recycled materials and of local and traditional materials; • reduce pollution, including emissions, noise and light pollution; and • maximise opportunities for the built heritage to contribute to physical, economic and community regeneration. <p>Conservation-led regeneration should respect the quality and distinctiveness of traditional buildings and the value they lend to an area through their townscape quality, design and use of materials. In their plans, policies, programmes and proposals planning authorities should give consideration to the opportunities presented by the region's industrial, maritime and rural heritage.</p>
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ENG1: Carbon Dioxide Emissions and Energy Performance	<p>Working with regional partners, EERA should consider the performance of the spatial strategy on mitigating and adapting to climate change through its monitoring framework and develop clear yardsticks against which future trends can be measured, which should inform the review of the RSS and the preparation of Local Development Documents.</p> <p>To meet regional and national targets for reducing climate change emissions, new development should be located and designed to optimise its carbon performance. Local authorities should:</p> <ul style="list-style-type: none"> • encourage the supply of energy from decentralised, renewable and low carbon energy sources and through Development Plan Documents set ambitious but viable proportions of the energy supply of new development to be secured from such sources and the development thresholds to which such targets would apply. In the interim, before targets are set in Development Plan Documents, new development of more than 10 dwellings or 1000m² of non-residential floorspace should secure at least 10% of their energy from decentralised and renewable or low-carbon sources, unless this is not feasible or viable; and • promote innovation through incentivisation, master planning and development briefs which, particularly in key centres for development and change, seek to maximize opportunities for developments to achieve, and where possible exceed national targets for the consumption of energy. To help realise higher levels of ambition local authorities should encourage energy service companies (ESCOs) and similar energy saving initiatives.
ENG2: Renewable Energy Targets	<p>The development of new facilities for renewable power generation should be supported, with the aim that by 2010 10% of the region's energy and by 2020 17% of the region's energy should to come from renewable sources. These targets exclude energy from offshore wind, and are subject to meeting European and international obligations to protect wildlife, including migratory birds, and to revision and development through the review of this RSS.</p>

WAT4: Flood Risk Management	<p>Coastal and river flooding is a significant risk in parts of the East of the England. The priorities are to defend existing properties from flooding and locate new development where there is little or no risk of flooding.</p> <p>Local Development Documents should:</p> <ul style="list-style-type: none"> • use Strategic Flood Risk Assessments to guide development away from floodplains, other areas at medium or high risk or likely to be at future risk from flooding, and areas where development would increase the risk of flooding elsewhere; • include policies which identify and protect flood plains and land liable to tidal or coastal flooding from development, based on the Environment Agency's flood maps and Strategic Flood Risk Assessments supplemented by historical and modelled flood risk data, Catchment Flood Management Plans and policies in Shoreline Management Plans and Flood Management Strategies, including „managed re-alignment“ where appropriate; • only propose departures from the above principles in exceptional cases where suitable land at lower risk of flooding is not available, the benefits of development outweigh the risks from flooding, and appropriate mitigation measures are incorporated; and • require that sustainable drainage systems are incorporated in all appropriate developments. <p>Areas of functional floodplain needed for strategic flood storage in the Thames Estuary should be identified and safeguarded by local authorities in their Local Development Documents.</p>
ETG1: Strategy for the Sub-Region	<p>The strategy aims to achieve transformational development and change throughout Essex Thames Gateway which will:</p> <ul style="list-style-type: none"> • substantially increase the numbers of jobs and homes in line with Policies E1 and H1 to bring about a better alignment of homes and workplaces while continuing to recognise and make the most of the area's complementary role in relation to London, especially the emerging development/transport nodes in East London at Stratford and elsewhere; • give the area a more positive and attractive image building on its strengths and assets, promoting excellence in the design of buildings and public realm and creating townscapes and landscapes of high quality and distinctiveness; • significantly increase the overall value of the sub-regional economy and the economic conditions, living standards, aspirations, and quality of life of its residents; • enhance the education and skills base and improve access to higher education; and • protect and enhance the quality of the natural and historic environments, including retaining and making more positive appropriate use of the green belt.

**ETG5:
Employment-
Generating
Development**

Local Development Documents should provide an enabling context for not less than 55,000 net additional jobs in Essex Thames Gateway during the period 2001-2021, distributed as follows:

Basildon	11,000
Castle Point	2,000
Southend	13,000
Thurrock	26,000
Rochford	3,000
TOTAL	55,000

The local authorities and Thurrock Thames Gateway Development Corporation, supported by regional and local partners, should facilitate these increases in jobs by promoting a competitive sub-regional business environment secured through:

- providing for a range of sites and premises suitable for the needs of existing and future businesses, including the development at London Gateway (a new container port facility with associated business park and rail freight handling facilities) and other sites that will support Thurrock's role as a leading logistics centre;
- providing innovation centres at the key centres for development and change;
- improving opportunities for small and medium enterprises in all economic sectors, especially transport and logistics, environmental technologies, healthcare, tourism and leisure;
- raising skill levels at NVQ Level 2, 3 and 4 to national averages through enhanced provision of further and higher education;
- focusing major retail, leisure and office developments at Basildon, Southend, Lakeside and other centres in need of regeneration and renewal; and
- enhancing use of the River Thames as an asset for business and leisure.

Thurrock Borough Local Plan September 1997 (TLP)

Policy Number	Policy - Written
BE1: Design of New Development	<p>A high standard of design will be expected in all proposals for new development, including alterations or extensions to existing properties. The Council will give particular attention to the mass, form and scale of developments, the constituent elements of design, the quality and appropriateness of materials used, landscaping, and the treatment of the spaces between and around buildings. All designs should ensure that vehicular and pedestrian movements are made safe and convenient.</p> <p>It should also be demonstrated, in proposals for development, that full and appropriate consideration has been given to the integration of the development with its immediate surroundings and, where relevant, with the wider setting.</p> <p>When considering proposals for residential development the Council will have regard to the guidance, criteria and standards contained in the Annexe.</p>
BE2: Development Control Policies	<p>Further to policies set out in this written statement, the Council will seek to regulate development, in the public interest, through the application of policy criteria, planning standards and guidelines set out in the Annexe hereto (Part Two of the Plan), and also through the imposition on planning permissions of such conditions as may be deemed appropriate.</p>
BE4: Landscaping	<p>In new developments, the Council will expect the concurrent submission of details of the landscaping proposed and will seek to ensure that such landscaping is implemented. Developments which would result in the destruction of protected trees and woodlands or other important landscape features such as waterbodies, hedgerows, and character landscapes will not be permitted.</p> <p>Prior to the commencement of any work on development sites, the Council will expect that measures are taken to safeguard and physically protect all trees, hedgerows and shrubs which are to be retained. Temporary fencing should be erected around the canopy spread of trees/shrubs, or around the root spread where this is clearly larger (Chestnut paling alone will not be acceptable).</p>
BE10: Infrastructure	<p>Development of land will only be permitted where there is adequate infrastructure, either in existence or programmed, to serve the development or when planning permission is to be subject to a planning agreement securing advance or suitably phased infrastructure provision, or appropriate contributions thereto, by the developers.</p>
BE11: Energy Efficiency	<p>In considering development proposals, the Council will take into account the need for energy efficiency in the built form of new developments. This will include matters such as hard and soft landscaping, orientation of buildings, and the layout and design of developments.</p>
BE26: Development of Contaminated Land	<p>When considering applications for the development of residential or other environmentally sensitive land uses, on land suspected of being contaminated by hazardous substances arising out of previous land uses, the Council must be satisfied that all appropriate measures to deal with the contamination of the site are undertaken prior to development beginning. Environmental surveys will be required to ensure that remedial measures are possible to reclaim the land for the proposed use, to the satisfaction of the Council.</p>

GB1: The Green Belt in Thurrock	<p>Within the Green Belt, as shown on the Proposals Map, permission will not be given, except in very special circumstances, for the construction of new buildings or for the change of use of land or the re-use of existing buildings unless it is for any of the following purposes:</p> <p>(i) Agriculture and forestry (unless permitted development rights have been withdrawn);</p> <p>(ii) Essential facilities for outdoor sport and outdoor recreation, for cemeteries, and for other uses of land which preserve the openness of the Green Belt and which do not conflict with the purposes of including land in it;</p> <p>(iii) Limited extension, alteration or replacement of existing dwellings (subject to other policies in the Plan);</p> <p>(iv) Limited infilling or redevelopment of major developed sites (subject to other policies in the Plan);</p> <p>(v) Mineral extraction.</p>
GB2: Design Considerations in the Green Belt	<p>(i) PHYSICAL FORM Where proposals are acceptable in principle under policies GB1 and GB3 to GB13 and buildings are proposed, the Council will expect such structures to be properly designed and constructed of sound materials appropriate to the countryside. Careful regard will be paid to the siting, scale, layout and location of buildings and, where appropriate, the provision of landscaping will be required, particularly in areas designated as in need of landscape improvement, under Policy LN2;</p> <p>(ii) ENVIRONMENTAL IMPACT The development should not have a detrimental effect on the amenities of local residents, rural activities and countryside users nor on highway safety;</p> <p>(iii) LANDSCAPE IMPACT Any development should take full account of its impact on the existing landscape and should safeguard, maintain and enhance existing landscape features, watercourses, trees, hedges and plants through approved landscaping schemes.</p>
LN2: Landscape Improvement Areas	<p>In Landscape Improvement Areas, the Council will expect sympathetic landscaping schemes in association with new developments. The Council will also undertake environmental improvement schemes and encourage private owners to take up grants for environmental improvements available from public sources.</p>

LN3: Landscapes of Local Importance	<p>In areas designated as Landscapes of Local Importance, development will only be permitted if it would not cause permanent loss of, or damage to the character of the landscape. The designated areas are listed below and shown on the Proposals Map.</p> <p>(i) For their contribution to the landscape generally –</p> <ul style="list-style-type: none"> - Belhus Wood and Aveley Lakes/Pits - Aveley Marshes - Lower Mardyke Valley - Palmers Shaw - Bulphan Fen and Horndon on the Hill - Orsett Pit - Chadwell and West Tilbury Escarpment/Tilbury Marshes - Linford Escarpment - East Tilbury Marshes - East Tilbury Village/Coalhouse Fort - Stanford Marshes - Corringham and Fobbing Marshes/Escarpment <p>(ii) For their historical interest -</p> <ul style="list-style-type: none"> - Belhus Park - Ford Place
LN12: Development Proposals and Nature Conservation	<p>New developments will only be permitted if proper consideration is given to the nature conservation value of the development site.</p> <p>Development prejudicial to the retention and management of important wildlife habitats and their inter-relationships will not be permitted.</p> <p>In appropriate cases the Council will expect landscaping schemes submitted under Policy BE4 to provide for new wildlife habitat creation and management.</p>
LN15: Sites of Importance for Nature Conservation	<p>In areas identified on the Proposals Map as Sites of Importance for Nature Conservation, development will only be permitted which would not materially harm their nature conservation value.</p>
LN16: Areas of Local Nature Conservation Significance and Ecological Corridors	<p>Areas of Local Nature Conservation Significance, and Ecological Corridors, for the enjoyment and protection of nature within the Borough are indicated on the Proposals Map. Developments in these areas will only be permitted where the nature conservation interest of the area is retained.</p>

E8: Oil Refineries	<p>New oil refining activities will only be permitted within the existing refinery complexes at Shellhaven and Coryton, or on adjacent land specified for their expansion. These developments will only be permitted if it can be demonstrated that they will not add materially to environmental, safety or health hazards. In determining applications for development within the existing refinery sites, the Council will also have regard to the need to accommodate changes in technology and economic circumstances. The existing sites and specified expansion areas are listed below and shown on the Proposals Map.</p> <p>A. Existing Sites</p> <ul style="list-style-type: none"> a) Shellhaven Oil Refinery b) Coryton Oil Refinery <p>B. Existing Areas</p> <ul style="list-style-type: none"> a) Shellhaven – North and West of Existing Refinery 48.2 hectares b) Coryton – North of Existing Refinery 45.4 hectares
T1: Balanced Transport Strategy	<p>While endeavouring to secure an adequate system of transportation for the satisfactory economic development of Thurrock and its expected population growth, including essential improvements to the road network and parking provision, the Council will seek to counter the potential effects of increased traffic by pursuing policies aimed at reducing the reliance on and unnecessary use of the motor vehicle and promoting the greater use of alternative modes of transport and communication, in particular by:</p> <ul style="list-style-type: none"> (i) improving the accessibility and convenience of public transport and promoting new and improved passenger services and systems; (ii) promoting the provision of new and improved facilities and services for the movement of freight; (iii) improving and extending the network of footpaths, cycleways and bridleways and promoting their wider and more intensive use; (iv) limiting the availability or attractiveness of car parking for non-essential journeys in areas susceptible to traffic congestion.
T6: Traffic Management	<p>The Council will seek to impose appropriate measures, as and when considered necessary, to regulate or deter the passage of all or specific categories of traffic on roads and other highways where problems are identified.</p> <p>Such measures will include the prohibition of commercial vehicles along environmentally sensitive sections of road, as indicated on the Proposals Map.</p>

T8: Existing and New Public Footpaths	<p>The Council will promote greater use of public footpaths as a means of communication and, to this end, will;</p> <ul style="list-style-type: none"> (i) Seek to secure the retention and maintenance of public pedestrian rights of way over all existing footpaths, except those identified in Policy T9; (ii) Provide route signposting where necessary; (iii) Require the provision by developers of new segregated public footpaths wherever appropriate within new development; (iv) Seek to secure the provision of the following new footpath routes in particular, as indicated on the Proposals Map:- <ul style="list-style-type: none"> (a) Mardyke Way extension to River Thames (b) Purfleet Garrison to Harrison's Wharf (c) Through Lion Gorge and Railway Cutting (d) To school site west of Pilgrims Lane, West Thurrock (e) Pilgrims Lane to Clockhouse Lane (f) Clockhouse Lane to Southern Link Road (g) Southern Link Road to Chafford Hundred North East Zone
T11: Cycleways	<p>The Council will promote greater use of the bicycle as a means of transport and, to this end, will:</p> <ul style="list-style-type: none"> (i) Take account of the needs of the cyclist in the design of all new highway and traffic management schemes; (ii) Seek the provision of segregated cycleways within all forms of major new development, where appropriate, to link areas of residence, workplace, education, recreation, shopping and other amenity; (iii) Seek the provision of secure facilities for the parking of bicycles at all locations where such need is identified; (iv) Introduce advisory signposted cycle routes <p>Cycleway spine routes will be established as indicated on the Proposals Map.</p>

Thurrock Core Strategy and Policies for Management of Development (TCSPMD)

Policy Number	Policy - Written
SSO2	Increase prosperity and employment growth in Thurrock in the five strategic Economic Hubs of Purfleet, Lakeside/West Thurrock, Grays, Tilbury and London Gateway whilst seeking a sustainable balance between housing and jobs growth across the borough supported by integration and phasing with existing and planned transport and community infrastructure.
SSO3	Support local business, attract inward investment and diversify the Thurrock economy into high skill logistics, cultural and environmental industries and additional public services to provide improved skills and jobs for local people by providing for land and sites of appropriate type and location.
SSO10	Provide in Thurrock a safe transport system that supports accessibility, manages the need to travel, and encourages the use of more environmentally friendly modes of transport such as cycling, walking and public transport.
SSO11	To sustain and enhance the open character of the Green Belt in Thurrock and only allow development in very special circumstances.
SSO12	Protect and enhance the natural, historic and built environment including biodiversity, landscape character, conservation areas, historic value listed buildings, scheduled monuments and other heritage assets and open space through positive improvement.
SSO13	Develop the Greengrid network of biodiversity sites, historic sites, green infrastructure and open spaces linking existing and new communities, the urban areas to countryside and access to the river. Provide new open spaces, improve the accessibility of existing open spaces and ensure safe connecting routes and corridors linking them.
SSO14	Promote sustainable development in Thurrock through the prudent use of water and other natural resources, sustainable design, methods and materials, and integration of land-use with the maximum re-use of land.
SSO17	To minimise the impact of climate change by supporting the provision of renewable and low carbon energy sources in Thurrock and ensuring that new development incorporates climate change adaptation.
SSO18	To reduce and manage the risk of flooding to and from development through its location, layout and design.
SSO19	To safeguard and enhance the Thurrock riverside and coastal land for its various roles as a key asset of the borough: as a haven for wildlife, a cultural and heritage environment, providing for leisure and recreation at Grays and East Tilbury and for port – related activity at Tilbury and , London Gateway and other locations. To provide land for flood risk management including new/relocated habitats across the Borough.

**CSSP2:
Sustainable
Employment
Growth**

1. The Council will promote and support economic development in the Key Strategic Economic Hubs that seeks to expand upon their existing core sectors and/or provide opportunities in the growth sectors.

I. The Key Strategic Economic Hubs will deliver the ~~East of England Plan's~~ **Council's** indicative target of 26,000 new jobs for Thurrock over the period 2001-~~2024~~**2026 and beyond**.

II. The Key Strategic Economic Hubs and other sites will supply approximately 456 Ha (gross) of employment land, including circa 245 Ha at the London Gateway development. There is sufficient previously developed land in the Key Strategic Economic Hubs to accommodate the proposed jobs numbers **with the exception of the Green Belt release North of Tilbury to provide expansion land for port related development**.

III. The Council will direct inward investment to the Key Strategic Economic Hubs.

IV. The Council will promote Flagship Developments that will generate and provide a catalyst for securing high quality jobs in the Key Strategic Economic Hubs. The Key Economic Strategic Economic Hubs, Core and Growth Sectors and Flagship Developments are set out below.

Key Strategic Economic Hubs	Core Sectors	Growth Sectors	Flagship Developments	Indicative Job Growth
Purfleet	Storage and warehousing; freight transport	Business services; recreation and leisure; creative industries	- Royal Opera House Production Facility, High House	2,800
Grays	Retail	Business services; recreations and leisure; public sector services	-Thurrock Learning Campus; -Grays Community Business Centre; -Sustainable Business Centres and Incubators	1,650
Lakeside/ West Thurrock Basin	Retail; logistics and transport; construction	Business services; retail; recreation and leisure	-Sustainable Business Centres and Incubators	7,000 -9,000 (subject to review of Lakeside AAP review in Local Development Documents (LDDs))
Tilbury	Port; logistics and transport	Business services; Environmental technologies; recycling; and energy	-Tilbury Eco-Quarter; - Expansion of Tilbury Riverside Business Centre	1,600 -3,800
London Gateway	Port; logistics and transport	Environmental technologies; recycling; and energy	-Training, Innovation and Research Facility; -Business and Distribution Park.	11,000-13,000

				Renewable Energy Centre	
	Other Sites in Borough	Logistics; freight transport; small business units	Business services; small business units; cultural; leisure.	Not Applicable	1,700
<p>The above job figures give indicative figures based upon technical studies outlined in Policy CSTP6. The figures for Lakeside Basin/West Thurrock will be subject to review as part of the Lakeside AAP and detailed in other Local Development Documents (LDDs).</p> <p>The Lakeside AAP is a key document for the Council to take forward the outcomes from the Single Issue Review for Lakeside. The AAP Other Local Development Documents will identify proposals to bring forward the diversification and redevelopment of the Lakeside Basin. This will include the assessment of new sites and the intensification of existing sites to provide increased employment from industry and commercial, mixed use and retail and leisure sites.</p> <p>Policy CSTP6 sets out the Thematic Policies that address local business expansion and relocation, the future use or redundant and under-used employment sites and economic development in the Regeneration Areas and Economic Hubs.</p>					

CSSP3 – Sustainable Infrastructure	The Council has identified the Key Strategic Infrastructure Projects set out below as essential to the delivery of the Core Strategy.			
	Key Infrastructure Projects:			
	Transport and Access	Road	M25 widening to Dual four lanes north of Junction 30.	CSTP14 CSTP14 CSTP16 CSTP17
			M25 Junction 30/31 Improvements.	
			A13/ East Facing Slips at A126.	
			A13 widening sections J30-A126 and A128-A1014	
			A1014 London Gateway Improvements	
			Lakeside Expansion and Diversification Transport Package.	
			Bus services infrastructure improvements.	
			South East Rapid Transit extending into Thurrock to Lakeside	
			Lorry Parks at West Thurrock, Tilbury and London Gateway	
		Rail	Station: 12-car platform lengthening.	
			Grays Station Transport Zone and improved interchanges at other station.	
			New station at other stations	
			Double tracking of Grays to Upminster Railway Line.	
			Rail-freight terminals at London Gateway and West Thurrock	
	Education, Learning and Skills	Thurrock Learning Campus (Grays).	CSTP12	
		An Academy Transport and Logistics at London Gateway or Grays Leaning Campus.		
		Schools Strategy: Primary and Secondary School Rebuild and Relocation Programme. Primary and Secondary schools rebuild and relocation programmes at locations across Thurrock incorporating Further Education and other community services at selected locations including:		
		Post 16 Education		
		i. Palmer’s Sixth Form College, Grays.		
		ii. Additional Sixth Form Provision – sixth form presumption at Gable Hall School, sixth forms are also being put in place at the Gateway Academy, Ormiston Park and Chafford Hundred.		
		Secondary Education:		
i. new build, refurbishment and expansion of existing mainstream secondary schools				
ii. rebuild Belhus				

	Social Community Infrastructure		<p>Chase School on its existing site as Ormiston Park Academy and safeguard adjoining land for long-term expansion.</p> <p>iii. the priority is to provide additional school places at existing existing in the major regeneration areas where appropriate appropriate schools to linked facilities identified in the Plan.</p> <p>Primary Education</p> <p>i. new additional primary schools in Purfleet and South Stifford</p> <p>ii. long-term a further new primary school in Grays</p> <p>iii. relocate and expand Chafford Hundred Primary School on adjoining land safeguarded for this use.</p> <p>iv. Lakeside (to be addressed in Area Action Plan other local Development Documents).</p> <p>v. new build, refurbishment and expansion of up to forty-three 43 existing mainstream primary schools.</p>	
			Grays Community Hospital	CSTP11
			Development of new and improved Primary Health Facilities and GP Practice facilities across Thurrock including: multi-hub Community Centre: enhanced provision will be achieved through development of a network of new multi-hub Centres providing a range of services and facilities for local neighbourhoods, including some Centres located with Schools.	CSTP11
			The "Cornerstone" project at Chadwell where a range of public and voluntary sector services will be provided in addition to health and well-being.	CSTP11
			Two "Sports and Well-Being Hub" of collocated leisure and sports facilities at Belhus and North-East of Grays.	CSTP9
			New and existing schools will	CSTP9

	Culture and Leisure		provide access to sports facilities for general and specialist need.		
			i) Royal Opera House Production Facilities at Purfleet. ii) Other cultural and leisure facilities at East Tilbury. iii) Investment in other cultural facilities in Grays town centre including the State Cinema. iv) Flagship leisure and cultural industries to be reviewed as part of the Lakeside -AAP other Local Development Documents	CSTP10	
			Development of the Greengrid Network linking major residential areas with open space.	CSTP18	
			Improving links from the river to open areas in the Green Belt.	CSTP18	
			Improved public access to and along the riverfront.	CSTP28	
			Provision of new urban open space including strategic scale Community Parks and smaller areas of open space.	CSTP20	
			Multi-hub Community Centres: provision of new and enhanced library services and community activity venues and facilities with the first project at Purfleet.	CSTP10	
		Emergency Services and Utilities		New polices facilities at Purfleet.	CSTP13
				New Ambulance station will be required to meet the needs of growing population.	
			Longer term relocation of Fire Service Station to a new location closer to Junctions 30/31		
			New wastewater pipe serving Purfleet and West Thurrock Area - already planned by Anglian Water Services and due to be built- during by by 2015.		
			Potential upgrades to Tilbury wastewater treatment works to treat and discharge additional wastewater flow generated by development – awaiting confirmation by Anglian Water Services		
			New power station at Tilbury		
			Flood Defence Infrastructure		
	CCSP4 –	1. Balancing competing demands on the Thurrock Green Belt			

Sustainable Green Belt	<p>The Council's policy is to maintain the purpose, function and open character of the Green Belt in Thurrock in accordance with the provisions of PPG2 for the plan period.</p> <p>The Council will:</p> <p>I. Maintain the permanence of the boundaries of the Green Belt, excepting the proposed Urban Extension Broad Locations Identified in this policy, Policy CSSP 1 and as shown on the Proposals Map.</p> <p>II. Resist development where there would be any danger of coalescence.</p> <p>III. Maximise opportunities for increased public access, leisure and biodiversity.</p> <p>All without prejudice to and pending:</p> <p>IV. The subsequent formal Review of the Thurrock Core Strategy DPD 2011-2031 that the Council will commence in 2011 following the completion of the Review of the RSS East of England Plan or its successor. In accordance with the requirements of the proposed Localism Act and the proposed National Planning Framework/</p> <p>2. Locating sustainable development at Broad Locations adjoining the Thurrock Urban Area and Outlying Settlements.</p> <p>The Council will direct development to the following Urban Extension Broad Locations subject to the provisions of policies CSSP1, CSSP2, CSSP3, CSTP1 and the provisions set out below:</p> <p>I. Opportunities for Leisure and Sport in the Green Belt</p> <p>i. The Council's policy is that the constructive and positive use of the Green Belt for sports and leisure purposes is an essential component of the Thurrock Spatial Strategy that will underpin the sustainable development and generation of Thurrock to the long-term benefit of local people. of 18,500 new dwellings and 26,000 new jobs in Thurrock to 2021.</p> <p>ii. The Council will actively encourage the pursuit of leisure and sports activities appropriate to the Green Belt by improving connectivity between Thurrock's Urban Areas and the Green Belt to promote this asset for the enjoyment and well being of Thurrock's communities.</p> <p>iii. In particular, the Council will support the development of Sports Hubs in Green Belt land at North East Grays and at Belhus.</p> <p>II. Opportunities for Economic Development</p> <p>Broad Location: Tilbury Marshes</p> <p>i. The Council will support the principle of release of Green Belt land (26 Ha.) to the North of Tilbury for port-related employment use and a Strategic Lorry Park to facilitate expansion of Tilbury Port. The Council will require management arrangements to be put in place for the remainder of the Tilbury Marshes site that has important biodiversity interest and required mitigation measures to be implemented to replace lost habitat and flood storage areas.</p>
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	<p>III. Opportunities for improving for Educational provision</p> <p>i. Belhus School Site The Council supports the potential relocation of the school for the Omiston Trust Academy within the Belhus School Site.</p> <p>ii. Broad Location: North-East Grays – Relocation of the Secondary School and College within the Green Belt</p> <p>The Council will support the relocation of a school currently located within the Green Belt at the North Grays Broad Location as complementary development to the proposed new Sports Hub and the relocation of a college to Grays Learning Campus town centre site. The vacated sites will be available for housing development (See 3.i below)</p> <p>iii. Broad Location: NE Stanford-le-hope/Corringham</p> <p>The Council will release land within the Green Belt if required to the NE of Stanford-le-hope/Corringham to provide for a new replacement secondary school.</p> <p>The vacated school site (currently “white land” in the Local Plan) would then be available for housing development.</p> <p>3. Housing Land Supply to 2021</p> <p>I. The following Broad Locations have been identified as Green Belt releases to contribute to the housing supply to 2021:</p> <p>(i) North East Grays – 461 (Identified potential capacity from school and college site, see 2 iii above)</p> <p>(ii) Stanford-le-hope – 328</p> <p>The Council considers that this relatively small-scale housing allocation on sites within the Green Belt is required to ensure a robust and deliverable policy whilst entirely reasonable and proportional to the Thurrock context.</p> <p>II. This policy approach will be reviewed with regard to the final outcome of the East of England Plan Review 2011 or successor document the evolving new Local Plans system and the proposed National Planning Framework.</p> <p>4. Enhancing the Green Belt</p> <p>I. Sustainable Boundaries The Council will seek to reinforce the Green Belt boundary through structural enhancement of the local landscape features. The Council will secure structural landscape enhancements in accordance with Landscape Character Assessments and they will be delivered by Developers as part of an overall contribution package linked to development schemes.</p> <p>II. Public access, open space and biodiversity</p>
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	<p>The implementation of the Greengrid Strategy will form a critical component of the overall Green Belt strategy to retain open character, enhance public access and secure biodiversity within Green Belt.</p> <p>III. Sustainable Design and Construction Developers proposing schemes within the Green Belt will have to fully comply with the relevant Thematic and Development Management policies in this plan.</p> <p>5. Additional Green Belt Alterations to Proposals Map</p> <p>I. Land excluded from the Green Belt because planning permission has been granted for housing at Batafield, East Tilbury and land south of Aveley By-pass and employment land at Ponds Farm, Purfleet.</p> <p>II. The Council proposes to include 70.3 hectares of previously safeguarded land adjacent to the former Shell Haven refinery site that was identified as oil refinery expansion land. With the cessation of the refinery use at Shell Haven and recent decision of the Secretary of State to exclude the land for development purposes from the London Gateway scheme, the land will assist in the purposes of the Green Belt in maintaining a strategic gap between the residential settlements of Stanford and Corringham and the port at London Gateway.</p> <p>III. The Council proposes 1.6 hectares of land is excluded from the Green Belt that has planning permission for housing development and is part of the major development site at Orsett and is incorrectly shown in the Local Plan as Green Belt.</p>
<p>CSSP5 – Sustainable Greengrid</p>	<p>It is the policy of the Council and its Partners to:</p> <ol style="list-style-type: none"> 1. Deliver the Greengrid Strategy as part of the Thurrock Core Strategy Infrastructure Prioritisation and Implementation Plan and the Adopted Statutory Development Plan <ol style="list-style-type: none"> I. Protect, manage and enhance the Greengrid in all proposals to enable the needs and objectives of the wider Greengrid network to be met. II. Deliver the area based Greengrid Improvement Zones to ensure that the location, planning, design and ongoing management of sites is appropriate. III. Set out guidance for the delivery of Thurrock Greengrid in the Thurrock Greengrid Supplementary Planning Document. IV. Ensure the Thurrock Greengrid is a priority for delivered by Developer Contributions including the proposed Community Infrastructure Levy as necessary. V. Provide opportunities for skills development, education and public awareness-raising on the value and importance of the Greengrid. 2. The Greengrid will be delivered at a spatial level through a series of 8 Greengrid Improvement Zones. The Improvement Zones are listed below: <ol style="list-style-type: none"> i. Aveley and South Ockendon (Including Thames Chase) ii. Mardyke Valley iii. West Thurrock/Lakeside/Chafford iv. Purfleet v. North Grays & Chadwell St Mary

	<p>vi. Grays Riverside/ Tilbury vii. East Thurrock / Rural Riverside viii. Stanford/ Corringham/ Horndon/ Langdon Hills</p> <p>Across the borough, considerations will include:</p> <ul style="list-style-type: none"> - Semi-natural green space - Safeguard for biodiversity and geology - Multifunctional greenspace - Historic Landscape and Historic Assets - Ecosystem opportunities - Strategic links and bridging points - Flood Risk Management - Strategic views - Broad landscape management areas <p>3. Develop Local Scale Assets The Council will promote Local-scale assets that contribute to Thurrock's sustainable Greengrid including:</p> <p>i. Doorstep sites, play areas, amenity open spaces and allotments, which are often local sites within urban areas and villages and the first link to the wider setting;</p> <p>ii. Local green links, which provide vital routes for people to access local sites and the wider Rights of Way and safe routes to school network;</p> <p>iii. Registered commons and villages and town greens;</p> <p>iv. Biodiversity interests and local nature reserves, such as Linford Wood and Grove House Wood;</p> <p>v. Local productive land, including local allotments, community gardens and commercial small-holdings involved in supplying local food or craft resources.</p> <p>4. Promote Productive land and natural system opportunities The Council and Partners will promote productive land and natural systems opportunities (soils, bio and geo diversity), including:</p> <p>i. current allotments</p> <p>ii. agricultural/rural lands</p> <p>iii. the potential for biomass cropping in the northeast of Thurrock</p> <p>iv. potential co-firing using biomass fuels in the Tilbury area</p> <p>v. the potential use of the Thames Chase community forest area for sustainable management of wood fuel.</p>
CSTP6 – Strategic Employment Provision	<p>1. Key Strategic Economic Hubs</p> <p>I. The Council will actively seek to maintain high and stable levels of economic and employment growth by creating a network of high quality, mutually reinforcing Key Strategic Economic Hubs, identified in Policy CSSP2. The Key Strategic Economic Hubs will provide 445 hectares of the Industrial and Commercial and Mixed-Use Land between 2009 and 2024⁶. This provision is included in 2 and 3 below.</p> <p>2. Primary and Secondary Industrial and Commercial Areas</p> <p>I. The Council will safeguard existing Primary and Secondary Industrial and Commercial land and premises in, or last used for employment purposes, where</p>

	<p>it is required to maintain a sufficient supply of employment land in the Plan period. The Site Specific Allocations DPD will identify existing Industrial and Commercial land that will be protected for employment purposes, as well as existing employment land to be allocated to other uses.</p> <p>II. The proposed new Primary and Secondary Industrial and Commercial sites (identified in the Site Allocations DPD) will provide approximately 372 hectares of net employment land across the Borough between 2009 and 2024.</p> <p>III. The Council will seek to sustain and enhance employment capacity (land, floor-space, and/or jobs) through the management and protection of the Primary and Secondary Industrial and Commercial areas. The areas will be defined in the Site Allocations DPD. The Primary and Secondary Industrial and Commercial areas will be reserved for employment generating uses falling within Class B1, B2 and B8 and sui generis uses. The Council will consider economic development that includes non-B Class uses within the Primary and Secondary Industrial and Commercial areas provided that it meets all of the following:</p> <ul style="list-style-type: none"> (i) The non-B Class Use provides a complementary and supporting use for the existing Class B uses; or (ii) The non-B Class Use is necessary for the day-to-day service requirements of the existing Class B uses; or (iii) There is a demonstrable need for the non-B Class Use within the borough and there are no other reasonable alternative sites within the borough; or (iv) The introduction of the non-B Class Use will not compromise the supply of Class B land within the borough and will not adversely affect Thurrock's existing and future economic structure; <p>IV. Non-B Class uses will not be supported within the Primary and Secondary Industrial and Commercial areas where they materially change the Class B character of the Primary and Secondary Industrial and Commercial areas.</p> <p>V. Where proposals for new economic development are proposed outside the Primary and Secondary Industrial and Commercial areas, the Council will make an assessment against the following criteria:</p> <ul style="list-style-type: none"> (i) Compatibility with uses in the area surrounding the proposal and potential impacts on those uses. (ii) Capacity and impact on the road network and access by sustainable modes of transport. <p>3. Mixed-Use Employment Locations</p> <p>The Council will encourage development that maximises the employment contribution from mixed-use development sites. In total, the Council has designated 75.4 hectares of land throughout the Borough for mixed-use development between 2009 and 2024. The mixed-use development sites will be set out in the Site Allocations DPD.</p> <p>4. Redundant and Under-Used Employment Land and Buildings</p> <p>In addition to those employment sites allocated to other uses through the Site Specific Allocations DPD, the Council will accept the redevelopment of genuinely redundant or underused employment land and buildings to non-employment uses provided that it can be demonstrated, to the satisfaction of the Council that:</p>
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	<p>(i) It can be demonstrated that the existing eEmployment uses are no longer viable or feasible;</p> <p>(ii) Provision is made for alternative employment floor space or jobs at least equivalent to the existing employment space There are sufficient alternative sites/provision to meet existing and future employment needs as identified in this Plan and any future review;</p> <p>(iii) The new uses are compatible with neighbouring uses and will not harm the viability of the surrounding employment area;</p> <p>(iv) The proposals are compliant with other development plan policies.</p> <p>5. Relocation and Expansion of Existing Businesses</p> <p>The Council will positively encourage the relocation (within Thurrock) of existing firms wishing to expand and major non-conforming installations where this will improve their economic and environmental sustainability, improve the local environment for local residents and enhance the sustainable development potential of adjoining sites. The Council will promote the regeneration and renewal of these sites and their surroundings for housing and mixed-use development.</p> <p>6. Office Development</p> <p>The Council will seek to direct office development to the key town centres identified on the Key Diagram and the Key Strategic Economic Hubs. The Council will review locations for office development as part of the Lakeside AAP Development Plan Documents on Lakeside. Office development will generally be supported in the Primary and Secondary Industrial and Commercial areas provided that it is accessible by sustainable modes of transport and that it does not:</p> <p>(i) Impact upon the viability and amenity of surrounding uses.</p> <p>(ii) Unacceptably impact upon the road capacity and network.</p> <p>7. Knowledge and Cultural Based Regeneration</p> <p>I. The Council will work with partners to enhance local employment opportunities within the Regeneration Areas.</p> <p>II. Knowledge based, cultural, retail, leisure and office developments will be directed to existing centres and the Regeneration Areas to promote their vitality and viability. These sectors will act as drivers for sustainable economic growth. The priority centres for the promotion of these sectors are:</p> <ul style="list-style-type: none"> - Purfleet; - Lakeside/ West Thurrock Basin (subject to Lakeside AAP); - Grays; and - Tilbury. <p>8. Environmental Industries</p> <p>The Council will seek to encourage and direct the development of environmental industries to the Key Strategic Economic Hubs. The Council will work with partners to bring forward the delivery of priority environmental industry projects at the preferred following locations:</p> <ul style="list-style-type: none"> - Tilbury
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	<p>- London Gateway</p> <p>9. Range of Unit Sizes</p> <p>I. Where appropriate the Council will require the provision of a range of unit sizes including small and medium sized business units in new economic development to ensure the needs of businesses are met.</p> <p>II. Where appropriate the Council will seek to incorporate small and medium sized business units into mixed-use developments and development proposals within the Regenerations Areas and Key Strategic Economic Hubs.</p> <p>10. Skills and Local Employment Opportunities</p> <p>The Council will work with partners and developers to enhance the knowledge and skills and local employment opportunities for residents including the promotion of local labour and training agreements on major construction projects. The Council will seek to utilise Section 106 Developer Contributions obligations to further the objectives of this policy.</p> <p>11. Tourism</p> <p>The Council will support the sustainable growth of the tourist industry in Thurrock. Where appropriate, planning permission will be granted within the town centres and Key Strategic Economic Hubs for overnight tourist and visitor accommodation, including hotels, provided the proposed development would:</p> <p>(i) Avoid any adverse effect on the amenity of occupiers of nearby properties; (ii) Be compatible with the character, appearance and function of the area; (iii) The proposals are compliant with other policies in the Core Strategy; (iv) Where appropriate, the Council will support development proposals that seek to support the development of the Olympic and Paralympic Games and legacy.</p>
<p>CSTP12 – Education and Learning</p>	<p>1. General Approach</p> <p>In order to enhance educational achievement and skills in the borough, the Council will work with the Department of Children Schools and Families (DCSF), the TTGDC, schools, learners, employers and other partners to ensure:</p> <p>I. The Council's objective and priority to maximise the benefit of investment in buildings, grounds and ICT, to achieve educational transformation.</p> <p>II. The provision of pre-school, primary school, high school, further education and special education facilities meet current and future needs: where appropriate different levels of education may be located together.</p> <p>III. The integration of schools into multi-functional hubs with linkages to key facilities such as sports and leisure facilities, health and social care.</p> <p>IV. Facilities in schools are fully integrated into community use where possible.</p> <p>V. opportunities for learning and training facilities associated with new and existing businesses are realised (in particular, the Council will promote Enterprise and Learning Hubs, such as The Royal Opera House Production Campus and Skills Academy).</p> <p>VI. The coordination of new educational provision with new development.</p> <p>VII. The provision of high quality communications and transport infrastructure.</p> <p>VIII. ICT which maximises the benefits from its use for teaching and learning, and administration and communication, being available anytime anywhere for life-long learning, to engage parents and support integrated working to safeguard children.</p>

	<p>IX. Environmental, economic and social (educational and community) sustainability.</p> <p>X. That educational opportunities are accessible to all.</p> <p>2. Post 16 Education</p> <p>The Council is working with partners to transform post-16 routes to achievement, increase choice and diversity for learners and parents, and improve educational services and facilities. The Council will pursue engagement between post-16 educational institutions and 14-19 partners. Where appropriate this will include the creation of Trusts and Academies. The Council will progress development schemes including:</p> <ul style="list-style-type: none"> i. Thurrock Learning Campus, Grays - the plans for providing 21st Century facilities for further and higher education in Grays Town Centre are being progressed. A consortium including Thurrock Borough Council and four Higher Education Institutions will establish colocated higher education at the Thurrock Learning Campus; ii. Palmer's Sixth Form College, Grays; iii. Additional Sixth Form Provision - a sixth form presumption at Gable Hall School resulting from the awarding of High Performing Specialist School status, sixth forms are also being put in place at the Gateway Academy, Ormiston Park and Chafford Hundred; iv. The Royal Opera House together with the National Skills Academy for Creative Arts, Purfleet; v. The Logistics Academy at London Gateway, Stanford le hope/ Corringham. <p>3. Secondary Education</p> <p>To meet the educational, training and community needs of young people and their families for the period of this plan, the Council is committed to replace and improve mainstream secondary school provision and will work with partners to identify and / or confirm sites of an appropriate size and location for schools as set out in the <i>School Strategy 2020 Vision</i> including:</p> <ul style="list-style-type: none"> i. New build, refurbishment and expansion of existing mainstream secondary schools under the BSF programme and other capita investments. ii. Rebuild Belhus Chase School on its existing site as Ormiston Park Academy and safeguard adjoining land for long-term expansion. iii. The priority is to provide additional school places at existing schools in the major regeneration areas and where appropriate to relocate schools to linked facilities identified in the Plan. <p>4. Primary Education</p> <p>The Council has outlined a programme of refurbishment, expansion and new schools required to support long-term aims and growth in Regeneration Areas and other Broad Locations in the Plan; it includes:</p> <ul style="list-style-type: none"> i. New additional primary schools in Purfleet and South Stifford; ii. Long-term a further new primary school in Grays; iii. relocate and expand Chafford Hundred Primary School on adjoining land safeguarded for this use; iv. Lakeside (to be addressed in Area Action Plan other Local Development Documents); v. Through its Primary Capital Programme (PCP) new build, refurbishment and expansion of up to forty three existing mainstream primary schools. This
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	<p>development will phased by areas, prioritised according to high levels of deprivation and low levels of educational attainment.</p> <p>5. Special Education</p> <p>The Council and partners will support children with special educational needs through further development of specialist bases and resource bases at mainstream schools, as follows:</p> <ul style="list-style-type: none"> i. Refurbishment and expansion of existing resource bases at mainstream primary and secondary schools as part of the PCP and BSF; ii. Completion of the special education campus at Buxton Road, Grays by relocating Beacon Hill School there from South Ockendon. <p>6. Developer Contributions</p> <p>Proposals for new development will be required to contribute towards educations in accordance with policy CSSP3, policy PMD16 and the Developer Contributions SPD.</p>
<p>CSTP18 – Green Infrastructure</p>	<p>1. Green Infrastructure Network</p> <p>I. The Council, with its partners, will restore, protect, enhance and where appropriate create its green assets. The Green Infrastructure seeks to address the connectivity between urban and rural areas in the borough and ensure that such green assets are multi-functional in use. Green assets can be those in public or private ownership and can be legally protected or covered by non-statutory designations.</p> <p>2. A net gain and New Development</p> <p>I. The Council will require a net gain in green infrastructure. This will contribute to addressing the existing and developing deficiencies, ensuring connectivity and relieving pressure on designated biodiversity sites such as SSSI's.</p> <p>II. Alongside, the requirements for biodiversity set out in Policy CSTP 19 development must contribute to the delivery of green infrastructure, including the acquisition, planning, design and ongoing management consistent with the emerging Greengrid SPD. A key element of this will be connectivity and the integrity of the network; sites should not be considered in isolation.</p> <p>III. Opportunities to increase green infrastructure will be pursued in new developments through the incorporation of features such as green roofs, green walls and other habitat/wildlife creation and also innovative technology.</p> <p>IV. Green infrastructure assets will be identified, enhanced and safeguarded through:</p> <ul style="list-style-type: none"> i. Not permitting development that compromises the integrity of green and historic assets and that of the overall green infrastructure network; ii. Using developer contributions to facilitate improvements to the quality, use and provision of multi-functional green assets and green linkages; and iii. Investment from external funding sources. <p>34. Deficits</p> <p>Where there is an identified deficit the Council will require the creation of green</p>

	<p>assets including parks and gardens; natural and semi-natural spaces; amenity greens; children's play space; and outdoor sports facilities. Developments in areas of deficiency should provide for the supply and ongoing management of new areas of high quality natural and semi-natural space to address the new demand for green infrastructure. The guidance for provision of green infrastructure will be identified in the Greengrid SPD.</p> <p>45. Programmes</p> <p>I. The Council will work with partners to develop and implement Green Infrastructure through an area-based Greengrid Improvement Zones at a local level as necessary in order to deliver the green infrastructure in accordance with the overarching objectives of the Greengrid Strategy.</p> <p>II. The Council will lead in Green Infrastructure management through developing best practice biodiversity enhancement throughout both urban-amenity and infrastructure land. This will be coordinated by programmes of education and community engagement and will support the development of environmental skills training in the region.</p> <p>III. Allocations for new Green Infrastructure for Lakeside will be identified in the emerging Lakeside AAP and the Site Specific Allocations DPD other relevant Development Plan Documents.</p> <p>IV. The Council will identify projects to enhance the network further by improving the quality of existing provision and create new facilities to address existing deficiencies and serve the increasing population and to improve links between sites.</p>
<p>CSTP19 – Biodiversity</p>	<p>Development will be encouraged to include measures to contribute positively to the overall biodiversity in the borough.</p> <p>1. The Biodiversity Network</p> <p>The Council will create a robust network of ecological sites centring on the designated sites, i.e. SSSIs, SPAs, Ramsar, Local Nature Reserves and Local Wildlife Sites. These sites will be safeguarded and enhanced to mitigate the effects of past habitat loss and fragmentation, development and climate change.</p> <p>2. Positive Biodiversity Management</p> <p>I. The Council will ensure that all designated sites are managed appropriately and will prepare suitable Biodiversity Management Plans, with partners, to demonstrate how positive management will be achieved.</p> <p>II. Buffering and extensions to existing sites and additional habitat will be sought through the adoption of appropriate Biodiversity Site Management Plans.</p> <p>III. Access will be balanced against biodiversity interest.</p> <p>3. Key Sites</p> <p>The Council has identified the following key sites that it will work with partners to enhance, and will pursue appropriate opportunities to increase the biodiversity network in the borough.</p> <p>i. East Thurrock Marshes;</p> <p>ii. Mardyke Valley Project;</p>

	<p>iii. Local Wildlife Sites; and iv. Living Landscapes Sites</p> <p>4. Climate Change and Habitat Loss</p> <p>The Council recognises the need for mitigation for habitat loss due to climate change. It supports the identification, through the Thames Estuary 2100 project, of potential inter-tidal habitat creation sites at Fobbing Marshes and fresh water habitat creation sites at North Fobbing Marshes, South Fobbing Marshes, Tilbury and West Tilbury Marshes and the Mardyke.</p> <p>5. Biodiversity and Geodiversity Action Plans</p> <p>I. The Council is committed to delivering the actions set out within the Thurrock, Essex and UK Biodiversity Action Plans. II. The Council will promote small-scale biodiversity interventions such as green roofs. III. The Council supports the production and implementation of the Geodiversity Action Plans being developed by local 'geo' groups in Eastern England as part of the East of England Geodiversity Partnership.</p>
CSTP21 – Productive Land	<p>The Council recognises the importance of food security and will ensure the protection, conservation and enhancement of agriculture, productive land and soil in the borough.</p> <p>1. Ensuring appropriate land management</p> <p>I. The Council will promote the appropriate management and conservation of agricultural land and soil to address the changing climatic and economic environment anticipated in the future.</p> <p>II. Development of the best and most versatile land (DEFRA Grades 1, 2 and 3a) will not be supported except in exceptional circumstances. Developers will need to demonstrate that:</p> <ul style="list-style-type: none"> i. there is no suitable site in a sustainable location on land of poorer agricultural quality; or ii. alternative sites have greater value for their landscape, biodiversity, amenity, heritage or natural resources or are subject to other constraints such as flooding. <p>III. The Council will take into account the importance and quality of agricultural land when considering land allocation for climate change adaptation/mitigation activities such as new fresh and salt-water habitat.</p> <p>2. Supporting productivity</p> <p>I. The Council, with its partners, will support the rural economy through:</p> <ul style="list-style-type: none"> i. Recognising and promoting the economic value of local food production and distribution. ii. Promoting farming and local food co-operatives and supporting rural grant applications. iii. Promoting and encouraging the expansion of agri-environment schemes. iv. Maintaining and enhancing soil quality and resilience and maximise optimising the areas where soil degradation has occurred. v. Encouraging energy-efficiency and renewable energy in agriculture. vi. Promoting sustainable water use.

	<p>vii. Promoting woodland creation in appropriate places.</p> <p>3. Complementary uses</p> <p>I. The Council will encourage farm diversification where appropriate through the development of complementary small-scale businesses, which do not undermine nor degrade agricultural capacity. Businesses such as:</p> <ul style="list-style-type: none"> i. Rural shops, pubs and services which contribute to maintaining the clusters of facilities serving the rural community; ii. Country pursuits that make a significant contribution to rural areas and have the potential to expand the leisure and tourism industry. <p>II. The Council will support sustainable transport for rural access.</p> <p>4. Allotments and urban production</p> <p>I. The Council will support opportunities to engage residents in food production to increase education and awareness of healthy living.</p> <p>II. The Council will seek to identify opportunities for food production in urban areas including allotments, community gardens and orchards.</p> <p>III. Developers will be required to consider provision for allotments in new development in line with the standards in the Greengrid Strategy and Appendix 5.</p> <p>IV. Some areas of Thurrock have been identified as being deficient in quality sites for allotments. The following allotment areas have been identified as sites for improvements to allotments:</p> <ul style="list-style-type: none"> i. Anchor Field; ii. Bull Meadow; iii. Cromwell Road; iv. Thurloe Walk; v. Whitehall Lane; vi. West Road; vii. Adams Road; viii. Wharf Road; and ix. High Road. <p>V. Where deficiencies exist in small-scale allotments in rural areas, the Council will identify potential sites and any improvements to these sites.</p>
<p>CSTP22 – Thurrock Design</p>	<p>The Council will promote high quality design in Thurrock and will progress opportunities to improve the quality of the environment throughout the borough and particularly in the Regeneration Areas and Key Strategic Employment Hubs.</p> <p>I. Development proposals must demonstrate high quality design founded on a thorough understanding of, and positive response to, the local context.</p> <p>II. The Council will promote a robust design process with the use of skilled designers so that proposals achieve the best balance of physical, social, economic and environmental outcomes.</p> <p>III. In particular, the Council requires developers to demonstrate that their proposals are designed to respect the distinct positive characteristics of areas within Thurrock, whether urban or rural, and create a sense of place within their schemes.</p>

	<p>IV. Development must provide a high standard of inclusive design so that it is accessible to all users.</p> <p>V. Development must be safe and secure in its design and contribute to community safety.</p> <p>VI. The Council will encourage distinctive new designs of high architectural quality in appropriate locations.</p> <p>VII. Development must embrace the use of high quality design including sustainable, renewable resources of energy and low-emissions technology, and enhance green infrastructure.</p> <p>VIII. The Council will require that developments address the particular sensitivities and capacity of the places within which they occur, including how adverse impacts are mitigated.</p> <p>Pre-application discussions with developers will be encouraged to help achieve the above and to ensure that the criteria set out in Policy PMD2 Design and Layout and other related policies are met.</p> <p>The Council will provide further guidance on Thurrock's design principles in the Design and Sustainability SPD.</p>
CSTP23 – Thurrock Character and Distinctiveness	<p>The Council will protect, manage and enhance the character of Thurrock to ensure improved quality and strengthened sense of place.</p> <p>I. The Council identifies the following key areas where character is a key issue:</p> <ul style="list-style-type: none"> i. Regeneration Areas ii. Lakeside Basin iii. Strategic Employment Hubs iv. High volume transport networks v. Urban Fringe vi. Town/Village centres vii. Historically Sensitive Areas viii. Strategic Natural and Semi- Natural Spaces ix. Strategic Multifunctional Green Space x. Rural landscapes xi. Green Belt xii. Wooded Hills xiii. Small scale sites, where development may contribute to cumulative degradation. <p>II. The Council requires the retention and enhancement of significant natural, historic and built features which contribute to the character of the borough as defined by their value, quality, cultural association and meaning or their relationship to the setting and local context.</p> <p>III. The Council requires the retention and enhancement of strategic and local views, which contribute to a distinctive sense of place. Where development will affect these views, their sensitivity and capacity for change must be adequately assessed and the effect of the development on them appropriately tested.</p> <p>In order to assess the sensitivity and capacity for change of Thurrock's character, the Council will require an assessment based on <i>The Guidelines for Landscape</i></p>

	<p>and <i>Visual Impact Assessment</i>, or other methodology supported by the Council.</p> <p>The Council will provide further guidance in the Design and Sustainability SPD.</p>
CSTP24 – Heritage Assets and the Historic Environment	<p>1. Protecting and Enhancing Heritage Assets</p> <p>I. The Council will preserve or enhance the historic environment by:</p> <ul style="list-style-type: none"> i. Promoting the importance of the heritage assets, including their fabric and their settings; ii. Encouraging the appropriate use of heritage assets and their settings; iii. Supporting increased public access to historic assets, including tourism for military and industrial heritage; iv. Reviewing the designation of local heritage assets, including considering the designation of new Conservation Areas; v. Retaining non-designated heritage assets which are considered locally important as well as those with statutory protection; and vi. Encouraging proposals that include enhancement of surrounding landscapes and integration between priority heritage assets and the Greengrid. <p>2. Proposed Development</p> <p>I. All development proposals will be required to consider and appraise development options and demonstrate that the final proposal is the most appropriate for the heritage asset and its setting, in accordance with:</p> <ul style="list-style-type: none"> i. The objectives in part 1 above; ii. The requirements of PMD 4 Historic Environment; iii. Conservation Area Character Appraisals and Management Proposals as appropriate; and iv. Relevant national and regional guidance. <p>3. Priorityes for Heritage Regeneration and Enhancement</p> <p>I. The Council will work collaboratively with owners and partners to encourage the appropriate regeneration and use of priority heritage assets to secure their long-term future. The Council will identify priority heritage assets from:</p> <ul style="list-style-type: none"> i. English Heritage's national Heritage at Risk Register; ii. The <i>Thurrock Heritage at Risk Register</i>, which will be reviewed annually; iii. The Conservation Area Management Proposals, which will be reviewed at least every five years, and iv. A local list of heritage assets once produced. v. The Historic Environment Record <p>II. Of priority heritage assets already identified, the Council will:</p> <ul style="list-style-type: none"> i. Ensure that the setting of Tilbury Fort, including views if it from the river, are appropriately protected and enhanced, and that encroachment on the open land around it is not permitted. ii. Ensure that the setting of Coalhouse Fort is appropriately protected from development and that its fabric is conserved. iii. Resist development that undermines an understanding of the role the river Thames has played in the historic development of Thurrock. iv. Promote public access between Tilbury Fort and Coalhouse Fort through riverside links. v. Ensure that any new development close to, or within, Bata Village or the Bata

	<p>Factory complex is well designed and contributes positively to their settings.</p> <p>vi. Ensure that Thurrock's historic landscapes, and the contribution made to them by ancient woodland, hedgerows and trees, are appropriately considered in all development proposals.</p>
CSTP25 – Addressing Climate Change	<p>1. Adaptation</p> <p>I. The Council will require climate change adaptation measures and technology to be considered from the outset in any development proposal including reduction of emissions, renewable and low carbon technologies, passive design, recycling and waste minimization.</p> <p>II. The Council will work to ensure that vulnerability to climate change impacts is minimised in new development, and that such development does not increase vulnerability to climate change impacts.</p> <p>III. The location and layout of new buildings should minimise vulnerability to climate change.</p> <p>IV. Developers must consider the potential effects of climate change on their development, including:</p> <ul style="list-style-type: none"> i. Water conservation and drainage ii. Need for summer cooling iii. Risk of subsidence iv. Flood risk from tidal, fluvial and surface water <p>2. Mitigation</p> <p>I. The Council will require new and existing development and associated activities to adhere to local, regional and national targets for reducing carbon emissions.</p> <p>II. The Council will ensure the following minimum reductions in CO2 emissions as an average across all sectors:</p> <ul style="list-style-type: none"> i. 14.3% by 2010 ii. 19% by 2015 iii. 23.6% by 2020 <p>III. The Council will employ innovative methods of reducing and mitigating emissions, including the introduction of a Carbon Offset Fund.</p>
CSTP26 - Renewable or Low-Carbon Energy Generation	<p>As part of the shift to low carbon future and to tackle climate change, the Council will encourage opportunities to generate energy from non-fossil fuel and low carbon sources.</p> <p>I. The Council will promote and facilitate proposals for centralized renewable or low-carbon energy schemes at appropriate locations and standards, including at Priority Locations at Tilbury and London Gateway.</p> <p>II. The Council will promote the delivery of small-scale renewable and low carbon energy developments utilising technology such as solar panels, biomass heating, small-scale wind turbine, photovoltaic cells, combined heat and power and other methods.</p> <p>III. The Council will promote the delivery of distinct energy networks in priority locations, in order to increase the proportion on energy delivered from renewable</p>

	<p>and low-carbon sources in borough.</p> <p>III. IV. The Council will ensure that effort is made to achieve a significant carbon reduction in all new development, at least matching the national targets.</p> <p>The Council will only view an application as unacceptable where it produces a significant adverse impact that cannot be mitigated.</p>
CSTP27 – Management and Reduction of Flood Risk	<p>I. The Council will ensure that flood risk management is implemented and supported through effective land use planning. The Sequential, and where necessary Exception Test, as set out in PPS25 will be employed when allocating sites for development and an Emergency Plan for the Borough will be completed.</p> <p>II. The Council will also continue to work collaboratively with the Environment Agency by supporting the area based policy approach adopted in the Thames Estuary 2100 Project. In particular the Council will seek to safeguard existing flood defences and new areas for flood defences, water storage and drainage areas, as well as seeking secondary defences for key assets.</p> <p>III. The Council will support the work of the Environment Agency in the Environmental Enhancement Project for the Mucking Flats and Marshes to ensure the delivery of appropriate flood mitigation and environmental enhancement measures.</p> <p>IV. The Council will work with the Environment Agency and other main stakeholders to ensure that fluvial and surface water flood risk is managed within Thurrock. This will include supporting the policies identified in the South Essex Catchment Flood Management Plan, such as identifying and safeguarding areas of land for existing and future areas of water storage in Policy Units 9, 10, 11 & 12 and in formulating System Asset Management Plans (SAMP) and the Integrated Urban Drainage Plans for Stanford-le-Hope, Tilbury and Purfleet. A Surface Water Management Plan will also be carried out to assist in the identification and mapping of areas susceptible to surface water flooding as recommended by DEFRA and the Pitt Review. Development proposals that will affect these locations will be expected to contribute towards infrastructure improvements in these locations to enable the development to proceed.</p> <p>V. The Council will ensure that where possible necessary new development throughout the borough contains space for water including naturalisation and environmental enhancement.</p>
PMD1 – Minimising Pollution and Impacts on Amenity	<p>1. Development will not be permitted where it would cause unacceptable effects on:</p> <ul style="list-style-type: none"> i. the amenities of the area; ii. the amenity of neighbouring occupants; or iii. the amenity of future occupiers of the site. <p>2. Particular consideration will be given to the location of sensitive land uses, especially housing, schools and health facilities, and nationally, regionally and locally designated biodiversity sites.</p> <p>3. The Council will require assessments to accompany planning applications where it has reasonable grounds to believe that a development may cause a breach of standards relating to:</p> <ul style="list-style-type: none"> i. Air pollution;

	<p>ii. Noise pollution; iii. Contaminated Land/soil iv. Odour; v. Light pollution; vi. Water pollution; vii. Invasion of privacy viii. Visual intrusion ix. Loss of light</p> <p>4. Where the assessment confirms a breach, planning permission will only be granted if satisfactory reductions can be achieved through design, or suitable mitigation measures can be put in place through conditions or legal agreement.</p>
PMD2 – Design and Layout	<p>1. The Council requires all design proposals to respond to the sensitivity of the site and its surroundings, to fully investigate the magnitude of change that would result from the proposals, and mitigate against negative impacts.</p> <p>All development proposals must satisfy the following criteria:</p> <p>i. Character – Development must contribute positively to the character of the area in which it is proposed, and to surrounding areas that may be affected by it. It should seek to contribute positively to local views, townscape, historic heritage assets and natural features, and contribute to the creation of a positive sense of place.</p> <p>ii. Continuity – Development proposals must promote continuity of street frontages and provide active ground floor frontages as far as reasonably possible.</p> <p>iii. Public Realm – New development should contribute to improvements in the public realm by contributing sensitive planting, street furniture, appropriate lighting and public art where appropriate. The quality of the design and detailing of all development, including interfacing elements such as facades, steps and walls should be robust, engaging and contribute positively to the public realm.</p> <p>iv. Public and Private Amenity space– Development proposals must provide adequate public and private amenity space in accordance with Thurrock’s relevant adopted standards, particularly in areas with identified deficiencies. It should be attractive, safe, uncluttered, readily accessible and should promote play.</p> <p>v. Accessibility – Development proposals must allow easy and safe access for all members of the community. Development must also integrate land uses and all modes of transport but pedestrians and cyclists must be given priority over traffic in scheme design.</p> <p>vi. Permeability and Legibility – Development should promote connections between places that people wish to use, including public transport links, community facilities and the Greengrid. Development should be designed to help people find their way and must be legible for all members of the community, providing recognisable routes using landmarks and signage where appropriate.</p> <p>vii. Safety and Security – Development proposals must create safe and secure environments and reduce the scope for crime and fear of crime. Where appropriate proposals should adopt the principles of <i>Designing Out Crime</i> set out</p>

	<p>in the Police Service's publication '<i>Secured by Design</i>'.</p> <p>viii. Landscape – Features contributing to the natural landscape in the borough, such as woods, hedges, specimen trees, unimproved grassland, ponds and marshes, will be protected and where appropriate enhanced to maintain their landscape and wildlife value. Provision and enhancement of landscape features will also be required to contribute to multiple uses and/or eco-system services, including amenity, recreation, flood alleviation and Sustainable Urban Drainage Systems.</p> <p>ix. Diversity – Development proposals must promote variety and choice through a mix of mutually compatible developments and uses.</p> <p>x. Utilities – Development proposals must accommodate public services and utilities without compromising design and layout. This includes providing suitable access to maintenance, waste and emergency service vehicles.</p> <p>xi. Energy and Resource use – Development should be designed to minimise energy and resource use. This includes integrating sustainable construction techniques, siting and orientation of buildings to maximise energy and water efficiency.</p> <p>xii. Layout – The layout of all development should optimise the assets of the site, while conforming to the appropriate standards for layout, design and access set out in the Layout and Standards SPD.</p> <p>2. The Council will require developers to consider the <i>Building for Life</i> criteria set out by the Commission for Architecture and the Built Environment (CABE) in designing residential development and the eCouncil will use the criteria to evaluate the proposal. Where the Council considers that the proposed development site has the potential to meet all the criteria, the Council will require residential development to meet the „silver“ standard, and from 2016, the „gold“ standard.</p> <p>3. The Council will encourage pre-application discussions and design review of development proposals by the Commission for Architecture and the Built Environment (CABE) and/or other relevant bodies.</p> <p>4. Where the Council has produced a design brief for site or sites, developers will be obliged to meet its detailed requirements.</p>
PMD4 – Historic Environment	<p>The Council will ensure that the fabric and setting of heritage assets, including listed buildings, conservation areas, scheduled ancient monuments and other important archeological sites, and historic landscape features are appropriately protected and enhanced.</p> <p>1. The Council will also require new development to take all reasonable steps to retain and incorporate non-statutorily protected heritage assets contributing to the quality of Thurrock's broader historic environment.</p> <p>2. Applications must demonstrate that they contribute positively to the special qualities and local distinctiveness of Thurrock, through compliance with local heritage guidance including:</p>

	<p>i. Conservation Area Character Appraisals;</p> <p>ii. Conservation Area Management Proposals;</p> <p>iii. Other relevant Thurrock-based studies, including the Landscape Capacity Study (2005), the Thurrock Urban Character Study (2007) and the Thurrock Unitary Historic Environment Characterisation Project (2009).</p> <p>iv. Further local guidance as it is developed.</p> <p>3. The Council will follow the approach set out in PPG 15 and PPG16 (and their replacement PPS15, once adopted), „PPS5: Planning for the Historic Environment“ in the determination of applications affecting Thurrock’s built or archaeological heritage assets. This will include consideration of alterations, extensions or demolition of listed buildings or the demolition of unlisted buildings within conservation areas, and requirements for pre-determination archaeological evaluations and for preservation of archaeology <i>in situ</i> or by recording.</p>
PMD6 – Development in Green Belt	<p>The Council will maintain, protect and enhance the open character of the Green Belt in Thurrock in accordance with the provisions of PPG2. The Council recognises Green Belt has a positive role to play in providing opportunities for access to the countryside, promoting outdoor sport and recreation, improving landscapes, retaining agricultural land and securing nature conservation and biodiversity.</p> <p>1. New Development</p> <p>i. Planning permission will only be granted for new development in the Green Belt provided it meets the requirements and objectives of PPG2.</p> <p>2. Residential Extensions in the Green Belt</p> <p>i. An extension must not be disproportionate to the original building, which in Thurrock means no larger than two reasonably sized rooms or any equivalent amount as defined in the Design and Sustainability Layout and Standards SPD.</p> <p>ii. The extension of the curtilage of a residential property which involves an incursion into the Green Belt will only be permitted where it can be demonstrated that very special circumstances apply.</p> <p>3. Replacement Dwellings in the Green Belt</p> <p>i. Replacement dwellings in the Green Belt will only be permitted provided that the replacement dwelling is not disproportionately larger than the original building, as defined in the Design and Sustainability Layout and Standards SPD.</p> <p>4. Established Residential Frontages in the Green Belt</p> <p>iii.i4. Where the Council determines that an established frontage of residential development exists in the Green Belt, planning permission will be granted, subject to compliance with all other relevant policies in this plan, for new dwellings on genuine infill plots and the replacement of existing dwellings and the extension of existing dwellings located on the existing frontage only. Replacement dwellings and extensions to existing dwellings will not be subject to the size limitations contained in paragraphs 2 and 3 of this policy Established frontages of residential development in the Green Belt are shown on the adopted Proposals Map. Within the established frontages of residential development included within the Green Belt, to be shown on the Proposal Map, planning permission for change of use to residential, new residential development on</p>

	<p>genuine infill plots, replacement of existing dwellings and extensions will be permitted, on the existing frontage only, when all other policy criteria in this plan are met.</p> <p>5. Re-Use and Adaptation of Buildings in the Green Belt</p> <p>I. The re-use and adaptation of buildings for residential, employment, leisure or community use will be permitted, provided the following criteria are met:</p> <ul style="list-style-type: none"> i. The building is of a permanent and substantial construction and does not require significant rebuilding before it can be put to its proposed use; ii. The building should not detract from the character and appearance of the locality after implementation of the new use. The bulk, form and general design of the building must reflect its surroundings; iii. The proposed use can be fully contained in the building and would not require extensive new buildings or inappropriate use of open areas; iv. The use does not have a materially greater impact than the present use on the openness of the Green Belt or amenities of the area by reason of noise, visual intrusion, traffic generation, fumes, dust or other forms of nuisance. <p>II. Re-use or adaptation of existing farm buildings for non-agricultural purposes will not automatically result in permission being granted to erect additional buildings to accommodate the displaced agricultural uses. Where permission for re-use or adaptation is granted, the Council will consider attaching a condition that removes permitted development rights for new farm buildings on the agricultural holding. The following factors will be considered when applying such a condition:</p> <ul style="list-style-type: none"> i. The openness and landscape value of the agricultural holding and surrounding area; and ii. The grouping and/or dispersion of existing buildings on the agricultural holding and in the vicinity; iii. The size of the holding and the ability to disperse new agricultural buildings widely within it. <p>6. Equestrian Facilities</p> <ul style="list-style-type: none"> i. The Council will expect stables to be located in existing buildings wherever possible. New buildings will only be permitted where there are no suitable existing buildings. ii. Stables will only be permitted where they are requisite to the use of the land for grazing. The Council will only permit one stable per 0.6 hectares (1.5 acres)¹ of grazing land and the stable must be on, or immediately adjacent to, the grazing land. iii. Stud farms, riding schools and other large-scale commercial equestrian facilities will only be permitted in the Green Belt where they use existing buildings. iv. Permission will not be given for additional housing in association with stables.
<p>PMD7 – Biodiversity, Geological Conservation and Development</p>	<p>All developers will be required to show that their proposals mitigate within the local area, or compensate for, any loss of biodiversity habitat, such that there is no overall net loss of biodiversity habitat in Thurrock.</p> <p>1. Development proposals will be required to demonstrate that any significant biodiversity habitat or geological interest of recognised local value is retained and enhanced on site. Where it can be demonstrated that this is not possible, and there is no suitable alternative site available for the development, developers will</p>

	<p>be required to show that their proposals would mitigate any loss of biodiversity or geological interest. In circumstances where it can be demonstrated that neither retention on site nor mitigation is possible, developers will be required to provide appropriate compensation for any significant loss of biodiversity or geological interest, such that there is no overall net loss of biodiversity habitat or features of geological conservation interest in Thurrock.</p> <p>2. The Council will not permit development that would result in the loss, or partial loss, of a locally designated biodiversity site or geological, except in exceptional circumstances where it can be demonstrated that there is no alternative and where appropriate mitigation measures are guaranteed by planning obligations or conditions, subject to the sequential approach outlined in (1) above.</p> <p>3. To enable the Council to determine an application which would result in a loss of biodiversity or geological value, in such circumstances, the developer will be required to submit a detailed justification setting out:</p> <ul style="list-style-type: none"> i. why the loss is considered to be unavoidable ii. an assessment of what species and habitat would be lost or adversely affected as a result of development (including an ecological survey where appropriate) iii. how the loss or adverse effect is proposed to would be mitigated: either onsite through habitat restoration or creation; and/or compensated for through the acquisition and management of a suitable site within the area and its appropriate management; or a financial contribution towards the purchase and management of such a site or management of an existing site to of land and funding towards its management to bring it up to a necessary standard. <p>2. 4. Compensation measures will be considered as an alternative to mitigation, but only where it can be demonstrated that all possible approaches to mitigation through design have been exhausted.</p> <p>3.4 Thurrock Council will require development proposals to incorporate biodiversity or Geological features into the design as far as possible. These may include green roofs, brown roofs and the creation of green corridors for wildlife.</p> <p>i. 5. Thurrock Council will determine when a Biodiversity or Geological Management Plan is required and will secure effective management through planning obligations where necessary.</p> <p>The Council will evaluate development proposals and biodiversity management plans or geological management plans against recognised best practice.</p>
PMD9 – Road Network Hierarchy	<p>1. Routes of all levels</p> <p>The Council will only permit the development of new accesses or increased use of existing accesses where:</p> <ul style="list-style-type: none"> i. There is no possibility of safe access taken from an existing or proposed lower category road ii. The design of the development minimises the number of accesses required. iii. The development makes a positive contribution to road safety or road safety is not prejudiced. iv. The development preserves or enhances the quality of the street scene. v. The development avoids causing congestion as measured by link and junction

	<p>capacities.</p> <p>vi. Measures are taken to mitigate all adverse air quality impacts in or adjacent to Air Quality Management Areas.</p> <p>vii. The development will minimise adverse impacts on the quality of life of local residents, such as noise, air pollution, and the general street environment.</p> <p>viii. The development will make a positive contribution to accessibility by sustainable transport.</p> <p>These criteria apply to routes of all levels (1, 2 and 3). The following principles also apply to particular levels:</p> <p>4. 2. Level 1 Routes - Corridors of Movement.</p> <p>i. There is a presumption against new accesses or the increased use of an existing direct access onto a Corridor of Movement. Development served by side roads connecting to a Corridor of Movement will only be permitted where it can be demonstrated that the Corridor of Movement will not be adversely affected in terms of highway safety and traffic capacity.</p> <p>ii.ii. Development will not be permitted where it impacts adversely on capacity and safety.</p> <p>iii.iii. Where the Corridor of Movement comprises an Inter-urban Public Transport Route or provides access to one or more of the borough's ports, new accesses must not have an adverse impact on the free flow of traffic.</p> <p>iii. There is a presumption against new accesses or the increased use of an existing direct access onto a Corridor of Movement. Development served by side roads connecting to a Corridor of Movement will only be permitted where it can be demonstrated that the Corridor of Movement will not be adversely affected in terms of highway safety and traffic capacity.</p> <p>iv. Exceptions will be made only for developments of overriding national importance, strategic sites allocated in this Local Development Plan, and strategic public transport facilities.</p> <p>2. 3. Level 2 Routes - Rural Roads only</p> <p>4. i. The establishment of new accesses or increased use of existing direct accesses will not normally be accepted for Rural Level 2, except where the access is for small-scale uses permissible in the green belt which do not adversely affect road safety or limit capacity.</p> <p>2. ii. The Council will require that the provision of accesses is consistent with the Design and Sustainability Layout and Standards SPD. In all cases any access that is proposed should meet current design standards.</p> <p>iii. Exceptions to this policy will be made for the working of mineral to recognise that minerals can only be worked where they occur. In such cases, road improvements may be sought from developers.</p>
PMD10 – Transport Assessments and Travel Plans	<p>Transport Assessments, Transport Statements, and Travel Plans must accompany planning applications in accordance with the Department for Transport guidance in <i>Guidance on Transport Assessments</i> (March 2007).</p> <p>i. Travel Plans must be consistent with Council policies. They will normally be secured through planning obligations, although planning conditions might suffice where this will clearly be the best option because the outcomes and measures</p>

	<p>required are simple and very clear, such as where the travel plan is for an existing use.</p> <p>ii. All developments that fall below the thresholds for individual Travel Plans will be expected to support the Council's Smarter Choices programme or Area Wide Travel Plans.</p> <p>iii. Where schools add capacity through development or new schools are proposed, they will be required to develop a School Travel Plan or revise their existing Travel Plan.</p> <p>iv. Proposals for residential developments of 25 units or more should be accompanied by a „Safe Routes to School“ assessment.</p> <p>v. Development will only be permitted where the Travel Plans, Transport Assessments or Transport Statements are agreed by the Council and there is adequate provision for existing or planned transport infrastructure and other proposed measures.</p> <p>Proposed mitigation measures will either be implemented in their entirety by or on behalf of the developer or will be implemented as part of a wider pooling of resources. Developers will be required to make provision for the objectives of the agreed Travel Plans to be monitored. Agreed Travel Plans will include targets, coupled with penalties if outcomes are not being met.</p>
PMD12 – Sustainable Buildings	<p>In determining planning applications for new development, the following criteria must be met:</p> <p>1. Residential</p> <p>Proposals for new or conversion to residential development must be consistent with the “Code for Sustainable Homes” (or equivalent) level 3 targets from 2010, level 4 targets from 2013 and zero carbon from 2016 (Level 6).</p> <p>The Council will require the following “Code for Sustainable Homes” credits to be achieved as a minimum in all new domestic development:</p> <ul style="list-style-type: none"> i. External Water Consumption: 1 credit ii. Management of surface water run-off from developments: 2 credits iii. Ecology: 4 credits <p>2. Non-residential (including Expansions or Extensions) over 1000m²</p> <p>Proposals for non-residential development must achieve, as a minimum, the following BREEAM standards (or equivalent), where appropriate:</p> <ul style="list-style-type: none"> - BREEAM Very Good up to 2016; - BREEAM Excellent from 2016; - BREEAM Outstanding from 2019 (in addition to national standards for zero carbon) <p>3. All-development Pproposals for development will be required to submit an Energy and Water Statement in support of planning applications. The detailed requirements of these statements will be set out in the forthcoming Design and Sustainability SPD, but will be expected to show how the applicant would:</p> <ul style="list-style-type: none"> i. Minimise water consumption; ii. Minimise energy consumption;

	<p>iii. Maximise water efficiency and water recycling</p> <p>iv. Maximise the use of recycled materials and sustainably sourced materials; and</p> <p>v. Minimise waste and maximise recycling during construction and after completion.</p> <p>4. The Council's Energy Study will identify priority locations and sites for sustainable developments and these will be included in the Site Allocations DPD. Requirements for priority locations and sites will be set out in the Design and Sustainability SPD.</p>
PMD13 – Decentralised Renewable and Low-Carbon Energy Generation	<p>1. New development of 5 or more residential dwellings, or 1,000 m² sq metres or more of non-residential floorspace, must secure, as a minimum, the following proportions of their predicted energy from decentralised and renewable or low-carbon sources, unless it can be demonstrated to the Council's satisfaction, by way of a full viability assessment, that this is not feasible or viable:</p> <ul style="list-style-type: none"> - 10% from 2010; - 15% from 2015; and - 20% from 2020. <p>2. The Council will require higher targets than the above for decentralized renewable and low-carbon energy generation on priority sites identified in the Energy Study.</p> <p>3. All new developments in and adjacent to priority locations identified as suitable for decentralised energy networks must be designed to connect to such networks.</p> <p>2. Priority Locations</p> <p>Within the Priority Locations, the Council will:</p> <p>I. Require all opportunities for establishing district energy networks to be taken up, where they would provide higher proportions of renewable or low carbon energy to be delivered than in (1) above.</p> <p>II. Require other developments considered suitable for connection to existing or feasible district energy networks to be designed to enable connection to such networks.</p> <p>Where developers consider their proposals unable to feasibly or viably deliver, or connect to, district energy networks this will need to be demonstrated by way of technical appraisal and open book economic viability assessment. The Council will not permit developments that would prejudice the provision of such networks.</p> <p>3. Identification of Priority Locations</p> <p>I. The priority locations are those which meet any, or any combination, of the following conditions:</p> <ul style="list-style-type: none"> - residential developments of 100 dwellings or more; - residential developments on sites larger than 2 ha; - non-residential developments with a total floorspace exceeding 10,000 sq metres. <p>II. Smaller sites in close proximity to an existing or proposed district energy network are considered priority locations if they meet any of the following conditions:</p>

	<ul style="list-style-type: none"> - sites smaller than 20 dwellings within 50 metres of an existing or proposed district energy network, - 20-30 dwellings within 100 metres of an existing or proposed district energy network, - 31-40 dwellings within 150 metres of an existing or proposed district energy network, - Sites larger than 40 dwellings within 200 metres of an existing or proposed district energy network - All commercial and other non-domestic developments within 200 metres of an existing or proposed district energy network. - <p>III. Priority Locations identified by the Council will be included on the Proposals Map. Sites which are not identified as Priority Locations at adoption of the Core Strategy, but which are demonstrated subsequently to meet the conditions to provide district energy networks, will be considered to be Priority Locations and will be subject to the requirements of this policy</p> <p>III.4. The Developer Contributions SPD will set out requirements for development to contribute to securing decentralised energy networks or systems from which it would benefit.</p>
PMD14 – Carbon Neutral Development	<p>The Council will require developers to demonstrate that all viable energy efficiency measures and renewable or low-carbon technology opportunities have been utilised to minimise emissions, in accordance with PMD12 and PMD13. Thereafter:</p> <p>i. Any development (whether new build, conversion or renovation) that would lead to a net increase in greenhouse gas Carbon dioxide emissions, over and above existing emissions for the development site, will be required to make contributions to the Thurrock Carbon Offset Fund.</p> <p>The net greenhouse gas emissions from the new development will be measured as tonnes per year. Financial contributions to the Thurrock Carbon Offset Fund will be developed as part of the Thurrock Energy Study and based on the trading price of carbon per tonne under the European Union Emissions Trading Scheme on 1st April preceding the decision date of the planning application.</p> <p>Further details of the Thurrock Carbon Offset Fund will be based on the methodology set out in the forthcoming Developer Contributions SPD and the Design and Sustainability SPD.</p>
PMD15 – Flood Risk Assessment	<p>1. Sites not covered by the Thurrock Sequential Test will be required to provide a site- specific Sequential Test to demonstrate compliance with PPS25 or any successor, to be provided by the applicant. To reflect the nature of Thurrock's defended floodplain, particular reference should be made to the hazard rating for each site where covered by the Thurrock Strategic Flood Risk Assessment.</p> <p>2. Only those applications classified under the „minor development“ or „changes of use“ categories will be exempt from applying the Sequential Test, but will still be expected to meet the requirements for Flood Risk Assessments and flood risk reduction as set out in Annex E of PPS25 and the associated Design and Sustainability SPD.</p>

	<p>3. Development proposals subject to the Exception Test in Thurrock must show that the following criteria have been met (in addition to FRA requirements outlined in PPS25):</p> <p>I. To assist with part a) of the Exception Test, reference should be made to the main assessment criteria outlined in the Thurrock Sustainability Appraisal and any opportunities to reduce the overall flood risk posed to the community, including schemes to make space for water;</p> <p>II. That the development is on developable previously developed land (see part b) of the PPS25 Exception Test as repeated above);</p> <p>III. II. The FRA must demonstrate that the development will be „safe“, without increasing flood risk elsewhere, and where possible will reduce flood risk overall. For Thurrock, this will mean addressing the following points in particular:</p> <p>i. Flood hazard must be fully considered and reference should be made in the site-specific FRA to the SFRA, or site-specific modelling. This should be used to inform a sequential approach to planning within the site;</p> <p>ii. Where it is deemed acceptable to reduce flood storage as a result of development, level for level compensation storage must be provided to ensure that there is no increased flood risk elsewhere;</p> <p>iii. Where appropriate, an emergency plan for the development must be submitted that is consistent with the emergency plan for the area. This will include evidence that 'more vulnerable' development can achieve safe access/egress to a communal refuge point or unaffected area accessible to the emergency services. In highly exceptional cases where access/egress to a place of safe refuge cannot be achieved, these will be considered on their individual merits;</p> <p>iv. Where appropriate, flood avoidance, flood resistance and flood resilience measures must be incorporated into the design of any development;</p> <p>v. Evidence that surface water management schemes, and other flood defence measures that are required on-site in order to allow a development to take place will be adequately maintained for the lifetime of that development by the site owner.</p> <p>vi. Evidence that the proposed development will not interfere with the potential for future maintenance or improvements to flood defences</p> <p>4. Developers may be required to provide section 106 Developer Contributions towards the improvement of Emergency Planning services and flood defence measures within Thurrock as part of flood management mitigation.</p> <p>5. All new Developments will be expected to incorporate Sustainable Drainage Systems (SUDS) to reduce the risk of surface water flooding, both to the site in question and to the surrounding area. Where the potential for surface water flooding has been identified, site-specific Flood Risk Assessments should ensure that suitable SUDS techniques are incorporated as part of the redevelopment.</p>
PMD16 – Developer Contributions	<p>1. Where needs would arise as a result of development, the Council will seek to secure planning obligations under Section 106 of the Town and Country Planning Act 1990 and in accordance with Circular 05/05, the Council's Developer Contributions SPD, PPG17 and any other relevant guidance.</p> <p>2. Through such obligations, the council will seek to ensure that development proposals:</p> <p>i. Where appropriate contribute to the delivery of strategic infrastructure to enable the cumulative impact of development to be managed</p> <p>ii. Meet the reasonable cost of new infrastructure made necessary by the proposal.</p>

	<p>iii. Mitigate or compensate for the loss of any significant amenity or resource.</p> <p>iv. Provide for the ongoing maintenance of facilities provided as a result of the development.</p> <p>The wide range of matters that will be covered by obligations include:</p>																																																							
	<table><tr><td rowspan="5">Housing</td><td>Affordable Housing (including intermediate and key worker housing)</td></tr><tr><td>Mobility Housing</td></tr><tr><td>Lifetime Homes</td></tr><tr><td>Special Needs Housing</td></tr><tr><td>Sheltered Housing</td></tr><tr><td rowspan="10">Education and Training</td><td>Early Years and Childcare</td></tr><tr><td>Primary Schools</td></tr><tr><td>Secondary Schools</td></tr><tr><td>Sixth Form Provision</td></tr><tr><td>Higher Educational Provision</td></tr><tr><td>School Transport</td></tr><tr><td>Adult Learning</td></tr><tr><td>Safer Routes to School</td></tr><tr><td>Vocational training in employment</td></tr><tr><td>Employment of local residents</td></tr><tr><td rowspan="10">Transport Infrastructure</td><td>Provision of Technical Work</td></tr><tr><td>Network Management</td></tr><tr><td>Sustainable Public and Community Transport</td></tr><tr><td>Accessibility and Travel Planning</td></tr><tr><td>Pedestrian Infrastructure including Public Rights of Way</td></tr><tr><td>Cycling Infrastructure</td></tr><tr><td>Road Infrastructure</td></tr><tr><td>Parking Infrastructure/ enforcement</td></tr><tr><td>Transport Information and Marketing Scheme and Residential Season Ticket Provision</td></tr><tr><td>Maintenance Payments for new and existing infrastructure</td></tr><tr><td rowspan="9">Community, Cultural and Social Infrastructure</td><td>Library Services</td></tr><tr><td>Community Centres (including Places of Worship)</td></tr><tr><td>Places of Worship</td></tr><tr><td>Youth Facilities</td></tr><tr><td>Social Care</td></tr><tr><td>Emergency Services – Police Service, Essex Fire and Rescue, Health Care</td></tr><tr><td>Services and Ambulance Services</td></tr><tr><td>Public Art</td></tr><tr><td>Recreation and Leisure Facilities including Open Space, Play Equipment and Pitches.</td></tr><tr><td rowspan="4">Built Environment</td><td>Street Scene Improvements</td></tr><tr><td>Preservation and enhancement of the Historic Environment</td></tr><tr><td>Safety and designing out crime</td></tr><tr><td>Sustainable Design and Layout</td></tr><tr><td rowspan="7">Environment/ Climate Change</td><td>Renewable Energy Additions</td></tr><tr><td>Biodiversity and Land Scaping</td></tr><tr><td>Open Space, Play Equipment and Pitches</td></tr><tr><td>Green Infrastructure</td></tr><tr><td>Greengrid</td></tr><tr><td>Carbon Offset Fund</td></tr><tr><td>Flood defense infrastructure</td></tr><tr><td>District Energy Networks</td></tr><tr><td>Other Utilities and Communications</td><td>Statutory Undertakers including electricity, gas and water and waste water</td></tr></table>	Housing	Affordable Housing (including intermediate and key worker housing)	Mobility Housing	Lifetime Homes	Special Needs Housing	Sheltered Housing	Education and Training	Early Years and Childcare	Primary Schools	Secondary Schools	Sixth Form Provision	Higher Educational Provision	School Transport	Adult Learning	Safer Routes to School	Vocational training in employment	Employment of local residents	Transport Infrastructure	Provision of Technical Work	Network Management	Sustainable Public and Community Transport	Accessibility and Travel Planning	Pedestrian Infrastructure including Public Rights of Way	Cycling Infrastructure	Road Infrastructure	Parking Infrastructure/ enforcement	Transport Information and Marketing Scheme and Residential Season Ticket Provision	Maintenance Payments for new and existing infrastructure	Community, Cultural and Social Infrastructure	Library Services	Community Centres (including Places of Worship)	Places of Worship	Youth Facilities	Social Care	Emergency Services – Police Service, Essex Fire and Rescue, Health Care	Services and Ambulance Services	Public Art	Recreation and Leisure Facilities including Open Space, Play Equipment and Pitches.	Built Environment	Street Scene Improvements	Preservation and enhancement of the Historic Environment	Safety and designing out crime	Sustainable Design and Layout	Environment/ Climate Change	Renewable Energy Additions	Biodiversity and Land Scaping	Open Space, Play Equipment and Pitches	Green Infrastructure	Greengrid	Carbon Offset Fund	Flood defense infrastructure	District Energy Networks	Other Utilities and Communications	Statutory Undertakers including electricity, gas and water and waste water	
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<p>3. To ensure the robust, sustainable and effective delivery of infrastructure within Thurrock, the Council will seek where appropriate different types of contributions from new development. These will be set out in the forthcoming Developer Contributions SPD. The range of contributions that will be utilised in Thurrock</p>																																																								

	<p>include:</p> <ul style="list-style-type: none">i. Standard Charges – to ensure certainty and clarity in the delivery of developer contributions, a formulaic approach with a standard charge will be utilised where appropriate.ii. Maintenance Payments – where appropriate maintenance contributions will be sought, usually in the form of a one off payment.iii. Forward or Support Funding – Specific elements of the development package may be required to be in place at an early stage in the build programme.iv. Pooling of Contributions – Pooling of contributions will be an appropriate way of collecting together funding from a number of developments in an area to facilitate the provision of infrastructure needed to meet the cumulative impact of development where a single development would not fairly be able to meet the associated costs. Cross boundary impacts with other Local Planning Authorities will require joint agreement between authorities. Effective and productive joint working with neighbouring authorities will be promoted.
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APPENDIX B

FRAMEWORK FOR THE ENVIRONMENTAL MANAGEMENT

B. FRAMEWORK FOR THE ENVIRONMENTAL MANAGEMENT

Contents Summary

Framework for the Environmental Management of the underground gas pipeline and associated AGI is provided in this Appendix.

B.1 Framework for the Environmental Management

B.1 Framework for the Environmental Management

Introduction

In accordance with the Town and Country Planning (Environmental Impact Assessment) Regulations 2009, the assessment process for the gas pipeline and associated AGI required in connection with the development of GEC has included a determination of how the potential environmental impacts will be avoided or reduced through design and mitigation.

Therefore, following identification of impacts the following steps are taken within the EIA process:

- Development of appropriate mitigation measures;
- Establishment of criteria for crossing sensitive sites;
- Effective management and control of the construction activities;
- Post-construction reinstatement;
- Post-construction auditing; and
- Effective management and control of the operational activities.

In the hierarchy of mitigation, likely significant adverse effects should in the first instance be avoided altogether, then reduced and finally offset. Significant adverse effects are best avoided through the design. As such the iterative nature of the EIA can help to inform the development of the design process.

Where it is not possible to avoid adverse significant environmental effects, plans have been and will continue to be prepared to help compensate for the impact identified.

Accordingly, the following details a Framework for the Environmental Management for the construction phase of the gas pipeline and associated AGI.

The primary aim is to ensure that there will be full compliance with all safeguards identified as being necessary during the EIA process, as well as any conditions which are likely to be written into the construction contract and any statutory obligations.

Many of the potential adverse impacts, especially those of concern to parties consulted, have been identified and mitigated. These are fully described in Volume 1 (Sections 9 to 16).

Summary of Potential Impacts and Proposed Mitigation

The following Table briefly summarises the potential impacts associated with the construction of the gas pipeline and associated AGI.

ASSESSMENT OF POTENTIAL IMPACTS AND SUMMARY OF PROPOSED MITIGATION

Aspect	Description of Potential Impact	Design Measures and Mitigation
Air Quality	During construction, there is the potential for dust emissions to arise.	Impacts will be managed and controlled through the implementation of a Construction Environmental Management Plan (CEMP). It is anticipated there will be no significant adverse impacts.
	During operation, no impacts have been identified.	N / A
Noise and Vibration	During construction, noise generating plant will be used.	Impacts will be managed and controlled through the implementation of a CEMP. It is anticipated there will be no significant adverse impacts.
	During operation, there is the potential for low level noise associated with the AGI.	High specification, low noise plant will be specified during the design phase. Regular maintenance checks will be carried out to ensure plant is working efficiently. Broken or faulty plant will be replaced.
Landscape and Visual	During construction: Landscape impacts may arise on Local Landscape Character; and Visual impacts will arise from the presence of construction equipment / undertaking of construction activities (e.g. machinery / excavations / temporary structures).	Impacts will be managed and controlled through the implementation of a CEMP. This will include the screening of construction works by hoarding (wherever practical) to mitigate impacts near sensitive receptors. It is anticipated there will be no significant adverse impacts.
	During operation, it is likely that there will be landscape and visual impacts associated with the AGI.	The AGI will be screened by planting to reduce the landscape and visual impacts.

Aspect	Description of Potential Impact	Design Measures and Mitigation
Ecology	During construction, there is the potential for impacts on ecology to arise.	A Phase 1 Habitat Survey and Phase 2 Protected Species Surveys have been undertaken. Areas where Protected Species are known to occur or areas with the potential to support Ecological Habitat will be avoided wherever possible, and removal of habitat will not occur during the breeding season. No significant long term residual impacts anticipated.
	During operation, no impacts have been identified.	N / A
Land Use / Geology, Hydrology and Hydrogeology	During construction, in relation to land use, there would be a temporary loss of agricultural land.	The land used temporarily for laydown / occupation will be subject to protection measures during construction and re-instated after. Productive agricultural land required will be minimized during final pipeline route selection. It is anticipated there will be no significant adverse impacts.
	During construction, in relation to geology, hydrology and hydrogeology, contaminants (such as fuels and concrete) will be used on site. There is the potential for land contamination to occur as a result of spillages.	Impacts will be managed and controlled through the implementation of a CEMP. Procedures will be put in place to deal with any pollution spills. It is anticipated there will be no significant adverse impacts.
	During operation, in relation to land use, there would be the permanent loss of agricultural land by the AGI.	Productive agricultural land required will be minimized. The expected total maximum loss of land is 0.44 ha. An appropriate contribution to Greengrid infrastructure will be made in consultation with TTGDC.
	During operation, no impacts have been identified in relation to geology, hydrology and hydrogeology.	N / A

Aspect	Description of Potential Impact	Design Measures and Mitigation
Traffic and Infrastructure	During construction, there will be additional traffic in the form of HGVs / low-loaders / construction personnel vehicles. There may be some crossings of local transport links.	All vehicle movements will operate under a Construction Transport Management Plan (CTMP). The purpose of the CTMP is to provide a framework for the active management of the increased demand on the local transport infrastructure to ensure that all impacts are minimised or eliminated.
	During operation, no impacts have been identified.	N / A
Cultural Heritage	The cultural heritage in the area is well understood from the work undertaken for GEC and the LG Development. As such, the existence and whereabouts of any existing cultural heritage features which have the potential to be impacted upon are already well understood. It is unlikely that there will be impacts on archaeological remains of significance during construction.	An assessment of the likelihood of archaeological remains of significance along the proposed pipeline route will be undertaken and prior to construction, a plan of archaeological works will be developed in conjunction with the Essex County Archaeologist. If it is discovered that archaeological remains are present, the construction works will avoid such an area if possible. In addition, an archaeological watching brief will be used. No significant long term residual impacts anticipated.
	During operation, no impacts have been identified.	N / A
Socio-Economics	During construction, there will be short term employment opportunities.	The socio-economic impacts are deemed to be positive, therefore no mitigation is required.
	During operation, no impacts have been identified.	N / A

Environmental Management System

The operation of an effective Environmental Management System (EMS) is an important component of the development of the gas pipeline and associated AGI from design through to construction and operation.

The key elements, which will be developed during the design of the gas pipeline and associated AGI, and continued through to construction and operation, include:

- A process of detailed route alignment and construction methodology which will be designed to minimise any potential environmental impacts as detailed in the ES;

- The production of a project specific Overall Environmental Management Plan for the construction / operation activities; and

- Procedures for the selection, management and auditing of the Construction Contractor, including a requirement for the Construction Contractor to produce a Construction Environmental Management Plan (CEMP).

Framework Construction Environmental Management Plan

The key to the successful management of the environmental issues on site lies in a systematic approach, which should be documented in the CEMP.

The Construction Contractor will be required to prepare and implement the CEMP, and should identify site responsibilities for environmental management and describes how the various environmental management activities will be undertaken.

This will include: consultations; licence and consent applications; communication; training; selection and management of sub-contractors; and, monitoring and auditing during construction.

The CEMP may include:

- A Construction Transport Management Plan (CTMP);

- A pollution control plan;

- A waste management plan;

- A contingency and emergency response plan;

- A reinstatement and aftercare plan;

- Environmental training plans (to include wildlife);

- Audit schedule and procedures;

- Liaison plan; and

- Development / site specific method statements.

Environmental Monitoring System

The following Table details the evaluation, monitoring, auditing and reporting processes which should be implemented to ensure that the recommendations made in the ES are carried out and the effects on the environment are quantified.

EVALUATION, MONITORING, AUDITING AND REPORTING PROCESSES

Responsible Party	Parameter to be Measured	Monitoring Location of Sensitive Receptor	Acceptance Criteria
Principal Contractor	Reinstatement of working width	Reinstatement monitoring after construction contractor's liability ends.	In accordance with the findings and recommendations of the ES.
	Environmental Training	Records to be maintained of personnel induction training and talks.	In accordance with Health, Safety and Environment Specification.
	Access to Site (once agreed)	Hauliers to comply with the agreed Traffic Management Plan.	To be included in Health, Safety and Environment Report.
		Compliance and speed restrictions to be checked regularly.	
	Waste Storage and Disposal Facilities at Construction Compound	Regular inspections of working areas and waste storage areas.	To be included in Health, Safety and Environment Report.
		Regular inspection of vehicles and fuel storage areas for fuel leaks.	
	Fuel / Chemical Spills	Reporting of all accidental spillages in accordance with HSE Specification.	To be included in Health, Safety and Environment Report.
		Regular inspection of vehicles and fuel storage areas for fuel leaks.	
	Disposal of Test Water	Discharge of water to be in accordance with the requirements of the discharge licence from the EA.	Written inspection report.
	Liaison with Local Council	Regular construction update to be provided.	Regular report.
	Archaeological Impact	Archaeological watching brief during topsoil stripping and trenching	Written inspection report.
	Ecological Impact		Written inspection report.
	Noise Impact	Notify Local Council when work outside of agreed hours is to be undertaken.	Regular report.
	Liaison with Other Contractors	Regular meeting.	Minutes of meetings.

Environmental Awareness

Site briefings will be given to all staff through induction talks before the start of construction, and through further Health, Safety and Environmental talks setting out the key procedures during construction. This will help ensure that site personnel are fully aware of the key environmental issues and management procedures, which have been set in place to mitigate impacts.

Environmental Inspection and Auditing

The Construction Contractor will be required to carry out regular site inspections and monthly audits during the construction phase to ensure that works comply with Statutory and Contract requirements. A site inspection and audit will also be required at the end of the construction phase to demonstrate that all reinstatement complies with the agreed obligations (for example: the replanting of hedgerows; reinstatement of the working width; and, reinstatement of land drainage schemes).

Furthermore, GECL will undertake audits before and during construction to verify the Construction Contractor's environmental performance.

Consultation

Continued consultation and liaison with TTGDC, other consultees and the local communities will be undertaken by the Project Team.

APPENDIX C

**LG DEVELOPMENT / DP WORLD REPORTS
REFERENCED**

C. LG DEVELOPMENT / DP WORLD REPORTS REFERENCED

Contents Summary

To date, a significant proportion of work has been carried out on the wider LG Development by DP World and their Consultants.

Details of the Reports used for the purposes of this ES are provided in this Appendix.

C.1 LG Development / DP World Reports Referenced

C.1 LG Development / DP World Reports Referenced

LG DEVELOPMENT / DP WORLD REPORTS REFERENCED

Archaeological Investigation Report – London Gateway Access Road (May 2010) [undertaken by OAU Ltd]

Archaeological Monitoring of Contamination Test Pits at the former Shell Oil Refinery Site (February and March 2001) [undertaken by OAU Ltd]

Assessment of Past Effects within the former Shell Oil Refinery (October 2002 – February 2003) [undertaken by OAU Ltd]

Canvey Terminal to Stanford-le-Hope Gas Pipeline – Environmental Statement (June 2006) [undertaken by RPS Ltd]

DP World / London Gateway - Ground Investigation Wells, Report on Ground Investigation (November 2008) [Fugro Engineering Services Limited]

DP World / London Gateway – Site A Reptile Mitigation Method Statement (2008) [Thomson Ecology]

DP World / London Gateway Ecological Action Plan – Water Vole (2008) [Thomson Ecology]

DP World / London Gateway Site A – Summary of Ecological Works (2008) [Thomson Ecology]

DP World Great Crested Newt Ecological Habitat Management and Maintenance Plan (2008) [Thomson Ecology]

DP World Great Crested Newt Survey (2008) [Thomson Ecology]

DP World Reptile Ecological Action Plan (2008) [Thomson Ecology]

DP World, London Gateway – Bat Activity Survey Interim Report – 2nd Visit (2008) [Thomson Ecology]

DP World, London Gateway – Park Development, Bat Ecological Action Plan (2008) [Thomson Ecology]

Geophysical Assessment of Sub-Surface Stratigraphy at the Shell Haven Site (April 2009) [undertaken by OAU Ltd]

Great Crested Newt Survey for A13/A1014 Junction, Off-site Rail Bend and Great Garlands Farm Elbow Receptor Site (2008) [Thomson Ecology]

London Gateway Development – River Colne Catchment Water Vole Survey (May 2009) [Thomson Ecology]

London Gateway Ecological Action Plan, Breeding Birds (2008) [DP World]

OPA Environmental Statement for the development of the LG Logistics and Business Park and associated facilities (compiled version 2004)

PP Environmental Statement for the LG Development 'Refined Access Road Design' (June 2010)

Shell UK Oil Products Limited, Delineation Investigation: Quality Assurance Project Plan (October 2000) [ERM]

Shell UK Oil Products Limited, Phase I Remediation Works: Shell Haven Refinery, Delineation Investigation (August 2001) [ERM]

Shell UK Oil Products Limited, Phase II Intrusive Site Investigation: Shell Haven Refinery, Stanford-le-Hope, October 2000 (Logs Only) [ERM]

Site walkover at the Shell Oil Refinery site (August 2001 and October 2002) [undertaken by OAU Ltd]

Sub-surface Deposit Model (October 2001) [undertaken by OAU Ltd]

APPENDIX D

SCOPING CONSULTATION

D. SCOPING CONSULTATION

Contents

A Scoping Study, which described the key environmental issues that would require detailed evaluation as part of the EIA process, was submitted to TTGDC in November 2010. Subsequently Scoping Responses were received. These are shown in this Appendix.

D.1 Scoping Study

D.2 Scoping Responses

D.1 Scoping Study



Gateway Energy Centre

GAS PIPELINE AND ABOVE GROUND INSTALLATION



ENVIRONMENTAL IMPACT ASSESSMENT

Scoping Study

Prepared by



November 2010



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LIST OF ABBREVIATIONS

ACC	Air Cooled Condenser
AGI	Above Ground Installation
AQMA	Air Quality Management Area
CCGT	Combined Cycle Gas Turbine
CCR	Carbon Capture Ready
CCS	Carbon Capture and Storage
CECL	Coryton Energy Company Limited
CHP	Combined Heat and Power
CO ₂	Carbon Dioxide
DECC	Department of Energy and Climate Change
DEFRA	Department of Environment, Food and Rural Affairs
DP	Dubai Ports
EEP	East of England Plan
EIA	Environmental Impact Assessment
ES	Environmental Statement
GECL	Gateway Energy Centre Limited
GECL	Gateway Energy Centre
ha	hectares
HDD	Horizontal Directional Drill HEO
	Harbour Empowerment Order
HRSG	Heat Recovery Steam Generator
HSC	Hazardous Substances Consent
HSE	Health and Safety Executive
HV	High Voltage
IEEM	Institute of Ecology and Ecological Management
km	kilometres
LDF	Local Development Framework
LG	London Gateway
LNR	Local Nature Reserve
m	metres
MOF	Minimum Offtake Facility
MWe	Megawatts Electrical
MW	Megawatts
NO _x	Nitrogen Oxides
NSR	Noise Sensitive Receptor
OPA	Outline Planning Application
PB	Parsons Brinckerhoff
PPG	Planning Policy Guidance
PPS	Planning Policy Statement
SEE	Spalding Energy Expansion
SEEL	Spalding Energy Expansion Limited
SINC	Site of Importance for Nature Conservation
SO ₂	Sulphur Dioxide
SPA	Special Protection Area
SSSI	Site of Special Scientific Interest
TTGDC	Thurrock Thames Gateway Development Corporation
TWAO	Transport and Work Act Order
UK	United Kingdom

SECTION 1

INTRODUCTION

1 INTRODUCTION

1.1 Intention to Apply for Planning Permission

1.1.1 In February 2010, Gateway Energy Centre Limited (GECL) submitted an application for Consent under Section 36 of the Electricity Act 1989 to the Department of Energy and Climate Change (DECC) to construct a Combined Cycle Gas Turbine (CCGT) Power Plant to be known as Gateway Energy Centre or GEC. In addition, deemed planning permission under Section 90 of the Town and Country Planning Act 1990 was also sought. The Consent application was accompanied by an Environmental Statement (ES) prepared in accordance with the requirements of the Electricity Works (Environmental Impact Assessment) (England and Wales) Regulations 2000 (as amended).

1.1.2 GEC will be located on land within the London Gateway Port / London Gateway Logistics and Business Park development, collectively called the LG Development, which is currently in the early stages of construction. The LG Development is being developed by DP World.

1.1.3 Further to the Section 36 Consent application, GECL intends to submit an application for planning permission to Thurrock Thames Gateway Development Corporation (TTGDC) under the Town and Country Planning Act 1990 for the installation of an underground gas pipeline and associated Above Ground Installation (AGI) required in connection with the development of GEC. The installation of electrical infrastructure for the High Voltage (HV) grid connection associated with the development of GEC will be the subject of a separate application to be made in due course (to TTGDC / Thurrock Council under the Town and Country Planning Act 1990 or to the Infrastructure Planning Commission (IPC) (or its successor) under the Planning Act 2008).

1.1.4 The former application for planning permission will include full details of the development proposals for the gas pipeline and associated AGI, and will be accompanied by an ES conforming to the requirements of the Town and Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 1999 (as amended) (the 1999 EIA Regulations).

1.1.5 This Scoping Study has been prepared by Parsons Brinckerhoff Limited (PB) on behalf of Gateway Energy Centre Limited (GECL), and sets out the proposed content, methodologies and key issues to be included in the Environmental Impact Assessment (EIA) and the resulting ES for the application for planning permission.

1.1.6 It is intended that, following consultation on this Scoping Study, responses will be compiled into a detailed Terms of Reference which sets out the proposed content, methodologies and key issues of the EIA and resulting ES in a more definitive manner.

1.2 Background to the GEC Development

1.2.1 GECL considers that GEC provides the following benefits:

- Up to 900 megawatts electric (MWe) of new generating capacity, enough to supply approximately one million homes, thus helping to ensure continuity of supply of electricity in the UK and the south east of England given the impending closure of a number of old coal and nuclear power plants;
- Minimal transmission losses given GEC's location in the UK close to the area of maximum demand (the south east of England, including London), effectively, reducing fuel usage and lowering carbon dioxide (CO₂) emissions;

- The potential to help reduce the UK's carbon emissions as the GEC would emit approximately 50 per cent less CO₂ than existing coal fired power plants;
- Flexibility of power generation to enable electricity production to be increased or decreased as renewable generation fluctuates (for example, when there is little wind);
- Creation of up to 600 jobs during GEC construction, and 40 direct long term jobs during GEC operation, and associated spend with local firms and suppliers;
- Provision of up to 150 MWe to the LG Development to meet its power requirements, further minimising transmission losses and CO₂ emissions;
- The potential for the provision of steam and / or hot water and / or cooling to the LG Development and other developments within the local area, which could reduce the overall amount of fuel needed to meet the equivalent energy requirements of standard heating / cooling equipment; and
- The GEC design will be Carbon Capture Ready (CCR) such that it will be able to retrofit Carbon Capture and Storage (CCS) if this becomes technically and economically feasible.

1.3 The Purpose of Scoping

1.3.1 The primary purpose of this Scoping Study is to provide sufficient information in support of GECL's request made pursuant to Regulation 10(1) of the 1999 EIA Regulations that TTGDC adopts a scoping opinion, and thereby enables TTGDC to give an opinion on the scope of information to be included in the ES for the gas pipeline and associated AGI for GEC. Accordingly, this Scoping Study contains the following:

- Plans identifying the proposed route of the gas pipeline and proposed location of the associated AGI;
- The policy context relating to the proposed development of the gas pipeline and associated AGI;
- The purpose and rationale for the proposed development of GEC, and the gas pipeline and associated AGI;
- A brief description of the gas pipeline and associated AGI; and
- The proposed scopes and methodologies for undertaking the EIA and the proposed structure of the ES.

1.3.2 Additionally, consultation is regarded as an important part of the EIA process which gives affected individuals and organisations an opportunity to have a say in the development process. Accordingly, the secondary purpose of this Scoping Study is to inform and seek feedback from consultees on the proposals for the development of the gas pipeline and associated AGI.

1.3.3 These consultees are invited to comment on the proposed content, methodologies and key issues of the EIA and resulting ES. Consultees are further invited to highlight any additional issues that they believe should be addressed, which may be relevant to the development of the gas pipeline and associated AGI for GEC, and identify any sources of information that may be relevant.

1.3.4 Unless specifically requested otherwise, all responses will be collated and presented as an Appendix to the ES to be used as a record of the Scoping Study process.

1.3.5 Further public consultation will be undertaken in order to obtain the views of the local community and to ensure that those views are considered in the development

proposals where appropriate. At present, it is likely that public consultation will include:

- A Public Exhibition in a local venue where information on development proposals will be provided and key project experts will be available to address any queries raised;
- An information leaflet / newsletter to be circulated to local residents and interested parties in advance of the Public Exhibition; and
- The offering of consultation meetings to key community groups in advance of, during and after the Public Exhibition.

1.4 Structure of the Scoping Study

1.4.1 This Scoping Study is structured as follows:

- Section 1: Introduction
- Section 2: Legislative and Planning Policy Context
- Section 3: Development Rationale
- Section 4: Development Proposals
- Section 5: Environmental Considerations
- Section 6: The Environmental Statement

A list of Consultees is provided in Appendix A.

SECTION 2

LEGISLATIVE AND PLANNING POLICY CONTEXT

2 LEGISLATIVE AND PLANNING POLICY CONTEXT

2.1 Introduction

2.1.1 This Section sets out the national, regional and local planning policies of direct relevance to the development of the gas pipeline and associated AGI.

2.2 National Planning Policy

2.2.1 At a national level consideration will be given to the following Planning Policy Guidelines (PPG) and Planning Policy Statements (PPS):

- PPS 1 Delivering Sustainable Development;
- Planning and Climate Change – Supplement to PPS 1;
- PPG 2 Green Belts;
- PPS 4 Planning for Sustainable Economic Growth
- PPS 5 Planning for the Historic Environment;
- PPS 7 Sustainable Development in Rural Areas;
- PPS 9 Biodiversity and Geological Conservation (and Circular 06/05);
- PPS 12 Local Spatial Planning;
- PPG 13 Transport;
- PPG 14 Development on Unstable Land;
- PPS 23 Planning and Pollution Control;
- PPG 24 Planning and Noise; and
- PPS 25 Development and Flood Risk.

2.3 Relevant Legislation

The Plan Led System – The Planning and Compulsory Purchase Act 2004

2.3.1 Section 38(3) of the Planning and Compulsory Purchase Act 2004 provides:

- “(3) *For the purposes of any other area in England the development plan is –*
- (a) *The regional strategy for the region in which the area is situated, and*
 - (b) *The development plan documents (taken as a whole) which have been adopted or approved in relation to that area”.*

2.3.2 Section 38(6) of the Planning and Compulsory Purchase Act 2004 provides:

“for the purposes of any determination to be made under the Planning Acts, the determination must be made in accordance with the plan unless material considerations indicate otherwise”

2.3.3 On 6 July 2010, the Secretary of State for Communities and Local Government announced the revocation of Regional Spatial Strategies (RSS) with immediate effect. This decision was quashed by the High Court on 10 November 2010, although the Government continues to express its intention to remove RSS.

2.3.4 Therefore, for the purposes of the gas pipeline and associated AGI, the “*development plan*” comprises the East of England Plan (2008) and the Thurrock Local Plan (1997), which sets out planning policies to guide and control new development in the East of

England region and Thurrock District respectively. The Secretary of State has directed that some, but not all, of the policies in the Local Plan will be “saved”.

- 2.3.5 Although not part of the “*development plan*” the ES will also consider the Council’s Core Strategy and Policies for the Management of Development, Development Plan Document with Proposed Focussed Changes for consultation between 12 November 2010 and 31 December 2010.

- 2.3.6 The RSS and the Local Plan must be read in context with existing and emerging national policies. This includes statements from the Government on matters relating to planning and energy policy, such as the consultation on the Revised Draft National Policy Statements for Energy, underway between October 2010 and January 2011.

The Pipelines Act 1962 / The Town and Country Planning Act 1990

- 2.3.7 Nationally Significant Infrastructure Projects, as defined in Part 3 of the Planning Act 2008, include the construction of a pipeline by a gas transporter and the construction of a pipeline other than by a gas transporter.

- 2.3.8 GECL is not a gas transporter and therefore the proposed gas pipeline does not fall within the ambit of Section 14(1)(f) and Section 20 of the Planning Act 2008.

- 2.3.9 The proposed gas pipeline is not a cross country pipeline. Section 235(1) of the Planning Act 2008 provides that ‘cross country pipeline’ has the same meaning as in the Pipelines Act 1962. The definition of cross country pipeline contained in Section 66(1) of the Pipelines Act 1962 is “‘*cross country pipeline*’ means a pipeline whose length exceeds, or is intended to exceed, [16.093 kilometres]”. As the proposed gas pipeline is approximately 7 km in length, it is not a cross country pipeline. Therefore the proposed pipeline does not fall within the ambit of Section 21 of the Planning Act 2008.

- 2.3.10 Accordingly, planning permission is required for the proposed gas pipeline and associated AGI. As the overall development of the gas pipeline and associated AGI will occupy an area of more than one hectare the application for planning permission will be submitted to TTGDC under the Town and Country Planning Act 1990.

- 2.3.11 The application for planning permission will describe the development proposals for the gas pipeline and associated AGI, and will be accompanied by an ES conforming to the requirements of the 1999 EIA Regulations.

The Town and Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 1999

- 2.3.12 Any Consent applications for development which is subject to the European Union EIA Directive (Directive 85/337/EEC) must be accompanied by an ES. The ES should describe the aspects of the environment likely to be significantly affected by the proposed development, considering in particular, effects on: human beings, fauna and flora, soil, water, air, climate, the landscape, material assets and cultural heritage, and the interaction between them.

- 2.3.13 As part of the examination of any significant environmental impacts, TTGDC will consider the results of the ES which will be submitted in accordance with the 1999 EIA Regulations. The term ‘Environmental Statement’ is defined in Regulation 2(1) of the 1999 EIA Regulations as:

“‘*Environmental Statement*’ means a statement –

- (a) *That include such of the information referred to in Part I of Schedule 4 as is reasonably required to assess the environmental effects of the development and which the applicant can, having regard in particular to current knowledge and methods of assessment, reasonably be required to compile, but*
- (b) *That includes at least the information referred to in Part II of Schedule 4”.*

INFORMATION REQUIRED IN AN ES AS SET OUT IN SCHEDULE 4 OF THE TOWN AND COUNTRY PLANNING (ENVIRONMENTAL IMPACT ASSESSMENT) (ENGLAND AND WALES) REGULATIONS 1999

Required Information	
PART 1	
1	A description of the development, including in particular: <ul style="list-style-type: none"> a) A description of the physical characteristics of the whole development and the land-use requirements during the construction and operation phases; b) A description of the main characteristics of the production processes, for instance, nature and quantity of the materials used; c) An estimate, by type and quantity, of expected residues and emissions (water, air and soil pollution, noise, vibration, light, heat, radiation, etc) resulting from the operation of the development.
2	An outline of the main alternatives studied by the applicant or appellant and an indication of the main reasons for his choice, taking into account the environmental effects.
3	A description of the aspects of the environment likely to be significantly affected by the development, including, in particular, population, fauna, flora, soil, water, air, climatic factors, material assets, including the architectural and archaeological heritage, landscape and the inter-relationship between the above factors.
4	A description of the likely significant effects of the development on the environment, which should cover the direct effects and any indirect, secondary, cumulative, short, medium and long-term, permanent and temporary, positive and negative effects of the development, resulting from: <ul style="list-style-type: none"> a) The existence of the development; b) The use of natural resources; c) The emissions of pollutants, the creation of nuisances and the elimination of waste, and The description by the applicant of the forecasting methods used to assess the effects on the environment.
5	A description of the measures envisaged to prevent, reduce and where possible offset any significant adverse effects on the environment.
6	A non-technical summary of the information provided under paragraphs 1 to 5 of this Part.
7	An indication of any difficulties (technical deficiencies or lack of know-how) encountered by the applicant in compiling the required information.
PART 2	
1	A description of the development comprising information on the site, design and size of the development.
2	A description of the measures envisaged in order to avoid, reduce, and if possible remedy significant adverse impacts.
3	The data required to identify and assess the main effects which the development is likely to have on the environment.
4	An outline of the main alternatives studied by the applicant or appellant and an indication of the main reasons for his choice taking into account the environmental effects.
5	A non-technical summary of the information provided under paragraphs 1 to 4 of this Part.

The Planning (Hazardous Substances) Act 1990

2.3.14

The Planning (Hazardous Substances) Act 1990 is of limited relevance, as the proposed gas pipeline and AGI is classified as an 'Exempt Pipeline' by the Planning (Hazardous Substances) Regulations 1992. Under the Planning (Hazardous Substances) Regulations 1992, an 'Exempt Pipeline' means a pipeline used to



convey a hazardous substance to or from a site. Therefore a Hazardous Substances Consent (HSC) is not required for the gas pipeline and associated AGI.

SECTION 3

DEVELOPMENT RATIONALE

3 DEVELOPMENT RATIONALE

3.1 Background

- 3.1.1 Information on the development rationale surrounding GEC is provided in Section 3 of the ES which accompanied the Section 36 Consent application to which reference will be made. The Section 36 Consent application can be downloaded at:

<http://www.gatewayenergycentre.co.uk/>

- 3.1.2 Further to this, the Revised Draft National Policy Statement EN-1 (October 2010) (EN-1) states (in Section 2.1):

“energy is vital to economic prosperity and social well-being and so it is important to ensure that the UK has secure and affordable energy. Producing the energy the UK requires and getting it to where it is needed necessitates a significant amount of infrastructure, both large and small scale”.

Furthermore, EN-1 states (at Paragraphs 3.1.1 to 3.1.4):

“The UK needs a mix of all types of energy infrastructure in order to achieve energy security at the same time as dramatically reducing greenhouse gas emissions.

It is for industry to propose new energy infrastructure projects within the strategic framework set by Government. The Government does not consider it appropriate for planning policy to set targets for or limits on different technologies.

The IPC should therefore assess all applications for development consent for the types of infrastructure covered by the energy NPSs on the basis that the need for those types of infrastructure has been demonstrated by the Government and that this need is urgent.

The IPC should give substantial weight to the contribution which projects would make towards satisfying this urgent need when considering applications for development consent under the Planning Act 2008”.

- 3.1.3 It is considered that since EN-1 is relevant to the development of GEC (further details are provided in Part 3.6 of EN-1), the gas pipeline and associated AGI should be seen as an essential associated development, and therefore the assessment of the gas pipeline and associated AGI should also start on the basis that the need for them has been demonstrated.
- 3.1.4 The Revised Draft National Policy Statement for Gas Supply Infrastructure and Gas and Oil Pipelines EN-4 (October 2010) is also relevant.
- 3.1.5 Further details will on rationale for the development of the gas pipeline and associated AGI will be provided in the ES.

SECTION 4

DEVELOPMENT PROPOSALS

4 DEVELOPMENT PROPOSALS

4.1 The Developer

4.1.1 GEC will be owned and operated by GECL, which is part of the InterGen group.

4.1.2 InterGen, formed in 1995, is a global power generation company with 12 power plants representing an equity share of 6 254 MWe of production capacity. InterGen's plants are located in the UK, the Netherlands, Mexico, the Philippines and Australia. Historically, the company has developed more than 20 power generation facilities in ten countries across six continents, with a combined generating capacity of over 16 000 MWe.

4.1.3 InterGen is the UK's largest independent gas fired power producer, with three plants in the UK that provide 6 per cent of the country's average demand. Its gas fired power plants are among the cleanest and most technologically advanced in the world.

4.1.4 In the UK, InterGen currently operates three gas fired power plants at Coryton in Essex, Rocksavage in Cheshire and Spalding in Lincolnshire.

4.1.5 InterGen's Coryton Power Station is an 800 MWe CCGT operated by Coryton Energy Company Limited (CECL) and is situated 700 m to the east of the proposed GEC.

4.2 The GEC Project

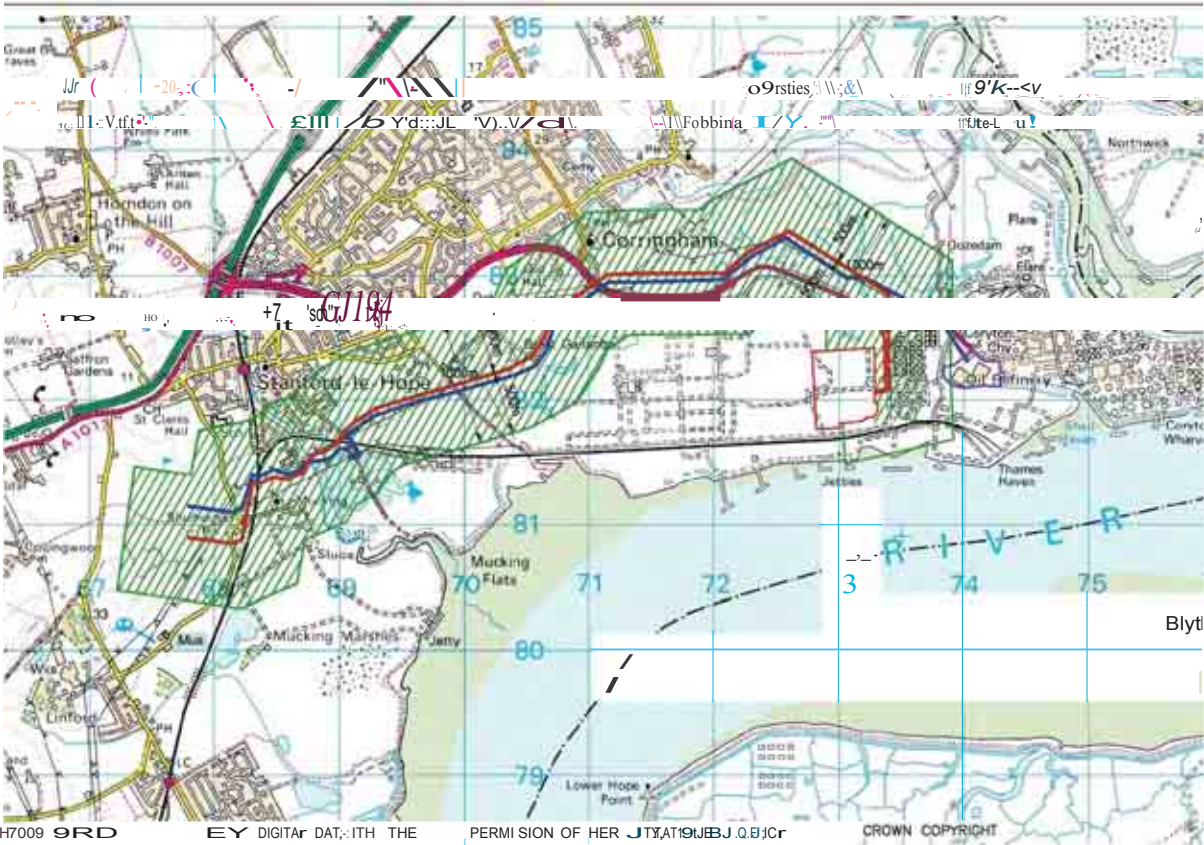
4.2.1 GEC will be located on land within the LG Development. Figure 1 shows the GEC site location.

4.2.2 The overall site boundary for the Section 36 Consent application for GEC is approximately 29.1 hectares (71.9 acres) and incorporates areas to the north and west which may be used for temporary laydown during construction. However, once constructed the GEC site will be approximately 11.3 ha (28.0 acres) including land to be set aside for the purpose of installing carbon capture equipment if required in the future.

4.2.3 The GEC site is situated on the north bank of the Thames Estuary and lies approximately 6 km east of the A13. The A1014 dual carriageway (The Manorway) is located to the north of the site and runs east to west to provide a link with the A13, which in turn connects to the M25 at Junction 30. The River Thames runs in a west to east direction to the south of the site where DP World has recently commenced works on the new port facility associated with the LG Development.

4.2.4 The nearest residential settlements to the GEC site are at Corringham and Fobbing which lie approximately 4 km to the west, Canvey Island approximately 5 km to the east, and Basildon approximately 7 km to the north.

4.2.5 To the east of the GEC site is the existing Coryton CCGT Power Station (700 m east), Shell Tanker Farm and Petroplus' Coryton Oil Refinery (950 m east).



LEGEND

- D** GATEWAY ENERGY CENTRE APPLICATION SITE LOCATION
- D** CORYTON ENERGY COMPANY POWER STATION LOCATION
- NEW GAS PIPELINE ROUTE CORRIDOR
- PROPOSED GAS PIPELINE
- EXISTING GAS PIPELINE

REV	DATE	DESCRIPTION	BY	NOTES	CLIENT/PROJECT	DATE	SCALE	CADREF	DRAWNBY	PRODUCEDBY	CHECKED	APPROVED
			HKDI		GATEWAY ENERGY CENTRE	13/10/09	1/30000		DD	DD	EA	EA
					TITLE		GAS PIPELINE ROUTE CORRIDOR					
					GAS PIPELINE ROUTE CORRIDOR							

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CLIENT/PROJECT: GATEWAY ENERGY CENTRE

DATE: 13/10/09

SCALE: 1/30000

CADREF: APPROVED: EA

DRAWNBY: DD

PRODUCEDBY: DD

CHECKED: EA

TITLE: GAS PIPELINE ROUTE CORRIDOR

FIGURE 1

THIS DRAWING WAS PRODUCED USING AUTOCAD AND SHOULD ON NO ACCOUNT BE AMENDED BY HAND

Operational Details

- 4.2.6 GEC will provide up to 900 MWe of power generation capacity. This will include the provision of up to 150 MWe to the LG Development to meet its long-term electricity requirements.
- 4.2.7 GEC will likely comprise two gas turbine units which will be fuelled by natural gas. Each unit will comprise a gas turbine and a Heat Recovery Steam Generator (HRSG). The natural gas will be burnt in the combustion chamber of each gas turbine from where the hot gases will expand through the gas turbine to generate electricity. The hot exhaust gases are then used in the HRSG to generate steam, which in turn is used to generate electricity via steam turbine equipment. The use of a combined gas and steam cycle increases the overall efficiency of the power plant.
- 4.2.8 GEC will be capable of generation in combined cycle mode with an overall electrical generation efficiency of approximately 55 % based on the lower calorific value of the fuel. This efficiency rating does not take into account the potential for added efficiency if it proves technically and economically feasible to supply heat in the form of steam and / or hot water and / or cooling to facilities and / or customers in the vicinity of the site.
- 4.2.9 The spent steam leaving the steam turbine equipment will pass to an Air Cooled Condenser (ACC) where it will be condensed. The resultant condensate will be returned to the HRSGs for reuse. The use of ACCs has the potential to eliminate other environmental impacts associated with other cooling systems.

Infrastructure Connections

- 4.2.10 The electricity generated at GEC will most likely be dispatched to the HV National Grid system via a connection to a new substation via an electric line above ground with parts which may be under grounded. This will be the subject of a separate Consent application in due course.
- 4.2.11 The natural gas used as fuel will be taken from a new underground gas pipeline to be constructed from the National Grid National Transmission System (NTaS) Number 5 Feeder pipeline via an associated AGI. These proposed works are the subject of this Scoping Study.
- 4.2.12 In addition to the new underground gas pipeline and electricity connection, interconnections and easements may also be required for CHP (for the export of steam / hot water) and CCR (for the export of captured CO₂). These are discussed further in the CHP Assessment and CCR Feasibility Study respectively, which have been submitted with the Section 36 Consent application for GEC.

4.3 Potential Gas Pipeline Options

- 4.3.1 Option analysis has shown that there are a number of potential options available for the route of the gas pipeline and the location of the associated AGI. These are:
- Route 1;
 - Route 2;
 - Route 3;
 - Route 4; and
 - Route 5 / Along the Existing Pipeline Route.
- 4.3.2 These options are described below and are shown in Figure 2.

11748 • J. Neurosci., September 24, 2008 • 28(39):11741–11748



EXISTING PIPELINE
POSSIBLE ROUTE 1
POSSIBLE ROUTE 2
POSSIBLE ROUTE 3
POSSIBLE ROUTE 4
POSSIBLE ROUTE 5

BASED ON 2009 ORDNANCE SURVEY DIGITAL DATA WITH THE PERMISSION OF HER MAJESTY'S STATIONERY OFFICE ©CROWN COPYRIGHT

Risq	Date	Description
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By	OK	App	Notes
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1INTERGEN

PARSONS
BRINCKERHOFF

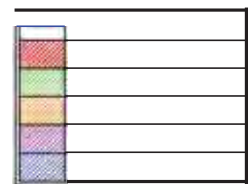
POTENTIAL GAS PIPELINE

Designed: DO
Date: 22/04/2010
Project Number:

Revision:

Amber Court
William Armstrong Drive

44-(0)191-22



Route 1

4.3.3 This route is approximately 10.5 km long. The route starts close to the existing National Grid Horndon on the Hill AGI. The proposed associated Minimum Offtake Connection (MOC) AGI would be constructed in close proximity to the Horndon on the Hill AGI, as the No. 5 Feeder runs through the site.

4.3.4 From the AGI, the route heads east and crosses North Hill (Road), before passing between Wrens Park Farm and Arden Hall. The route then carries on east for approximately 1 km before taking a north easterly turn to parallel the A13 dual carriage way for approximately 1 km. The pipeline route then crosses the A13 and the passenger railway line that runs from Shoeburyness to London Fenchurch Street to the south of the A13, and parallels the railway for about 1km, on the southern side of the tracks. The pipeline route then diverts east to pass through a row of properties along High Road north of Fobbing, before finally diverting south towards the proposed GEC site location.

Route 2

4.3.5 This route is approximately 9.7 km long. This route follows a similar path to Route 1 with one major difference.

4.3.6 The same location is proposed for the AGI as for Route 1 and the route crosses the A13 dual carriage way and the passenger railway line that runs from Shoeburyness to London Fenchurch Street at the same locations. The main difference from Route 1 is that Route 2 does not pass through the row of properties along High Road to the north of Fobbing. Instead Route 2 diverts south before reaching the row of properties along High Road.

4.3.7 The route follows the railway for approximately 1 km after the A13 and railway crossing before diverting south for about 2 km as it passes through the undeveloped area between Corringham and Fobbing. The pipeline route then crosses Lion Hill (Road) and carries on in a south easterly direction for approximately 1 km, before crossing The Manorway. Once The Manorway has been crossed, the pipeline route diverts east for approximately 1 km before heading south to the proposed GEC site location.

Route 3

4.3.8 This route is approximately 8.5 km long. Again, the proposed location for the AGI is close to the existing National Grid Horndon on the Hill AGI.

4.3.9 From the AGI, the route heads approximately 1 km east before crossing North Hill. Shortly after this road crossing, the route takes a south easterly diversion and runs parallel to North Hill (Road) for approximately 1 km, as it passes between Arden Hall and the Arden Hall Cottages. The route then crosses the A13 dual carriage way and two slip roads. After the A13 crossing, the proposed route crosses the passenger railway line that runs from Shoeburyness to London Fenchurch Street and then closely parallels The Manorway through Stanford-le-Hope. The route crosses The Manorway and carries on east along the road. The High Road is then crossed north of Oak Farm before the route crosses some overhead power cables. The route turns north east and crosses to the north of The Manorway, where it parallels The Manorway for about 1 km, before finally crossing The Manorway once again. The route then follows The Manorway east for about 1 km before finally diverting south to the proposed GEC site location.

Route 4

4.3.10 Route 4 is the shortest of the options at approximately 6.3 km long. The proposed location for the AGI is next to the existing AGI (which serves the exiting CECL Power Station) situated west of Mucking and to the south of Stanford-le-Hope.

- 4.3.11 From the AGI, the pipeline turns south east and crosses two parallel overhead power cables. The route then turns east to cross Walton's Hall Road south of Bluehouse Farm before crossing the passenger railway line that runs from Shoeburyness to London Fenchurch Street. The route carries on east past Mucking, before diverting approximately 1 km north towards Stanhope Industrial Park. The route continues east towards Stanford-le-Hope Marshes before turning north west to cross the railway freight line to the Coryton Oil Refinery approximately 10 m west of the marshes. Rainbow Lane (Track) is then crossed, and the route continues north passing the south east of Great Garlands Farm, before crossing The Manorway near Old Hall Farm. This proposed route corridor then continues in a generally eastern direction, before diverting south to cross The Manorway to the GEC site. An earlier variant of this route through the LG Development was considered not practicable as it would have pre-determined future layout and unnecessarily precluded development of some areas.

Route 5 / Along the Existing Pipeline Route

- 4.3.12 This route is approximately 7.0 km long. Paralleling the existing CECL Power Station gas pipeline route would mean that the proposed AGI could be located adjacent to the existing AGI situated west of Mucking and to the south of Stanford-le-Hope.
- 4.3.13 From the proposed AGI, the proposed route corridor (likely to be mainly to the north of the existing gas pipeline) would head east to cross Walton Hall Road before turning north to cross Mucking Wharf Road. The proposed route corridor would then turn east to cross the London to Southend Railway.
- 4.3.14 After crossing the passenger railway line that runs from Shoeburyness to London Fenchurch Street, the proposed route corridor heads north east following the route of the existing over ground electric lines. The proposed route corridor would continue to the south east of the sewage works and towards the North Shell Angling Lakes before crossing back across the railway freight line to the Coryton Oil Refinery and crossing Wharf Road. It is highly probable that a Horizontal Directional Drill (HDD) section would be required for the gas pipeline from the sewage works to the Wharf Road crossing, underneath the northern most Shell Angling Lake.
- 4.3.15 After this section, the proposed route corridor would closely follow the existing gas pipeline to cross Rainbow Lane and go past the south east of Great Garlands Farm, before crossing The Manorway. This proposed route corridor then continues in a generally eastern direction, before diverting south to cross The Manorway to the GEC site.

4.4 Selected Gas Pipeline Option

- 4.4.1 Based on an evaluation of the route options (including consideration of technical, commercial, planning and environmental factors) Route 5 (along the existing pipeline route) was selected as the preferred route for the gas pipeline, and therefore the proposed AGI location would be adjacent to the existing AGI situated west of Mucking and to the south of Stanford-le-Hope.
- 4.4.2 There are a number of reasons for selecting Route 5 as the preferred option, including:
- Route 5 has a preferable connection point to the existing NTaS Number 5 Feeder Pipeline to the west of Mucking and to the south of Stanford-le-Hope, as the alternative proposed Horndon on the Hill connection point (associated with Routes 1, 2 and 3) is already congested;;
 - The route is closest in routing to the existing CECL Power Station pipeline route which is a proven route for a gas pipeline and therefore does not cause the proliferation of gas pipelines in the area;

- Route 5 follows the easements of the existing CECL Power Station pipeline route and will therefore require minimal expansion / disruption to land owners compared to a completely new route;
- Route 5 follows the route of the recently approved Calor Gas Pipeline, and therefore has been established as being acceptable from a current planning perspective;
- The route is considered to have a lower potential for significant environmental impacts when compared to the other route options; and
- Route 5 retains a degree of success as a pipeline route (being associated with the route of the existing CECL Power Station pipeline) and therefore benefits from historic knowledge of the route coupled with operational familiarity provided by the CECL Power Station operations and maintenance team.

4.4.3 Figure 1 presents a 1 km wide route corridor within which the gas pipeline and associated AGI will be sited. Although this is a large area, this represents the proposed survey area for the purposes of the EIA. During construction, the working width will be between 26 to 30 m depending on location, and whether any specialist construction techniques are required. Therefore during construction, the maximum land take will be 2.3 ha. During operation, the largest land take will be associated with the AGI, and is expected to be less than 0.1 ha.

4.5 Construction and Operation of Gas Pipeline

Construction

- 4.5.1 The gas pipeline is likely to be constructed of continuously welded buried steel. The wall thickness and choice of steel will be selected to satisfy the relevant design factors and location in relation to all ground features including: roads, railways; water courses; and, the proximity of occupied buildings and future developments.
- 4.5.2 Construction of the gas pipeline will see the installation of temporary gated fencing, the location of which will be agreed with the landowners along the working width. During construction, the topsoil will be stripped and stored on one side of the fenced area to prevent mixture with the sub-soil.
- 4.5.3 The gas pipeline will be formed from 12 m lengths of steel pipe which will be welded together to produce a continuous pipe. All welds will be fully tested before commissioning. The lengths of steel pipe will be transported to the working width from a temporary storage area.
- 4.5.4 The lengths of pipe will be strung out and positioned on wooden skids along a line parallel to the position of the proposed trench. Where practicable, a trench will be excavated to a depth so that the top of the pipe will be at least 1.2 m below the surface. This is likely to be increased to a minimum of 2 m when crossing roads, railways or water courses. During trench excavation, details of any land drains will accurately be pegged and recorded.
- 4.5.5 The gas pipeline will be lowered into the trench and then buried by backfilling within imported material, sand or suitable excavated sub-soil which will be graded to avoid damage to the protective coating of the gas pipeline. This will then be carefully compacted above and around the gas pipeline and the remainder of the trench will be filled with the remaining excavated sub-soil.
- 4.5.6 In discussion with the landowners, the most appropriate and practical method for the reinstatement of the land drains will be established. Walls and fences removed in the construction process will be reinstated and hedgerows replanted.

Operation

- 4.5.7 The gas pipeline will be designed to operate up to 90 bar g with a maximum flowrate of approximately 250 000 m³/h of natural gas. It is likely that pigging stations (to be used for maintenance of the gas pipeline) will be situated at the AGI and at the GEC site. In addition, an isolation valve will also be installed close to the gas pipeline's mid-point.

Environmental Considerations

- 4.5.8 The majority of environmental impacts arising from pipeline projects will occur during construction. The EIA will therefore describe the standard pipeline construction practice likely to be used to build the gas pipeline. The following events during the construction period will be described:

- Construction access;
- Fencing along the boundary of the working width;
- Topsoil stripping;
- Land drainage works;
- Pipe stringing;
- Welding and joint coating;
- Trenching and laying;
- Cleaning, gauging, and testing;
- Permanent reinstatement; and
- Corrosion protection.

- 4.5.9 In addition to the above, the typical crossing methods for roads, rivers and railways will be described. It is expected that this will include the following:

- Open Cut;
- Thrust boring;
- Horizontal Direct Drilling (HDD); and
- Tunnelling.

SECTION 5

ENVIRONMENTAL CONSIDERATIONS

5 ENVIRONMENTAL CONSIDERATIONS

5.1 Introduction

5.1.1 The ES will describe and assess the potential environmental impacts of activities associated with construction, operation and decommissioning of the gas pipeline and associated AGI.

5.1.2 A summary of the proposed content, methodologies and key issues of the EIA and resulting ES is given below. The gas pipeline and associated AGI will be engineered in accordance with the conclusions of the ES to ensure that any environmental impact will be as predicted.

5.1.3 Information, in respect of land surrounding the proposed GEC site, is set out in the ES prepared to accompany the Section 36 Consent application for GEC. Additionally GEC will be located on land within the LG Development. The nature of the LG Development is such that a wide variety of Consent applications were required. Applications made for the LG Development to date include:

- A Harbour Empowerment Order (HEO) under the Harbours Act 1964 associated with the proposed Port;
- An Outline Planning Application (OPA) under the Town and Country Planning Act 1990 for the proposed LG Logistics and Business Park; and
- A Transport and Works Act Order (TWAO) under the Transport and Works Act 1992 for the proposed rail improvements associated with the proposed LG Logistics and Business Park.

5.1.4 Those applications, all of which were accompanied by respective ESs, were approved on 30 May 2007.

5.1.5 Therefore a wide range of EIAs have already been undertaken for these Consent applications, the results of which have been presented in three comprehensive ESs. Those are referred to as the:

- HEO Environmental Statement;
- OPA Environmental Statement; and
- TWAO Environmental Statement.

5.1.6 In addition, an Overarching ES has also been prepared which presents the potential cumulative impacts of the three individual proposals.

5.1.7 Further to the above, an additional ES has been prepared and submitted as part of an application for Planning Permission for the proposed Refined Access Road Design under the Town and Country Planning Act 1990. This is referred to as the Refined Access Road Environmental Statement (June 2010).

5.1.8 As a result of the above, a substantial proportion of the existing environment and baseline conditions of the GEC site and surrounding area are already well understood.

5.2 Air Quality

5.2.1 Potential impacts on air quality are likely to occur predominately through the construction phase due to the nature of the construction work and the additional traffic generated at this time. During construction, the main impact on air quality will be dust arising from activities such as excavations and earth moving operations. Emissions of oxides of nitrogen (NO_x) and sulphur dioxide (SO₂) from traffic movements on site and in the area will be minor and should have no impact on local air quality.

Assessment Methodology

5.2.2 Information on existing air quality will be reviewed using information provided from automatic monitoring sites for air quality that are or have been operated on behalf of the Department for Environment, Food and Rural Affairs (DEFRA) in the UK. The results from these monitoring sites are available on the internet. The location of any Air Quality Management Areas (AQMAs) would be discussed in relation to the proposed route corridor.

5.2.3 During construction, analysis of the emissions of dust generated by the excavation works together with a screening assessment of the impacts on local air quality of the temporary increase in traffic levels will be undertaken and suitable mitigation measures proposed where necessary.

5.2.4 Emissions during the operational and decommissioning phases, which may potentially include infrequent emissions of natural gas at the AGI, are expected to be minimal. However, the potential impacts during both phases will be fully assessed with mitigation measures proposed.

5.3 Noise and Vibration

5.3.1 As above, potential impacts due to noise and vibration may occur predominately through the construction phases due to the nature of the construction work and the additional traffic generated at this time. Depending on decommissioning techniques, similar impacts may be expected during decommissioning.

Assessment Methodology

5.3.2 To determine the potential noise and vibration impacts, Noise Sensitive Receptors (NSR) within 200 m of the proposed gas pipeline route would be identified, and existing ambient noise levels quantified by way of a site survey.

5.3.3 Predicted daytime noise levels at various distances from the proposed gas pipeline route will be calculated for the following construction activities:

- Topsoil stripping;
- Pipe stringing;
- Welding;
- Trench excavation;
- Tunnelling (drilling), if required;
- Pipe lowering;
- Backfilling; and
- Reinstatement.

5.3.4 The predicted daytime noise levels will be based on sound power levels given in BS 5228: Noise and Vibration Control on Construction and Open Sites (2009). Sounds levels will assume flat open ground without any barriers, with calculations as per the methodology in BS 5228 assuming constant working. The noise impact resulting from specialist construction techniques at any crossings will also be assessed in the same way. The significance of effects will be ascertained by way of comparison of the predicted levels against guideline levels and existing ambient levels.

5.3.5 Road traffic noise during construction will also be assessed.

5.3.6 Noise and vibration impacts during the operational and decommissioning phases are expected to be minimal. However, the potential impacts during both phases will be

fully assessed with mitigation measures proposed. In particular, the potential impact of noise from the AGI during operation will be assessed.

5.4 Landscape and Visual

5.4.1 During construction, potential landscape and visual impacts are likely to occur due to the nature of the construction work and from the siting of the Construction Contractor's temporary construction compound and pipe storage yard. The landscape and visual impact assessment will examine these potential impacts on the existing landscape and visual amenity of the surrounding area.

5.4.2 During operation, the majority of the gas pipeline will be buried along its entire length and therefore an assessment of the landscape and visual impacts of the pipeline itself is not considered necessary. However, the assessment will address impacts of visible features along the pipeline route (such as the midpoint isolation valve, permanent gas pipeline markers, aerial markers, cathodic protection test posts) along with the AGI compound and associated access gateway from the public road to the site.

Assessment Methodology

5.4.3 A Desk Top Review of all Local Planning Authority planning documents, the Countryside Agency (now part of Natural England) Landscape Character Areas, and the corresponding Landscape Character Assessment (if available from the local authority) will be undertaken. Particular attention will be paid to the location of any Areas of Outstanding Natural Beauty, Areas of High Landscape Value and popular tourist spots and viewpoints.

5.4.4 Where a visual impact is identified, potential mitigation measures will be discussed. At this time, mitigation measures may be needed due to the Construction Contractor's temporary construction compound and pipe storage yard during construction and the AGI / mid-point isolation valve during operation.

5.5 Land Use

5.5.1 A description of the proposed gas pipeline route and associated AGI location is provided in Section 4 which indicates that the majority of the land along the proposed route corridor is arable land.

Assessment Methodology

5.5.2 A desk-based assessment will be undertaken to gather information on land use and quality using:

- Aerial and ground photographs;
- The Local Plan; and
- Ordnance Survey mapping.

5.5.3 Short and long-term impacts associated with the gas pipeline construction will be assessed. The scope of the assessment may include the following:

- Temporary loss of crop production within the working width;
- Temporary removal of field boundaries along the working width;
- Indirect effects upon the ease of working fields within the working width;
- Increased risk of disease transmission associated with vehicle movements along the working width; and
- Disruption of field drainage.

- 5.5.4 The results of the assessment will quantify the scheme land take (including indirect impact of severance) and will identify the impact on individual farms and provide a description of any suitable mitigation.

5.6 Ecology

- 5.6.1 There are 27 Statutory Designated Sites located within 10 km of the proposed gas pipeline route. Of these Sites, parts of the Vange and Fobbing Marshes Site of Special Scientific Interest (SSSI) and Grove House Wood Local Nature Reserve (LNR) are located within the proposed route corridor survey area. The Thames Estuary and Marshes Special Protection Area (SPA) and RAMSAR site is located approximately 50 m outside the proposed route corridor survey area and an estimated 300 m from the proposed gas pipeline route.

- 5.6.2 In addition, there are nine Non-Statutory Designated Sites located within 2 km of the proposed gas pipeline route. These Sites are afforded a level of protection through the planning process and represent a tier of nature conservation interest below that of the Statutory Designated Sites. Of these Sites, the proposed gas pipeline route will pass directly through Corringham Marshes Site of Importance for Nature Conservation (SINC).

- 5.6.3 Furthermore, as part of the proposals for the LG Port development, four amelioration lands have been / are being developed. These are:

- Stanford Wharf Nature Reserve (previously named Site A in the ES prepared to accompany the Section 36 Consent application for GEC) – Located at Mucking Flats to the south west of the proposed London Gateway;
- Site X – Located on the south side of the River Thames Estuary, at Salt Feet and Halstow Marshes, to the north of the village of Cliffe;
- The Northern Triangle – An area of land to the north of The Manorway and to the west of Oozedam Farm, immediately to the north of the former Shell Haven Oil Refinery site; and
- The Northern Landscape Receptor site (Refinery Expansion Land).

- 5.6.4 Stanford Wharf Nature Reserve and Site X are areas of land considered for intertidal habitat creation principally on intertidal mudflats. The Northern Triangle is an area of land to be used for the relocation of protected species affected by the LG Port development, principally water voles, reptiles and invertebrates.

- 5.6.5 In addition, a further four off site locations are being used for the relocation of water voles and reptiles. These include:

- The River Colne – An inland site located in Essex to be used as a reintroduction site for water voles; and
- Bonner's Farm (Peldon, Essex), Blakehill (Wiltshire) and Sandpool (Wiltshire) – To be used for the translocation of reptiles in accordance with an agreed method statement.

Assessment Methodology

- 5.6.6 The ecological impact assessment methodology will be based on Guidance issued by the Institute of Ecology and Environmental Management (IEEM). This involves five key stages including:

- Consultations;
- Baseline studies and evaluation of ecological receptors;
- Identification of valued ecological receptors;

- Identification and characterisation of potential impacts during construction, operation and decommissioning; and
- Assessment of impact significance.

5.6.7 The flora and fauna of the proposed route corridor and the wider landscape will be assessed through consultation with Statutory Authorities and baseline studies.

5.6.8 The baseline studies will include a Phase 1 Habitat Survey which will include specific searches for the potential habitat of protected species. The results of the Phase 1 Habitat Survey will indicate the requirement for further Phase 2 Protected Species Surveys.

5.6.9 Where vulnerable species are identified, the ES will discuss possible monitoring programmes to evaluate the impact of the proposed gas pipeline.

5.7 Hydrology and Hydrogeology

5.7.1 As the pipeline will transport only natural gas, it is considered that there will not be any impacts on local watercourses due to the operation of the pipeline. Therefore any potential impact is likely to be limited to the construction phase.

5.7.2 Water levels in the ground along the proposed route corridor may affect the final gas pipeline route. The composition of such waters may also influence the final design material of the pipe.

5.7.3 The land along the proposed route corridor is predominately used for agriculture. It is therefore likely that land drain systems will be encountered during the construction of the proposed gas pipeline.

5.7.4 In addition, water pollution during construction may occur due to:

- Surface run-off from the working width to the local watercourses;
- Permeation of pollutants to local aquifers;
- Increased sedimentation from open-cut crossings of streams and rivers; and
- Drainage of the pipeline, its trenches and the working width to local watercourses or land for natural soak away.

Assessment Methodology

5.7.5 The relevant authorities will be consulted in order to obtain water resource quality and condition information. Depending upon this information, the proposed route corridor may be surveyed to establish a more detailed understanding of groundwater levels and conditions. The results will be analysed as part of the determination of the final gas pipeline route.

5.7.6 In addition, major watercourses crossed by the proposed gas pipeline will be identified to determine the likelihood of surface water run-off contamination of streams and rivers. Suitable mitigation measures to prevent contamination will be discussed.

5.7.7 Mitigation measures that will prevent any adverse impact of the construction work on existing land drainage will be detailed as appropriate and full consultation will be sought with landowners.

5.8 Geology

5.8.1 Ground disturbance during gas pipeline construction will predominately be limited to the uppermost 2 m of ground, and as such represents an extremely minimal impact upon the geological profile. However, the nature of the solid and drift geology will be considered, using available mapping data, when assessing the proposed route corridor. In particular:

- Where solid geology is found close to the surface or where deep crossings are required, this can have a particular influence on route selection where any trenches penetrate to its depth.
- Where drift geology is found, this can have a particular influence on route selection where trench excavation / open cut crossings are required.

5.8.2 Information on past and present mineral extraction will be considered as this may also have an influence on the proposed route corridor.

Assessment Methodology

5.8.3 A Phase 1 Desk Study of existing information will be undertaken to provide a general description of the soils and geology which are likely to be found along the proposed route corridor. This will be informed by the extensive surveys already undertaken for the LG Development. For any identified contaminants, baseline conditions may subsequently be assessed through the undertaking of a Phase 2 Intrusive Site Investigation.

5.9 Transport and Infrastructure

5.9.1 Potential transport and infrastructure impacts are likely to occur predominately during the construction phase due to the nature of the construction work and the additional traffic generated at this time. In addition to the staff transport movements, construction traffic will also consist of civil works traffic.

5.9.2 Transport and infrastructure impacts during operation will include those associated with the inspection and maintenance of the gas pipeline. These are expected to be insignificant. Inspection will likely include an aerial survey of the gas pipeline route by helicopter periodically once in operation.

Assessment Methodology

5.9.3 The characteristics of the existing transport network are well understood as a result of recent work undertaken in association with the Section 36 Consent application for GEC and the Consent applications for the wider LG Development.

5.9.4 The assessment baseline will consider the characteristics of the existing transport network (including existing traffic movements) as well as considering committed developments in the vicinity including GEC and the LG Development, and committed transport improvement schemes. Any further committed developments to be considered will be determined in consultation with the relevant Planning and Highway Authorities.

5.9.5 The quantum, characteristics and profile of traffic movements resulting from the gas pipeline and associated AGI will be determined using a suitable methodology, which shall be established in consultation with the Highways Agency and Local Highway Authority.

5.9.6 The impact of the addition of the development related traffic movements over the baseline situation will be assessed and quantified in accordance with the “*Guidelines for the Environmental Assessment of Road Traffic*”, DfT Circular 2/07 “*Planning and the Strategic Road Network*” and DfT’s “*Guidance on Transport Assessment*” (2007). In particular, assessment will focus upon capacity and safety implications.

5.9.7 Suitable mitigation of transport impacts will be derived. Given the temporary nature of impact, mitigation methods will likely focus upon effective traffic management and route management methods which seek to minimise the need to travel and, where travel is unavoidable, maximise the use of sustainable transport alternatives.

5.9.8 The residual impact of traffic movements, following the application of suitable defined mitigation, will be assessed and quantified.

5.10 Cultural Heritage

5.10.1 The proposed gas pipeline route runs through an area which includes a number of Scheduled Monuments and Listed Buildings. The cultural heritage in the area is well understood from the work undertaken in connection with the proposed GEC and the LG Development.

5.10.2 The existence and whereabouts of any existing cultural heritage features which have the potential to be impacted upon have already been established. However, further field inspection will be undertaken to identify any areas of high archaeological potential along the proposed gas pipeline route where currently unrecorded archaeology may still survive beneath the top soil.

Assessment Methodology

5.10.3 As stated above, the cultural heritage in the area is already well understood from the work undertaken in connection with the proposed GEC and the LG Development, and the need for and requirements of any further studies will be determined through consultation with the Archaeology Unit at Essex County Council and English Heritage. No intrusive studies are proposed for archaeological purposes, although again this will be confirmed or otherwise with the Archaeology Unit at Essex County Council and English Heritage.

5.10.4 The assessment of impacts to cultural heritage will include:

- A baseline assessment to establish the known archaeological remains and cultural heritage sites in and around the proposed route corridor;
- A baseline assessment to establish the potential for unknown archaeological remains in and around the proposed route corridor;
- An evaluation of the significance of the known archaeological remains and existing cultural heritage sites within and around the proposed route corridor; and
- An evaluation of the potential significance of unknown archaeological remains within and around the proposed route corridor.

5.10.5 In addition, further detailed searches will be performed to establish the presence of any other Scheduled Monuments and Listed Buildings. The impacts to these receptors will be addressed; this assessment will be focused on potential visual impacts during construction and those associated with the AGI during operation.

5.11 Socio-Economics

5.11.1 Assessment of socio-economic impacts will include consideration of the following during construction, operation and decommissioning:

- The creation of jobs and training opportunities;
- The changing influx of workers, which may alter the demand for services and facilities in the surrounding area;
- The provision of educational and visitor facilities; and
- Effects on tourism.

5.11.2 The following socio-economic impacts will also be considered:

- The location of public rights of way (including footpaths, bridleways and byways) and minimised hindrance to them where possible.

Assessment Methodology

5.11.3 The existing socio-economic make-up of the surrounding area will be described. This will be based on the collection of a wide range of data and information from published

materials, plus consultation with the local authority and key stakeholders. The study area will extend to cover the immediate area of Thurrock and the wider area of Essex in general in order to assess the likely effects that may be experienced within the local community. Consideration of the socio-economic impacts above will be described, using the existing socio-economic make-up as a baseline for reference.

- 5.11.4 In addition, any correlation between the development proposals and local planning policies will be provided.

5.12 Safety

- 5.12.1 Safety is one of the key factors considered in the choice of a proposed gas pipeline route. In addition, from an operational perspective it is important that the gas pipeline is designed, built and tested in such ways that its integrity is not comprised throughout its lifetime.

Assessment Methodology

- 5.12.2 The Health and Safety Executive (HSE) will be consulted to establish all Codes of Practice, Standards, Recommendations and Regulations for which the gas pipeline will be designed and constructed.

- 5.12.3 The safety measures to be employed during construction and operation of the proposed gas pipeline and associated AGI will be fully outlined.

SECTION 6

THE ENVIRONMENTAL STATEMENT

6 THE ENVIRONMENTAL STATEMENT

6.1 Introduction

6.1.1 An Environmental Statement will be prepared to accompany the application for Planning Permission under the 1999 EIA Regulations.

6.1.2 The ES to be prepared will document the findings of the EIA which will be undertaken following the methodology outlined above, once this has been formally agreed. The EIA is intended to determine the potential extent of any significant environmental impacts (either positive or negative) with regard to the development of the gas pipeline and associated AGI.

6.1.3 In accordance with the 1999 EIA Regulations, the ES will also identify any mitigation measures that may be needed to avoid, reduce and, if possible, remedy any significant adverse impacts identified. Additionally, monitoring will be recommended in some cases to help demonstrate that the gas pipeline and associated AGI is operating in compliance with the performance criteria identified in the ES.

6.2 Proposed Structure

6.2.1 The ESs for the gas pipeline and associated AGI for GEC will comprise three separate volumes:

- Volume 1 – Main Report
- Volume 2 – Technical Appendices; and
- Volume 3 – Figures

6.2.2 A Non-Technical Summary (NTS) for the gas pipeline and associated AGI will also be provided outlining the key findings of the ES.

6.2.3 It is currently anticipated that Volume 1 of the ES will include the following sections:

- Executive Summary
- Introduction
- Rationale for Development
- Planning Policy Context
- The GEC Development / GEC Site Surroundings
- Route Selection and Route Description
- Construction Methods and Operation
- EIA Methodology and ES Content
- Stakeholder Consultations and Additional Studies
- Air Quality
- Noise and Vibration
- Landscape and Visual
- Ecology
- Land Use / Geology, Hydrology and Hydrogeology
- Transport and Infrastructure
- Cultural Heritage



- Socio-Economics
- Safety
- Environmental Management Plan
- Summary of Mitigation and Monitoring
- Indirect / Secondary and Cumulative Impacts

APPENDIX A

CONSULTEES

CONSULTEES

British Pipeline Agency	Land and Wayleaves Section 5-7 Alexandra Road Hemel Hempstead Hertfordshire HP2 5BS
Buglife	First Floor 90 Bridge Street Peterborough Cambridgeshire PE1 1DY
Castle Point Borough Council	Kiln Road Thundersley Benfleet Essex SS7 1TF
Civil Aviation Authority	CAA House 45-49 Kingsway London WC2B 6TE
Corringham & Fobbing Community Forum	
Department for Energy and Climate Change	3 rd Floor, Area A 3 Whitehall Place London SW1A 2AW
Department for Transport	Zone 3/01 Great Minster House 76 Marsham Street SW1P 4DR
East of England Development Agency	Victory House Vision Park Chivers Way Histon Cambridge CB24 9ZR
East of England Regional Assembly	Flempton House Flempton Bury St Edmonds Suffolk IP28 6EG
English Heritage	Brooklands 24 Brooklands Avenue Cambridge CB2 8BU
Environment Agency	Cobham Road Ipswich Suffolk IP3 9JE
Essex Amphibian and Reptile Group	47 Wedgewood Way Ashingdon Essex SS4 3AS

**APPENDIX A
CONSULTEES**



Essex and Suffolk Water	Sandon Valley House Cannon Barnes Road East Hanningfield Chelmsford Essex CM3 8BD
Essex Badger Protection Group	Milton Lodge Milton Road Corringham Essex SS17 8JP
Essex County Council Archaeology Advice	Environment, Sustainability and Highways County Hall Chelmsford Essex CM1 1QH
Essex County Fire and Rescue Service	Grays Fire Station Hogg Lane Grays Essex RM17 5QS
Essex Mammal Group	148 Main Road Danbury Essex CM3 4DT
Essex Police	PO Box 2 Headquarters Springfield Chelmsford Essex CM2 6DA
Essex Wildlife Trust	The Joan Elliot Centre Abbots Hall Farm Great Wigborough Colchester Essex CO5 7RZ
Government Office for the East of England	Eastbrook Shaftesbury Road Cambridge Cambridgeshire CB2 2DF
Health and Safety Executive	Wren House Hedgerows Business Park Colchester Road Springfield Chelmsford Essex CM2 5FP
Highways Agency	Woodlands Mantle Lane Manton Industrial Estate Bedford MK41 7LW

**APPENDIX A
CONSULTEES**



London Gateway (DP World)	The Manorway Stanford-le-Hope Essex SS17 9PD
Ministry of Defence	Defence Estates Kingston Road Sutton Coldfield West Midlands B75 7RL
Natural England	Harbour House Hythe Quay Colchester Essex CO2 8JF
National Grid Property Ltd	Planning Manager National Grid House Warwick Technology Park Gallow Hill Warwick Warwickshire CV34 6DA
Network Rail	Town Planning Technician SE Network Rail 1 Eversholt Street London NW1 2DN
NERL Safeguarding	Mail Box 25 NATS-CTC 4000 Parkway Solent Business Park Fareham Hampshire PO14 7FL
Port of Authority	London River House Royal Pier Road Gravesend Kent DA12 2BG
RSPB	RSPB Rainham Marshes New Tank Hill Road Purfleet RM19 1SZ
SPEAC	112 Monks Haven Stanford-le-Hope Essex SS17 7EB
Stanford Community Forum	
Thurrock Biodiversity Action Group	53 Love Lane South Ockendon Essex RM15 4HT
Thurrock District Council	Civic Offices, New Road Grays Essex

**APPENDIX A
CONSULTEES**

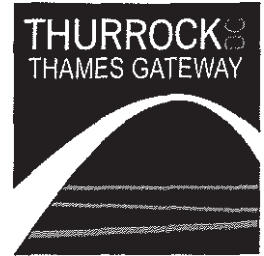


	RM17 6SL
Thurrock Thames Gateway Development Corporation	Gateway House Stonehouse Lane Purfleet Essex RM19 1NX
Thurrock Wildlife Society	53 Love Lane South Ockendon Essex RM15 4HT



D.2 Scoping Responses

06 January 2011



Keith Dalton
Dalton Warner Davis
21 Garlick Hill
London
EC4V2AU

THURROCK THAMES GATEWAY
DEVELOPMENT CORPORATION

Gateway House
Stonehouse lane
Purfleet, Essex
RM19 1NX

Tel 01708 895 400
Fax 01708 895 447

www.thurrocktgdgc.org.uk



Dear Keith

Town and Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 1999 (as amended)- Proposed Gas Pipeline and Above Ground Installation, Gateway Energy Centre, Stanford-le-Hope, Essex

I refer to your letter dated 26th November 2010 requesting a scoping opinion in respect of the Environmental Statement (ES) that will relate to the above project. apologise for the delay in replying within the statutory 5 week timeframe, which was due to the Christmas break.

Your request for a scoping opinion was supported by a Scoping Report, the contents of which are generally endorsed by the Corporation. As required by the EIA Regulations, the Corporation has also sought the views of statutory bodies and copies of the responses received are enclosed.

In addition to the issues addressed in the Scoping Report, we would request that the following items are also covered:

- **Air Quality**- please note the comments made by Natural England, dated 16th December 2010, regarding the cumulative impacts of air pollution, the potential impact on sensitive habitats downwind and the incorporation of data and thresholds from the UK Air Pollution Information System.
- **Landscape and Visual**- your attention is drawn to the comments from Natural England regarding the need for an assessment of the permanent features associated with the development.
- **Ecology**- please see the comments from Natural England regarding BAP species and habitats, the sources of data for biological records and the timing of ecological surveys. Please also note the comments from Essex Wildlife Trust and the Environment Agency regarding the proximity of designated nature conservation areas and individual species.
- **Land Use / Geology, Hydrology & Hydrogeology** – please note the comments from Natural England regarding the assessment of impacts from trench excavations and open cut crossings. Your attention is drawn to the

points raised by Environment Agency regarding flood risk, contaminated land and pollution control.

- **Transport & Infrastructure**-please refer to the comments from Thurrock Council's Senior Engineer regarding the need for a transport statement to consider potential traffic implications during construction.
- **Cultural Heritage**-please note the content of the specialist archaeological advice from Essex County Council regarding need to collate available archaeological study work and the suggestion for intrusive archaeological investigation.
- **Socio-Economics**-please refer to the final page of the consultation response from EEDA which includes a list of items which should be addressed within the ES.

The above is the Corporation's formal scoping opinion under Regulation 10 of the above Regulations. However, please note that once the Corporation has received any planning application and received consultation responses it reserves the right to request further information should the need arise.

A copy of this scoping opinion and your original request has been forwarded to Thurrock Council, which keeps the statutory register

Yours sincerely



Matthew Gallagher
Planning Development Officer
matthew.gallagher@thurrocktgdgc.org.uk
01708 895441

c.c. Development Management- Thurrock Council

Enclosures - consultation replies received from:

Civil Aviation Authority
Castle Point Borough Council
East of England Development Agency
Essex County Council (Archaeology)
Environment Agency
Essex Wildlife Trust
Health & Safety Executive
Ministry of Defence
Natural England
Port of London Authority
Thurrock Council (Development Management)
Thurrock Council (Highways)
Thurrock Council (Pollution Control)

COPY

Directorate of Airspace Policy

Mathew Gallagher (via e-mail)
Thurrock Thames Gateway Development Corporation (TIGDC)

30 November 2010

Ref ERM/DAP/Planning/GatewayEnergyCentreGasPipeline

Dear Mr Gallagher

Gateway Energy Centre at Stanford-le-Hope – Proposed Gas Pipeline and Above Ground Installation

The Civil Aviation Authority (CAA) has been asked to provide scoping comment related to the proposed gas pipeline and above ground installation associated with the Gateway Energy Centre at Stanford-le-Hope. We are advised that comment should be forwarded to the TIGDC and trust that what follows is useful.

It appears that for the main part, regardless of route, the proposed pipeline (as opposed to the Energy Centre itself) would be predominantly below the surface and that any above surface development (including during construction) would only a matter of a few meters in height. That being the case, the CAA has few observations other than to highlight that at some stage within the planning process relevant planning authorities will need to check any aerodrome and technical site safeguarding maps to identify any specific safeguarding issues (OfT / ODPM Circular 1/2003 refers).

Yours sincerely

{original signed}

Mark Smailes
Off Route Airspace 5



Head of Regeneration and Homes
C Point Borough Council
Council Offices, Kiln Road,
Thundersley, Benfleet,
Essex SS71TF
Tel: 01268 882200
Fax: 01268 882455
DX: 39603 Hadleigh

M. Gallagher
Thurrock Thames Gateway Development Corporation
Gateway House
Stonehouse Lane
Purfleet,
Essex.
RM19 1NX

Date Received for

6 - DEC 2010

Thurrock Thames Gateway Development Corporation
13th December 2010
DEV15747

K. Fisher Extn 2381

Your Ref: KD/CB/2746D

Dear Sir,

Gateway Energy Centre
Town and Country Planning (Environmental Impact Assessment) (England and Wales)
Regulations 1999
Regulation 10 Scoping Opinion Request
Proposed gas pipeline and above ground installation

I refer to the letter of the 26th November 2010, received from Messrs Dalton Warner Davis in respect of the above proposal and would advise you that this Authority does not wish to make any comment in respect of the proposed development.

I trust that this information is of assistance to you.

Yours sincerely

Kim Fisher

Chief Development Control Officer

Reply to: Natalia Blaken
Direct dial: 01223 200844
Email: nataliabfakon@eeda.org.uk
Your ref: KD/CB/27460

COPY

Matthew Gallagher
Planning Development Officer
Thurrock Thames Gateway Development Corporation
Gateway House
Stonehouse Lane
Purfleet
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RM19 1NX

(
20th December 2010

Dear Sirs

**Gateway Energy Centre
Regulation 10 Scoping Opinion Request
Proposed Gas Pipeline and above ground installation**

Further to a letter from Dalton Warner Davis dated 26th November, 2010, please find detailed below EEDA's comments on the scoping study prepared by Parsons Brinckerhoff dated November 2010. This letter is a response from EEDA as a statutory planning consultee on planning proposals, and is based upon the information submitted to EEDA.

EEDA's principal role is to improve the East of England region's economic performance. Our main focus when commenting on planning proposals is therefore to address:

- whether the proposal will help further sustainable economic development and regeneration in the East of England, and in particular,
- the ability of the proposals to help deliver the Regional Economic Strategy (RES), (Inventing our future-Collective action for a sustainable economy, 2008).

Others will no doubt wish to comment on the other dimensions of the proposal. It is within this context that our response should be considered.

Power Infrastructure Study September 2009 (EEDA)

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Although primarily dealing with electricity power provision, the study makes it clear that the appropriate and timely provision of network infrastructure to secure energy provision to service existing businesses and new development is a key requirement of a successful and growing economy and as part of a wider package of measures that address the broad aims of regeneration. However, it is apparent within the East of England that the network infrastructure for power is acting as a constraint in the development process. EEDA, through a commissioned study has sought to more fully identify this issue and provide advice to resolve such network infrastructure issues which will fulfil the subsequent long-term economic growth and regeneration. In particular the study has sought to identify:

- where development is being or may be held up;
- how the energy companies are responding to such issues; and
- what type of interventions EEDA and other public agencies can make to mitigate such issues.

The study has identified and considered significant areas of constraint in delivering network capacity to support regional growth plans. It is also clear that the East of England requires significant investment in the power distribution network even taking into account measures designed to maximise the capacity while economising on cost.

The study recognises that the electricity transmission network faces several challenges over the coming years. The first is asset renewal, as most of the assets are nearing the end of their estimated life. The second challenge is the accommodation of new generation in order to meet the UK's share of the EU2020 renewable energy target.

Regional Economic Strategy

The installation of the energy network improvements are of vital significance in contributing to the UK's objectives for security of supply and climate change mitigation. It is also expected that the region will benefit from some job creation. The Regional Economic Strategy (RES) contains a Resource Efficiency goal seeking a low resource economy and leading the UK in sustainable energy production. This goal states that the region has a strong skills and science base for energy technologies and is a leading region for renewable generating capacity and the region will continue to require a broad sustainable energy infrastructure. Regional companies and universities have specialist expertise in the wider energy supply chain. Developing new capacity and generation presents a major opportunity to create new businesses, jobs and investment.

In addition, the spatial economy goal states that place matters. In an increasingly competitive international economy, the nature and quality of place are becoming ever more significant. Sustainable built and natural environments are key factors in attracting investment, a well skilled labour force, business and visitors. Priority 2 of this Goal seeks to protect and enhance green infrastructure which is central to securing sustainable communities. The region should seek to create distinctive areas within and between cities and towns. These issues should be explored further in EIA.

Comments

EEDA supports the investment in the energy supply network, which is recognised by nationally and regionally to require reinforcement, upgrading and replacement to meet power supply targets and also targets for renewable connection.

EEDA would anticipate that the following issues are considered within the EIA:

- provision for businesses (particularly to support the region's enterprise base, skills, innovation activities and assets) including the supply of high quality business premises in sustainable locations;
- improving the region's skills base (to address employers' needs and ensure access to education and skills);
- tackling deprivation and social exclusion, equality and diversity (giving communities improved opportunities to participate fully in the regional economy);
- promoting sustainable development, urban renaissance and rural vitality including the reduction in greenhouse gases and water resources,
- the balance between housing and employment opportunities contributing to effective and affordable places;
- managing growth and development sensitively and effectively;
- complementing and enhancing the position of London as a world city; and
- protecting and enhancing the region's landscapes and environmental assets.

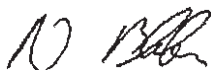
EEDA, as an economic development agency, would not wish to comment individually on the options. However, it is important to emphasise that as well as supporting energy infrastructure the RES also seeks to protect and enhance the region's landscapes. We would suggest that all reasonable measures are taken to mitigate the visual impact of the proposals upon the landscape and the environment and landscape policy designations. You will no doubt receive representations from local agencies and partners on this issue.

We urge that the impact of the proposal on plans and projects for economic development within Thames Gateway, as already established in Regional and Local Plans, should be closely examined and evaluated in the Environmental Impact Assessment. This would of course consider the DP Ports propositions together with emerging proposals in the Thurrock Core Strategy.

Finally, we note that letters from the Secretary of State regarding the revocation of the East of England Plan has been stayed by the High Court awaiting a new hearing in January. In the light of this ongoing fluid position and the recent White Paper on Local Growth I would stress that this places greater importance on relevant, appropriate and sound evidence to support planning applications and the approach to their delivery and implementation.

If you would like to discuss any of these matters in further detail, please do not hesitate to contact me at the above address.

Yours sincerely



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Natalie Blaken
Head of Planning

Essex County Council
Environment, Sustainability and Highways
County Hall
Chelmsford
Essex
CM1 1QH

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Matthew Gallagher
Thurrock Thames Gateway Development Corporation,
Gateway House,
Stonehouse Lane,
Purfleet,
Essex
RM191NX

Our ref: A/HEM/614/10

Date: 14th December 2010

Specialist Archaeological Advice

Dear Matthew

The Manorway, Stanford Le Hope, Essex: Gas Connection

Thank you for consulting the Historic Environment Branch of Essex County Council on the scoping opinion.

The Historic Environment is dealt with under section 5.10 of the scoping document. As stated previously there has been concern regarding the historic environment work undertaken for the Gateway Energy Centre, and the lack of integration of the extensive work undertaken on the DP World Site. The present pipeline route bisects an area extensively studied in recent years, not only with the development of the new port, but also with the development of the new wetland site to its west and recent excavations on an earlier pipeline running parallel, slightly to the south (published in 2005). A programme of aerial survey in the last two years, undertaken by ECC has identified extensive archaeological cropmarks in the western area of the proposed route.

As part of any Environmental Impact Assessment all the above information will need to be collated. In the case of the aerial photographic evidence an appropriate digital plot of the available data should be completed to assess what features the pipeline route will impact on. Although the submitted documentation states that no intrusive studies are proposed for archaeological purposes this will need to be reconsidered due to the extensive nature of some of the archaeological deposits likely to be affected by the pipeline. It is clear that previously identified deposits, such as those around Great Garlands Farm will need to be defined and their extent shown within the EIA as well as assessing the date and extent of the cropmarks and identifying the impact of the scheme on these. It is unlikely that this can be achieved with no intrusive work.

If you have any questions or would like us to meet the developers please do not hesitate to contact me.

Yours sincerely



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Richard Havis
Senior Historic Environment Officer

Telephone: 01245 437632

Fax:01245437213

Email: richard.havis@ essex.gov.uk

COPY

Mr Matthew Gallagher
Thurrock Thames Gateway Development
Centre
Stonehouse Lane
Purfleet
Essex
RM19 1NX

Our ref: AE/2010/111862/01-L01
Your ref: *

Date: 20 December 2010

Dear Mr Gallagher

SCOPING OPINION FOR THE MANORWAY, STANFORD LE HOPE

Thank you for consulting us on the seeping opinion for the proposed underground gas pipeline and associated Above Ground Installation (AGI), associated with the proposed gas-fired electricity generating station at the Manorway, Stanford-le-Hope. We can provide you with the following advice:

Flood Risk

Route 5, the selected gas pipeline option, crosses a number of "Main Rivers" under our jurisdiction including Manorway Fleet, Fobbing Common Sewer, Stanford Boundary Ditch, and Stanford Brook. We would like to meet with the contractor at the detailed stage of the scheme to discuss and agree the crossings.

Under the terms of the Water Resources Act 1991 and the Land Drainage Byelaws, the prior written consent of the Agency is required for any proposed works or structures in, under, over or within 9 metres of the top of the bank of the main river (Manorway Fleet, Fobbing Common Sewer, Stanford Boundary Ditch, and Stanford Brook).

In addition where the route crosses any watercourse (non or main river) located in the London Gateway Port boundaries, then it will also require our formal consent under Harbour Empowerment Order (HEO) for London Gateway Port, 2008 - Schedule 10. This consent is very similar to the above Flood Defence Consent however the byelaw distance increases from 9 to 16m. These consents will have to be agreed with us and DP World, the main client for the development site.

In addition our formal written consent is required where the works affect the flows within ordinary watercourses, outside of the Port Development area.

Any culverting or works affecting the flow of a watercourse requires the prior written Consent of the Environment Agency under the terms of the Land Drainage Act

Environment Agency
Cobham Road, Ipswich, Suffolk, IP3 9JD.
Customer services line: 08708 506 506
Email: enquiries@environment-agency.gov.uk
www.environment-agency.gov.uk
Cont/d..

1991/Water Resources Act 1911: The Environment Agency seeks to avoid culverting, and its consent for such works will not normally be granted except as a means of

As recognised in paragraphs 5.7.2 & 5.7.3, a detailed assessment is required of the impact on and mitigation of water levels along the chosen route.

Contaminated Land: risk to controlled waters

The proposed assessment methodology detailed in the "Land Use/Geology, Hydrology and Hydrogeology" section of the scoping report appears reasonable with regards to the potential impact of the proposed development on groundwater/surface water quality from activities associated with the proposed construction and operation.

Planning Policy Statement 23: Planning and Pollution Control (PPS23) requires consideration of the potential impact of the proposed development on groundwater/surface water quality, together with the mitigation measures to eliminate or minimise the potential impacts. With respect to land that may have been affected by contamination as a result of its previous use or that of the surrounding land, sufficient Information must be provided with the planning application to satisfy the requirement of PPS23 for dealing with land contamination. This should be presented as a Preliminary Risk Assessment (including a desk study, conceptual model and Initial assessment of risk), and provide assurance that the risk to controlled waters are fully understood and can be addressed through appropriate measures.

The excavations all appear to penetrate the ground by up to 2m. In most cases this will require groundwater risk assessments to be carried out and remedial measures to prevent contamination of groundwater sources.

It is noted that the area of the route corridor includes part of the former Shell Haven Refinery site, which, although subject to some investigation and remediation, will be affected by some residual contamination by hydrocarbons, possibly including some free phase material. It also appears other potential sources of contamination may be present associated with the former landfill areas and an area used for the bulk storage of hydrocarbon products located at the eastern end. These areas should all be fully considered in the EIA.

Pollution Control

As recognised in the scoping report, a detailed pollution prevention plan, including an emergency plan, will be required for the chosen pipeline route and full details of the pollution prevention measures will be required for the proposed above ground installations.

The scheme should also include an agreed construction environmental management plan (CEMP).

It should also include a description of the activities at the AGI with the associated controls and mitigation of any environmental impacts that may occur during commissioning and operation.

Ecology

As Essex currently has no Biological Records Centre, the desk based survey should include obtaining records from the Essex Field Club who have a wealth of biological data for Essex through their network of county recorders. The desk based survey should also include Red Data Book (both national and Essex Red Data species) and Biodiversity Action Plan (BAP, both National and Essex plans are relevant) species that may occur in the survey corridor.

With all options, including the preferred option 5, there are likely to be protected species issues, particularly with respect to great crested newts and water voles where the pipeline crosses main rivers, streams and ditches. Specific assessments should also be undertaken to determine how the development will impact on overwintering birds of Stanford Wharf Nature Reserve and the Thames Estuary designated sites (Ramsar, SPA and SSSI). All options may also contain vascular plant species of interest (particularly in the ditch network) and a full plant survey should be undertaken of ditches and watercourses to be affected.

Although the pipeline route for option 5 does not pass through any statutory designated sites such as SPAs or SSSIs, it does run very close to the Thames Estuary and Marshes SPA and Ramsar site, which is approximately 50 m outside of the survey area and 300 m from the actual gas pipeline route. Impacts on the overwintering bird interest of this site should be fully considered during construction of the pipeline, which may lead to visual and noise disturbance to Schedule 1 bird species.

The seeping report identifies the loss of habitat on Corringham Marshes local Wildlife Site (IoWS), mitigation measures should be proposed for this loss of lowland grazing marsh. Enhancement measures should also be sought wherever possible.

It is also suggested in the scpng report that route 5 passes beneath a fishing lake. Measures must be taken to prevent the mobilisation of potentially saline groundwater and the disturbance of fish by noise and vibration.

Regard must also be given to impacts on areas where protected animals have been relocated by DP World London Gateway as part of the protection of sensitive animals required for the port and park developments.

We trust these comments are useful. Please do contact me if you require any additional information.

Yours sincerely

Miss Jo Hardwick
Planning Liaison Officer

Direct dial 01473 706016
Direct e-mail jo.hardwick@environment-agency.gov.uk

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UNCLASstFIED

20th December 2010

Matthew Gallagher
Planning Development Officer
Thurrock Thames Gateway Development Corporation
Gateway House
Stonehouse lane
Purfleet
ESSEXRM19 INX

Date Received (by)

23

COPY

EMAIL: matthew.gallagher@thurrocktgdc.org.uk

Town and Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 1999 (as amended)-Proposed Electricity Generating Station, The Manorway, Stanford-le-Hope, Essex, SS17 9PD: Gas Connection

Dear Mr Gallagher,

Thank you for your letter dated 30th November 2010. Essex Wildlife Trust would like to voice their concerns with regard to the above proposal.

Much of the proposal New Gas Pipeline Route Corridor and the Proposed Gas Line is running through areas designated for their importance for habitat and wildlife. The breadth of designations of wildlife importance for the area, covering flora, birds and invertebrates highlights the value of this area

Attached is a GIS map of the area showing the RAMSAR, Special Protection Area (SPA), Sites of Scientific Interest (SSSI), Local Nature Reserve and Essex Wildlife Trust Nature Reserve, and Local Wildlife Sites (LoWS) and I have listed the sites below:

Thames Estuary and Marshes RAMSAR (Convention on Wetlands of International Importance)
Thames Estuary & Marshes (SPA)
Mucking Flats & Marshes (SSSI)
Vange & Fobbing Marshes (SSSI)
Grove House Wood Local Nature Reserve (LNR)
Stanford Warren Essex Wildlife Trust Nature Reserve

Local Wildlife Sites (LoWS)

Designated Local Wildlife Sites (LoWS) are important areas of land with significant value to wildlife. Many LoWS contain habitats and species recognised under the UK Biodiversity Action Plan and can support both locally and nationally threatened species and habitats. The following LoWS are found within the proposed location for the project and their citations are on the Local Wildlife Site website: www.localwildlifesites.org.uk

essex wildlife
TRUSTS

ESSEX
Wildlife Trust

Abbott's Hall Farm
Great Wigborough
Colchester, Essex
CO5 7RZ

Tel 0162/862960
Fax 0162/862990

E-mail
admin@essexwildlife.org.uk
Website
www.essexwildlife.org.uk

Essex Wildlife Trust
Company Registered
No 638666 England

Registered Charity
No 10065

YAT Registered
No 945 7459 77

Th70 Manorway Fleet Reedbed
Th69 Corrlingham/Fobbing Marsh (307.2ha) TQ 727834
Th62 Warren Lakes
Th60 Stanford Wallen Wetland
Th58 Stanford Meadow

Birds

All wild birds in the UK are protected by law under the Wildlife and Countryside Act (1981) which makes it illegal to kill or injure any wild bird or damage or destroy their nests. Therefore, Essex Wildlife Trust recommends that any operations that impact on areas containing nesting birds (i.e. the previously mentioned designated sites) should be conducted where possible outside the bird breeding season – between February and August.

Water Voles

Water voles are also protected under the Wildlife and Countryside Act 1981 and it is an offence to disturb sheltering water voles, or to damage or obstruct their burrows. Works must be conducted at the appropriate time of the year.

Relocation of Water Voles and Reptiles

The River Colne and Bonner's Farm (Peldon, Essex) cannot be used as reintroduction sites for water voles and reptiles as they have already been used and ideally local sites should be used.

Conclusion

It is crucial that the pipeline construction work has on-site ecologists present to ensure works are not carried-out at the correct times of the year and the developers abide to working conditions that inflict minimal disturbances to the surrounding landscape and wildlife, including compaction, noise and other pollutions.

Please keep us informed of the progress of this application and any decision made in due course. The impact of the construction of this pipeline on protected species and habitats is of major concern to Essex Wildlife Trust.

Yours sincerely



Lucinda B Butcher
Living Landscapes Coordinator, Conservation Team, Essex Wildlife Trust
lucindab@essexwt.org.uk

Attached: Stanford le Hope Conservation Designated Areas-Map (dated 20-12-10)



STANFORD LE HOPE Conservation Designated Areas

Mucking Grassland
L.....J and Marshes

D Special Protection
Area

-SSSI

IIaI Local Wildlife SHes

· Ramsar

17"71 Essex Wildlife Trust
L.....J Nature Reseve

Local Nature
Reserve

Scale 1:30,000 @ A4
Digitiser LBB
Date 20-Dec-2010





Date Received (by)

6 – DEC 2010

Thurrock Thames Gateway
Development Corporation Ltd

Thurrock Thames Gateway Development Corporation
Gateway House
Stonehouse Lane
Purfleet
Essex RM191NX

Our Ref HID CI3A/pe

3 December 2010

Attention Mr Matthew Gallagher-Principal Development Officer

Dear Sir

**ENVIRONMENTAL IMPACT ASSESSMENT-SCOPING OPINION
UNDERGROUND PIPELINE AND ABOVE GROUND INSTALLATION
PROPOSED ELECTRICITY GENERATING STATION GAS CONNECTION**

I refer to your letter dated 30 November 2010 concerning the EIA request for a Scoping Opinion for the above.

Scoping reports/Environmental Impact Assessments are concerned with projects which are likely to have significant effects on the environment. HSE's principal concerns are the health and safety of people affected by work activities. HSE has no comments to make on the scoping opinion.

Yours faithfully

et.A.-- ^r *t.A.-*

Paul Elliott
East of England Team



MINISTRY OF DEFENCE

Mr Matthew Gallagher
Thurrock Thames Gateway Development Corporation
Gateway House
Stonehouse Lane
Purfleet
Essex
RM191NX

Defence Estates Safeguarding
Statutory & Offshore

Defence Estates, Kingston Road,
Sutton Goldfield, West Midlands, B85 7RL

Telephone (MOD): +44 (0)121 311 2259
Facsimile (MOD): +44 (0)121 311 2218
E-mail: deopsnorth-lms7safe@de.mod.uk

COPY

Your Reference:
Our Reference: D/DE/43/20 (10/2067)

07/12/2010

Dear Mr Gallagher

MOD SAFEGUARDING-SITE OUTSIDE SAFEGUARDED AREA

Proposal: Proposed gas pipeline and above ground installation

Location: Gateway Energy Centre

Thank you for consulting Defence Estates Safeguarding on the above proposed development. This application relates to a site outside of Ministry of Defence safeguarding areas. We can therefore confirm that the Ministry of Defence has no safeguarding objections to this proposal.

Yours sincerely

Richard Brotherton
DEOPS NORTH
Defence Estates Safeguarding

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UNCLASSIFIED

Date Received (by)

13 DEC W1U

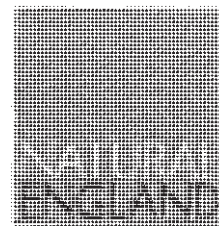
Thurrock Thames Gateway
Development Corporation

1):

DEFENCE ESTATES
Defining Estate Solutions to Defence Needs

COPY

Date: 16 December 2010
Our ref: PS/COL/12301
Your ref:



Natural England
Harbour House
Hythe Quay
Colchester
Essex
C02 BJF

T: 0300 060 1966
M: 07900 227383
F: 0300 060 2245

Matthew Gallagher
Planning Development Officer
Thurrock Thames Gateway Development Corporation
Gateway House
Stonehouse Lane
Purfleet
Essex
RM191NX

Dear Mr Gallagher

**Town and Country Planning (Environmental Impact Assessment) (England and Wales)
Regulations 1999 (as amended)
Proposed Electricity Generating Station, The Manorway, Stanford-le-Hope, Essex, SS17
9PD: Gas Connection**

We refer to your letter of 30 November 2010 received by Natural England on 2 December. We understand our views are sought on the scope of a forthcoming Environmental Statement (ES) to accompany a planning application by Gateway Energy Centre for a gas pipeline and above ground installation (AGI).

Natural England

Natural England is a non-departmental public body. Our statutory purpose is to ensure that the natural environment is conserved, enhanced, and managed for the benefit of present and future generations, thereby contributing to sustainable development. We are working towards the delivery of four strategic outcomes:

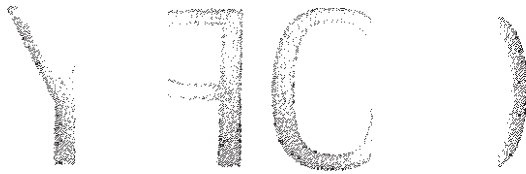
- A healthy natural environment;
- People are inspired to value and conserve the natural environment;
- Sustainable use of the natural environment;
- A secure environmental future

Advice

We are receipt of an Environmental Impact Assessment (EIA) scoping report prepared by Parson Brinckerhoff (PB) dated November 2010. With respect to Environmental Considerations (Section 5) we offer the following observations on the potential impacts associated with the new gas connections:

Air Quality

We concur with the assessment that the primary impact pathways on air quality will be through additional traffic associated with the construction phase as well as airborne dust (due to excavations and earth moving operations). The scoping report states that emissions of oxides of nitrogen (NO_x) and sulphur dioxide (SO₂) from traffic movements on site and in the area will be minor and should have no impact on local air quality. While we accept that the predicted



emissions are in themselves minor, however it is the cumulative impact of this and other sources of air pollution which are contributing to exceedance of NO_x levels/loads. These combined emissions are linked to eutrophication of sensitive habitats downwind (e.g. woodlands and grasslands some distance from the works). Assessment of air quality should also take account of data and thresholds for ecological receptors held on the UK Air Pollution Information System website (www.apis.ac.uk). We note that potential impacts will be fully assessed with mitigation measures proposed.

Landscape and Visual

We agree that, as the gas pipeline is to be buried, there is little value to be gained in carrying out a landscape and visual impact assessment for that aspect of the proposals. However, it is relevant to carry it out for permanent features such as pipeline markers, AGJ compound, etc. Landscape and visual impact assessment in an EIA should follow best practice methodology such as that set out in the *Guidelines for Landscape and Visual Impact Assessment* (Landscape Institute and Institute of Environmental Assessment and Management 2002). Visual receptors (e.g. residential areas, views from public rights of way) should be agreed with TTGDC before the assessment is carried out.

Ecology

The proposed assessment methodology (Institute of Ecology and Environmental Management's Guidelines for Ecological impact Assessment in the United Kingdom) is considered appropriate and acceptable to Natural England in preparation of the Environmental Statement (ES). The baseline studies and recommendations for more detailed surveys should not only cover protected species, but also Biodiversity Action Plan (SAP) species and habitats. In the continuing absence of a centralised Biological Records Centre for Essex, we advise that data is sought from a number of sources, including Natural England, the Environment Agency, RSPB, British Trust for Ornithology (BTO), Essex Field Club, Essex Wildlife Trust, Thurrock local groups and local/county recorders.

In line with our advice given for the associated National Grid connections project, Natural England would anticipate the following habitat and species groups may need to be assessed within the ES:

- Extended Phase 1 Habitat survey, including a search for evidence of invasive species controlled under the Wildlife and Countryside Act;
- Aquatic habitat survey;
- Phase 2 habitat surveys if sites contain or adjoin land covered by local nature conservation designations;
- Bat activity survey, and emergence surveys if trees / buildings with roosting potential could be affected;
- Badger survey;
- Water vole survey;
- Reptile survey;
- Great crested newt survey;
- Habitat assessment for dormice and, if necessary, dormouse survey;
- Terrestrial invertebrate survey, particularly if wet grassland or brownfield habitat would be affected;
- Fish and aquatic invertebrate survey if ditches would be affected;
- Breeding bird survey; and
- Wintering / migrating bird survey if selected site(s) could contribute to the roosting habitat of birds from the Thames Estuary and Marshes SPA / Ramsar site.

The timing of surveys is important to avoid delays to the EIA. For example, great crested newt surveys can only be undertaken in spring (primarily mid April to mid May) and are highly likely to be required for this project.

Geology (geodiversity)

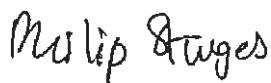
Due to the relatively shallow depth of working, we agree that the gas pipeline construction is unlikely to have significant impacts on the underlying solid and drift geology of the area. However, it seems prudent to assess the proposed routes for any possible impacts arising from trench excavations and open cut crossings.

Further Advice

The *advice given* by Natural England in this letter is made for the purpose of the present consultation only. In accordance with Section 4 of the Natural Environment and Rural Communities Act 2006, Natural England expects to be included as a consultee in relation to any additional matters to be determined by Thurrock Thames Gateway Development Corporation (TTGDC) that may arise as a result of, or are related to, the present proposal. Natural England retains its statutory discretion to modify its present advice or opinion in view of any and all such additional matters or any additional information related to this consultation that may come to our attention.

Should you wish to discuss this response please do not hesitate to contact me at the *above* address.

Yours sincerely



Phil Sturges Lead
Adviser
Government Team
Four Counties Area

E-mail: phil.sturges@naturalengland.org.uk

COPY



1909-2009

A CENTURY OF SERVICE

Our ref P&P/DEVELOP/DC219/F

22 December 2010

Matthew Gallagher
Planning Development Officer
Thurrock Thames Gateway Development Corporation

Gateway House
Stonehouse Lane
Purfleet
Essex
RM19 1NX

Date Received (by)

24 DEC 2010

Thurrock Thames Gateway
Development Corporation

Dear Sir

**GATEWAY ENERGY-CENTRE-PROPOSED-GAS-PIPELINE AND ABOVE GROUND
INSTALLATION**

London River House
Royal Pier Road
Gravesend, Kent, DA12 2BG, UK

Tel: +44 (0) 1474 562200

Fax: +44 (0) 1474 562281

Website: INWWW.pfa.co.uk

DIRECT LINE: 01474 562384

DIRECT FAX: 01474 15823QB

MOBILE: 07738 028540

E-MAIL: lucy.owoom;jpla.co.uk

I write to you in connection with the above and the letter and enclosure from Dalton Warner Davis dated 26 November 2010. Having now had the opportunity to review the 'Gas Pipeline and Above Ground Installation Seeping Report' I would like to make the following comments:

Options 4 and 5 would impact on the PLA's estate and as such consent would be required from the PIA. Full technical details need to be provided in the Environmental Statement of the proposed method for crossing Mucking Creek, including the depth that it is proposed that the pipeline would be.

I hope the above is of assistance to you.

Yours Faithfully

Liwen
Planning Officer



COPY

Matthew Gallagher

From: Keen, Jonathan [JKeen@thurrock.gov.uk]
Sent: 21 December 2010 14:55
To: Matthew Gallagher
Subject: The Manorway Gas Connections Scoping Report

Matthew

Town and Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 199 (as amended)-Proposed Electricity Generating Station, The Manorway, Stanford-le-Hope, Essex, 5517 9PD: Gas Connection

I have reviewed the Scoping Study sent with your covering letter dated 30 November 2010.

I have no comments to make on the content of the report at this time.

Kind regards

(Jonathan Keen
Planning Officer
Development Control, Level 2,
Thurrock Council, New Road,
Grays, Essex, RM17 6SL
01375 652119 tll, 01375 652787
l:BJ jkeen@thurrock.gov.uk

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Matthew Gallagher

From: Khan, Senober [SKhan@thurrock.gov.uk]
Sent: 04 January 2011 11:51
To: Matthew Gallagher
Cc: Drover, Nathan
Subject: Gas pipeline and above ground installation - EIA seeping study- Nov 2010

Matthew

Further to the above matter, I have the following comments to make:

Of the route options evaluated, there are no objections to route 5 / along the existing pipeline route, which has been identified as being the preferred route. This will ensure that major roadie A13 will not be affected.

Notwithstanding, clarification is required regarding the following points concerning route 5:

1. Why does the proposed pipeline cross the A1014 'The Manorway' northbound at the eastern end and then diverts again south at the western end of the A1014 ?
2. Why cant the proposed pipeline run parallel along the south side of the A1014, the pipeline would remain well within the pipeline route corridor and would therefore not need to disrupt any major traffic routes ?
3. Routes 1, 2 and 3 head to the north crossing the A13 with no links to the south towards Mucking Marshes, how are these routes being considered in view of routes 4 and 5 ?
4. If the existing power station will cease operations on the start of the new power station, then why not continue using the existing gas pipeline to feed into the new power station ?

Whilst no Transport Assessment will be required, however a transport statement will be required to detail the traffic implications during the construction phase on the roads affected, and what traffic management measures are being proposed to mitigate disruption to road traffic (no direct new access on to the A1014), along with a travel plan in particular to ensure construction traffic should not be through sensitive residential areas.

Kind regards

Senober Khan
Senior Engineer

Civic Offices
New Road
Grays Essex
RM17 6SL

(**tele:** 01375 65 2447
email: skhan@thurrock.gov.uk

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Our ref:cdp
Your Ref:
Date:03.12.10

Direct Dial:01375 652096
Fax:01375 65708
E-mail:cpomphreH@thurrock.gov.uk

Thurrock Thames Gateway Development Corporation
Gateway House
Stonehouse Lane
Purfleet
Essex
RM191NX

F.A.O. Matthew Gallagher
Dear Matthew

Town and Country Planning (Environmental Impact Assessment) (England and Wales)
Regulations 1999 (as amended) - Proposed Electricity Generating Station, The
Manorway, Stanford le Hope, Essex, SS17 9PD: Gas Connection

Further to your consultation request regarding the above our comments are as follows:

I have reviewed the environmental impact assessment scoping study (Parsons Brinkerhoff November 2010).

My comments are limited to those parts of the assessment relevant to environmental health namely -Sections 5.2 Air quality 5.3 Noise and vibration 5.7 Hydrology and Hydrogeology and 5.8 Geology.

I am satisfied with the contents and proposed methodology for those sections.

I am also satisfied with section 6.2.3 which lists the anticipated sections to be included in the environmental statement.

If you require any further information please contact me

Yours Sincerely



C Pomphrett
Pollution Control

APPENDIX E

**SUPPORTING NOISE AND VIBRATION
STUDIES / INFORMATION**

E. SUPPORTING NOISE AND VIBRATION STUDIES / INFORMATION

Contents

Supporting Noise and Vibration Studies and Information is provided in this Appendix.

- E.1** Baseline Noise Survey
- E.2** Construction Noise Calculations

E.1 Baseline Noise Survey

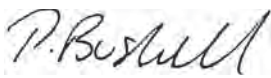


THAMES GATEWAY ENERGY CENTRE - AMBIENT NOISE SURVEY REPORT

INTERGEN

January 2011

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Report Title	:	Gateway Energy Centre – Ambient Noise Survey Report
Report Status	:	Issue 1
Job No	:	63958A
Date	:	January 2011
Prepared by	:	 Peter Bushell
Checked by	:	 Humphrey Roberts-Powell
Approved by	:	 Richard Perkins

CONTENTS

	Page
1 INTRODUCTION	1
1.1 Background	1
1.2 Site Description	1
1.3 Scope of Work	1
2 METHODOLOGY	1
2.1 General	1
2.2 Published Guidance	1
2.3 Noise Sensitive Receptors	2
2.4 Background Monitoring	2
3 AMBIENT RESULTS	3
3.1 Measurements	3
APPENDICES	



EXECUTIVE SUMMARY

Parsons Brinckerhoff has been commissioned to conduct an Environmental Impact Assessment for the proposed Gateway Energy Centre Gas Pipeline.

As part of the assessment PB has undertaken an ambient noise survey at sensitive receptors along the proposed pipeline route to quantify the existing noise levels. This report details the approach and the findings.

1 INTRODUCTION

1.1 Background

1.1.1 Parsons Brinkerhoff has been commissioned to conduct an Environmental Impact Assessment for the proposed Gateway Energy Centre Gas Pipeline.

1.1.2 As part of the assessment PB has undertaken an ambient noise survey at sensitive receptors along the proposed pipeline route to quantify the existing noise levels. This report details the approach and the findings.

1.2 Site Description

1.2.1 The route of the proposed pipe line will pass to the south of Stanford-Le-Hope. The area passed through is mostly open fields with some light industrial activity interspersed with residential properties. Heavy industrial activity is focused on the Thames Haven area 2km to 3km South-East of Stanford-Le-Hope. Existing noise emissions from Thames Haven do not significantly impact the survey area. The following noise sources do impact some or all of the survey locations:

- Road traffic flows along A1014 and other local roads
- The railway line between East Tilbury and Stanford-Le-Hope
- The Mucking Landfill Site

1.3 Scope of Work

1.3.1 Work undertaken in the completion of this ambient noise assessment included the following:

- Local Authority Consultation
- Site visit to undertake measurements
- Reporting of findings

2 METHODOLOGY

2.1 General

2.1.1 A noise survey has been conducted to quantify the existing ambient noise levels in the vicinity of the proposed site. Short term sampling measurements were used to assess the ambient noise climate.

2.1.2 A glossary of acoustics terminology is provided in Annex A.

2.2 Published Guidance

2.2.1 The guidance on the assessment of noise within PPG 24[1] has been adhered too. PPG 24 outlines the key considerations to be taken into account when assessing the impact of a new development on the local noise climate.

The method detailed in BS 7445-1:2003 [2] and BS 7445-3:1991[3], were followed during the surveys undertaken. BS 7445 defines and prescribes best practice during the recording and reporting of environmental noise. It is inherently applied in all instances when making environmental noise measurements.

2.3 Noise Sensitive Receptors

2.3.1 The following noise measurement locations were selected.

Measurement	Type	Location	Guidance Followed
1	Short term attended	St. Cleres School, Butts Lane, Stanford-Le-Hope	BS 7445:2003
2	Short term attended	Mucking Wharf Road, Mucking, Stanford-Le-Hope	BS 7445:2003
3	Short term attended	Wharf Road, Stanford-Le-Hope	BS 7445:2003
4	Short term attended	Rockery Hill, Corringham, Stanford-Le-Hope	BS 7445:2003

Table 1: Noise Sensitive Receptors

2.3.2 A map of the measurement locations is presented in Annex B.

2.4 Background Monitoring

2.4.1 All noise monitoring was conducted in accordance with the guidance set out in BS 7445:2003. Measurements were made using Class 1 Integrating-Averaging Sound Level Meters as defined in IEC 61672:2003[4]. Meters were calibrated and checked before and after each measurement period, with no change in level noted. The calibration certificates for the meters used are provided in Annex C, which also shows the serial numbers of all the equipment used. Microphones were placed 1.4m above the ground, and at least 1.5m from any acoustically reflective surface. Meters were set to a fast response time for all measurements.

2.4.2 Measurements took place on a typical weekday: Thursday 13th January 2011. Weather conditions were conducive to successful monitoring; with wind speeds less than 5ms⁻¹. Roads were dry, and there was no precipitation at the time of measurement. The ambient temperature was between 9°C and 11°C during the monitoring period.

2.4.3 The site engineer was Chris Borak (AMIOA) of PB

3 AMBIENT RESULTS

3.1 Measurements

- 3.1.1 The full set of results for the spot measurements are shown in the noise monitoring forms in Annex D. A summary of the lowest measured background noise levels taken at each of the locations is presented in Table 2.

Measurement Location	Lowest Measured L ₉₀ , dB(A)
1	35.8
2	30.1
3	32.9
4	29.5

Table 2: Summary of Spot Measurements

REFERENCES:

1. PPG 24: September 1994 "Planning Policy Guidance: Planning and Noise", Department of the Environment
2. BS 7445-1: 2003 "Description and Measurement of Environmental Noise: Guide to quantities and procedures", BSI
3. BS 7445-3: 1991 "Description and Measurement of Environmental Noise: Guide to application to noise limits ", BSI
4. IEC 61672:2003 "Electroacoustics - sound level meters", BSI

ANNEX A

Glossary of Acoustic Terminology

GLOSSARY OF ACOUSTICS TERMINOLOGY

Decibel (dB)	The decibel scale is used in relation to sound because it is a logarithmic rather than a linear scale. The decibel scale compares the level of a sound relative to another. The human ear can detect a wide range of sound pressures, typically between 2×10^{-5} and 200 Pa, so the logarithmic scale is used to quantify these levels using a more manageable range of values.
Sound Pressure Level (SPL)	<p>The Sound Pressure Level has units of decibels, and compares the level of a sound to the smallest sound pressure generally perceptible by the human ear, or the reference pressure. It is defined as follows:</p> $\text{SPL (dB)} = 20 \log_{10}(P/P_{\text{ref}}) \quad \text{where } P = \text{Sound Pressure (in Pa)}$ $P_{\text{ref}} = \text{Reference Pressure } 2 \times 10^{-5} \text{ Pa}$ <p>An SPL of 0dB suggests the Sound Pressure is equal to the reference pressure. This is known as the <i>threshold of hearing</i>.</p> <p>An SPL of 140dB represents the <i>threshold of pain</i>.</p>
Loudness	The loudness of a sound is subjective, and differs from person to person. The human ear perceives loudness in a logarithmic fashion, hence the suitability of the decibel scale. Generally, a perceived doubling or halving of loudness will correspond to an increase or decrease in SPL of 10dB. Note that a doubling of sound energy corresponds to an increase in SPL of only 3dB.
Sound Power Level (SWL)	<p>The Sound Power Level defines the rate at which sound energy is emitted by a source, and is also expressed in dB. It is defined as follows:</p> $\text{SWL (dB)} = 10 \log_{10}(W/W_{\text{ref}}) \quad \text{where } W = \text{Sound Power (in Watts)}$ $W_{\text{ref}} = \text{Reference Power } 1 \text{ pWatt}$
A-Weighting	The human ear can detect a wide range of frequencies, from 20Hz to 20kHz, but it is more sensitive to some frequencies than others. Generally, the ear is most sensitive to frequencies in the range 1 to 4 kHz. The A-weighting is a filter that can be applied to measured results at varying frequencies, to mimic the frequency response of the human ear, and therefore better represent the likely perceived loudness of the sound. SPL readings with the A-weighting applied are represented in dB(A).
Equivalent Continuous Level ($L_{\text{eq,T}}$)	<p>The Equivalent Continuous Level represents a theoretical continuous sound, over a stated time period, T, which contains the same amount of energy as a number of sound events occurring within that time, or a source that fluctuates in level.</p> <p>For example, a noise source with an SPL of 80 dB(A) operating for two hours during an eight-hour working day, has an equivalent A-weighted continuous level over eight hours of 74 dB, or $L_{\text{Aeq,8hrs}} = 74 \text{ dB}$.</p> <p>The time period over which the L_{eq} is calculated should always be stated.</p>
Maximum Sound Level (L_{max})	The maximum sound level, L_{max} (or L_{Amax} if A-weighted) is the highest SPL that occurs during a given event or time period.
Minimum Sound Level (L_{min})	Similarly, the minimum sound level, L_{min} (or L_{Amin} if A-weighted) is the lowest SPL that occurs during a given event or time period.
L_{90} or L_{A90} and other percentile measures	This represents the SPL which is exceeded 90% of the time, expressed in dB or dB(A). L_{A90} is used to quantify background noise levels (see below). Other percentiles exist and are used for various types of noise assessment. These include L_{01} , L_{10} , L_{50} , L_{99} .

Noise	A noise can be described as an unwanted sound. Noise can cause nuisance.
Ambient Noise	The totally encompassing sound in a given situation, at a given time, including noises from any source in any direction.
Specific Noise	A component of the ambient noise, associated with the specific source under investigation.
Initial Noise	Ambient prevailing noise in an area before any changes to the existing noise climate
Residual Noise	This is the ambient noise minus the specific noise, i.e. the remaining noise when the specific noise source is removed.
Background Noise	This is defined as the L_{A90} of the residual noise.
Noise Sensitive Receptors (NSR's)	Any identified receptor likely to be affected by noise. These are generally human receptors, which may include residential dwellings, work places, schools, hospitals, and recreational spaces.
Octave	In reference to the frequency of a sound, an octave describes the difference between a given frequency and that which is double that frequency, e.g. 125Hz to 500Hz, or 4kHz to 8kHz.
Octave/Third Octave Bands	A sound made up of more than one frequency can be described using a frequency spectrum, which shows the relative magnitude of the different frequencies within it. The possible range of frequencies is continuous, but can be split up into discrete bands, often an octave or third-octave in width. Each octave band is referred to by its centre frequency, generally 63Hz, 125Hz, 250Hz, 500Hz, 1kHz etc.

ANNEX B

Measurement Locations Map

Measurement Location Plan



ANNEX C

Calibration Certificates



CERTIFICATE OF CALIBRATION

Certificate Number CAL061008
Date of Issue 0710612010

Customer Parsons Brinkerhoff Ltd

Description of Instrument Including Manufacturer / Supplier
Sound Level Meter Rion NA-28 Sound Level Analyser [Serial No. 00380778] with
 Rion UC-59 Microphone [Serial No. 00940] and
 Rion NH-23 preamplifier [Serial No. 70703]
 Fitted with a WS-10 foam windshield.

The instrument conforms to Class 1 of BS EN 61672-1:2003

The instrument was running Version 1.8 Firmware

Associated Calibrator B&K 4226 S/N 1445373

Date of Calibration 07/06/2010

Test Procedure ..\..\Calibration Results Sheets\Current Approved Results
 Sheets\NA-28 Master 61672-Approved Issue 3 (BK 1445373).xls

Test procedures in accordance with BS EN 61672-3:2006
NOTE: Test 10.1 (Self Generated Noise with Microphone Installed)
omitted.

Test Engineer Amrat Patel

APPROVED SIGNATORY 
Les Jephson O / Mike Breslin Id"

BEAUFORT COURT, 17 ROEBUCK WAY, MILTON KEYNES, MK5 8HL

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1:81 info@noise-and-vibration.co.uk Q www.noise-and-vibration.co.uk

ACOUSTICS NOISE AND VIBRATION LIMITED. REGISTERED IN ENGLAND NO. 3549028. REGISTERED OFFICE AS ABOVE.



CERTIFICATE OF CALIBRATION

Certificate Number CAL041024
Date of Issue 26/04/2010
Customer Parsons Brinckerhoff Ltd

Description of Instrument

Calibrator Rion NC-74 [Serial No. 35173440]
With *W'* adaptor type NC-74-002 fitted.

Date of Calibration 26/04/2010.

Test Procedure ..\..\Calibration Results Sheets\Current Approved Results
Sheets\NC-74 Master 60942 Approved Issue 2 (BK 1445373).xls

Test procedures in accordance with BS EN 60942: 2003 (Annex B)

Test Engineer Amrat Patel

APPROVED SIGNATORY

Les Jephson **Breslin D**

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ACOUSTICS NOISE AND VIBRATION LIMITED. REGISTERED IN ENGLAND NO. 3549028. REGISTERED OFFICE AS ABOVE.

ANNEX D

Noise Survey Monitoring Forms

Noise Monitoring Form

Project:	Gateway Energy Centre Pipeline	Job No.:	63628A
Location:	St Cleres School		

Equipment:	Rion NA-28	Engineer:	Chris Borak
Pre-Calibration Level:	93.9 dB	General Weather Description:	Humid, No Precipitation, Heavy cloud cover
Post-Calibration Level:	93.9 dB		

Measurement Period				Weather			Statistical Noise Levels / dB(A)					Description of Audible Noise
Date	Start Time	Elapsed Mins	End Time	Wind	Direction from	Temp (°C)	Lmax	Lmin	Leq	L10	L90	
				Speed (m/s)								
13/01/2011	11:36:00	15	11:51:00	2	SW	11	84.8	54.7	64.8	65.5	56.6	Local traffic noise, distant traffic, Aircraft, Some noise from school.
13/01/2011	12:43:00	15	12:58:00	2	SW	12	79.9	55.8	60.7	63.5	56.1	
13/01/2011	19:00:00	10	19:10:00	1	SW	10	82.4	52.7	64.3	64.5	55.9	Local traffic noise, distant traffic, Aircraft
13/01/2011	23:00:00	5	23:05:00	2	SW	10	49.8	32.9	42	41.6	35.8	Local traffic noise, distant traffic
14/01/2011	01:00:00	5	01:05:00	3	SW	9	52.8	36.5	42.2	42.4	38.9	Distant traffic, Aircraft

Noise Monitoring Form

Project:	Gateway Energy Centre Pipeline	Job No.:	63628A
Location:	Mucking		

Equipment:	Rion NA-28	Engineer:	Chris Borak
Pre-Calibration Level:	93.9 dB	General Weather Description:	Humid, No Precipitation, Heavy cloud cover
Post-Calibration Level:	93.9 dB		

Measurement Period				Weather			Statistical Noise Levels / dB(A)					Description of Audible Noise
Date	Start Time	Elapsed Mins	End Time	Speed (m/s)	Wind Direction from	Temp (°C)	Lmax	Lmin	Leq	L10	L90	
13/01/2011	12:03:00	15	12:18:00	2	E	11	69.4	48	56.4	59	51.4	Road sweeper (could be heard from considerable distance), Trucks entering and leaving landfill site.
13/01/2011	12:58:00	15	13:13:00	2	E	12	63.6	38.6	48	52	41	
13/01/2011	19:23:00	10	19:33:00	1	E	10	59.7	43.5	49.4	52.9	45.3	Trucks entering and leaving landfill site.
13/01/2011	23:07:00	5	23:12:00	2	E	10	39.2	27.8	32.3	34.4	30.1	Light aircraft, faint distant traffic noise or possibly industrial noise
14/01/2011	01:12:00	5	01:17:00	3	E	9	36.9	28.4	35.8	37.8	30.7	Faint distant traffic noise or possibly industrial noise

Noise Monitoring Form

Project: Gateway Energy Centre Pipeline	Job No.: 63628A
Location: Wharf Road	

Equipment: Rion NA-28	Engineer: Chris Borak
Pre-Calibration Level: 93.9 dB	General Weather Description: Humid, No Precipitation, Heavy cloud cover
Post-Calibration Level: 93.9 dB	

Measurement Period				Weather			Statistical Noise Levels / dB(A)					Description of Audible Noise
Date	Start Time	Elapsed Mins	End Time	Speed (m/s)	Wind Direction from	Temp (°C)	Lmax	Lmin	Leq	L10	L90	
13/01/2011	12:22:00	15	12:37:00	2	E	11	63.6	38.6	48.0	52.0	41.0	Distant traffic noise, distant aircraft, some local traffic.
13/01/2011	13:13:00	15	13:28:00	2	E	12	63.9	35.5	47.5	50.2	39.8	Distant traffic noise, distant aircraft, some local traffic, dogs barking.
13/01/2011	19:41:00	10	19:51:00	1	E	10	69.1	38.2	49.1	50.8	42.3	Distant traffic noise, distant aircraft, some local traffic, light aircraft (distant)
13/01/2011	23:25:00	5	23:30:00	2	E	10	55.1	30.2	44.6	44.7	32.9	Distant traffic noise, Aircraft.
14/01/2011	01:27:00	5	01:32:00	3	E	9	60.4	32.5	41.2	41.3	34.3	Distant traffic noise, possibly faint industrial noise.

Noise Monitoring Form

Project: Gateway Energy Centre Pipeline	Job No.: 63628A
Location: Corringham	

Equipment: Rion NA-28	Engineer: Chris Borak
Pre-Calibration Level: 93.9 dB	General Weather Description: Humid, No Precipitation, Heavy cloud cover
Post-Calibration Level: 93.9 dB	

Measurement Period				Weather			Statistical Noise Levels / dB(A)					Description of Audible Noise
Date	Start Time	Elapsed Mins	End Time	Speed (m/s)	Wind Direction from	Temp (°C)	Lmax	Lmin	Leq	L10	L90	
13/01/2011	12:37:00	15	12:52:00	2	E	11	44.5	38.3	39.3	39.9	39	Arcing of overhead power lines, traffic from the Manor way, distant aircraft
13/01/2011	15:15:00	15	15:30:00	2	E	12	45.6	35.2	40.2	40.5	37.8	Arcing of overhead power lines, traffic from the Manor way, distantaircraft
13/01/2011	20:03:00	10	20:13:00	1	E	10	50.5	36.0	44.1	45.9	40.6	Arcing of overhead power lines, traffic from Manor Way, distant aircraft
13/01/2011	23:42:00	5	23:47:00	2	E	10	48.9	29.8	33.7	34.0	30.2	Arcing of overhead power lines, occational Traffic on Manor way
14/01/2011	01:36:00	5	01:41:00	3	E	9	38.1	27.8	31.2	32.8	29.5	Distant low freq. possibly industrial noise source.

E.2 Construction Noise Calculations

GEC Pipe-Line - Construction Noise Calcs																
Plant Type	L _{Aeq} at 10m	Duration of Activity, hrs	Duration of Activity as a Percentage of 10h	Correction to L _{Aeq} (10h)	Individual Activity Noise L _{Aeq} (10h)	Combined Noise L _{Aeq} (10h)	Total Construction Noise at 150m L _{Aeq} (10h), dB	Total Construction Noise at 200m L _{Aeq} (10h), dB	Total Construction Noise at 230m L _{Aeq} (10h), dB	Total Construction Noise at 280m L _{Aeq} (10h), dB	Total Construction Noise at 400m L _{Aeq} (10h), dB	Total Construction Noise at 450m L _{Aeq} (10h), dB	Total Construction Noise at 500m L _{Aeq} (10h), dB	Total Construction Noise at 550m L _{Aeq} (10h), dB	Total Construction Noise at 600m L _{Aeq} (10h), dB	Total Construction Noise at 3500m L _{Aeq} (10h), dB
Site Preparation																
Bulldozer	79	6	60%	-2	77											
Tracked Excavator / Loader	77	6	60%	-2	75											
Water Pump	63	6	60%	-2	61	79	55	53	52	50	47	46	45	44	43	28
Excavation																
Tracked Excavator	73	6	60%	-2	71											
Dump Truck	71	4	40%	-4	67											
HDD Rig	73	4	40%	-4	69											
Tractor Side Boom	74	4	40%	-4	70											
Wheeled Lorries	84	4	40%	-4	80	81	57	55	54	52	49	48	47	46	45	30
Rolling Compaction																
Roller	81	6	60%	-2	79											
Roller Vibratory Plate	49	10	70%	-1	48	79	55	53	52	50	47	46	45	44	43	28
Welding /Cutting steel																
Welder	73	8	60%	-2	71											
Generator	81	6	60%	-2	79											
Steel Cutter	76	8	60%	-2	74	81	57	55	54	52	49	48	47	46	45	30
Other																
Tracked Excavator	73	8	60%	-2	71											
Concrete Pump	77	8	60%	-2	75											
Tractor	72	8	60%	-2	70	77	53	51	50	48	45	44	43	42	41	26
					Total Noise at NSR		63	61	59	58	55	54	53	52	51	36

APPENDIX F

**SUPPORTING ECOLOGY STUDIES /
INFORMATION**

F. SUPPORTING ECOLOGY STUDIES / INFORMATION

Contents

Supporting Ecological Studies and Information is provided in this Appendix. These Studies include a Phase I Habitats Survey, and numerous Phase II Protected Species Surveys.

- F.1** Phase I Habitat Survey / Ecological Scoping Study
- F.2** Ecological Scoping Response
- F.3** Phase II Bat Survey Report
- F.4** Phase II Reptile Survey Report
- F.5** Phase II Water Vole Survey Report
- F.6** Phase II Great Crested Newt Survey Report
- F.7** Phase II Breeding Birds Survey Report

F.1 Phase I Habitat Survey / Ecological Scoping Study

**ECOLOGICAL SCOPING
REPORT FOR THE
GATEWAY ENERGY
CENTRE CCGT GAS
PIPELINE AND
ELECTRICITY CABLING
ROUTES**

InterGen

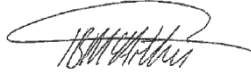

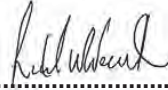
October 2010

ECOLOGICAL SCOPING REPORT FOR THE GATEWAY ENERGY CENTRE CCGT GAS PIPELINE AND ELECTRICITY CABLING ROUTES

63958A 1.2

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Report Title	:	ECOLOGICAL SCOPING REPORT FOR THE GATEWAY ENERGY CENTRE CCGT GAS PIPELINE AND ELECTRICITY CABLING ROUTES
Report Status	:	Final
Job No	:	63958A 1.2
Date	:	October 2010
Prepared by	:	Tom McArthur..... 
Checked by	:	Katherine Fisher..... 
Approved by	:	Richard Wearmouth..... 

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FIGURE 7 - LOCATION OF TARGET NOTES WITHIN SURVEY AREA (REFER TO APPENDIX 2)

EXECUTIVE SUMMARY

EXECUTIVE SUMMARY

Parsons Brinckerhoff (PB) has been commissioned by InterGen to undertake an ecological scoping report to inform baseline information and to identify any initial ecological constraints which may occur as a result of the construction of a new gas pipeline, electric cable and associated sub-station. These developments are required to facilitate the proposed Gateway Energy Centre Combined Cycle Gas Turbine Power Station which will provide the energy requirements for the adjacent larger DP World LG Development, of which the Power Station is part of.

The final alignment of the gas pipeline, electricity cabling route and associated sub-station are yet to be agreed, however, indicative locations and routes have been established and form the basis of this assessment.

The purpose of the assessment was to document the baseline ecological conditions of an area wide enough to encompass the indicative linear route alignments by recording and mapping broad habitat types and to investigate and identify any designated sites and the potential for protected and/or species of conservation interest. Further detailed survey of these features was recommended where they were considered to comprise an ecological constraint to the proposed linear routes.

The survey area, encompassing the indicative gas pipeline, approximately 11 km long, electric cabling route, approximately 6 km, sub-station and a 500 m wide buffer is situated to the south and east of Stanford-le-hope, Essex, between TQ 677 810 and TQ 732 817 and is dominated by arable, grazing marsh and brownfield land. Water bodies and urban developments are also present.

A desk study was undertaken to collect records of protected and notable species and habitats. The search area included a radius of up to 2 km from the indicative route alignment for all protected and notable species and non-statutory designated sites. The search area was extended to a 10 km radius for all statutory designated sites. The existing ecological reports produced to inform the adjacent LG Development were also reviewed.

An Extended Phase 1 Habitat survey was undertaken by experienced PB ecologists in April and May 2010 to assess the ecological value of the survey area and record any protected habitats, or evidence/potential of any notable or protected species on site or within the relevant surrounding area.

In total 27 statutory, and nine non-statutory, designated sites were identified within a 10 km and 2 km radius respectively of the indicative route. Of particular note is the European designated Thames and Estuary and Marshes Special Protection Area (SPA) located approximately 300 m to the south to the indicative route and the non-statutory Corringham Marshes Site of Nature Conservation Importance (SNCI) which is likely to be bisected by the pipeline.

The scoping assessment identified that the survey area supports a mosaic of habitats including: broad leaved semi-natural woodland; arable; improved; marshy and semi-improved grassland; continuous and scattered scrub; broad leaved scattered trees; wet and dry ditches; hedgerows; inundation vegetation; swamp (reed beds); bare ground; buildings; brownfield land and standing and running mesotrophic water such as streams, drains, lakes, ponds.

In isolation these habitats have been found to be primarily of negligible or low conservation value within the context of the survey area. However, the grazing marshes, reed beds, brownfield land and roadside corridors are UK and / or Local Biodiversity Action Plan (BAP) habitats and are considered to be of district conservation value.

Badgers, water voles, four common reptile species and several UK BAP bird species were recorded during the Extended Phase 1 habitat assessment. The mosaic of habitats has the potential to also support; bats, reptiles, amphibians and breeding birds. These species or groups of species could all comprise some degree of constraint to the redevelopment.

Specific surveys are recommended for the following species: badger, water vole, otter, bats, breeding birds, reptiles, great crested newts and notable flora. An Appropriate Assessment is also considered necessary to assess any potential impacts on Thames and Estuary and Marshes SPA.

SECTION 1

INTRODUCTION

1 INTRODUCTION

1.1 Overview

1.1.1 Parsons Brinckerhoff Ltd (PB) has been commissioned by InterGen to undertake a detailed Ecological Scoping Assessment to inform the construction of a proposed gas pipeline, electric cabling route and sub-station associated with the Gateway Energy Centre Combined Cycle Gas Turbine (CCGT) Power Station.

1.1.2 The purpose of the assessment is to document the baseline ecological conditions by recording and mapping broad habitat types to investigate and identify any designated sites and the potential for protected and/or species of conservation interest that would require further survey. Further surveys would be required for any species or habitat which might comprise an ecological constraint to the future development of the gas and electric linear routes, and associated sub-station.

1.1.3 The exact alignment and location of the gas pipeline, electricity cabling route and the sub-station have yet to be finalised. Therefore the assessment has been undertaken on the indicative routes, the three preferred sub-station locations and a survey buffer ranging from between 500 m and 1600 m in width. This buffer is considered sufficiently broad to encompass all potential route alignments. The indicative linear route for the gas pipeline and electricity cabling will follow the alignment of an existing InterGen gas pipeline as it is most likely that they will be laid as close to one another as possible to allow for easy management and maintenance.

1.2 Site context

1.2.1 The proposed gas pipeline, electric cable and the associated CCGT Power Station are to be located south-east of Stanford-le-hope, Essex and will form a small part of the larger London Gateway Logistic and Commercial Centre, hence forth referred to as the LG Development. The LG Development comprises a large area of brown field land currently being cleared and levelled under specified conditions defined under its consented planning permission. The CCGT Power Station will be located within the LG Development's boundary and is expected to fulfil the majority of its energy demands.

1.2.2 Detailed ecological surveys and assessments were undertaken between 2001 and 2008 within the LG Developments footprint and its immediate surroundings to help inform the LG Development's planning applications. Due to the proximity of the proposed gas and electric linear routes to the LG Development, the land surveyed within these existing reports overlap significantly with the survey area defined within this assessment. Many of the recent LG Development ecology surveys and assessment are considered valid and of importance to this assessment.

1.2.3 The gas pipeline will connect to an existing gas supply located immediately south of St Cleres Hall Golf Club, OS Grid reference TQ 677 810. It will run east for approximately 11km through arable, marsh and brown field habitats and connect to the proposed CCGT Power Station located to the west to the existing Coryton Power Station, at OS Grid reference TQ 732 817. The pipeline will be laid using a combination of both surface excavation and horizontal directional drilling (HDD). A plastic pipe, measuring 16 inches in diameter, will be laid at a depth of approximately 1.5 m, using a working corridor 30 m wide where HDD is not employed. Works are proposed to commence in spring 2012 / 2013 and will take approximately six months to complete. The HDD technology will be employed to tunnel under Stanford Warren

Nature Reserve, Hassenbrook Stream and where the indicative route crosses The Manorway road.

- 1.2.4 The electricity cabling route will start at the proposed CCGT Power Station site and trace the route of the proposed gas pipeline. It will, however, terminate approximately half way along the gas pipeline at a newly constructed sub-station, approximately 6 km west of the proposed Power Station (the specific location is currently unknown). The electricity cable will therefore be about half the length of the gas pipeline. It is likely that the electricity cable will utilise either existing or new National Grid pylons but this is yet to be confirmed.
- 1.2.5 A single sub-station will be constructed at one of 13 possible locations, north and west of the CCGT Power Station. At the time of writing there are three possible options. The three preferred options have been included within this assessment.
- 1.2.6 The routes of both the gas pipeline and the electric cabling are likely to follow one another. As such a broad indicative route, incorporating these proposed routes, a buffer area (refer below) and the three proposed sub-station locations form the basis for this scoping assessment. All land within this broad corridor is here forth described as the survey area. The land surveyed along the linear route was at least 500 m wide at its narrowest point. This 500m buffer was considered sufficient to accommodate any minor changes in the proposed route prior to its alignment being finalised. The indicative gas pipeline and electricity cabling routes together will be referred to here forth as the 'linear route'.
- 1.2.7 The proposed locations of the Power Station, the existing gas inlet (start of the gas pipeline), the three possible sub-station locations and the alignment of the gas pipeline and electricity cabling route are presented in Figure 1.
- 1.2.8 There are four designated receptor sites, created for and managed under the planning conditions of the LG Development located within the survey area. The Northern Triangle receptor site is the only site which overlaps with the indicative linear route or locations of the substation. The location of the four receptor site is illustrated in Figure 2. They have been created to compensate for the loss of habitat within the LG Development's boundary and to provide suitable habitat for the translocated or dispersed species, particularly; great crested newts, reptiles, water voles and birds.

1.3 Legislation and Planning Context

- 1.3.1 Articles of wildlife and countryside legislation, planning policy guidance and references to both local and national biodiversity action plans and regional/local strategies and plans are referred to in this report. Their context and applicability is explained as appropriate in the relevant sections of the report and additional details are presented in Appendix A.
- The key articles of relevance are:
 - The Conservation of Habitats and Species Regulations 2010 (Habitats Regulations)
 - The Wildlife and Countryside Act 1981(as amended) (WCA)
 - The Countryside and Rights of Way Act 2000 (CRoW)
 - The Natural Environment and Rural Communities Act 2006 (NERC)
 - The Protection of Badgers Act 1992



- Planning Policy Statement 9: Biodiversity and Geological Conservation (PPS9)
- The UK Biodiversity Action Plan (UKBAP)
- The Local Biodiversity Action Plan (LBAP) for Essex and Thurrock
- The East of England Regional Spatial Strategy
- Essex and Southend-on-Sea Replacement Structure Plan
- Thurrock Borough Local Plan

SECTION 2

METHODOLOGY

2 METHODOLOGY

2.1 Desk Study

2.1.1 A desk study was undertaken to collect records of protected and notable species and habitats. The 'search area' included a radius of up to 2 km from the centre of the indicative route for all protected and notable species.

2.1.2 The desk based study also included a search for statutory designated sites located within 10 km and non-statutory designated sites located within 2km of the proposed pipeline route. The sites searched for include:

- Special Areas of Conservation (SAC);
- Special Protection Areas (SPA);
- Ramsar Sites;
- Site of Special Scientific Interest (SSSI);
- National Nature Reserve (NNR)
- Local Nature Reserve (LNR);
- Sites of Nature Conservation Importance (SNCI); and
- Local Wildlife Sites (LWS);

2.1.3 The following web-based data-bases were consulted:

- National Biodiversity Network (NBN) Gateway – accessed 19th April 2010
- Multi Agency Geographic Information for the Countryside (MAGIC) – accessed 19th April 2010
- Nature on the Map – accessed 20th April 2010
- Buglife “All of A Buzz in the Thames Gateway” – accessed 12th October 2010
- Essex Local Wildlife Sites Website – accessed 12th October 2010

2.1.4 The following groups were contacted for baseline data:

- Essex Bat Group
- Essex Small Mammal and Bat County Recorder
- Essex Bird County Recorder
- Essex Badger Protection Group
- Essex Wildlife Trust (Standford Warren Reserve Manager)
- Essex Freshwater Invertebrate County Recorder
- Essex Terrestrial Invertebrate County Recorder
- Essex Flora County Recorder

2.1.5 Detailed species and habitat impact assessments have been undertaken regularly within and around the LG Development since 2001, subsequently, the presence of protected and notable species and habitats is well understood and documented. All

reports and management plans produced as part of the LG development were reviewed.

2.2 Field survey

2.2.1 An Extended Phase 1 Habitat survey was undertaken by suitably experienced PB Ecologists, Tom McArthur MIEEM and Leanne Moses AIEEM between 12th and 16th April 2010 and Jason Brown AIEEM and Marianne Curtis AIEEM on the 18th May. The surveys were performed to identify and assess the ecological value of the survey area and record any protected habitats, or evidence/potential of any notable or protected species within the survey area or its immediate surroundings.

2.2.2 The survey followed standard methodology published by the Joint Nature Conservation Committee (JNCC, 2007). This methodology is a standardised technique for rapidly obtaining baseline ecological information over a large area of land. All habitat types present on site were recorded on Phase 1 maps and dominant plant species recorded in accordance with standard nomenclature (Stace 1997) and their abundance was assessed on the DAFOR scale where relevant:

- D Dominant
- A Abundant
- F Frequent
- O Occasional
- R Rare

2.2.3 The standard Phase 1 survey methodology was extended to consider all protected and notable fauna that may be present within the survey area (IEEM 2006). Any incidental records or evidence of species were target noted on a separate map and each habitat evaluated for its potential to support protected or notable species.

2.2.4 The spatial area subject to the survey encompassed a buffer of 250 m either side of the linear route and the sub-stations, creating an approximate 500 m survey corridor. This buffer is considered suitable given the nature of the considered impacts of a pipeline installation and the extensive information already held on protected species from the LG Developments existing survey reports. Where necessary, the survey corridor has been extended beyond 500 m to consider any key ecological features, especially transient or mobile species that may be present.

2.3 Nature Conservation Evaluation Methodology

2.3.1 The ecological features of the site have been evaluated in accordance with guidelines provided within the Institute of Ecology and Environmental Management (IEEM) 'Guidelines for Ecological Impact Assessment' (EclA).

2.3.2 The guidance provides a framework for the evaluation of features which takes into account the direct biodiversity value of habitats and species, the indirect value of features which help support the ecological integrity of key features, legal protection for both sites and species and evaluation against national and local planning guidance and objectives.

2.3.3 It uses a geographic frame of reference for assigning value to features of ecological importance that consists of the following categories given in the left hand column of

Table 2.1 below. Examples of the types of features that are typically assigned to each geographic scale are given in the right hand column.

Table 2.1 Examples of the different values for ecological importance.

Geographical Scale at which Feature is Important	Example of Feature
International	Special Areas of Conservation (SACs), Special Protection Areas (SPAs), Ramsar sites.
National	Sites of Special Scientific Interest (SSSIs), National Nature Reserves (NNRs).
Regional	County designated wildlife sites supporting a regionally significant area of a UK priority habitat; or large population of species in the UKBAP or of national nature conservation concern protected species level.
County	Non-statutory sites designated at county level. Ancient woodlands, large areas of priority BAP habitat offering a significant wildlife resource at county level. Large populations of a legally protected species or species included in the UK or Local BAP or other species considered to be threatened at a national level.
District	Non-statutory sites designated at district level, Local Nature Reserves (LNRs). Moderately sized examples of priority BAP habitats.
Local	Old hedges, woodlands, ponds, significant areas of species rich grassland or other habitat, small scale examples of priority BAP habitat or areas supporting small populations of protected species, species included in the UK or Local BAP or other species considered to be threatened at a national level.
Of value within the context of the Site or zone of influence of the scheme/project	Woodland plantations, structure planting, small areas of species rich grassland or other species rich habitat that is not included in the UK or Local BAP.
Negligible	Areas of built development, active mineral extraction or intensive agricultural land with low interest for nature conservation and little/no ability to support UK or Local BAP species or species considered threatened nationally.

2.3.4 It should be noted that whilst the evaluation considers the presence of protected species that receive legal protection at various levels (national, international) and non-statutory protection at a local level (through development plans), the simple presence of the species does not necessarily infer value at the level of protection it receives. Therefore, the value of a site for protected species is dealt with on a species by species basis, taking into account the recorded level of activity, the level of protection it receives and the overall value of habitat on that site for that species.

2.3.5 Given the length of the routes and the diversity of habitats they will bisect, the survey area has been divided into four distinct 'Areas', each comprising similar habitat types. The use of separate areas allowed for an easier, more practicable assessment. The boundaries of the four areas are illustrated in Figure 1 and summarised in Table 2.2 below.

Table 2.2 Summary of the four separate survey areas.

Survey Area	Habitats present
1	Diverse mixture of grassland (arable, improved and amenity), reed beds, large open standing water bodies, Hassenbrook stream and residential dwellings.
2	Predominantly arable with small sections of residential dwellings to the north.
3	Dominated by arable and improved grazed marshland, (Corringham Marshes SIN).
4	Dominated by the brown field LG Development site, comprising wasteland, hardstanding and inundation vegetation. This area will be cleared of all habitats and levelled as part of the LG Development prior to the gas and electric routes being constructed. As such Area 4 will support no habitats of interest and be of little or no conservation importance by the end of 2011.

2.4 Survey limitations

- 2.4.1 The site was visited over the period of five consecutive days in April and once in May 2010, as such, seasonal variations can not be observed and potentially only a selection of all species that occur within the site will have been noted. Therefore the survey provides a general assessment of potential nature conservation value. However, it is considered that the combination of historic records from the desk study and the site visit provides an accurate representation of the various species and habitat types present at the site.
- 2.4.2 Access could not be gained to several small sections of the survey area towards the particularly the Shell owned land adjacent to the LG development and the residential and commercial land to the west of the survey area. All inaccessible areas were surveyed from adjacent boundaries, making use of aerial photography and existing Phase 1 Habitat maps produced as part of the LG development. It is therefore considered that sufficient data was collected to provide an accurate representation of the survey area as a whole.
- 2.4.3 Numerous Phase 1 habitat maps for each area have been reproduced from field survey notes and plans. Whilst this provides a sufficient level of detail to fulfil the requirements of a Scoping Assessment, the maps are not intended to provide exact locations and distributions of key habitats. Furthermore the habitats and the management of the habitats are likely to change over time.

SECTION 3

RESULTS

3 RESULTS

3.1 Desk Study

Statutory Designated sites

- 3.1.1 There are 27 statutory designated sites located within 10 km of the indicative route. Only Vange and Fobbing Marshes SSSI and Grove House Wood LNR are located within the survey area. Thames Estuary and Marshes SPA and Ramsar site is located approximately 50 m outside of the survey area and an estimated 300 m from the indicative route. Details of all the statutory designated sites are provided in Table 3.1 with their locations shown in Figure 2.



3.1.2

Table 3.1 Statutory designated sites found within 10 km radius from the survey area

Designated Site	Size (Ha)	Distance from Indicative Linear Route	Description
Thames Estuary and Marshes SPA and Ramsar site	4802	300 m south	Designated for supporting internationally important populations of over wintering avocets, hen harriers and ringed plovers.
Benfleet and Southend Marshes SPA Ramsar site	2374	6 km east	Designated for supporting internationally important populations of dark-bellied Brent geese, knot, grey plover and migrant ringed plovers.
Vange and Fobbing Marshes SSSI	167.3	100 m north	Unimproved coastal grassland and associated dykes and creeks support a diversity of nationally uncommon or rare maritime plants
Holehaven Creek SSSI	272	1.5 km east	Nationally and internationally important numbers of black-tailed godwits
South Thames Estuary & Marshes SSSI	5289	2 km south	Tidal mudflat supporting thousands of breeding and wintering birds at low tide. Including shelduck, dunlin, curlew, oyster catcher and lapwing.
Benfleet and Southend Marshes SSSI	2374	6 km east	Salt marshes, mud flats, scrub and grassland supporting a diverse flora and fauna.
Mucking Flats and Marshes SSSI	313	800 m south	Mudflats, salt marsh and sea wall grassland important for wintering wildfowl and waders. Ringed plovers occur in large numbers with nationally important populations of shelduck, grey plover, dunlin, black-tailed godwit and redshank.
Canvey Wick SSSI	128	2 km north east	Supports a nationally important assemblage of invertebrates associated with herb-rich habitats.
Pitsea Marsh SSSI	92	3 km north	Mosaic of scrub, grassland, reedbed, fen, open water and salt marsh supporting an outstanding range of invertebrates.
Basildon Meadows SSSI	7	4 km north west	Comprises unimproved herb-rich meadows.

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**ECOLOGICAL SCOPING REPORT
FOR THE GATEWAY ENERGY
CENTRE CCGT GAS PIPELINE AND
ELECTRICITY CABLING ROUTES**

Table 3.1 Statutory designated sites found within 10 km radius from the survey area

Designated Site	Size (Ha)	Distance from Indicative Linear Route	Description
Hangmans Wood and Deneholes SSSI	3	4.5 km west	Dominated by semi-natural and ancient woodland which supports important hibernation roost for several species of bat.
Globe Pit SSSI	0.4 ha	6.5 km west	Designated for its geological interest and importance.
Chattenden Woods SSSI	128	7 km south	This woodland is a rare example of coppice-with-standard woodland in Kent.
Grays Chalk Pit SSSI	17.3	7 km west	Lowland broad-leaved, mixed and yew woodland.
Dalham Farm SSSI	9	8 km south east	This site is designated for its geological interests.
Thundersley Great Common SSSI	9	8.5 km north	It is dominated by a range of acidic grass/heath plant communities.
Lion Pit SSSI	2.5	8.5 km west	Designated for its geological interest and importance.
Bakers Hole SSSI	6.5	9.5 km south west	Designated for its geological interest and importance.
Thorndon Park SSSI	148.5	10 km north west	Lowland broad-leaved, mixed and yew woodland.
Great Wood & Dodds Grove SSSI	36.8	10 km north east	Coppice with stands oak ancient woodland supporting the heath fritillary butterfly.

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**ECOLOGICAL SCOPING REPORT
FOR THE GATEWAY ENERGY
CENTRE CCGT GAS PIPELINE AND
ELECTRICITY CABLING ROUTES**

Table 3.1 Statutory designated sites found within 10 km radius from the survey area

Designated Site	Size (Ha)	Distance from Indicative Linear Route	Description
Leigh NNR	257.5	9.5 km east	Dominated by eel grass and salt marsh species. The site also supports many invertebrate species and large numbers of dark-bellied Brent geese and waders such as grey plovers and knots.
High Halstow Northward Hill NNR	52.51	8 km south	This scrubland has a diverse bird population, including long-eared owl and nightingale, while the oak woodland supports a large heronry. The elm woodland is home to a colony of white letter hairstreak butterflies.
Linford Wood LNR	3.44	1.5 km south west	Woodland
Grove House Wood LNR	2.24	200 m north	Woodland
Vange Hill LNR	11.44	4 km north	Grassland and scrub
Canvey Lake LNR	8.27	6 km east	Wetland and a large water body.
Belton Hills LNR	21.99	9 km east	Managed scrub on a former open grassland. Supports a variety of notable flora and invertebrate species.
Belfairs LNR	37	10 km north east	Semi-natural ancient woodland supporting heath fritillary butterfly.

Non-Statutory Designated Sites

- 3.1.3 There are ten non-statutory sites located within 2 km of the indicative linear route. These sites are afforded a level of protection through the planning process and represent a tier of nature conservation interest below that of the statutory sites. The proposed route will pass directly through Corringham Marshes SINC. Details are provided in table 3.2 with their locations shown in Figure 3.

Table 3.2: Non-statutory designed sites within 2km of the proposed pipeline route.

Designated Site	Size (Ha)	Approximate distance from the pipeline route
Corringham Marshes SINC	247.7	0 m. The pipeline route will pass through the SINC
Mucking Lakes SINC	25.3	HDD access points located 100 m to the east
Stanford Warren SINC	12.1	HDD access points located 100 m to the east and west
Vange and Fobbing Marshes SINC	130.3	200 m north
Gobions Lake SINC	16.1	800 m south
Buckingham Hill SINC	22.9	300 m south west
Mucking Flats and Marshes SINC	Not known	800 m south
Fobbing Marsh SINC	58.9	1.2 km north
Linford Wood SINC	3	1.3 km south west
Orsett Golf Course SINC	50.6	1.4 km west

Protected and/or species of Conservation Importance

- 3.1.4 The following text details the desk study results for all notable and protected species within the search area. The field survey results are provided later.

Badger

- 3.1.5 The desk study revealed records of active badgers (*Meles meles*) throughout the survey area. An active sett was recorded within the LG Development (Area 4) and incidental badger sightings have been recorded within Areas 1 and 3. A distance of 3 km between the groups of sighting indicates that at least two groups of badgers may be present across the search area.

Brown Hare

- 3.1.6 Brown hares (*Lepus europaeus*) were recorded as being widespread across the LG Development site during surveys in 2001, 2002 and 2008 (Thomson Ecology (7))

2008). No records for hares were provided from the desk study results for the remainder of the search area.

Water Vole

3.1.7 The desk study results were consistent with the water vole (*Arvicola terrestris*) surveys undertaken in 2001, 2002, 2006, 2007 and 2008, indicating there are populations present throughout Areas 3 and 4 (Thomson Ecology (10) 2008). Activity was recorded along 5,500 m of the 10,845 m of water ways surveyed in 2001 and 2002. The land within and immediately surrounding the LG Development was found to be 'extensively populated' by this species. The 2008 surveys focused only on the LG Development and concluded this site supported a population of 15 individuals.

3.1.8 The presence of water voles within the LG Development resulted in an extensive translocation programme in which water voles were trapped and moved to various local receptor sites, including the Northern Triangle and Great Garlands Farm receptor sites, both located within Area 3, see Figure 4.

3.1.9 Figure 5 (Water Voles) illustrates the extent of the land within the survey area which was officially surveyed by Thomson Ecology in 2008.

Otter

3.1.10 The desk study did not identify any records of otter (*Lutra lutra*) within the 2 km search area.

Dormice

3.1.11 No records of dormice (*Muscardinus avellanarius*) were identified during the formal desk study. However, the Essex BAP indicated the presence of dormouse approximately 10km north east of the proposed route within Belfair's Local Nature Reserve within the past ten years.

Bats

3.1.12 Various records of bats were identified within the 2 km search area. The species recorded comprise the following; pipistrelle species (*Pipistrellus spp.*); noctule (*Nyctalus noctula*); serotine (*Eptesicus serotinus*); Leislars (*Nyctalus leisleri*); Daubentons (*Myotis daubentoni*) and brown long-eared (*Plecotus auritus*) bats.

3.1.13 Dedicated bat surveys were undertaken in 2001/2002 within the LG Development and its immediate surroundings (Thomson Ecology (11) 2008). Only a few noctules were recorded flying along the southern boundary of the LG Development. Update surveys undertaken in 2008 concluded that there were 'very low' levels of bat activity around the LG Development site; Daubentons, Leislars, pipistrelle spp. and noctules were recorded.

3.1.14 Two small pipistrelle roosts were recorded by Thomson Ecology within two buildings located within Area 4, but both buildings have since been demolished under a Natural England development licence as part of the LG Developments site clearance.

3.1.15 Figure 5 (Bats) illustrates the extent of the land within the survey area which was officially surveyed by Thomson Ecology in 2008.

- 3.1.16 The majority of the historical records from the desk study not associated with the LG Development were concentrated around the residential areas of Stanford-le-hope and along the A1014, The Manorway. The majority of the recordings comprise sporadic single passes of pipistrelle species and brown long-eared bats with only a few accounts where bats were recorded foraging in one area or in groups of two or more bats.

Birds

- 3.1.17 An extensive list of bird records was obtained for Stanford Warren Nature Reserve SINC located within Area 1. 13 Schedule 1 species have been recorded within the past ten years and many BAP and Red and Amber Listed species of conservation concern. The 13 Schedule 1 species are; barn owl (*Tyto alba*), bearded tit (*Panurus biarmicus*), brambling (*Fringilla montifringilla*), cetti's warbler (*Cettia cetti*), kingfisher (*Alcedo atthis*), avocet (*Recurvirostra avosetta*), fieldfare (*Turdus pilaris*), hobby (*Falco subbuteo*), marsh harrier (*Circus aeruginosus*), Mediterranean gull (*Larus melanocephalus*), peregrine (*Falco peregrinus*), redwing (*Turdus iliacus*), scaup (*Aythya marila*) and whimbrel (*Numenius phaeopus*).

- 3.1.18 Breeding bird surveys undertaken as part of the LG Development indicated the presence of three Schedule 1 species; barn owl, bearded tit and blackred start (*Phoenicurus ochurroc*) within Areas 3 and 4. In addition, 11 UK BAP/Red list species were recorded breeding within the survey area; grey partridge (*Perdix perdix*), lapwing (*Vanellus vanellus*), skylark (*Alauda arvensis*), song thrush (*Turdus philomelos*), spotted flycatcher (*Muscicapa striata*), starling (*Sturnus vulgaris*), house sparrow (*Passer domesticus*), linet (*Carduelis cannabina*), yellowhammer (*Emberiza citrinella*), reed bunting (*Emberiza schoeniclus*) and corn bunting (*Miliaria calandra*).

- 3.1.19 Figure 5 (Breeding Birds) illustrates the extent of the land within the survey area which was officially surveyed by Thomson Ecology in 2008.

- 3.1.20 Over wintering bird surveys undertaken as part of the LG Development recorded the presence of five species for which the adjacent Thames Estuary and Marshes SPA is designated for. The following species, shelduck (*Tadorna tadorna*), Teal (*Anas crecca*), Pintail (*Anas acuta*), Gadwall (*Anas strepera*) and shoveler (*Anas clypeata*) were recorded in low numbers across the survey area.

Great Crested Newts

- 3.1.21 No specific desk study data was requested light of the extensive surveys already undertaken throughout the survey area as part of the LG Development. A high meta-population of great crested newts (*Triturus cristatus*) has been identified within the 2 km search area. Dedicated surveys were undertaken in 2001, 2002 and again in 2006 throughout the LG Development, it's associated receptor sites (Figure 4) and the farmland located within 500 m (Thomson Ecology (13) and (14) 2008). Of the 320 water bodies surveyed, great crested newts were present in 44 of them. It was estimated that they comprise 39 small populations and five medium populations. Overall a large great crested newt meta-population was recorded.

- 3.1.22 Separate surveys undertaken in 2008 around Mucking village (Area 1) also recorded great crested newts (Thomson Ecology (15) and (16) 2008). The six water bodies studied were found to support three small and three medium populations.

- 3.1.23 Figure 5 (Great Crested Newts) illustrates the extent of the land within the survey area which was surveyed in 2008 by Thomson Ecology

Other Amphibians

- 3.1.24 No dedicated surveys have been undertaken for other amphibians, however, smooth newts (*Triturus vulgaris*) and palmate newts (*Triturus helveticus*) have been incidentally recorded within Area 1, 3 and 4 (P&O and Shell 2004). Anecdotal evidence suggested common toads (*Bufo bufo*) may also be present.

Reptiles

- 3.1.25 No specific desk study data was requested light of the extensive surveys already undertaken throughout the survey area in recent years. Phased reptile surveys were undertaken in 2007 and 2008 across the LG Development (Thomson Ecology (1) and (2) 2008) of all habitat considered suitable to support reptiles. All four common reptile species were recorded; grass snake (*Natrix natrix*), slow worm (*Anguis fragilis*), adder (*Vipera berus*) and common lizard (*Lacerta (Zootoca) vivipara*). Low populations estimates were recorded for all species except common lizards which were recorded at a density of between 10 and 100 per hectare in certain optimum locations within the LG Development site.

- 3.1.26 Figure 5 (Reptiles) illustrates where the Thomson Ecology have undertook official reptile surveys in 2007 and 2008.

White Clawed Crayfish

- 3.1.27 The desk study revealed no records of this species within the survey area and the ponds and drains in the area were considered unsuitable for this species.

Other Aquatic Invertebrates

- 3.1.28 The surveys undertaken as part of the LG Development, identified 30 different invertebrate families within Areas 3 and 4, one of species, the scarce emerald damselfly (*Lestes dryas*) is listed as vulnerable in the UK red data book (Thomson Ecology (12) 2008). Additionally 4 vulnerable, 3 endangered, 16 rare and 77 nationally scarce species as well as many species of local importance were also recorded.

- 3.1.29 The county recorder for Essex held no data for the search area.

Terrestrial Invertebrates

- 3.1.30 The surveys undertaken as part of the LG Development in 2002 and 2003, recorded approximately 470 species of terrestrial invertebrate, including two UK BAP species; the brown carder bee (*Bombus humilis*) and the shrill carder bee (*Bombus syvarum*) (P&O and Shell 2004). Two nationally vulnerable species, four nationally rare species and 34 nationally notable species were also recorded within the LG Development.

- 3.1.31 The 'All of a Buzz' project, run by Buglife in the Thames Gateway area evaluates habitats, including brownfield sites for their potential to support invertebrates. There are six brownfield sites within the wider area which have been identified as being of particular importance to invertebrates, details are provided in table 3.3 and locations are presented in Figure 5.

Table 3.3: Habitat identified as being important to support invertebrates.

Value of Habitat	Approximate Size (km ²)	Approximate distance from the pipeline route
High Invertebrate Potential	1.9	0 m. The pipeline beings inside this habitat. Located south of St Cleres Hall Golf Club.
High Invertebrate Potential	0.2	100 m south. Covering the potential location of substation 5B, adjacent to the Stanford Le Hope Industrial park.
High Invertebrate Potential	0.6	150 m north east, located north of the Petroplus Refining site.
High Invertebrate Potential	0.2	150 m west, located north of Orsett Golf Club.
Medium Invertebrate Potential	0.1	100 m west, located north of Orsett Golf Club.
Low Invertebrate Potential	0.2	200 m west, located north of Orsett Golf Club.

Flora

3.1.32

Desk study results were only available for Corringham Marshes SINC (North of The Manorway) from a survey undertaken in 2005 and 2006. Table 3.4 summarises the results.

Table 3.4: List of notable species recorded within Corringham Marshes SINC

Common Name	Latin Name	Protection
Willowleaf lettuce	<i>Lactuca saligna</i>	National Red-Data
Corn Parsley	<i>Petroselinum segetum</i>	European Scarce
Divided sedge	<i>Carex divisa</i>	BSBI* Scarce
Low goosefoot	<i>Chenopodium chenopodioides</i>	BSBI Scarce
Seaside barley	<i>Hordeum marinum</i>	BSBI Scarce
Saltmarsh alkaligrass	<i>Puccinellia fasciculata</i>	BSBI Scarce
British alkaligrass	<i>Puccinellia rupestris</i>	BSBI Scarce
Golden dock	<i>Rumex maritimus</i>	BSBI Scarce
Marsh dock	<i>Rumex palustris</i>	BSBI Scarce
Sea clover	<i>Trifolium squamosum</i>	BSBI Scarce
Distant sedge	<i>Carex distans</i>	Essex Scarce
Soft Hornwort	<i>Ceratophyllum submersum</i>	Essex Scarce
Houndstongue	<i>Cynoglossum officinale</i>	Essex Scarce
Sea rush	<i>Juncus maritimus</i>	Essex Scarce
Fine-leaved water-	<i>Oenanthe aquatica</i>	Essex Scarce

dropwort		
Parsley water-dropwort	<i>Oenanthe lachenalii</i>	Essex Scarce
Short-styled Field rose	<i>Rosa stylosa</i>	Essex Scarce
Sea wormwood	<i>Seriphidium (Artemisia) maritimum</i>	Essex Scarce

* Botanical Society of the British isles (BSBI)

3.1.33 Thompson Ecology recorded five nationally scarce species in Areas 3 and 4; divided sedge, broad-leaved spurge (*Euphorbia platyphyllos*), dittander (*Lepidium latifolium*), annual beard grass (*Polypogon monspeliensis*) and stiff salt marsh-grass (*Puccinellia rupestris*) (Thomson Ecology (8) 2008). Divided sedge, dittander and stiff salt marsh-grass, though nationally scarce, are relatively common within southern Essex. A further 22 species of local importance were also recorded within the LG Development site.

3.1.34 Several stands of Japanese Knotweed (*Fallopis Japonica*) were recorded in the south east corner of the search area. Anecdotal evidence indicates that these stands have been treated and removed as part of the LG Development clearance works.

3.1.35 No notable or species rich hedgerows were recorded within the survey area.

Other Notable Species

3.1.36 Evidence of mink (*Mustela vison*) was recorded to the south of the proposed pipeline route in Area 4. Mink are acknowledged to be one of the key reasons for the recent dramatic decline in the national water vole population.

3.2 Field survey

3.2.1 The survey area is divided into four separate areas as defined in paragraph 2.4.5 and illustrated on Figure 1.

3.2.2 The legislative and policy requirements for the habitats and species presented in this section are presented in detail within Appendix A.

General Habitat Types

3.2.3 The survey area (defined as the 500 m buffer centred on the indicative linear route) supports many habitat types defined by the JNCC standard methodology for Phase 1 Habitat Survey. The nature conservation evaluation is included here separately for each habitat type found on site. Habitats found outside the survey area have not been evaluated as it is considered that these will not be directly affected by the proposed construction of the linear route and sub-station and as such are not considered further consideration.

3.2.4 The Phase 1 Habitat Maps are illustrated in Figure 6 with details of the associated Target Notes in Appendix 2.

Area 1

3.2.5 Area 1 lies directly south of Stanford-le-Hope town and comprises; water bodies, arable fields, scrub and grassland separated by species-poor hedgerows. The

London Southend railway track runs south from Stanford-le-Hope directly through the middle of the survey area.

- 3.2.6 The north western corner of Area 1 is dominated by St Cleres golf course (see Target Note 21 (TN 21)), an area of well managed amenity grassland interspersed with rank semi-improved grassland. The fields were dominated by perennial ryegrass (*Lolium perenne*) other species present include poa species (*Poa spp*), creeping bent (*Agrostis stolonifera*), sweet vernal (*Anthoxanthum odoratum*) and timothy (*Phleum pratense*). Amenity grassland was also recorded intermittently within residential gardens and dominated a cemetery.
- 3.2.7 Semi-improved grassland was located in abundance to the east of the golf course. A similar species composition of grasses was recorded as found in the amenity grassland but with Cockfoot (*Dactylis glomerata*) and a higher proportion of herbaceous species, including dandelion (*Taraxacum officinale*), creeping buttercup (*Ranunculus repens*), white clover (*Trifolium repens*) and ribwort plantain (*Plantago lanceolata*).
- 3.2.8 In addition to six small water bodies recorded within the golf course, several ponds and lakes dominated the eastern side of Area 1. The water bodies present within the golf course are a mixture of permanent (TN 6 & 7) and non-permanent ponds (TN 7 & 9) surrounded by semi improved grassland. Surrounding these water bodies are areas of unmanaged grassland containing a large pile of tyres at the southern border. The larger water bodies were used as commercial fishing lakes.
- 3.2.9 Stanford Warren Nature Reserve (TN 41) comprises a large low lying area of reed beds (swamp) dominated by Phragmitise species. Several small patches of the reed beds had recently been managed creating pools of open water.
- 3.2.10 The Hassenbrook stream (TN 44) flows south between Stanford Warren Nature Reserve and the commercial fishing lakes into the Thames Estuary and Marshes SPA, thereby connecting the nature reserve to the SPA.
- 3.2.11 Grove House Local Nature Reserve (TN 121), located along the edge of the northern boundary of Area 1, is a fenced area of broadleaved semi-natural woodland with an abundance of hawthorn (*Crataegus monogyna*), ash (*Fraxinus excelsior*), blackthorn (*Prunus spinosa*), elder (*Sambucus nigra*), and holm oak (*Quercus ilex*) of varying ages.
- 3.2.12 The south-western end of Area 1 is dominated by arable fields (TN 3) that are separated by earth bank boundaries (TN 13) and fencing.
- 3.2.13 Areas of continuous and scattered scrub (TN 23, 25, 30, 48, 50, 53, 116) comprising brambles, blackthorn, hawthorn, and elder were occasionally found throughout the survey area.
- 3.2.14 A dry drainage ditch and defunct hedgerow dominated by common nettle, bramble, and hawthorn (TN 29) runs along the southern bank of Mucking Wharf road which bisects the railway track. An intact hedge runs along the northern bank of Mucking Wharf road (TN 31), separating the road from a number of private dwellings (TN36 & 38) and a converted church with associated graveyard (TN 33 & 39) containing horse chestnuts (*Aesculus hippocastanum*), yew (*Taxus baccata*), and hawthorn trees.
- 3.2.15 Directly north of Stanford Warren nature reserve lies a large brown field site utilised by Anglian Water (TN 116) which contains areas of semi-improved grassland and

scattered scrub. A number of associated water tanks and man-made plastic lined ponds are present within the complex (TN 117-119).

Area 2

- 3.2.16 The majority of this study area is located directly north of a railway track that runs eastwards from Stanford-le-hope. The area mainly comprises arable fields of winter wheat and oilseed rape (*Brassica napus*) and grazed improved grassland.
- 3.2.17 A network of dry ditches and associated unmanaged species poor hedgerows (TN 60), dominated by hawthorn, blackthorn, willow spp. (*Salix spp*) and elder with an understorey of ground ivy (*Glechoma hederacea*), common nettle (*Urtica dioica*), and cow parsley (*Anthriscus sylvestris*) form the field boundaries. Many of the hedgerows are defunct with large gaps occurring throughout.
- 3.2.18 A number of wet ditches, supporting standing water (TN 86, 96-99, 101-103, & 10) were present within the eastern section of Area 2. Many were covered with filamentous algae (TN 66, 81, 96, 97, 98, & 126). The submerged vegetation contained within the wet ditches comprised common reed, hard rush (*Juncus inflexus*) and willow species (TN 77, 82, 85, 86, 127, 128, & 131).
- 3.2.19 The scattered and continuous scrub present throughout the survey area is dominated by bramble, blackthorn, hawthorn, and ash. The understorey generally included cow parsley, teasel (*Dipsacus fullonum*), common nettle, and grasses.
- 3.2.20 A small area of semi-improved grassland surrounding a patch of bare ground was recorded in the centre of the survey area. This habitat was bordered by mature coniferous trees and scattered scrub.
- 3.2.21 Interspersed throughout the survey area are three farms; Great Garlands, Old Garlands and Corringham Hall farm, Old Hall and Oak Farm are located just outside of the survey area boundary. Each farm supported hard-standing, walls, scrub or tall ruderal vegetation and farm buildings including house and storage or cow sheds (TN 93, 95, 106, 107, 112, & 124). Four of the farms contain ponds (TN 90, 94, 114, & 123) predominantly comprising of reedmace (*Typha latifolia*) but also reeds, pondweed and floating sweet-grass (*Glyceria fluitans*). The ponds were surrounded by hawthorn, willow trees, and grasses.
- 3.2.22 Large areas of amenity grassland occur to the west of the area; comprising the playing fields of Stanford-le-Hope's Primary School, and a bowling green associated with the adjacent pub The Crooked Billet (TN 75 & 76).

Area 3

- 3.2.23 Area 3 is dominated by large species poor, grazed, improved grassland and arable fields, most of which make up Corringham Marshes SINC.
- 3.2.24 The fields are boarded by wet ditches with associated hedgerows and fences (TN 128, 131, 134, 135, 136, 141, 142, 150, 151, & 153). The ditches contain stagnant or slow running water, with species such as common reed, hard rush, and floating sweet-grass. The banks of the wet ditches are generally scattered with hawthorn, blackthorn and willow species.

- 3.2.25 A large number of ponds (approximately 25) are located to the east of the survey area within a field of species poor improved grassland. The area is part of the Northern Triangle receptor site (TN 144) (refer to 1.2.8).
- 3.2.26 The Fleet a large curved area of open standing water is located along the Areas 3's eastern boundary. The Fleet is dominated by common reeds and hard rushes.
- 3.2.27 Areas of continuous scrub occur in large patches running along the banks of The Manorway and at the borders of fields to the east of the survey area. The scrub is dominated by bramble, hawthorn, blackthorn, and elder, scattered trees occur sporadically throughout.
- 3.2.28 Linear strips of semi-improved grassland with occasional scattered trees and scrub occur along the verges of The Manorway.
- Area 4*
- 3.2.29 Area 4 largely comprises of brownfield land, dominated by poor semi-improved grassland.
- 3.2.30 Large areas of standing water and inundation wet vegetation are located throughout Area 4, most water bodies were devoid of submerged or emerging vegetation.
- 3.2.31 One deep pond, located approximately 100 m south of Manorway House in the centre of the survey area was surrounded by continuous scrub, comprising mainly brambles. Scattered and continuous scrub was also recorded in small patches throughout the Area.
- 3.2.32 The south eastern section of the Area is dominated by the existing Coryton Power Station, predominantly supporting amenity grassland, built structures and hardstanding. Another two built complexes, supporting similar habitats, Corryton Commercials (TN 146) and Greystar (TN 147) lie to the north of the Area.
- Nature Conservation Evaluation*
- 3.2.33 The nature conservation interest of the habitats in the survey area is evaluated below:
- Improved grassland: This habitat is common and widespread throughout the local area and with a low species diversity is considered to be of negligible conservation value. However, Corringham Marshes SINC, located within Area 3 is dominated by improved grassland. Given its non-statutory designation, the improved grassland located within this SINC is considered to be of value at a district scale.
 - Semi-improved grassland: This habitat is well dispersed throughout the survey area and its surroundings, the more diverse and tussocky areas of semi-improved grassland are considered to be of value within the context of the survey area.
 - Arable: Due to the low species diversity, arable crops are of little nature conservation interest. There are some arable fields located within Corringham Marshes SINC, however, as the marshes are designated for their grassland and communities and network of drains, arable remain of negligible value.

- Continuous and Scattered Scrub: Occasionally present throughout the survey area offering foraging and shelter opportunities to a range of species. This habitat is considered to be of value within the context of the survey area.
- Hedgerows: Species poor defunct and intact hedgerows act as potentially valuable wildlife corridors and are limited in presence. This habitat is therefore considered to be of value within the context of the survey area.
- Broad-leaved Semi-natural Woodland: Rare within the survey area but not the region. Given this habitat's potential to support a range of species it is considered to be of value within the survey area.
- Scattered Broadleaved Trees: Recorded occasionally throughout the survey area, large mature trees could support roosting bats and nesting birds. This habitat is therefore considered to be of value in the context of the survey area. The value of the trees as a habitat to support protected and/or notable species may be greater than that of the survey area this will be informed by further survey and assessed independently.
- Standing Water: The water bodies, including ponds, lakes and wet drains present in the survey area, particularly those which are permanent features, increase its diversity. The standing water present in all Areas is therefore considered to be of local conservation value. The value of the standing water as a habitat for protected species may be greater than 'local'; this will be informed by further survey and assessed unrepentantly.
- Running water: Comprising Hassenbrook stream, its marginal vegetation and several of the larger wet drains within Area 2. These habitats are likely to serve as wildlife corridors and will link directly to the nearby Thames Estuary and potentially the SPA. The stream is therefore considered to be of local conservation value.
- Inundation Vegetation: A less common habitat within the survey area associated with the water bodies and running water but fairly common within the wider surroundings. It supports a low species diversity and is therefore considered to be of low conservation value.
- Reed Bed (Swamp): This habitat is abundant throughout the survey area (particularly Stanford Warren Nature Reserve) and comparatively uncommon within the wider surroundings. It is also a BAP habitat and therefore considered to be of value within the context of the district.
- Built Structures: Located throughout the survey area in various forms. Some buildings, especially the farm buildings could support bats or birds such as the schedule 1 barn owl. This habitat is therefore considered to be of value to the survey area. The value of the buildings as a habitat for protected species may be greater than that of the survey area, this will be informed by further survey and assessed independently.
- Dry drain: A common habitat both within the survey area and wider area supporting low species diversity and therefore considered to be of negligible conservation value.

Badger

- 3.2.34 Badger setts and evidence of badger activity were recorded within Areas 1, 2 and 3.
- 3.2.35 As badgers are vulnerable to persecution, information on the sett locations has been restricted and only provided to InterGen and Natural England, (Annex 4). It can be

made accessible on request to all of the relevant authorities with the condition that it cannot be placed on public view.

- 3.2.36 The badger sett observed in Area 1 comprised seven entrances within 15m on each other. Fresh spoil, bedding, guard hairs and prints were recorded around the sett indicating that it was active at the time of survey and with high level of use. The sett was considered to be a main sett. Badger latrines and paths were recorded along the field boundaries in this Area.

- 3.2.37 Another sett recorded in Area 1 and a sett in Area 2, were both single entry outlier setts, located within field boundaries. Well defined mammal paths led to both setts and badger prints were found in drains near by. Both setts were considered to be in use at the time of the survey. This information should be treated with sensitivity.

Brown Hare

- 3.2.38 The survey area supports suitable habitat to support brown hare, particularly in Areas 2, 3 and 4. Approximately eight hares were recorded in Area 4 and one unconfirmed form (TN 65) was recorded in Area 2.

Water Vole

- 3.2.39 The habitats present within the survey area are considered optimum to support water voles. Wet drains and ponds were located throughout but in particularly high concentrations in the grazing marsh of Area 3 (at least 30 drains in total). One unconfirmed water vole sighting and a confirmed feeding station were recorded within the network of drains (TN 86 and 129). The vegetation along the banks of a large drain within Area 3 had recently been cleared exposing bare soil (TN 136). A total of 12 possible water vole entrances were recorded along a 100m stretch of this bank but no other evidence was available to confirm their presence from incidental evidence alone.

- 3.2.40 Given the suitability of the habitats on site, water voles are considered likely to be present across the site, particularly Area 3 with its high concentration of wet drains.

Otter

- 3.2.41 The site supports many connected water bodies but none were considered suitable to support otters. No evidence of otters was recorded during the survey.

Dormice

- 3.2.42 The survey area contains limited habitat for dormice. The woodland of Grove House LNR is considered to be the only the optimum habitat for dormice within the survey area. Although it supports several key vegetative species for dormice including hazel, oak and bramble, they were only recorded occasionally. Being surrounded on three sides by residential dwellings, the wood is poorly connected to the wider landscape.

- 3.2.43 The majority of the hedgerows located within the survey area are species poor, defunct or fragmented. Major roads, urbanisation and lack of management have further increased fragmentation and reduce the survey area's suitability to support this species. Dormice are therefore considered to be absent from the survey area due to the lack of suitable habitat and limited connectivity.

Bats

- 3.2.44 The survey area contains suitable habitat for foraging, commuting and roosting bats in the form of hedgerows, mature trees, water bodies and traditional farm buildings. No roosts were confirmed on site from incidental sightings.
- 3.2.45 Hedgerows of varying species diversity and degrees of fragmentation are located in surveys Areas 1 and 2 with a few isolated hedgerows in Areas 3 and 4. This network of hedgerows across the survey area is considered suitable for commuting and foraging bats to cross the survey area relatively easily. These hedgerows are well connected to the mature scrub and planted trees along the highway and rail embankments located along the indicative linear route.
- 3.2.46 The survey area supports a large number of water bodies and reed beds suitable for foraging bats. Stanford Warren LNR, the adjacent commercial fishing lakes and Hassenbrook stream in Area 1 are of particular note given their proximity to a diverse range of potential roosting sites, including farm buildings, Victorian houses, churches and mature trees. The aforementioned drains within Area 3 and the permanent and ephemeral ponds within Area 4 are also suitable but less well connected to roosting or commuting habitats.
- 3.2.47 Potential bat roosting opportunities were recorded in Great Garlands farm, Old Garland farm, Oak farm, Old Hall farm and Corringham Hall farm, all within Area 2. Each farm supports traditional farm houses and barns or storage sheds with visible access and egress points suitable for bats. Each farm is also well connected by the network of hedgerows to the drainage ditches within Area 2 and water bodies in Areas 1 and 3 respectively.
- 3.2.48 Area 4 was devoid of any bat commuting, foraging or roosting opportunities.

Birds

- 3.2.49 The survey area contains various habitats suitable to support nesting birds, these comprise open grassland and arable, mature trees, scrub, hedgerows, reed beds, riparian vegetation and derelict buildings. A total of 49 bird species were recorded incidentally during the walkover (Appendix 3).
- 3.2.50 No Schedule 1 species were incidentally recorded within the survey area. Of the 49 species recorded, seven were UK BAP priority species, eight conservation red listed species, 15 amber listed species and seven species listed in Section 41 of the NERC Act, further details are presented in Appendix 3.
- 3.2.51 The survey area is therefore known to support a diverse assemblage of birds many of which are of conservation concern. The survey area also supports habitat suitable to support the Schedule 1 listed species known to live the area from the desk study results..

Great Crested Newts

- 3.2.52 The survey area supports at least 12 ponds suitable to support great crested newts within 250m of the indicative linear route (TN 6, 7, 8, 9, 90, 94, 114, 115, 123, 133, 157, 160). Great crested newts are known to occupy terrestrial habitats within 500m of breeding ponds although habitats within 250m are used most frequently (Langdon et al. 2001). Each of these ponds was assessed and given a Habitat Suitability Index (HSI) score (Oldham et al. 2000) in order of establish their fitness to support a

population of great crested newts. The scores range from 0.53 to 0.77, (details are provided in the relevant target notes). Each pond scored above the minimum 0.43 threshold as defined by the guidelines (Oldham et al. 2000), indicating they are suitable for great crested newts. All the ponds support varying amounts of submergent and emergent vegetation, aquatic invertebrates and are devoid of fish on initial inspection.

3.2.53 The survey area also supports a comparatively high number of slow moving or stagnant drains, predominately in Area 3. The majority of these drains are devoid of submergent vegetation but support sufficient dead matter and emergent common reed to provide sub-optimum habitat for breeding great crested newts.

3.2.54 A series of 28 ponds have been recently created within the Northern Triangle receptor site, Area 3, as part of the mitigation for the LG Development (TN 144). The ponds, which vary in size and shape have been designed and created specifically for great crested newts. Some of the ponds have been planted with aquatic vegetation and man made hibernacula have been constructed next to each one. These water bodies are considered to provide sub-optimum opportunities for great crested newts at present but will mature into an area highly suitable to support this species.

3.2.55 The terrestrial habitat within the survey area is varied. Large areas of arable crops or poached grazing fields offer little opportunities for either foraging or hibernating newts. However, patches of semi-improved and ruderal grassland and scrub are located intermittently throughout the survey area. The suitable aquatic and terrestrial habitats are also well connected via the network of hedgerows and vegetated drains.

Reptiles

3.2.56 The survey area contains habitats which are deemed to be of high suitability for common reptile species. Rough grassland and immature scrub, ideal for foraging reptiles; areas of open ground, suitable for basking and piles of rubble, wood or debris frequently used by hibernating reptiles were recorded in abundance throughout all four survey Areas. The managed rough grassland south of St Cleres golf course, Area 1 (TN 16) and brown field habitat dominating Area 4 were considered to be particularly suitable.

3.2.57 Incidental sightings include a grass snake, common lizard and slow worm in Area 1, and adders in Areas 1 and 3.

White-clawed crayfish

3.2.58 Despite the survey area supporting many drains and water bodies, none were considered suitable to support crayfish. The drains and streams were largely stagnant or very slow moving and devoid of the suitable stony substrate or the refugia they require for shelter and anchorage.

Aquatic and Terrestrial Invertebrates

3.2.59 The site consists of a mosaic of different habitats which present some potential for common species of terrestrial invertebrates. The reed beds within Area 1 and 4 and the other water bodies located within Area 4 have the potential to support greater assemblages of aquatic invertebrates.

Flora

- 3.2.60 The habitats present in the survey area are largely common and representative of the wider landscape; predominantly arable, grazing marsh and brown field. It is considered likely that the majority of the flora on site is limited to common and widespread species. However, a series of nationally rare species and one species scarce in Europe was recorded in Corringham Marshes SINC (Area 3).
- 3.2.61 The hedgerows recorded on site were predominantly species poor and many were also defunct. None were recorded to be of sufficient value to be of importance under the Hedgerow Regulations 1997.
- 3.2.62 No invasive species were recorded on site during the Extended Phase 1 Habitat survey.

SECTION 4

DISCUSSION & RECOMMENDATIONS

4 DISCUSSIONS & RECOMMENDATIONS

4.1 Discussion and specific recommendations

- 4.1.1 The survey area has been designed around an indicative route based on the alignment of the existing InterGen gas pipeline. This is due to the fact that the final linear route alignment has yet to be agreed but will follow the existing route where ever possible. The recommendations made within this Ecological Scoping Assessment are therefore intrinsically linked to the indicative route. Should the final route differ significantly from the indicative alignment it could affect habitats and species not considered within this assessment and further detailed surveys may be required.
- 4.1.2 Construction of the linear gas pipeline and electric cabling, following the indicative route, would result in temporary habitat loss and disturbance along the majority of the alignment. The 30 m wide trench excavation, connection of the pipe or cable and reinstatement of the ground is anticipated to take approximately six months in total. However, works are only likely to be operational at any one point along the route for a week or two as the pipe or cable is laid iteratively.
- 4.1.3 It is understood that the exception to the working footprint and time scales referenced above may be at the access and egress points of the Horizontal Directional Drilling (HDD) sites. The site footprint of each bore hole and associated traffic access could be larger than the 30m width required for the trench excavation, potentially resulting in a larger area of temporary habitat loss. The tunnelling works may also take longer than several weeks to complete at each location. These HDD may therefore lead to proportionally greater degrees of localised noise and vibration disturbances than those associated with the trench excavation. However, it should be acknowledged that the HDD technology will only result in disturbances at the access and egress points, the remainder of the tunnelled route will remain unaffected as the pipeline or cable is laid deep underground.
- 4.1.4 Any habitat loss, fragmentation or disturbance will be negligible within Area 4 following the completion of the vegetation clearance and site levelling as part of the LG Development.
- 4.1.5 The following section provides an initial assessment of where possible adverse impacts to habitats and protected and notable species may occur and subsequently informs if further surveys are recommended and where they should be focused.
- 4.1.6 The legislative and policy requirements for habitats and species presented in this section and therefore the justification for the surveys are presented in Appendix A.

Designated Sites

- 4.1.7 The linear route is unlikely to directly impact on any statutory designated sites. However, the Thames Estuary and Marshes SPA is located approximately 300 m south of the indicative route alignment. It is required under Article 61 of the Habitats Directive (2010) to assess the possible effects of any project, which could affect a site of European importance. Given the proximity of the indicative route to the SPA, and the potential for indirect impacts, it is considered likely that an Appropriate Assessment will be required. The Appropriate Assessment will identify any potential

impacts which may occur upon the qualifying bird species due to the construction works.

- 4.1.8 Vange and Fobbing SSSI and Grove House LNR are situated within 500 m of the indicative route but it is considered unlikely they will be affected by the temporary, relatively localised impacts associated with the construction works.

- 4.1.9 The proposed route will run directly through Corringham Marshes SINC (Area 3) and Stanford Warren Nature Reserve (Area 1), both non-statutory designated sites and in close proximity to several others. As the gas pipeline will be laid deep underneath under Stanford Warren Nature Reserve via HDD, significant adverse impacts are not envisaged. However, the gas pipeline and the electric cable routes are both likely to pass through Corringham Marshes SINC leading to temporary habitat loss and localised disturbances. Further assessment of these impacts is recommended as part of an Ecological Impact Assessment.

- 4.1.10 Impacts on the other designated sites located within the search area are currently considered unlikely due to the temporary nature and relatively localised impacts of the construction works. This will be confirmed as part of an Ecological Impact Assessment.

UK and Local BAP Habitats

- 4.1.11 There are two habitats within the survey area which are UK BAP priority habitats.

- *Coastal Grazing Marsh*: The linear route will cut through a large area of grazing marsh north of The Manorway and a small section immediately south of Great Garlands Farm (Corringham Marshes SINC). Although impacts are likely to be temporary, the route will bisect several drains, potentially leading to localised but adverse impacts.
- *Reedbeds*: The largest area of reed bed, Stanford Warren Nature Reserve will be avoided as the linear route will pass underneath via HDD. Thin linear strips of common reeds, located along the majority of the drains in Area 3, will be locally affected where the proposed route and the drains intersect.

- 4.1.12 There are four habitats within the survey area which are priority habitats within the local Thurrock BAP:

- *Roadside Verges*: Minor adverse impacts could result from the temporary loss of this habitat where the linear route crosses any minor roads. Impacts will be avoided along The Manorway by using HDD.
- *Brownfield Wildlife Land*: The LG Development comprises brownfield land but will be cleared and made devoid of all conservation interest prior to the start of any construction works.
- *Coastal Grazing Marsh*: As above.
- *Reedbeds*: As above.

- 4.1.13 As priority BAP habitats, Corringham Marshes SINC (coastal grazing marsh) and the reedbed habitat are considered to be of District importance. As such, it is recommended that an ecological impact assessment is undertaken after the final route alignment and the location of the substation have been confirmed to accurately determine how the linear route will affect these habitats.

- 4.1.14 The detailed impact assessment will also determine the value and possible impact on areas of standing water and any built structures within the survey area. Both the Coastal Grazing Marsh and the Reedbed habitats are currently considered to be of Local value but this may change following the completion of the recommended species surveys, outlined below.

Badgers

- 4.1.15 The survey area contains suitable habitat for badgers and several badger setts were recorded. Further species specific update surveys are recommended for a 30 m buffer either side of the finalised route alignments to ensure the linear route does not adversely affect any active sett and to ensure legal compliance.

- 4.1.16 Badgers are mobile species and can dig new setts and change their territory boundaries relatively easily. As such, it is recommended that any detailed surveys of their distribution and activity are not undertaken until approximately 8 to 12 before the commencement of the construction works.

Water voles

- 4.1.17 Area 3 supports optimum habitat for water voles and is known to support a medium population. Water voles are also present in Area 4 but are currently being translocated to various receptor sites, including the Great Garlands Farm and the Northern Triangle sites in Area 3 (Figure 4).

- 4.1.18 Water voles may be adversely affected where any construction works bisect or disturb a water course they inhabit or utilise. Although the distribution of water voles around the LG Development is well mapped, further detailed surveys are recommended to establish the presence/absence of this species within the previously unsurveyed Areas 1 and 2 and to re-establish their distribution in Areas 3 and 4 where the linear route is predicted to cross the drains. Figure 5 (Water Voles) illustrates the approximate area requiring detailed survey.

Otters

- 4.1.19 Despite the large network of water bodies across the survey area, the habitat is not considered optimal for otters and no otters or evidence of otters have been recorded during the LG Development surveys or recent 2010 field survey. However, as a precaution it is recommended that the drains which will be directly affected by the proposed route are checked for any signs of otter.

Dormice

- 4.1.20 The survey area does not provide suitable habitat for this species and therefore it is not considered further in this assessment.

Bats

- 4.1.21 The survey area provides suitable habitats for a range of bat species for roosting, commuting and foraging. The fragmentation of hedgerows or vegetated drains due to the excavation works have the potential to affect commuting bats and prevent them moving through the survey area.

4.1.22 The linear route may require the removal of several mature trees or lead to an increase in noise, vibration and light disturbance around the retained mature trees which could support roosting bats. Mature trees with potential to support bats are located at TN 33, 35, 36, 53, 58, 80, 83, 87, 88, 91, 113, 121, 122, 123, 152.

4.1.23 Surveys, undertaken as part of the LG Development have already established the presence / absence of bats and use of a large proportion of the survey area by this species group, Figure 5 (Bats). There are however, sections of land in Areas 1, 2 and 3 which have not been surveyed. Detailed bat surveys are therefore recommended in these areas to ensure an understanding of how bats use the habitats present across the whole site is obtained. Given the quality of the habitat, a minimum of three dusk and / or dawn activity surveys are recommended in Areas 1, 2 and 3 respectively. Surveys will follow the Bat Conservation Trust's Bat Surveys; Good Practice Guidelines.

Birds

4.1.24 The linear route will bisect a range of habitats suitable to support birds. Schedule 1 species and many BAP, Red and Amber Priority species have been recorded throughout the survey area. Breeding bird surveys have been previously undertaken within and around the LG Development, Figure 5 (Breeding Birds), to help determine the potential impact the development may have. It is recommended breeding bird surveys are completed in 2010 throughout the previously unsurveyed habitats within Areas 1, 2 and 3. Survey methodologies will follow the BTO breeding bird survey guidelines.

4.1.25 It is not envisaged that the final alignment of either pipeline or cabling route will be located within 100 m of a potential barn owl nesting site. Assuming the schedule of works, due to be completed in the summer months, is adhered to, no significant adverse impacts are anticipated and no specific surveys are deemed necessary.

4.1.26 A detailed wintering bird survey was completed in 2009 / 2010 for the proposed scheme (Environ 2009), however, the construction works will be limited to the spring and summer months and will therefore not affect any wintering birds. Should the schedule slip into the autumn or winter, update surveys may be necessary.

Reptiles

4.1.27 The survey area contains many isolated patches and several large areas of habitat suitable to support common reptiles. All four common reptile species; common lizard; grass snake; adder and slow worm were recorded during the scoping walk over survey, confirming that temporary habitat disturbance associated with the excavation works and the HHD could lead to the mortality or the adverse disturbance of reptiles.

4.1.28 It is recommended that reptile surveys are undertaken during the optimal survey season (April to June and September) to confirm the species distribution and abundance. Given the diversity of the species and following the draft Herpetosure Workers guidelines, a minimum of ten, non-consecutive surveys should be undertaken using a combination of felts and corrugated tiles. The land not previously surveyed as part of the LG Development is shown in Figure 5 (Reptiles). The recommended surveys should concentrate on areas which support suitable habitats, are most likely to be affected by the construction works and ensure they span a broad section of the linear route.

Great Crested Newts

- 4.1.29 The survey area contains a large number of water bodies and a large area of terrestrial habitat suitable to support great crested newts. Of all the water bodies only six have not been surveyed as part of the LG Development; those located along the southern boundary of St. Cleres golf course and in close proximity to the start of the gas pipeline. The abundance and distribution of great crested newts across survey area is otherwise well understood, refer to Figure 5 (great crested newts).
- 4.1.30 Due to the close proximity of these ponds to the start of the pipeline, the excavation works could lead to mortality or adversely affect the local population of great crested newts, should they be present. Therefore four presence/absence surveys are recommended within these seven water bodies, if presence is confirmed another two surveys should be undertaken to help estimate the population size. All surveys will be completed between April and June in line with best practise. Survey methodologies would follow the Great Crested Newt Mitigation Guidelines (2001).

White clawed crayfish

- 4.1.31 The survey area does not provide suitable habitat for this species and therefore it is not considered further in this assessment.

Aquatic and Terrestrial Invertebrates

- 4.1.32 The survey area is likely to support common species of terrestrial invertebrates given the spread of diverse habitats present. No records of protected or notable invertebrates have been found during the recent specialised surveys, although it is acknowledged that no specialist surveys have been undertaken. No statutory sites within the surrounding area are designated for their invertebrate communities.
- 4.1.33 Six Brownfield sites located within close to the indicative linear route have been identified as containing habitat suitable to support important invertebrate populations. Of the six, one site containing high invertebrate potential will be temporary impacted as it overlaps with part of the start of the proposed route. It is considered that impacts from the proposed development will only temporarily affect a comparatively narrow strip of arable habitat therefore no further surveys are deemed necessary for this species group.
- 4.1.34 Substation 5B is located within a site identified as containing high invertebrate potential. However, it is understood that a specific ecological impact assessment is being undertaken in addition to this assessment. The requirement for further survey will be confirmed by this additional, more informed assessment.
- 4.1.35 The drains present within Area 3 provide potential habitat for diverse assemblages of aquatic invertebrates. However, the surveys previously undertaken as part of the LG Development indicated they do not support any notable or protected species. As these surveys were undertaken in 2008 and are therefore considered to be currently valid, no further surveys are recommended.

Flora

- 4.1.36 Several notable plant species were located within Corringham Marshes SINC. Although the species are not legally protected they are regarded as being scarce on a local, national and European level.

- 4.1.37 It is recommended that a detailed survey is undertaken to map the species' distribution and abundance within the final route alignment's 30 m corridor. This survey should be undertaken shortly prior to the commencement of the construction works to ensure all plants which could be directly affected by the scheme are identified and can be protected accordingly.
- 4.1.38 It is also recommended that a construction work's Method Statement be prepared to confirm how any scarce flora located within the 30 m working corridor will be protected during the construction works. The Method Statement will detail the requirement for any species translocations, adjustments to the pipeline route, habitat reinstatement or habitat creation within the corridor.
- 4.1.39 At the time of the survey, the survey area was found to be devoid of any diverse and species rich hedgerows or any invasive species, as such and based on the initial assessment, it is not considered necessary to undertake any specific hedgerow or invasive species surveys. It is possible however, that invasive species could become established prior to the commencement of work. Any such occurrences are likely to be recorded during the recommended notable flora surveys and should be treated accordingly.

4.2 Recommendations summary

- 4.2.1 In order to adequately inform the scheme and identify any ecological constraints, Table 4.1 summarises the species specific surveys which have been recommended.

Table 4.1: Recommended further surveys.

Species	Location
Badgers	Areas 1, 2, 3 and 4
Water voles	Areas 1, 2 and 4
Bats	Areas 1, 2, and 3
Breeding Birds	Areas 1, 2, and 3
Reptiles	Areas 1, 2, and 3
Great Crested Newts	Area 1
Floral	Area 3

General recommendations

- 4.2.2 All the species surveys recommended above should be undertaken well in advance of the commencement of the works to inform the baseline and any future impact assessments of the proposed linear schemes. The survey results will inform an ecological impact assessment as required. Such an assessment is recommended to further identify how the proposed linear route and substation will affect the nature conservation of the area and to identify the requirement for any mitigation or compensation measures.
- 4.2.3 By considering the existing ecological conditions of the site and its surroundings it is recommended that opportunities for mitigating any protected and/or notable species or sensitive or valuable habitats is incorporated into the proposed works. Such works may include the temporary draining of the wet drains, the construction of temporary

reptile and great crested newt protection fencing and the reinstatement of all disturbed habitat.

- 4.2.4 The alignment of the linear route traverses through the southern boundary of the Northern Triangle receptor site. This site is managed under a Natural England European Protected Species Licence and is thus subject to stringent legal requirements and conditions. Assuming the route's alignment is not amended, the site's legal underpinnings will necessitate the detailed analysis and thorough consultation with Natural England. Such consultation will help ensure the site's conservation value is maintained and the works are legally compliant

SECTION 5

CONCLUSIONS

5 CONCLUSIONS

- 5.1.1 A detailed Ecological Scoping Assessment has been completed to inform the construction of a proposed gas pipeline, electric cable route and associated sub-station of any potential ecological constraints. The presence of any designated sites and the presence or potential presence of any protected and/or species of conservation interest have been identified and requirements for further survey and assessment recommended.
- 5.1.2 The linear route will not directly impact on any statutory designated sites. However, as the Thames Estuary and Marshes SPA is located approximately 300 m south of the indicative route alignment, an Appropriate Assessment may be required to identify any potential impacts upon the qualifying bird species. Vange and Fobbing SSSI and Grove House LNR are situated within 500 m of the proposed route but are unlikely to be affected by the envisaged temporary and relatively localised impacts associated with the construction works.
- 5.1.3 The proposed route will run directly through two non-statutory designated sites. These include Stanford Warren Nature Reserve and the gas pipeline and the electric cable are both likely to pass through Corringham Marshes SINC. The gas pipeline is unlikely to affect Stanford Warren Nature Reserve as the route will be re-directed under the reserve via HDD, however, it is likely that Corringham Marshes may be adversely affected, a detailed ecological impact assessment is recommended to accurately determine the impacts following the confirmation of the final routes.
- 5.1.4 This assessment found the survey area to support a variety of habitats suitable to support notable and protected species. Several dominant habitats including grazing marshes and reedbeds are listed as UK and Local BAP Habitats and maybe adversely affected by the proposed works.
- 5.1.5 Several protected and notable species including water voles, badgers, common reptile species and several BAP bird species were confirmed on site during the Extended Phase 1 Habitat survey. The habitats present are also likely to support a variety of other protected and/or species of conservation interest. Recommendations for further detailed great crested newt, bat, reptile, water vole and breeding bird surveys have been made. These surveys will aim to confirm the distributions and abundances of each species and inform any future ecological impact assessment. It has been recommended that these surveys are undertaken in the areas not previously been surveyed as part of the adjacent LG Development. Conversely the recommended badger and notable flora surveys should be undertaken across a large area including land previously surveyed but not until shortly before the commencement of the construction works. The survey information already collated and assessed as part of the LG Development will be used to supplement the new survey data.

SECTION 6

REFERENCES

6 REFERENCES

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APPENDICES

APPENDIX 1

SUMMARY OF LEGISLATION AND GUIDANCE FOR NOTABLE AND PROTECTED SPECIES AND HABITATS IN THE UK

SUMMARY OF LEGISLATION AND GUIDANCE FOR NOTABLE AND PROTECTED SPECIES AND HABITATS IN THE UK

The following Appendix sets out details of legislation within the UK and how this legislation applies to particular species groups. The key pieces of international and national legislation are described after which specific legislation pertaining to species or species groups are described in turn.

International and national legislation

EC Habitats Directive

In 1992 the then European Community adopted Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora, known as the Habitats Directive. The main aim of the EC Habitats Directive is to promote the maintenance of biodiversity by requiring member states to introduce protection for these habitats and species of European importance. The mechanism for protection is through designation of Special Areas of Conservation (SACs), both for habitats and for certain species listed within Annex II. There are a number of species listed within Annex II of the Habitats Directive that are present within the UK; these include four lower plant species, nine higher plant species, six species of molluscs, six species of arthropods, eight species of fish, two species of amphibian, and nine species of mammal.

The Bern Convention

The Convention on the Conservation of European Wildlife and Natural Habitats (the Bern Convention) came into force in 1982. The principal aims of the Convention are to ensure conservation and protection of wild plant and animal species and their natural habitats (listed in Appendices I and II of the Convention), to increase cooperation between contracting parties, and to regulate the exploitation of those species (including migratory species) listed in Appendix 3. To this end the Convention imposes legal obligations on contracting parties, protecting over 500 wild plant species and more than 1000 wild animal species.

Bonn Convention

The Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention or CMS) was adopted in Bonn, Germany in 1979 and came into force in 1985. Contracting Parties work together to conserve migratory species and their habitats by providing strict protection for endangered migratory species (listed in Appendix 1 of the Convention), concluding multilateral agreements for the conservation and management of migratory species which require or would benefit from international cooperation (listed in Appendix 2 of the Convention), and by undertaking co-operative research activities.

Convention on Biological Diversity

The Convention on Biological Diversity (Biodiversity Convention or CBD) was adopted at the Earth Summit in Rio de Janeiro, and entered into force in December 1993. It was the first treaty to provide a legal framework for biodiversity conservation. Contracting Parties are required to create and enforce national strategies and action plans to conserve, protect and enhance biological diversity.

Wildlife and Countryside Act 1981 (as amended)

The Wildlife and Countryside Act 1981 (as amended) is the principle mechanism for the legislative protection of wildlife in Great Britain. However it does not extend to Northern Ireland, the Channel Islands or the Isle of Man. This legislation is the means by which the Convention on the Conservation of European Wildlife and Natural Habitats (the 'Bern Convention') and the European Union Directives on the Conservation of Wild Birds (79/409/EEC) and Natural Habitats and Wild Fauna and Flora (92/43/EEC) are implemented in Great Britain.

Conservation of Habitats and Species Regulations 2010

In the UK the Council Directive 92/43/EEC has been transposed into national laws by means of the Conservation (Natural Habitats, & c.) Regulations 1994 (as amended), and the Regulations (Northern Ireland) 1995 (as amended). The Regulations came into force on 30 October 1994, and have been amended several times. Subsequently the Conservation of Habitats and Species Regulations 2010 was created which consolidates all the various amendments made to the 1994 Regulations in respect of England and Wales and is commonly known as the 'the Habitats Regulations'. In Scotland the Habitats Directive is transposed through a combination of the Habitats Regulations 2010 (in relation to reserved matters) and the 1994 Regulations. The Conservation (Natural Habitats, &c) Regulations (Northern Ireland) 1995 (as amended) transpose the Habitats Directive in relation to Northern Ireland.

The Regulations contain five Parts and four Schedules, and provide for the designation and protection of 'European sites', the protection of 'European protected species', and the adaptation of planning and other controls for the protection of European Sites.

Other Legislation

Deer Act 1991

The Deer Act 1991 protects deer from poaching, taking or killing of certain deer in close season, taking or killing deer at night, and the use of prohibited weapons for the trapping or killing of deer.

Wild Mammals (Protection) Act 1996

The Act protects wild mammals from malicious or intentional harm.

Species and Habitat Specific Legislation

Plants

Wild plants are protected under Section 13 of the Wildlife and Countryside Act 1981 (as amended). It prohibits the unauthorised intentional uprooting of any wild plant species and forbids any picking, uprooting or destruction of plants listed on Schedule 8 of which there are over 150.

The Conservation of Habitats and Species Regulations 2010 have nine plants listed within Annex IV these are; shore dock, (*Rumex rupestris*), killamey fern (*Trichomanes speciosum*), early gentian (*Gentianella anglica*), lady's slipper (*Cypripedium calceolus*), creeping marshwort (*Apium repens*), slender naiad (*Najas flexilis*), fen

orchid (*Liparis loeselii*), floating-leaved water plantain (*Luronium natans*), and yellow marsh saxifrage (*Saxifraga hirculus*). It is an offence to deliberately pick, collect cut, uproot or destroy any protected plant, or keep, transport, sell, or exchange, any live or dead such plant species, this applies to all stages of its life cycle.

Invasive Species

Schedule 9, Section 14 of the Wildlife and Countryside Act (1981, as amended) prohibits the introduction into the wild of any species that is not ordinarily resident in and is not a regular visitor to Great Britain in a wild state, or any species of the 39 plants listed on Schedule 9.

The frequently encountered invasive species within proposed development sites include Japanese knotweed (*Fallopia japonica*); Giant hogweed (*Heracleum mantegazzianum*); Himalayan balsam (*Impatiens glandulifera*); Floating pennywort (*Hydrocotyle ranunculoides*); New Zealand pygmyweed (*Crassula helmsii*); Rhododendron (*Rhododendron ponticum*); and certain hybrids of the above, some species may be native yet are listed for conservation purposes.

Plant or soil material contaminated by Japanese knotweed that is to be discarded is considered to be a 'controlled waste' under the Environmental Protection Act 1990 (EPA 1990). It is an offence to deposit, treat, keep, or dispose of controlled waste without a licence. Furthermore knotweed that has been cut down and removed must be received by an authorised person to be disposed of correctly. A licence can be obtained from the Environment Agency (EA). The release or planting of a listed species in the wild can be permitted under a licence granted by the relevant statutory body.

Fungi

There are five species of fungi protected under Schedule 8 of the Wildlife and Countryside Act 1981 (as amended). These include the sandy stilt puffball (*Battarrea phalloides*), royal bolete (*Boletus regius*), and the hedgehog fungus (*Hericium erinaceus*). It is an offence to pick, uproot, trade in, or possess for the purpose of trade, any species listed under schedule 8.

Invertebrates

A number of invertebrates such as stag beetles (*Lucanus cervus*), silver studded blue butterfly (*Plebejus argus*) or white letter hairstreak (*Stymondia w-album*) are fully protected under Schedule 5 of the Wildlife and Countryside Act (1981, as amended). This legislation makes it illegal to intentionally kill, injure, or take a protected invertebrate, or to damage, destroy, or obstruct access to any structure or place used for shelter or protection by such a species; and disturb any protected species occupying such a structure or place.

Three invertebrates are listed under Schedule 2 of the Conservation of Habitats and Species Regulations 2010, the large blue butterfly (*Maculinea arion*), fisher's estuarine moth (*Gortyna borelii lunata*), and lesser whirlpool ram's-horn snail (*Anisus vorticulus*). It is an offence deliberately to kill, capture, or disturb a listed species, or to damage or destroy the breeding site or resting place of such an animal.

White-clawed crayfish

White-clawed crayfish (*Austropotamobius pallipes*) are Britain's only native freshwater crayfish. The white clawed crayfish is listed under Annex II and V of the Habitats Directive and therefore member states are required to designate Special Areas of Conservation to protect important populations of this species. White-clawed crayfish are protected under Schedule 5 of the Wildlife and Countryside Act (1981, as amended). It is illegal to take the animals from the wild or to sell them.

All surveys for white clawed crayfish must be carried out by, or under the supervision of, an experienced licence holder, and all licence conditions must be complied with. In England and Wales trapping also requires the approval of the Environment Agency, with application for a licence to use traps within the watercourse being surveyed. Licences to permit taking (for example during relocation exercises) are not available in respect of development activities and usually need to be covered under a conservation licence which is issued by the relevant statutory body subject to approval of a method statement.

Amphibians

There are four common species amphibian species, common frog (*Rana temporaria*), common toad (*Bufo bufo*), palmate newt (*Triturus helveticus*), and smooth newt (*Triturus vulgaris*). All of the four common species are protected under Schedule 5 of the Wildlife and Countryside Act (1981, as amended) against deliberate and/or intentional killing, injuring and trade.

Great Crested Newts and Natterjack Toads

Great crested newts (*Triturus cristatus*) (GCN) and natterjack toads (*Bufo calamita*) are fully protected under Schedule 5 of the Wildlife and Countryside Act (1981, as amended) and the Conservation of Habitats and Species Regulations 2010. It is illegal to possess a protected species (alive or dead), deliberately capture, injure or kill, to intentionally or recklessly disturb, or to deliberately take or destroy the eggs of these protected species. It is also illegal to damage, destroy or intentionally or recklessly obstruct access to a breeding or resting place used by these protected species. All life stages of great crested newts and natterjack toads are afforded the same level of protection.

In order to undertake any activity which would otherwise result in any of the above offences being committed, it may be necessary to obtain a European Protected Species (EPS) licence from the relevant statutory body (Natural England (NE), Countryside Council for Wales (CCW) or Scottish natural Heritage (SNH)). It is possible to undertake surveys which would otherwise involve unlawful acts, such as disturbance, by obtaining a survey license which provides authorisation for scientific and educational purposes

Reptiles

The four common reptile species, adder (*Vipera berus*), grass snake (*Natrix natrix*), common lizard (*Zootoca vivipara*) and slow worm (*Anguis fragilis*), are protected under Schedule 5 of the Wildlife and Countryside Act (1981, as amended) against deliberate and/or intentional killing, injuring and trade.

If common reptile species are found to be present or considered potentially present within a proposed development site. To ensure that no subsequent offence will be committed a precautionary method of working (written by a suitably qualified ecologist) and submitted to the relevant authority may be required to enable works to proceed with limited risks of offences being caused.

Smooth Snakes and Sand Lizards

Smooth snakes (*Coronella austriaca*) and sand lizards (*Zootoca agilis*) are fully protected under the Wildlife and Countryside Act (1981, as amended) and the Conservation of Habitats and Species Regulations 2010. This additional protection means it is an offence to possess, intentionally kill, capture or injure these species; deliberately, intentionally or recklessly disturb these species; damage, destroy or obstruct a breeding site, resting place or other place used for shelter and protection; take or destroy eggs and to sell or trade in these species.

In order to undertake any activity which would otherwise result in any of the above offences being committed in respect of smooth snakes, it may be necessary to obtain a licence from the relevant statutory body (NE, CCW or SNH).

Birds

All birds, their nests and eggs are protected by the Wildlife and Countryside Act (1981, as amended). It is an offence to intentionally kill, injure, or take any wild bird, or take or destroy an egg of any wild bird. It is also an offence to damage or destroy the nest of any wild bird (whilst being built, or in use). Therefore, clearance of vegetation within the site boundary, or immediately adjacent to the site during the nesting season could result in an offence occurring under the Act. The bird breeding season can be taken to run between the 1 February and 31 August and is subject to geographical and seasonal factors. There are 79 species of birds listed under Schedule 1 of the Wildlife and Countryside Act 1981 (as amended). It is an offence to intentionally or recklessly disturb any wild bird listed on Schedule 1 while it is nest building, or at a nest containing eggs or young, or disturb the dependent young of such a bird.

Barn Owls

Barn owls (*Tyto alba*) are listed as 'Amber' status under the Birds of Conservation Concern (BoCC) and are categorised as a species of European Conservation Concern. The Barn Owl is given the highest level of legal protection possible under Schedule 1 of the Wildlife and Countryside Act 1981. It is therefore illegal to kill, injure or take a barn owl, or to take or destroy its eggs. It is also illegal to intentionally or recklessly take, damage, or destroy the nest of any wild bird while it is in use or being built, release or allow the escape of a barn owl into the wild or possess any bird (dead or alive) or part of bird without a licence which is obtainable through the country agencies (EN, SNH, and CCW).

Mammals

All wild mammals are protected under the Wild Mammals (Protection) Act 1996 from certain cruel acts; and for connected purposes. It is an offence to mutilate, kick, beat, nail, or otherwise inflict unnecessary suffering on any wild mammal.

Badgers

Badgers (*Meles meles*) are protected under the Protection of Badgers Act (1992) and the Wildlife and Countryside Act (1981, as amended). As such it is an offence to wilfully take, kill, injure or ill-treat a badger, or possess a dead badger or any part of a badger. Under the Act their setts are also protected against obstruction, destruction, or damage in any part.

Sett interference includes damaging or destroying a sett, obstructing access to a sett, and disturbing a badger whilst it is occupying a sett. The Act defines a badger sett as 'any structure or place, which displays signs indicating the current use by a badger' and Natural England takes this definition to include seasonally used setts.

Work that may disturb badgers or their setts is illegal without a development licence from the relevant statutory body (NE, CCW, SNH). As a precautionary principle, a buffer distance between a badger sett and the works will be determined, based upon guidance from an appropriately experienced ecologist. This buffer distance should be based upon the size and activity levels at the sett, the topography between the sett and the works and the nature of the works.

Bats

All native UK bat species are fully protected by UK law under Schedule 5 and 6 of the Wildlife and Countryside Act (1981, as amended), and under Schedule 2 of the Conservation of Habitats and Species Regulations 2010. It is illegal to deliberately capture, injure or kill a bat or to intentionally or recklessly disturb bats. It is also illegal to damage, destroy or intentionally or recklessly obstruct access to a breeding or resting place used by a bat.

Any activity that would result in a contravention of the above legislation would likely require an EPS licence from the relevant statutory body (NE, CCW or SNH). Works or mitigation activities involving interference with bats or bat shelters must be carried out by a licensed bat worker.

Dormice

Dormice (*Muscardinus avellanarius*) are protected under the Wildlife and Countryside Act (1981, as amended) and are listed in Schedule 2 of the Conservation of Habitats and Species Regulations 2010. Under the current legislation it is illegal to intentionally or deliberately kill, injure or capture dormice, deliberately disturb dormice (whether in a nest or not); or to damage, or destroy dormouse breeding sites or resting places.

Any activity that would result in a contravention of the above legislation would likely require an EPS licence from the relevant statutory body (NE, CCW or SNH).

Otters

The otter (*Lutra lutra*) is fully protected under Schedule 5 of the Wildlife and Countryside Act (1981, as amended) and are listed under Schedule 2 of the Conservation of Habitats and Species Regulations 2010. It is therefore illegal to deliberately capture, injure or kill an otter, possess an otter (dead or alive), or any other part of an otter, or intentionally or recklessly disturb otters. It is also illegal to damage,

destroy or intentionally or recklessly obstruct access to a holt or other resting place used by an otter.

Any activity that would result in a contravention of the above legislation would likely require an EPS licence from the relevant statutory body (NE, CCW or SNH).

Water voles

Water voles (*Arvicola terrestris*) are protected under the Wildlife and Countryside Act (1981, as amended). It is an offence to possess, control or sell water voles or to intentionally kill, injure or take water voles. It is also an offence to intentionally or recklessly damage, destroy or obstruct access to a place that water voles use for shelter or protection or disturb water voles whilst using such a place.

A licence is required for catching/handling water voles, or for field surveys that are intrusive or disturbing where the surveyor suspects water voles are present. A licence can be obtained by applying to the relevant statutory body (NE, SNH, and CCW,)

Hedgerows

The Hedgerows Regulations (1997) make provision for the protection of important hedgerows in England and Wales. The regulations affect hedgerows which are 20m or more in length, or connected at both ends to another hedgerow of any length.

They relate to hedgerows which are on, or adjoining land used for the following purposes: agriculture or forestry; the breeding or keeping of horses, ponies or donkeys; common land; village greens; Sites of Special Scientific Interest (which include all terrestrial SACs, NNRs, and SPAs) and Local Nature Reserves. They do not include hedges that is attached to, or marking the boundaries of a private house.

It is an offence to intentionally or recklessly remove or cause or permit another person to remove a hedgerow or intentionally or recklessly remove, or cause or permit another person to remove, a hedgerow which is the subject of a hedgerow retention notice.

Tree Preservation Order (TPO)

Part VIII of the Town and Country Planning Act (1990) and the Town and Country Planning (Trees) Regulations (1999) allows tree preservation orders (TPO) to be made by a Local Planning Authority in respect of trees or woodlands. This prohibits the cutting down, uprooting, topping, lopping, wilful damage, or wilful destruction of a preserved tree. Any tree is eligible for protection, regardless of age, species or size, no trees are automatically protected.

Tree Felling

Up to 5m³ of standing timber can be felled per quarter without requirement for a felling licence provided that no more than 2m³ is sold. There are a number of exemptions, refer to the Forestry Authority Website.

General Guidance on European Protected Species Licence Applications

Should a European Protected Species (EPS) be found on a development site, and where best practice guidance either cannot be followed or is not applicable an EPS

licence will be required. The licence permits operations that fall outside the Good Practice Guidance an application for such a licence should be made to the relevant statutory body (NE, CCW or SNH) before any works can proceed. It is also possible to obtain a general licence that may cover an area rather than applying in each individual case for a separate specific/individual licence

Should the survey information be considered insufficient or the statutory body is not satisfied with the application, the licence application may be refused. This could potentially result in significant delays to a project, if not considered in time; however, early consideration of the potential presence of EPS on a site and an assessment of suitable mitigation measures to derogate such possibilities early in a project will negate this potential delay.

APPENDIX 2

TARGET NOTES FROM THE EXTENDED PHASE 1 HABITAT SURVEY

REFER TO FIGURE 7 FOR THE LOCATIONS OF THE TARGET NOTES WITHIN THE SURVEY
AREA

TARGET NOTES FROM THE EXTENDED PHASE 1 HABITAT SURVEY

TARGET NOTE	DESCRIPTION
1	Derelict steel framed barn, open on three sides, concrete and breeze block wall on southern side supporting the remains of a corrugated metal roof. Very low potential for bats and birds.
2	Short ephemeral vegetation with uneven ground, areas of bare ground and piles of wood around its boundaries providing potential to support reptiles,
3	Open arable fields providing potential for ground nesting birds including sky larks.
4	Permanent pond - 150m ² , 80% covered by willow and reedmace. There are no ducks or fish present. The banks are gently sloping and support rabbit warrens. The vegetation on the banks is dominated by common nettle, bramble, and elder. The Habitat Suitability Index (HSI) Score for great crested newts is 0.76.
5	Permanent pond – access not gained but scored 0.77 on the HSI when surveyed by Thomson Ecology in 2009
6	Two permanent ponds (both 5x7m) linked together via a small dry ephemeral channel, the pond is 100% open. No birds or fish observed. The banks are shallow and dominated by grasses (perennial rye grass, cock's foot, etc), species of willow on the banks link it to the golf course pond. (HSI score of 0.70)
7	2 small ponds Permanent pond- 5x8m, 100% open, with 95% blanket weed cover, species present include floating sweetgrass and soft rush. The pond has steep banks, approximately 2.5m high, dominated by grasses. (HSI score of 0.70)
8	Pond 20x10m, it was not possible to access the pond although reedmace was visible from the road. A moorhen was heard within proximity to the pond. (HSI score of 0.66)
9	Ephemeral pond, 1x2m wide, shaded by willow spp. The pond has shallow banks with short sward grass and no emergent vegetation. No ducks or fish were recorded. Ponds was dry on second visit.
10	Large rabbit warren with no evidence of badgers.
11	Well worn mammal path, species unknown.
12	Intact hedge comprised of ash, holly, hawthorn, field maple, blackthorn. The hedge was planted in 2000.
13	Field boundary consisting a small raised earth bank of earth.
14	Existing gas outlet station comprising an enclosed area of hardstanding, two small, single story brick buildings and the associated pipe work. The small flat roof single storey modern buildings are not considered suitable for bats. This outlet forms the start of the proposed pipeline route.

15	Large badger latrine comprising several recently used dung pits.
16	Ruderal unmanaged grassland forming an area of rough for the adjacent golf course suitable for reptiles.
17	Adult adder observed.
18	Badger skeleton found in unmanaged rough grassland.
19	Large pile of tires partially covered with long grass creating suitable reptile refugia.
20	Adult grass snake observed.
21	St Cleres golf course.
22	Squirrel dray.
23	Continuous scrub present along an earth bank, species present included, elder, bramble, broom, and silver birch.
24	Quarry comprising sandy banks with short acid grassland. Sand martins were recorded nesting within the banks.
25	Linear strip of continuous scrub comprising common nettle, hawthorn, elder, bramble and hazel
26	Species poor hedgerow on either side of the road, comprising elder, ivy, elm, ornamental privet, brambles, and hawthorn. Patches of bare earth and lots of deadwood were also noted.
27	Area of scrub dominated by brambles, a dry pond may be present in the centre, however, access was not granted, details were recorded from a raised walkway. A fresh spoil heap was noted within the scrub.
28	Scattered scrub dominated by bramble and hawthorn.
29	Dry drain and defunct hedge running along roadside. The hedge is dominated by common nettle, and bramble, with alder, ivy, and hawthorn
30	Continuous scrub comprising bramble, cleavers, elder, ivy, common nettle, hawthorn, grasses and teasel.
31	Intact hedge comprising hawthorn, reedmace, field speedwell, dogwood and lords and ladies.
32	Hedgerow running along the railway was not accessed. The hedge was dominated by hawthorn and blackthorn from the vantage point of the road..
33	Mature horse chestnut (12m) covered with ivy providing potential to support bats.
34	Two old single storey stable buildings, with half a tiled pitched roof and half a flat roof. Buildings supports ridge tiles and gaps above the locked doors. Building provides low potential to support bats.
35	Scrub surrounding three sides of a horse field and stable, the forth side is fenced. The scrub is dominated by blackthorn and hawthorn, one mature sycamore is present.

36	Private garden surrounded by a cherry laurel, dog wood, ivy, and yew hedge. Several mature, horse chestnut and elm trees are present within the garden.
37	Scattered trees and scrub, supporting horse chestnut, blackthorn, ash, periwinkle, cleavers, common nettle and ivy.
38	19 th Century two storey brick building with a clay tiled pitched roof, ridge tiles and a white wooden soffit. The building is in good condition, and is considered to provide low potential for bats.
39	Converted nineteenth century church and chapel now used as a residential dwelling. Both buildings support a pitched slate and clay tiled roof, ridge tiles, lead flashing and wooden soffits. The graveyard contains horse chestnuts, yew, and hawthorn. The church provides good potential to support bats.
40	Private house and garden. The two storey building supports a pitched clay tiled roof. The house is suitable for bats given the large number of broken ridge tiles and is considered to have medium bat potential. The associated farm warehouse buildings have asbestos tiled roofs and are considered to provide poor roosting opportunities for bats. .
41	Stanford Warren Nature Reserve. The reserve contains large areas of reedmace, weeping willows and standing water. A footpath runs through the middle of the reserve.
42	Continuous scrub dominated by hawthorn and blackthorn. It was not possible to access the area, however, it was viewed from the nature reserve and a field to the west.
43	An adult common lizard was observed
44	River Hassenbrook , a small stream ~2m wide, with no emergent vegetation. The banks are steep ~30-50 cm high, vegetation comprises managed and unmanaged reedmace, common nettle, and lesser celandine. The stream slows into the Thames Estuary and Marshes SPA.
45	Commercial fishing lakes surrounded by semi-improved grassland with scattered willows.
46	Semi defunct overgrown hedgerow dominated by hawthorn and elder. Ground flora comprising common nettle, gorse, cleavers, grasses and dock.
47	Road underpass under the railway.
48	Scattered scrub dominated by bramble, hawthorn, immature ash trees, grasses, and blackthorn.
49	Continuous scrub comprising rose sp., bramble, blackthorn, immature ash. A corner of short grass and rubble is considered suitable for reptiles.
50	Allotments. The south west corner was dominated by bramble.
51	Small bank with defunct hedgerow, dominated by bramble, elm, field maple, and elder. Ground flora is comprising field speedwell, cow parsley, cleavers, common nettle, lords and ladies, dead nettle, ragwort, and hogweed.
52	Well maintained hedge dominated by privet to the east and hawthorn, elder, ivy,

	and privet to the west.
53	Cemetery supporting improved managed grassland with shepherds purse, daisies, crows foot and mature and immature trees including yew, cherry spp. ash, plane and holly.
54	Single storey brick building with a pitched roof, wooden soffits, hipped ridge and clay tiles. The building is considered to have low potential to support bats.
55	Single story shed constructed from concrete with a pitched felt roof is considered to have no bat potential.
56	Single story brick building with a pitched roof, wooden soffits, hipped ridge and clay tiles. The building has gaps at the gable ends and within the door, however it is considered to have low bat potential.
57	Unmanaged defunct hedgerow running along an earth bank. The hedgerow is dominated by hawthorn, elm, elder, holm oak, ash, pedunculate oak, and field maple, with an under storey of cleavers, grass, hogweed, common nettle,
58	Three mature oak trees all have high potential for roosting bats and nesting birds.
59	Unmanaged hedgerow comprising elder, hawthorn, ivy, elm, and ash. The ground flora is dominated by grasses, cleavers, common nettle, broadleaved dock, hogweed, and lords and ladies.
60	Unmanaged hedgerow dominated by hawthorn, blackthorn and elder. The under storey consists of ivy, grasses, cow parsley, bramble and common nettle.
61	Unmanaged hedgerow comprising horse chestnut, elm, elder, field maple, hawthorn, bramble, deadwood, and grasses. A dry drain runs alongside the hedgerow becoming wet at the southern end.
62	Badger footprints observed.
63	Continuous scrub dominated by bramble, hogweed, elm, grasses, common nettle, oak, and gorse. The area has a high potential to support reptiles and nesting birds.
64	Skylark observed within the field.
65	Potential hare form.
66	Shallow wet drain approximately 1m wide within the hedgerow. The drain is covered in a layer of algae and does not contain any emergent or aquatic vegetation. It is therefore considered to have limited potential to support great crested newts. The hedgerow is unmanaged and comprises elder, hawthorn, ivy, elm, and ash. The ground flora is dominated by grasses, cleavers, common nettle, broadleaved dock, hogweed, and lords and ladies. Mammal hole were observed but access not permitted to inspect them further.
67	Dry drain with scattered scrub dominated by bramble, hawthorn, elder, grasses, common nettle, and ivy.
68	Unmanaged hedgerow comprising elder, hawthorn, ivy, elm, and ash. A dry drain runs parallel to it, becoming very shallow at the western end.

69	Defunct hedgerow dominated by deadwood with some elm.
70	Ornamental hedgerow of holly, cherry laurel, immature ash, and dogwood.
71	Single story brick building, currently being used as a store room. The building has a clay tiled, pitched roof with gable ends and a wooden soffit. The building is considered to be suitable for roosting bats.
72	Private house and garden. The two storey brick building with a pitched roof, gable ends and clay tiles is considered to support low potential for roosting bats. The garden consists mainly of ornamentals including cherry spp.
73	Dry drain with scrub comprising bramble, ivy, elder, and elm and an under storey of perennial rye grass, shepherds purse, daisy, and dandelion.
74	Two story, 1980's brick building with wooden soffits and wooden cladding. The operational pub has a pitched roof with gable ends and clay tiles. The building is in good condition and therefore considered to have low potential to support roosting bats.
75	Bowling green, with a single storey wooden hut used for storage. The hut has a low pitched roof with gables ends; the roof was covered by roofing felt. It is surrounded by an ornamental hedge comprising box hedge, privet sp, and rose spp.
76	Semi-mature willow and ash trees not considered suitable for roosting bats.
77	Wide unmanaged hedgerow comprising elm, bramble, elder, grasses and an associated wet drain.
78	Unmanaged hedgerow comprising elm, deadwood, elder, bramble, and cleavers.
79	Single storey building with a flat concrete roof covered in roofing felt. The building is in good condition, well sealed and therefore considered to have low potential to support roosting bats.
80	Mature Turkey oak has no obvious features that would be suitable for bats and is considered to have low potential to support bats.
81	Defunct hedgerow comprised mainly of bramble, willow, and elm. A wet drain runs along the side of the hedgerow. The drain is stagnant, shaded and has no emergent or submerged vegetation, and is therefore not considered suitable to support great crested newts.
82	Hedgerow with wet drain comprised of elm, willow and brambles.
83	Unmanaged defunct hedgerow running along either side of a lane. The hedgerow is dominated by hawthorn, blackthorn, elder, bramble, and cleavers. Within the hedgerow are two mature lime trees with visible holes and cracks that may be utilised by bats. The trees are therefore considered to have a medium bat potential.
84	Small enclosed area of hardstanding dominated by brambles and nettles.
85	Hedgerow dominated by hawthorn which partially shading a wet drain. The permanent drain supports both emergent and submerged vegetation and is

	considered suitable to support great crested newts.
86	Hedgerow dominated by blackthorn, elm, hawthorn, and bramble running along the bank of a wet drain. The drain supports emergent and submerged vegetation, predominantly reeds and is considered suitable to support great crested newts. Unidentified mammal tracks and a water vole feeding station was confirmed along the banks.
87	Three mature willows with crevices and holes which provide good potential to support roosting bats.
88	A mature ash tree with crevices and holes which provide good potential to support roosting bats.
89	Several farm buildings and one farm house. The farm house is a two storey building with a pitched gable roof and clay tiles and is in good condition. It is considered to support low to moderate potential for bats. The associated farm buildings are constructed from corrugated metal sheets, are predominantly open and are considered to support a low potential for bats.
90	Large pond approximately 300 m ² with a small island in the centre mainly comprising willow and cow parsley. The pond is considered suitable for great crested newts, although it is predominantly shaded by willow trees, and much of the pond is covered in blanket weed. The other areas of open water are shallow with emergent grass vegetation at the corners. The banks are steep and are covered in grasses and cowslip. HSI score of 0.53.
91	A stand of mature oaks with crevices and holes which provide good potential to support roosting bats.
92	Unmanaged elm hedge with an under storey comprising grass, cow parsley and ivy. Large gaps are present throughout.
93	Private farm house and garden. The house is a three storey building with a pitched clay tiled, gable roof. As it is well sealed and in good condition, it is considered to provide low potential for bats. A series of single storey outbuildings are in varying states of disrepair and used for storage. These buildings have brick walls with gable and hip pitched and clay tiled roofs, many of the tiles are missing. The gardens are well managed.
94	Large pond approximately 220 m ² with several emergent willow trees (20% cover), reedmace, and floating sweet-grass are also present. The banks are gently sloping with six large willows cut back to stumps along the margin. HSI score of 0.58.
95	Three large open faced farm warehouses constructed from corrugated metal and two adjoining open faced buildings; one brick with a partially collapsed pitched tiled roof, the other concrete with bricked up windows and a corrugated metal roof. All these buildings have a low potential to support bats and barn owls.
96	Wet drain with three large willows at the north end. There is a low potential for GCN within the drain as the water is 2-3 cm deep, stagnant, and heavily shaded by the willows. The willows contain cracks and holes which could support bats.
97	Wet drain approximately 2-3 m wide, widening to 15 m at certain points. The

	drain is completely un-shaded as the shallow banks are grazed and poached by cattle. Filamentous algae was recorded in dense concentrations. The drain is not considered highly suitable for either water voles or great crested newts.
98	Large wet drain with steep banks, heavily shaded by willows, bramble, and hawthorn. The water is stagnant and supports large amounts of filamentous algae. It has moderate potential to support water voles.
99	Wet drain with medium potential for water voles. The drain has steep banks dominated by common nettle, grasses, and bramble with some common reed also present. A blackthorn dominated hedgerow with an under storey of grasses runs along the top of the bank.
100	Great crested newt fencing enclosing a small semi-improved field. The site supported a small pond, artificial log piles and other hibernacula as mitigation for the adjacent LG Development. A fox was observed adjacent to the pond in the long rank grassland.
101	A largely un-shaded wet drain, approximately 2m wide supporting filamentous algae, hard rush and grasses. The shallow banks support grasses and small patches of hawthorn. The drain is considered to support low potential for water voles.
102	Wet drain occasionally shaded by scattered scrub dominated by hawthorn and bramble. The steep banks are dominated by grasses with occasional patches of common reed. It is considered to be of low potential for great crested newts and water voles.
103	Wet drain containing running water, it is approximately 1.5-3m wide, and predominately un-shaded. The steep banks comprise bare ground or brambles, scattered trees of ash and willow are also present.
104	Dry drain with an intact unmanaged hedgerow dominated by blackthorn. Also common nettle, bramble, hawthorn, and elder also present.
105	Wet drain, although there is very little water present. The drain is mainly open, occasionally shaded by hawthorn and elder. There is little potential to support water voles or great crested newts.
106	Cow shed comprising two brick buildings. The buildings have pitched, clay tiled gable roofs but have little potential to support bats.
107	Wooden barn consisting of both single and two storey sections with pitched gable roofs and either clay tiles or thatching. There are open entrances into the building and roof via gaps at the gable ends, above doors, and through the broken windows. The barn provides potential nesting opportunities for barn owls and roosting bats
108	A corn bunting observed.
109	Concrete culvert.
110	Dry drain with shallow banks and hedgerow, dominated by hawthorn, scattered elm trees are also present. The under storey comprises sedge, grasses and cleavers.
111	Private two storey, red brick farm house with a low pitched gable roof. The

	building is considered to have low potential to support bats.
112	A series of operational and derelict out houses. Comprising stables made from corrugated metal sheets, wood, and brick. Small gaps were located above the doors but they are considered to have low potential to support bats. Several open fronted cattle or storage sheds constructed out of concrete and corrugated metal sheets with a low potential to support bats are also present.
113	A large mature ash tree that is considered to have potential for bats.
114	Permanent pond surrounded by ash and hawthorn shading approximately 70% of the pond. The banks of the pond are shallow mainly comprising bare earth, however, submerged and emergent vegetation are present. The pond is considered to have potential to support great crested newts. HSI score of 0.55.
115	Large garden pond, approximately 105 m ² in size supports reedmace, hard rush, duckweed and water lily. The banks are shallow and covered in amenity grassland. The pond is unlikely to support great crested newts as goldfish are present in an abundance. HSI score of 0.63
116	Entrance to a largely derelict Anglian Water site comprising grassland dominated by cock's foot, perennial rye grass, vetch sp., cow parsley, common nettles, cleavers and teasel. Small patches of buddleia, bramble, dogwood and immature beech, willow and laylandii trees are found throughout the site. The area provides good reptile habitat and a dead slow worm was observed along the eastern boundary. The site has many mammal tracks running though it, however, only evidence of fox and rabbit were observed. A railway embankment and broad-leaved woodland across the northern boundary. The wood is dominated by elder, ash, hawthorn, and blackthorn, with the under storey consisting of ivy, parsley, common nettle, and bramble. A small ephemeral pond was observed in the woodland but access was limited due to the dense scrub. Also present were.
117	Two large fenced water tanks probably shallow, with vertical concrete sides. The tanks were not shaded and common reed and broad-leaved dock, water forget-me-not covered approximately 10% of the waters surface. The steep sides restricted the water body's potential to support great crested newts.
118	Large man made, plastic lined, rectangular pond with steep banks comprising cock's foot, perennial rye grass, vetch sp., cow parsley, common nettles, cleavers and teasel. The pond does not contain any emergent or aquatic vegetation due to lining, and is not considered to have a low potential to support great crested newts.
119	Two large man made, plastic lined, filter ponds with steep banks. Both ponds are dominated by common reed, with reedmace occurring around the edges. The pond is considered to have potential to support newts.
120	Sub-station and tanks constructed from plastic and metal, these structures are not considered to be suitable for bats. Behind the sub-station is an area of hawthorn and blackthorn dominated scrub.
121	Grove House Nature Reserve, a broadleaved woodland comprising a mixture of immature and mature trees, predominantly hawthorn, ash, blackthorn, elder, oak, and hazel, beech, holm oak, and holly trees are also present. The under

	storey supports bluebell and lesser calendine, with lords and ladies and wood aven also present.
122	Norman church and graveyard. The building is constructed of stone with a pitched roof and slate tiles. Within the graveyard is a mature willow and two mature lime trees, both have many cracks and holes. The church and trees within the graveyard are all considered to have a high potential to support bats.
123	Large pond approximately 960 m ² in size with steep banks dominated by common nettle, dandelion and cleavers. The pond is surrounded by a mixture of mature sycamore and hawthorn trees, these partially shade the pond (approximately 30%). The pond is predominately covered by emergent vegetation of reedmace and pondweed. HSI score of 0.76.
124	Farmhouse, garden and associated farm buildings. The farm house is a two storey red brick building with a pitched, gable ended roof and lead flashing. Gaps suitable to support bats maybe present throughout the old building, which is therefore considered to have a medium potential to support bats. A number of operational cowsheds, constructed from wood, brick, and corrugated metal sheets are also present. The majority of the sheds are not considered suitable for bats, however they do support several features which bats may utilise such as gaps, and holes. Therefore the buildings are considered to have a mixture of low-moderate potential to support bats.
125	Triangle of continuous scrub comprising hawthorn, blackthorn, bramble, cow parsley, common nettle and grasses. A spoil heap was noted within the centre of the scrub.
126	Wet drain that is completely covered in blanket weed. It is also completely shaded by adjacent scrub and is considered to have a low potential to support great crested newts.
127	Wet drainage drain approximately 1 m wide running parallel to the road. The drain is dominated by common reed and bramble. Drain is considered suitable to support great crested newts and water voles.
128	Wet drain approximately 1 m wide containing stagnant water and common reed. The drain is shaded by the hedgerow running along the bank which is dominated by hawthorn and blackthorn. The drain is considered suitable to support water voles but poor for great crested newts.
129	Water vole observed.
130	Residential houses and ornamental gardens. The brick buildings support pitched clay tiled roofs with gable ends. They are considered suitable to support bats but offer low potential.
131	Wet drain approximately 1-2 m wide with relatively steep banks covered in grass, and shaded by common reed and occasional hawthorn or blackthorn. Sections of the water are covered by pondweed. The drain is considered to have a high potential to support water voles but low potential to support great crested newts.
132	Mink raft associated with the DP World LG Development observed.
133	Permanent large pond, approximately 250 m ² in size, no aquatic vegetation

	present and marginal vegetation limited to hard rush. The banks are shallow, poached and covered in grasses with occasional hawthorn trees. The pond is considered to have moderate potential to support great crested newts. Badger and waterfowl prints were observed in the area.
134	Wet drain approximately 2 m wide with submerged aquatic vegetation and shallow grass banks. The drain is considered to have moderate potential to support GCN's and poor for water voles.
135	Wet drain that contains no emergent or submerged vegetation. It is completely open with moderately steep sides offering limited potential for water voles.
136	Wet drain that which has recently been managed and most of the common reed has been removed, leaving the drain open and un-shaded but still suitable for water voles, possible water vole entrances recorded.
137	Water vole trap associated with the DP World LG Development observed.
138	Brown hare observed.
139	Great crested newt fencing associated with the DP World LG Development.
140	A newly dug pond associated with the DP World LG Development, surrounded by stock proof fencing. The pond contains no or little emergent or submerged vegetation and has medium sloping bare earthed banks. Hibernacula also present.
141	A wide wet drain, the Fleet, approximately 10 – 15 m wide. The central section of the drain is dominated by common rush with the edges of the drain comprising hard rush, floating sweet grass, and broad leaved dock. A mammal path runs along the bank which is also suitable to support water voles.
142	Farm track with two unmanaged tall hedges dominated by hawthorn, blackthorn, elder, with immature willow trees scattered sporadically throughout. A drain that has areas of water runs adjacent to the hedge, it contains no aquatic or emergent vegetation, and is completely shaded by the hedge.
143	Wet drain varying from 3 - 7 m in width. The drain is not shaded and contains no aquatic vegetation, has shallow sloping banks covered in grass and occasional common rush and is considered to have low potential to support water voles.
144	A large area of rough grassland, designed as a receptor site for the translocated great crested newts from the DP World LG Development site. It contains 24 man made ponds which are completely un-shaded, support gentle slopes covered in bare ground and grass. Reedmace is starting to colonise the ponds. Each pond has a man made hibernacula built in close proximity. Log piles are scattered around the grassland and hundreds of saplings have been planted throughout the area.
145	Dry drain that has not been wet for some time as it is dominated by grasses and has no aquatic or marginal plants.
146	Coryton Commercials compound comprising several operational buildings. They comprise a mixture of flat roofed concrete and brick buildings and pitched roofed corrugated metal storage sheds. The buildings are considered to have

	low potential to support bats.
147	Greystar premises which contain a two storey concrete building with no windows. The building lacks features considered to be useful for bats and is therefore considered to have minimal bat potential. Leylandii trees run along the edges of the property.
148	A single story building with a flat, felt covered roof and wooden soffit. The building is in relatively good condition and is considered to have a low potential to support bats.
149	A mature willow is present to the east of Coryton Commercials supporting many cracks and holes which may provide suitable roosting opportunity for bats. The tree is considered to have a moderate potential to support roosting bats.
150	Wet drain approximately 1 m wide which has recently been managed and all vegetation removed. The banks are poached and shallow with no vegetation, however, holes are present within the banks that may have been made by water voles, therefore the drain is considered to have moderate water vole potential.
151	Wet drain approximately 2-3 m wide with 20-30 cm of slow moving water visible. The grass covered banks are shallow and have been poached. The drain is considered to have moderate potential to support great crested newts, however, it has little potential for water voles except for feeding and commuting.
152	Waste land comprising scattered scrub dominated by bramble and hawthorn. Along the roadside willow and poplar trees were present. The trees are mature and contain features that would be suitable for bats. The area is also considered suitable to support reptiles.
153	A wet drain approximately 0.5 m wide becoming drier to the south with banks that are of medium steepness and shallow slow moving water that is dominated by common reeds. Two water vole traps were noted. It is considered to have high potential to support water voles.
154	A wet drain approximately 3 m wide covered by common reed and partially shaded by willow. The banks are relatively shallow with great crested newt fencing along the top of the bank.
155	An ephemeral depression either devoid of vegetation or supporting algae, grass or occasionally common reed.
156	A single storey, flat roofed, plastic electricity shed. Not considered suitable for bats as no access points were recorded.
157	A large pond with medium angled slopes that are completely covered in bramble scrub. There was no aquatic vegetation present except occasional stand of common reed. The pond is considered suitable to support great crested newts with an HSI score of 0.72.
158	A single storey brick building with slightly pitched bitumen felt covered roof. The building has no obvious access points and is not considered to be suitable to support bats.
159	A four storey tall communications building, constructed of brick and concrete with a flat roof. The building provides no / few features that would be suitable to

	support bats. An area of hardstanding surrounding the building is utilised as a car park and supports a few scattered ornamental trees, all with a low potential for bats.
160	Large pond with gentle sloping, poached banks. The pond is dominated by common reed that covers approximately 80% of the pond. The pond is considered suitable to support great crested newts with an HSI score of 0.62

APPENDIX 3

A LIST OF THE BIRDS INCIDENTALLY RECORDED DURING THE PHASE 1 HABITAT WALKOVER SURVEY

A SUMMARY OF THEIR ASSIGNED PROTECTION IS GIVEN

APPENDIX 3
A LIST OF THE BIRDS INCIDENTALLY
RECORDED DURING THE PHASE 1
HABITAT WALKOVER SURVEY

ECOLOGICAL SCOPING REPORT
FOR THE GATEWAY ENERGY
CENTRE CCGT GAS PIPELINE AND
ELECTRICITY CABLING ROUTES

7 A LIST OF THE BIRDS INCIDENTALLY RECORDED DURING THE PHASE 1
HABITAT WALKOVER SURVEY

Latin Name	Common Name	Conservation Status	UK BAP	NERC (S41)	Bonn Appendix 2	Bern Appendix 2
<i>Aegithalos caudatus</i>	Lond Tailed Tit					
<i>Alauda arvensis</i>	Sky Lark	Red	X	X		
<i>Anas platyrhynchos</i>	Mallard					
<i>Ardea cinerea</i>	Grey Heron				X	
<i>Branta canadensis</i>	Canada Goose					
<i>Carduelis chloris</i>	Green Finch					
<i>Charadrius hiaticula</i>	Ringed Plover					
<i>Columba livia</i>	Rock Dove					
<i>Columba oenas</i>	Stock Dove	Amber				
<i>Columba palumbus</i>	Wood Pigeon					
<i>Corvus corone</i>	Carrion Crow					
<i>Corvus monedula</i>	Jackdaw					
<i>Cuculus canorus</i>	Cuckoo	Red	X			
<i>Cyanistes caeruleus</i>	Blue Tit					X
<i>Cygnus olor</i>	Mute Swan				X	
<i>Delichon urbicum</i>	House Martin	Amber				X
<i>Dendrocopos major</i>	Great Spotted Woodpecker					X
<i>Egretta garzetta</i>	Little Egret					X
<i>Emberiza calandra</i>	Corn Bunting	Red	X	X		
<i>Emberiza citrinella</i>	Yellowhammer	Red	X	X		X
<i>Emberiza schoeniclus</i>	Reed Bunting	Amber	X	X		X
<i>Erithacus rubecula</i>	Robin					X
<i>Fringilla coelebs</i>	Chaffinch					
<i>Fulica atra</i>	Coot					
<i>Gallinago</i>	Snipe	Amber			X	

APPENDIX 3
A LIST OF THE BIRDS INCIDENTALLY
RECORDED DURING THE PHASE 1
HABITAT WALKOVER SURVEY

ECOLOGICAL SCOPING REPORT
FOR THE GATEWAY ENERGY
CENTRE CCGT GAS PIPELINE AND
ELECTRICITY CABLING ROUTES

Latin Name	Common Name	Conservation Status	UK BAP	NERC (S41)	Bonn Appendix 2	Bern Appendix 2
<i>gallinago</i>						
<i>Garrulus glandarius</i>	Jay					
<i>Hirundo rustica</i>	Barn Swallow	Amber				X
<i>Hirundo rustica</i>	Swallow	Amber				X
<i>Larus argentatus</i>	Herring Gull	Red				
<i>Larus canus</i>	Common Gull	Amber				
<i>Larus fuscus</i>	Lesser Black-back Gull	Amber				
<i>Larus marinus</i>	Great Black-back Gull	Amber				
<i>Larus ridibundus</i>	Black Headed Gull	Amber				
<i>Motacilla cinerea</i>	Grey wagtail	Amber				X
<i>Parus major</i>	Great Tit			X		X
<i>Passer domesticus</i>	House Sparrow	Red	X	X		
<i>Phasianus colchicus</i>	Pheasant					
<i>Pica pica</i>	Magpie					
<i>Picus viridis</i>	Green Woodpecker	Amber				X
<i>Prunella modularis</i>	Dunnock	Amber				
<i>Riparia riparia</i>	Sand Martin	Amber				X
<i>Saxicola torquatus</i>	Stonechat					
<i>Streptopelia decaocto</i>	Collared Dove					
<i>Sturnus vulgaris</i>	Starling	Red	X	X		
<i>Sylvia atricapilla</i>	Black Cap					
<i>Sylvia communis</i>	White Throat	Amber				
<i>Troglodytes troglodytes</i>	Wren					X
<i>Turdus merula</i>	Blackbird					
<i>Turdus philomelos</i>	Song Thrush	Red				

APPENDIX 4

LOCATIONS OF THE BADGERS RECORDED WITHIN THE SURVEY AREA

THIS INFORMATION HAS ONLY BEEN MADE AVAILABLE TO INTERGEN AND NATURAL ENGLAND TO MAINTAIN LEGAL COMPLIANCE.

FIGURES

FIGURES1-7

FIGURE 1

**LOCATION OF THE SURVEY AREA AND THE CCGT SITE
LOCATION, GAS INLET LOCATIONS, THREE POSSIBLE
SUBSTATIONS AND THE DIVISION FO THE SURVEY AREA
INTO FOUR SEPARATE SMALL AREAS**

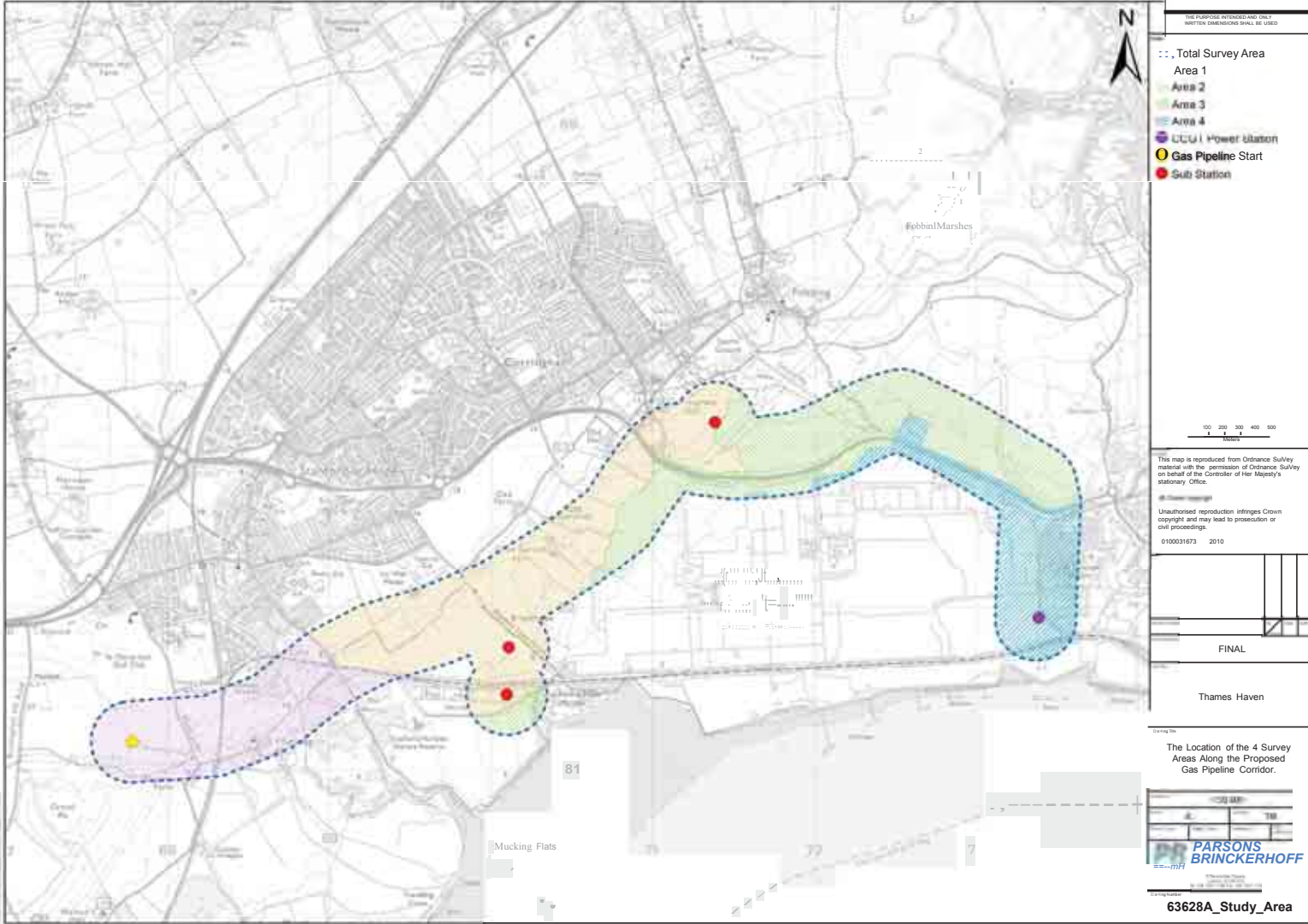


FIGURE 2

**LOCATIONS OF STATUTORY DESIGNATED
SITES WITHIN A 10 KM RADIUS OF THE
PROPOSED LINEAR ROUTE.**

FIGURE 3

**LOCATIONS OF NON-STATUTORY
DESIGNATED SITES WITHIN A 2 KM RADIUS
OF THE PROPOSED LINEAR ROUTE.**

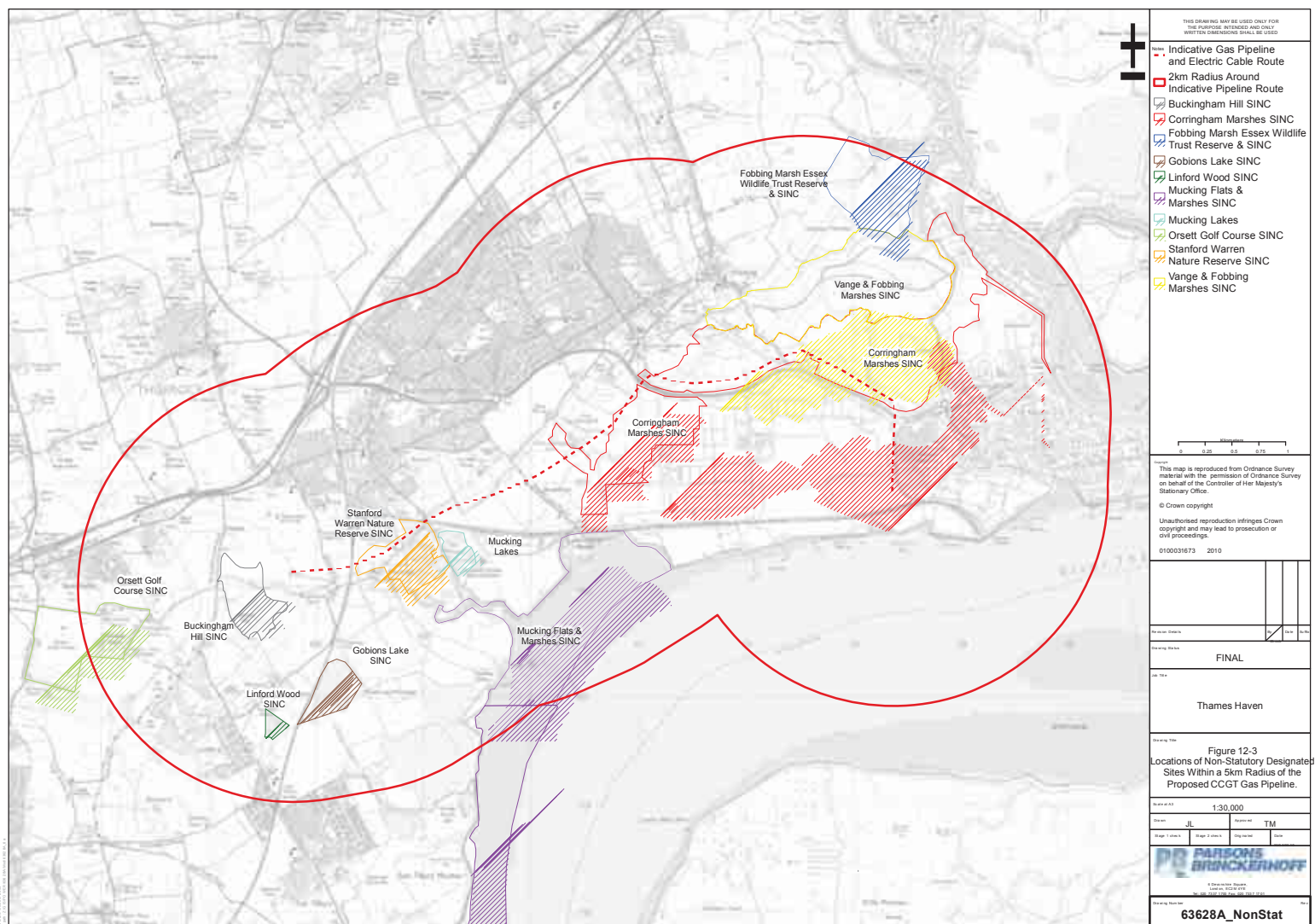
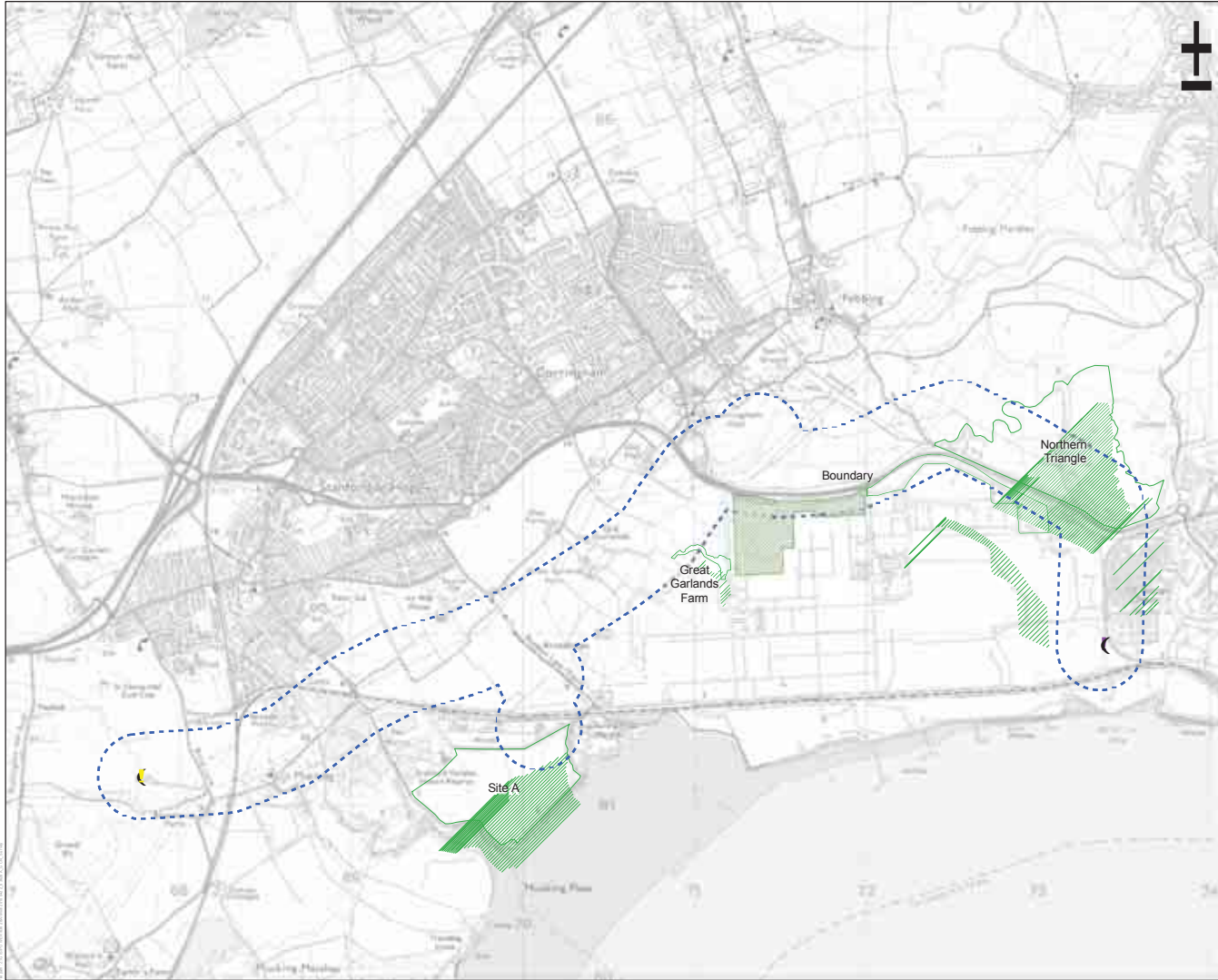


FIGURE 4

**LOCATION OF THE RECEPTOR SITES
DESIGNED AND IMPLEMENTED IN THE
SURVEY AREA AS PART OF THE LARGER DP
WORLD LG DEVELOPMENT.**



THIS DRAWING MAY BE USED ONLY FOR THE PURPOSES INTENDED AND ONLY WRITTEN DIMENSIONS SHALL BE USED

North

- Total Survey Area
- CCGT Power Station
- Start of Gas Pipeline
- Receptor Sites
- Associated With The Park Development

0 150 300 450 600
Metres

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0100031673 2010


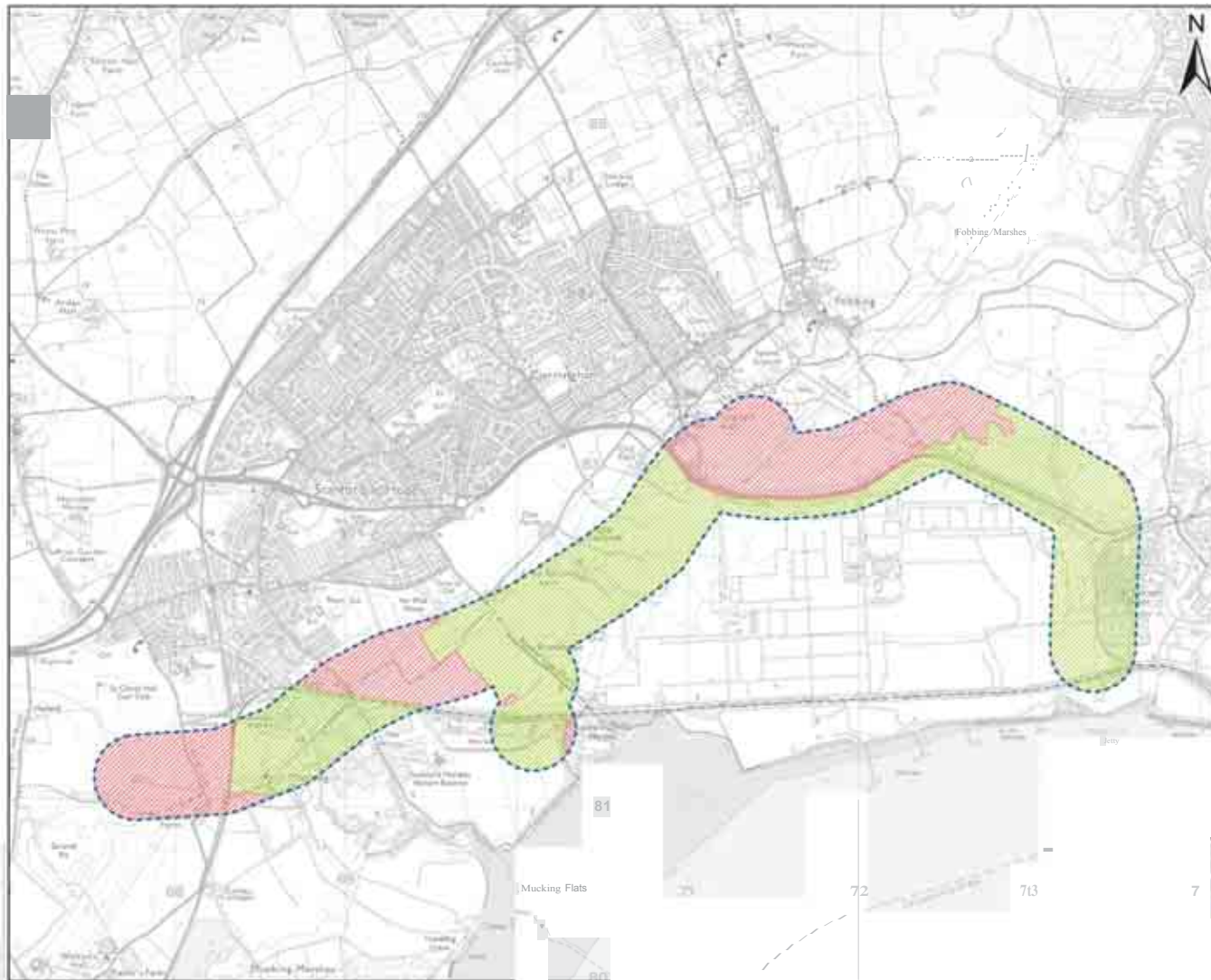
Revision Details	On	Drawn	Check
Drawing Name	FINAL		
Job Title	Thames Haven		
Drawing Title	Receptor Sites Associated With The Park Development		
Scale at A3	1:20,000		
Drawn	JL	Approved	TM
Check 1/Date	Check 2/Date	Originator	Date/Amendments
 A draughting company London, Essex & Wiltshire Tel: 01206 310000 Fax: 01206 310001			
Drawing Number	63628A_RS		

FIGURE 5

**INDICATION OF THE LAND WITHIN THE
SURVEY AREA ALREADY SURVEYED FOR
PROTECTED SPECIES BY THOMSON
ECOLOGY IN 2008.**



THIS DRAWING MAY BE USED ONLY FOR THE PROJECT DESCRIBED ON SHEET 63628A

111 Total Survey Area
 Area surveyed in 2008 as
 Part of the Park Development
 Area Not Previously
 Surveyed

100 200 300 400 500
 Meters

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 0100031673 2010

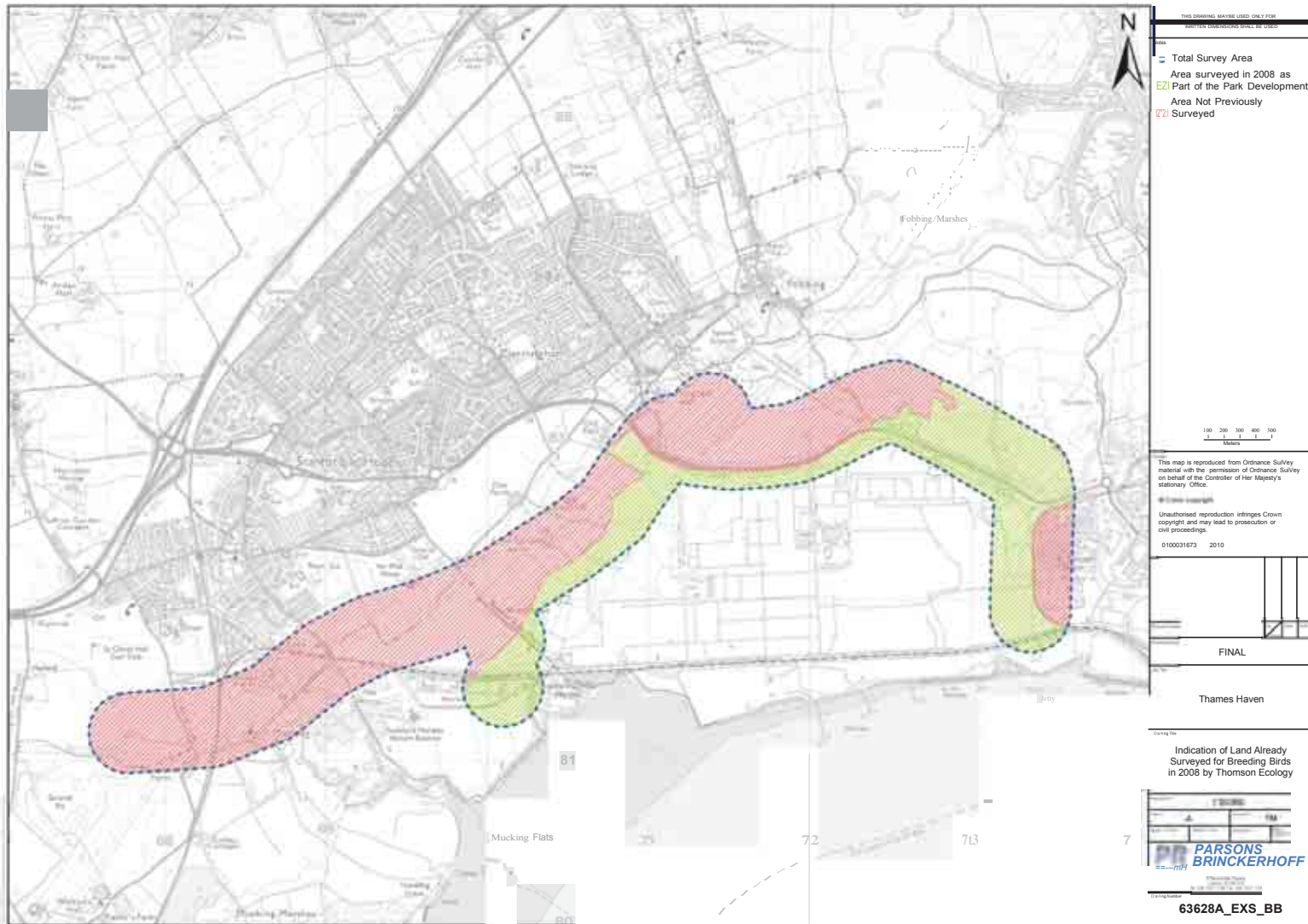
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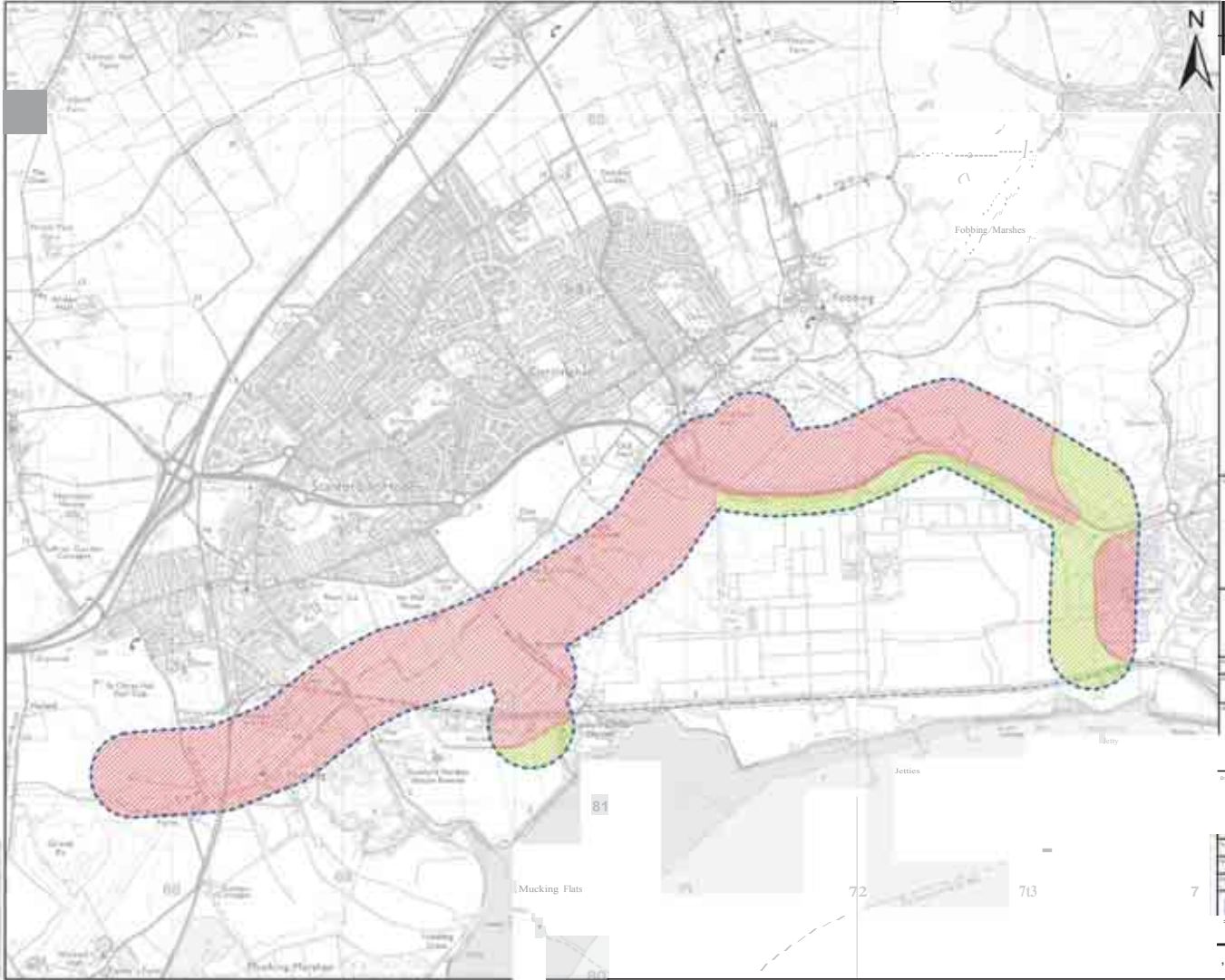
Thames Haven

Indication of Land Already
 Surveyed for Bats in 2008
 by Thomson Ecology

PARSONS
 BRINCKERHOFF

63628A_EXS_BATS





THIS DRAWING MAY BE USED ONLY FOR THE PURPOSES INTENDED AND ONLY WRITTEN DIMENSIONS SHALL BE USED

Legend:
- Total Survey Area
- Area Surveyed in 2008 as Part of the Park Development
- Area Not Previously Surveyed

Scale: 100 200 300 400 500 Meters

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0100031673 2010

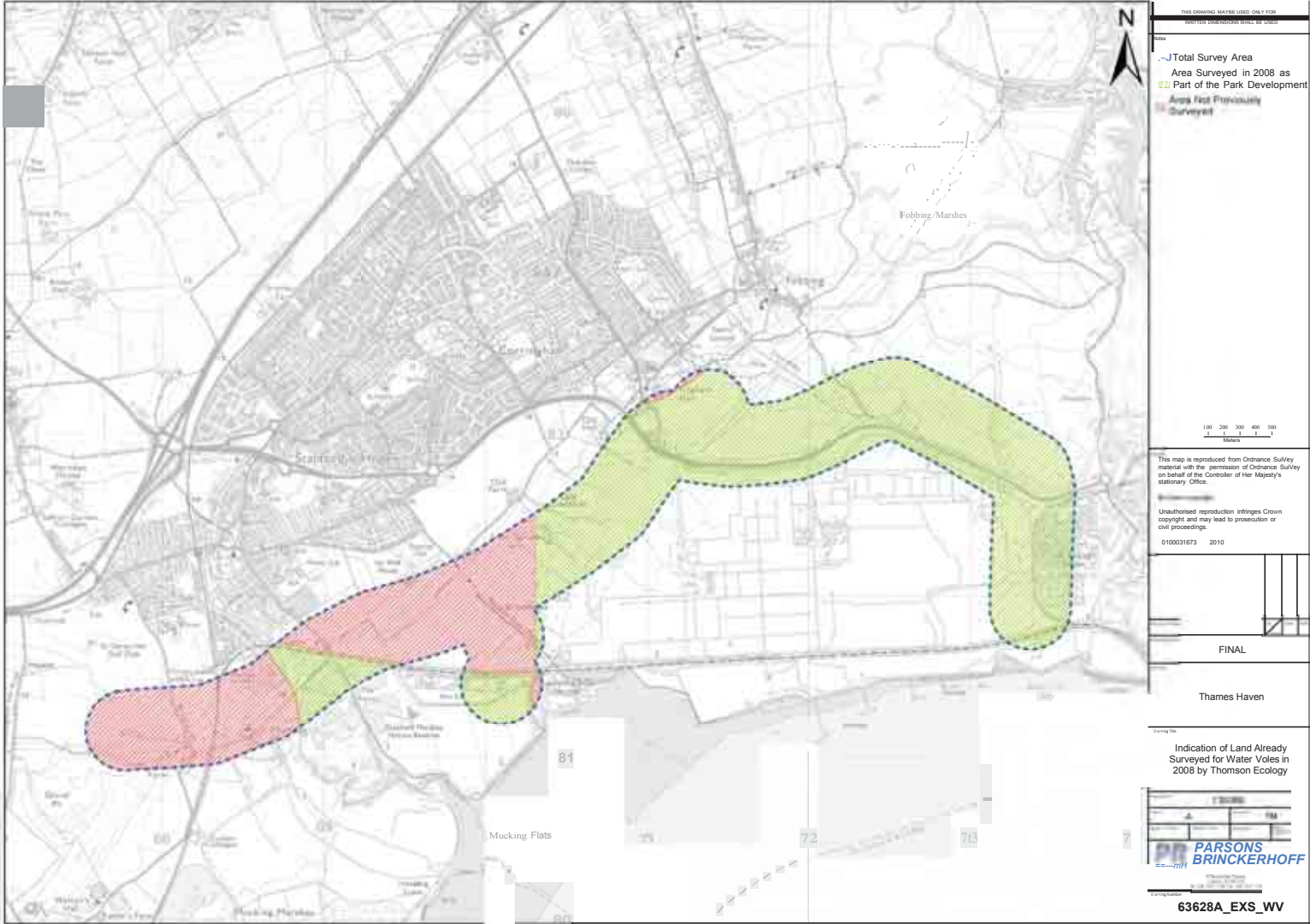
FINAL

Thames Haven

Indication of Land Already Surveyed for Reptiles in 2008 by Thomson Ecology

PARSONS BRINCKERHOFF

gNSbJ628A_EXS_RPTL



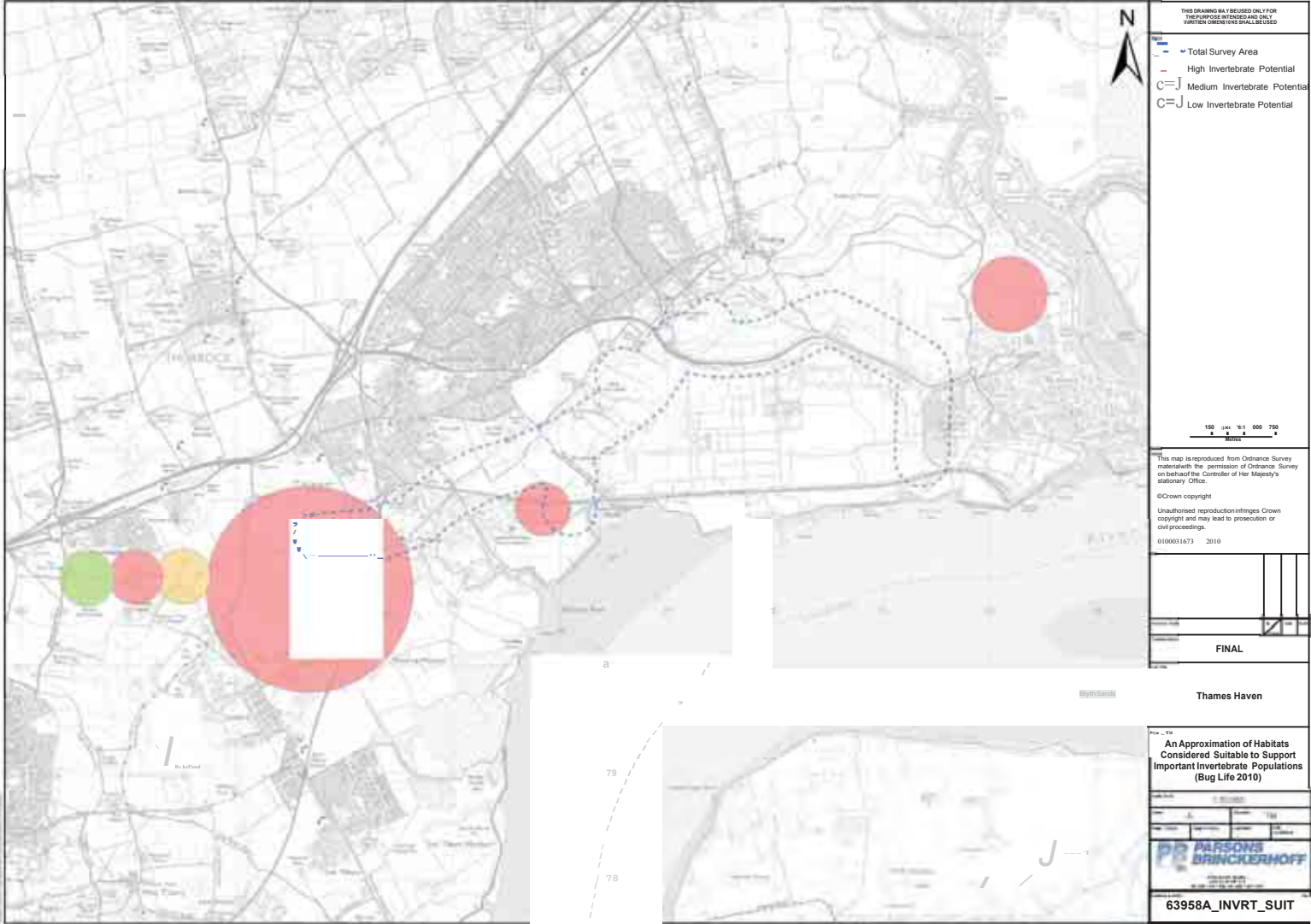
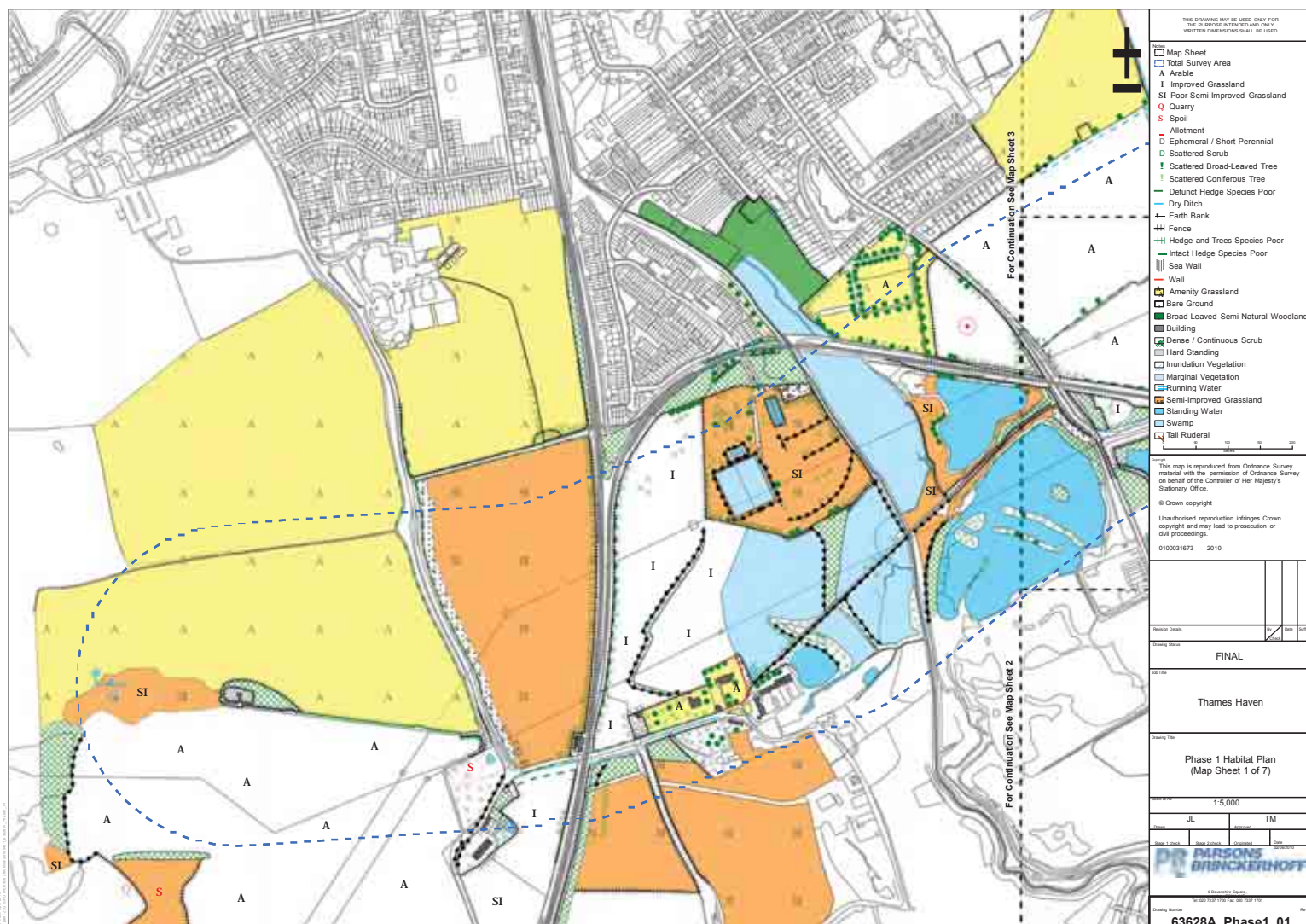


FIGURE 6

**PHASE 1 HABITAT MAPS FOR THE SURVEY
AREA**







THIS DRAWING MAY BE USED ONLY FOR THE PURPOSES INTENDED AND ONLY IF WRITTEN DISCRESSIONS SHALL BE USED

Map Sheet
Total Survey Area
A Arable
I Improved Grassland
SI Poor Semi-Improved Grassland
Q Quarry
S Spoil
Alotment
Ephemeral / Short Perennial
D Scattered Scrub
Scattered Broad-Leaved Tree
Scattered Coniferous Tree
Defunct Hedge Species Poor
Dry Ditch
Earth Bank
Fence
Hedge and Trees Species Poor
Intact Hedge Species Poor
Sea Wall
Wall
Amenity Grassland
Bare Ground
Broad-Leaved Semi-Natural Woodland
Building
Dense / Continuous Scrub
Hard Standing
Inundation Vegetation
Marginal Vegetation
Running Water
Semi-Improved Grassland
Standing Water
Swamp
Tall Ruderal

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Rev	Description	Date
1	Issue	2010

Drawing Status

FINAL

Job Title

Thames Haven

Drawing Title

Phase 1 Habitat Plan
(Map Sheet 2 of 7)

Scale at A2

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Drawn	Checked	Approved
JL		TM

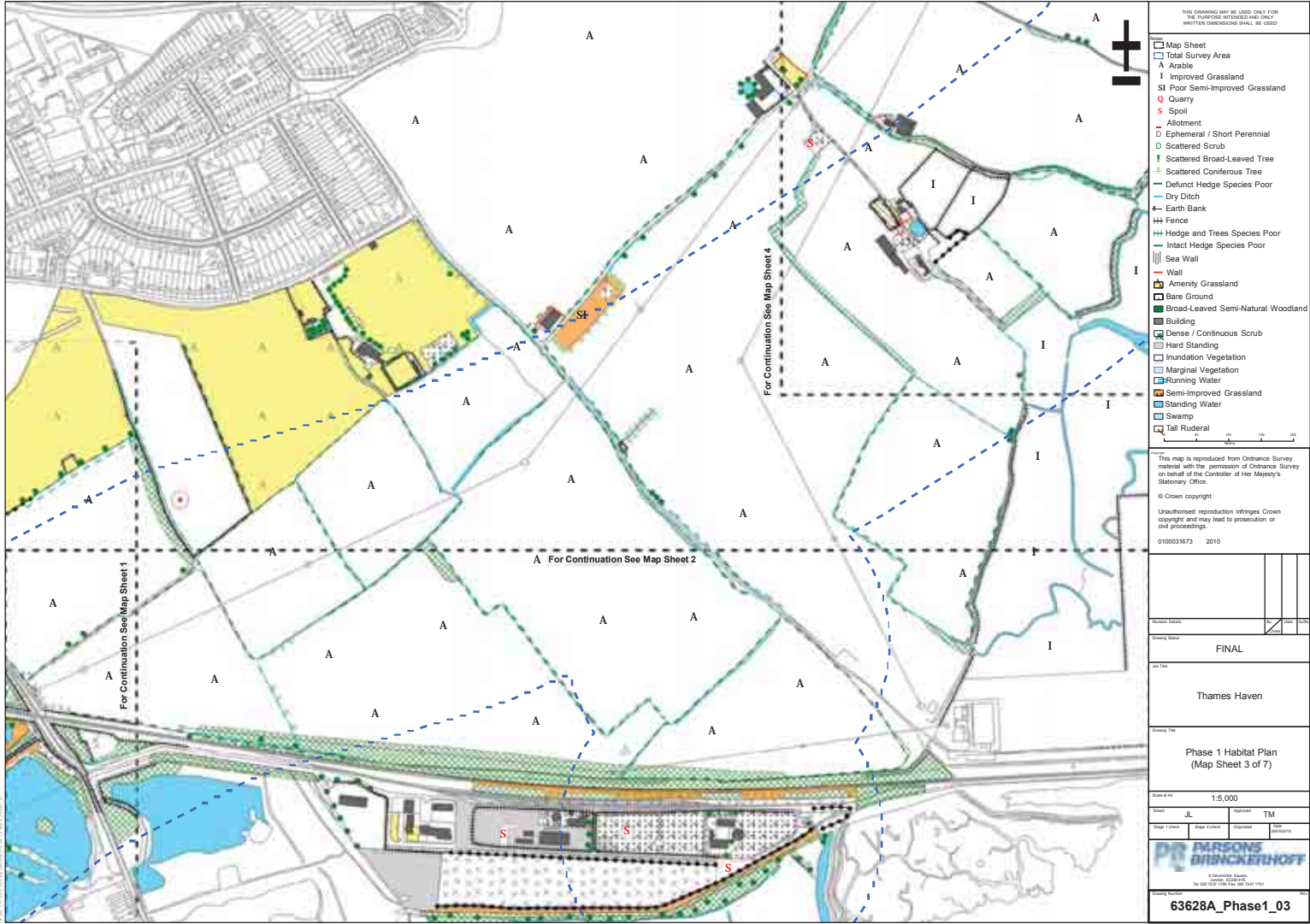
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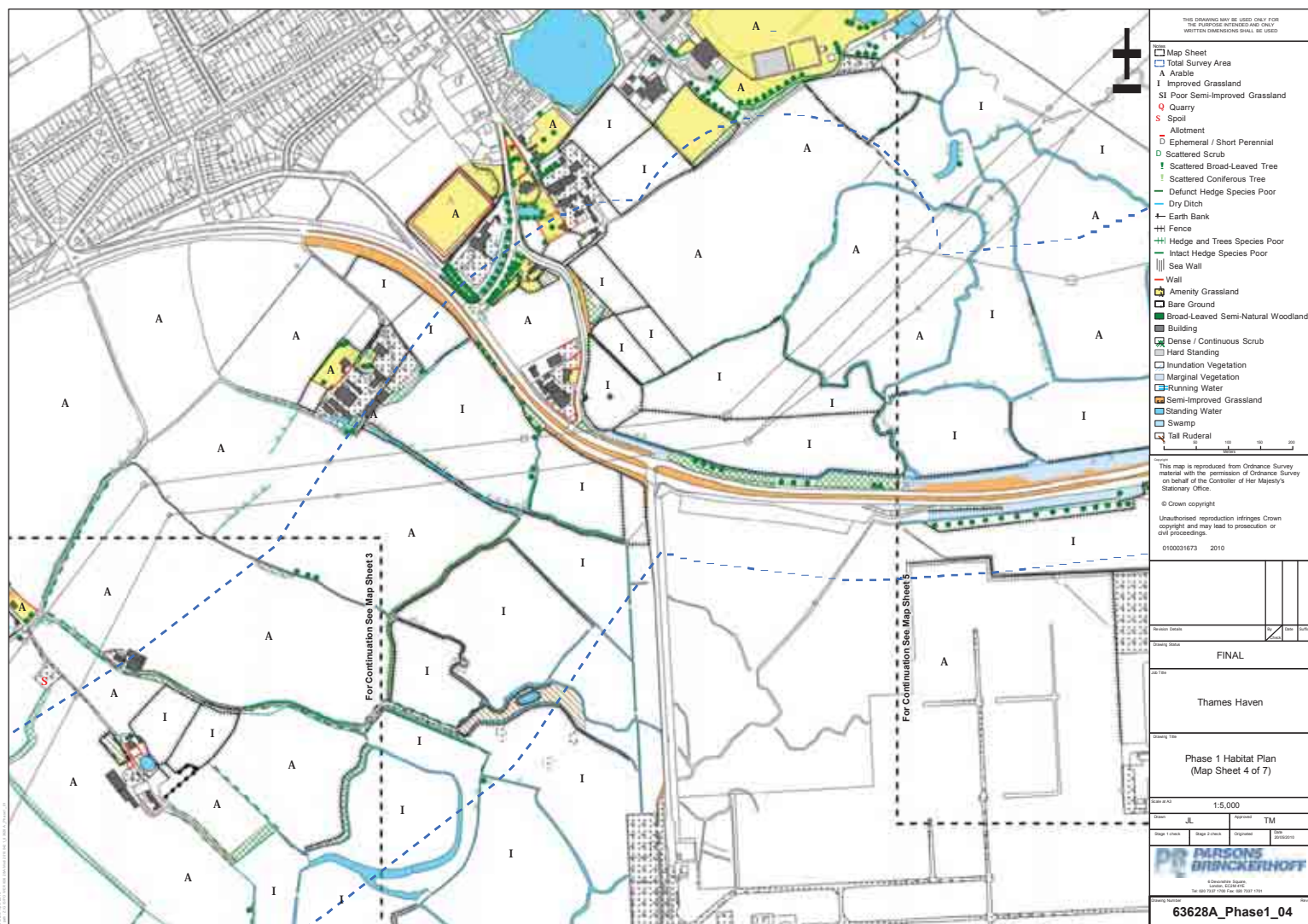
PARSONS BRINCKERHOFF

A Sustainable Future
London, 020 7491 4100
Tel: 020 7491 4100 Fax: 020 7491 4101

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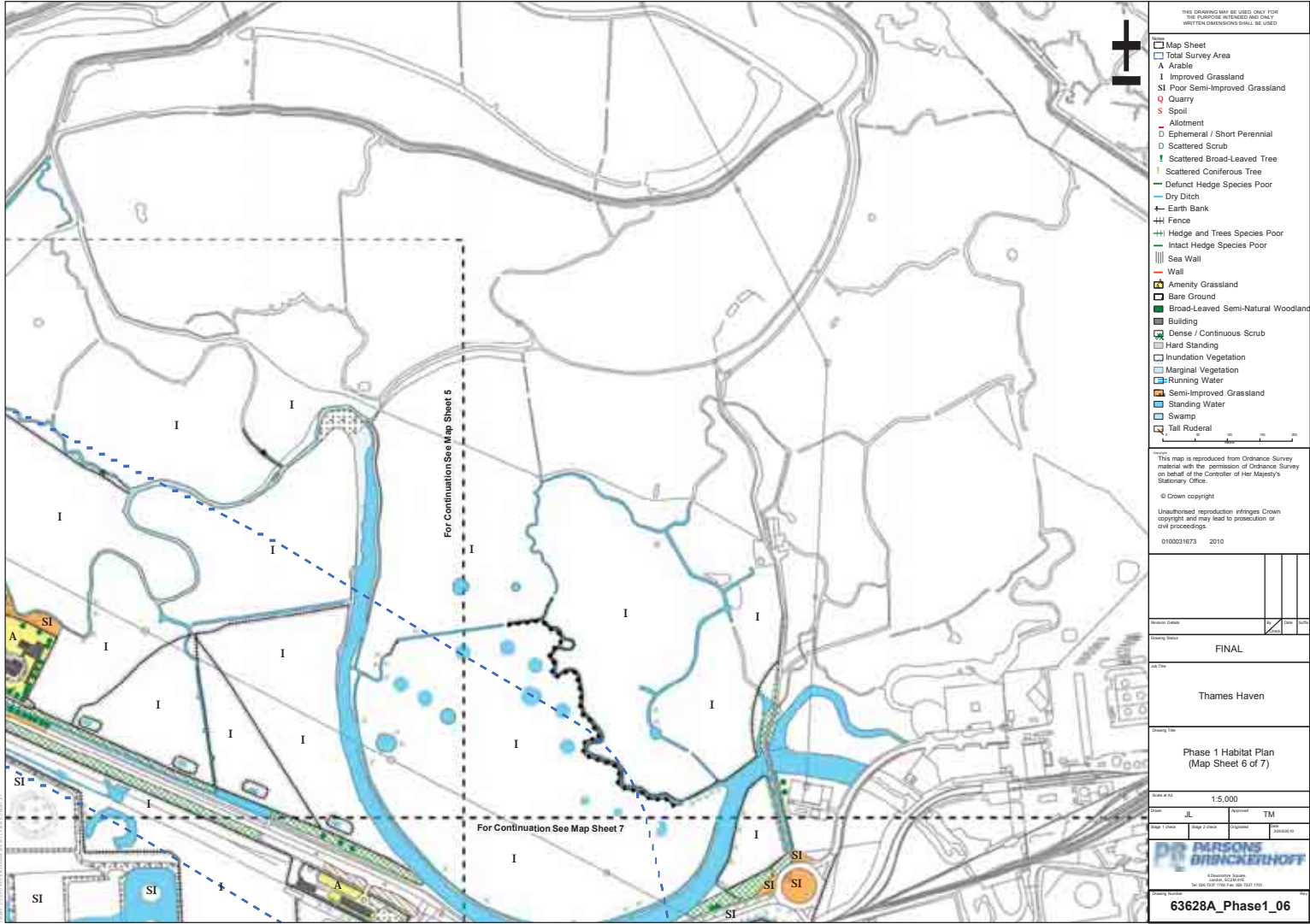


FIGURE 7

**LOCATION OF TARGET NOTES WITHIN
SURVEY AREA (REFER TO APPENDIX 2)**

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North

Map Sheet
Total Survey Area
Target Note

0 50 100 150 200
Meters

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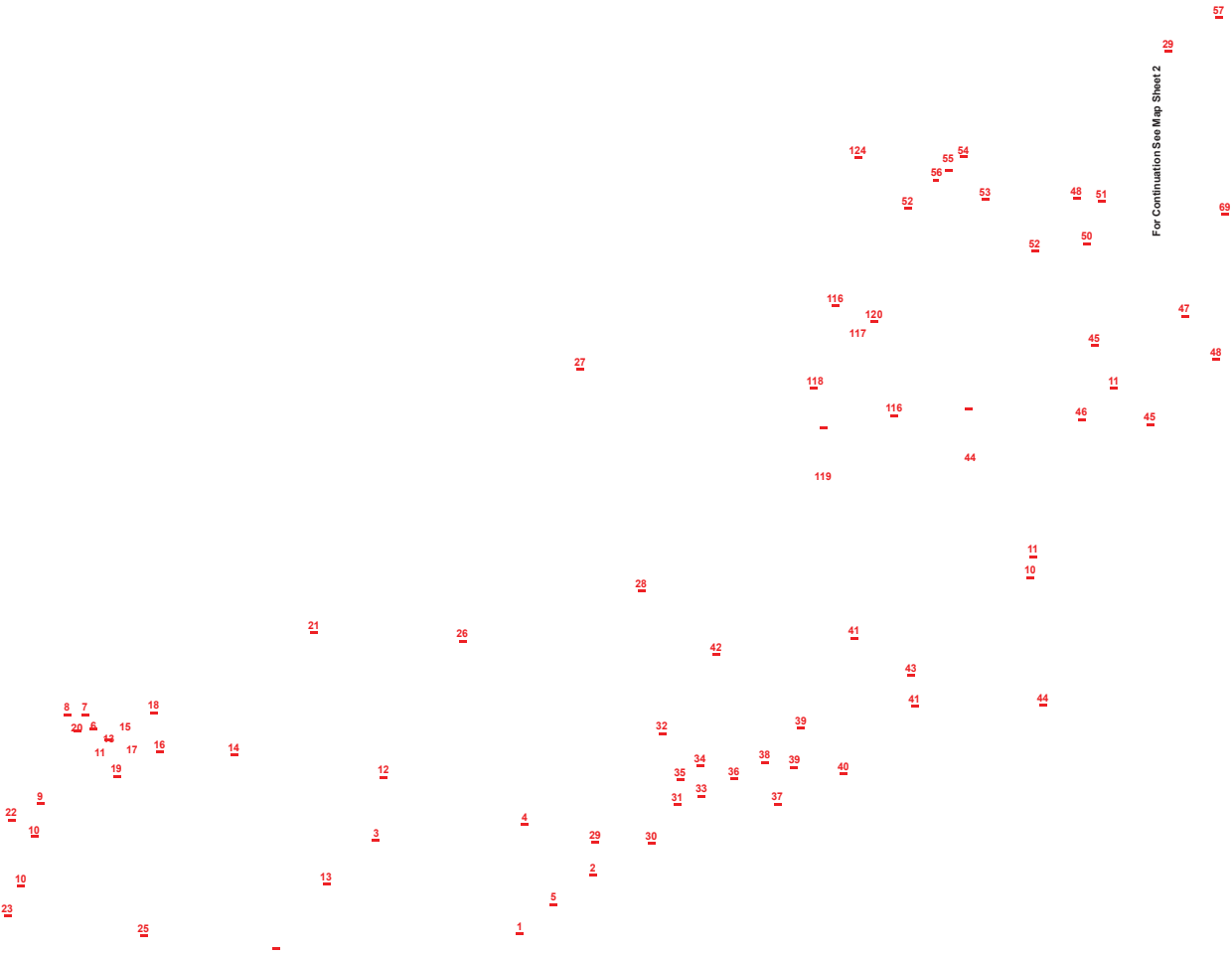
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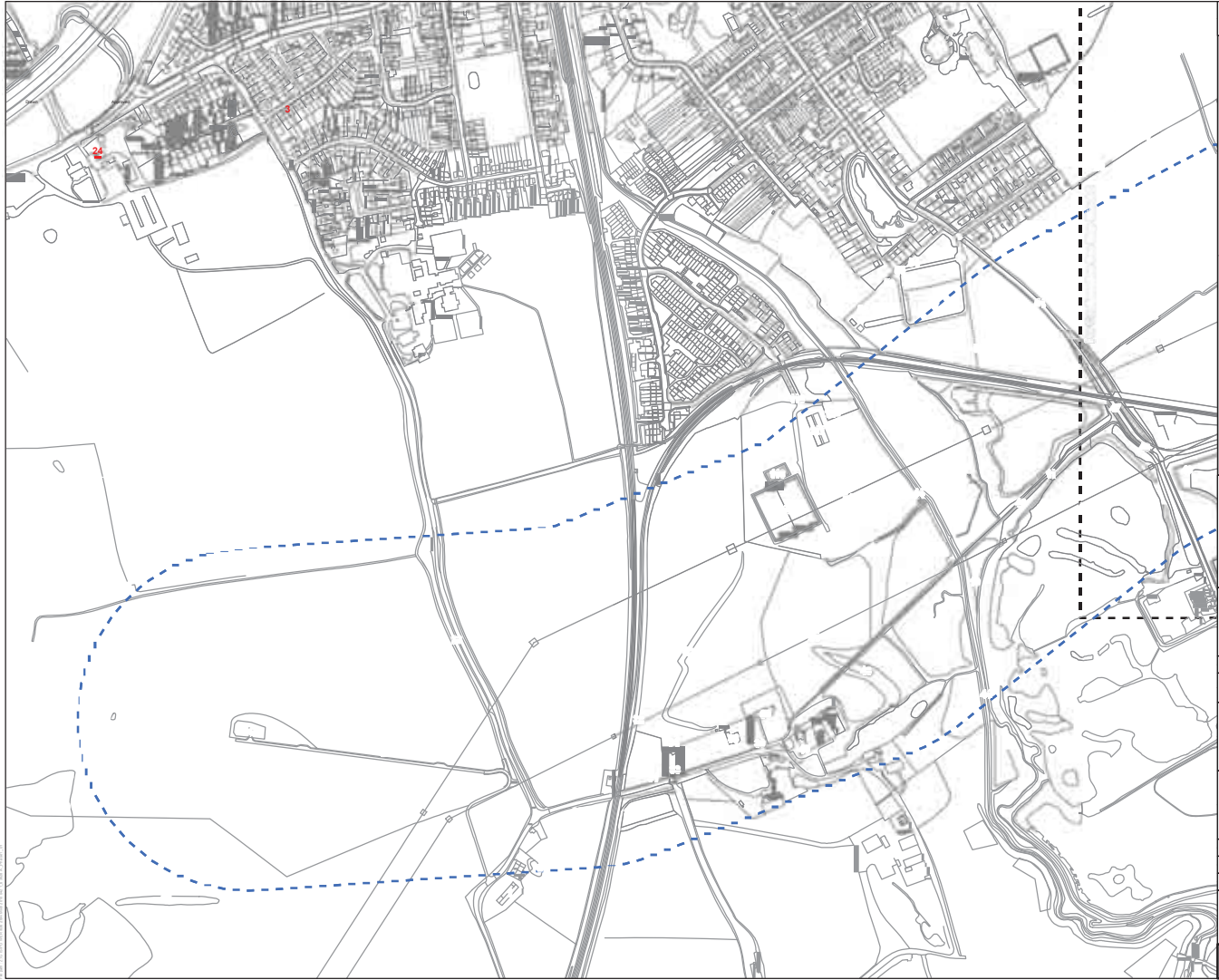
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Thames Haven

Drawing Title
Phase 1 Target Notes
(Map Sheet 1 of 6)

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For Continuation See Map Sheet 2





TM
Date: 1/14/2019
63628A_TN_01
Drawing Number

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Map Sheet
Total Survey Area
Target Note

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For Continuation See Map Sheet 3



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Thames Haven

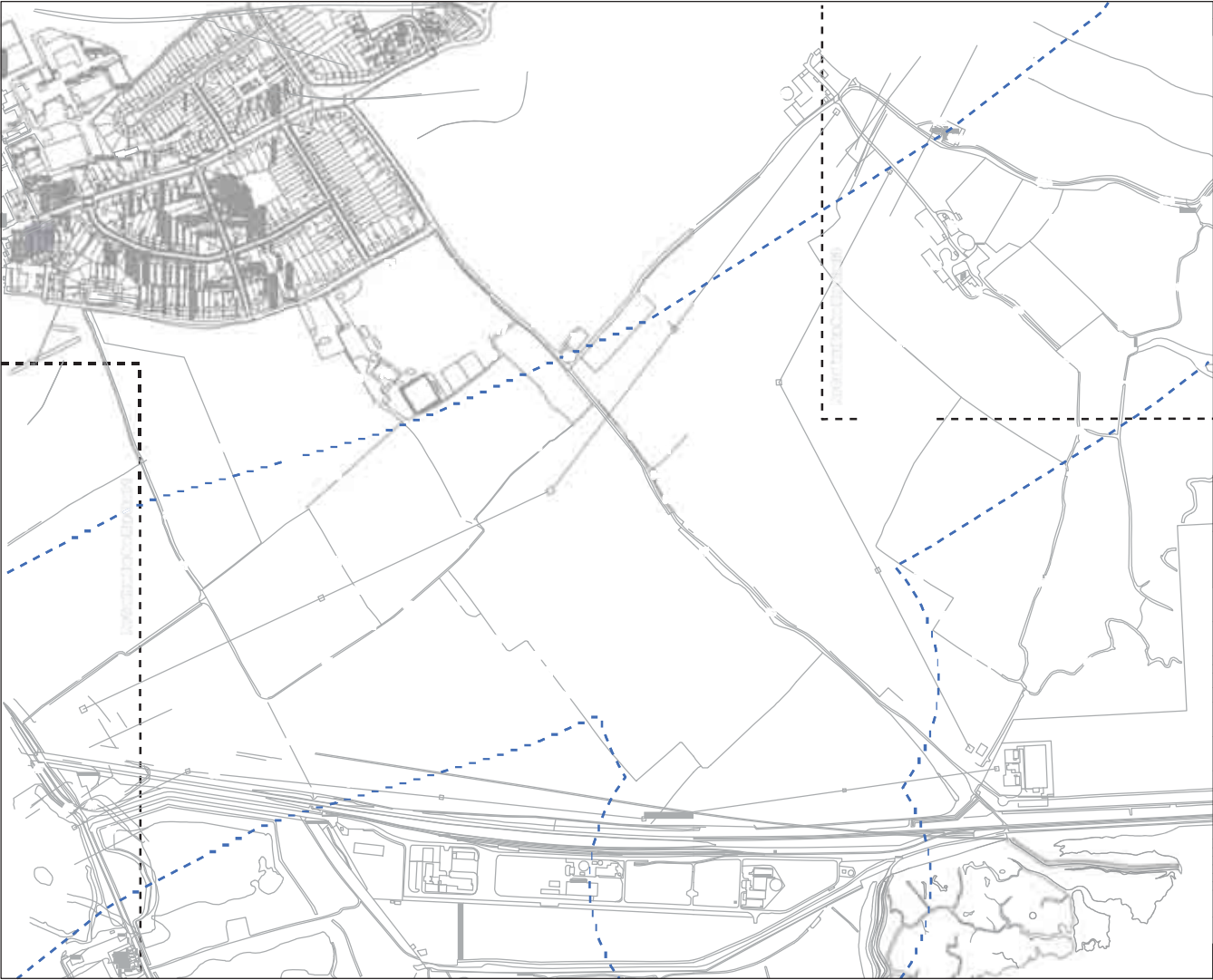
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Phase 1 Target Notes
(Map Sheet 2 of 6)

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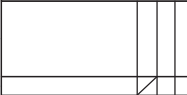
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Stage 1 check	Stage 2 check	Originated	Date 04/16/2011



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North

Map Sheet
Total Survey Area
Target Note

131

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For Continuation See Map Sheet 2

For Continuation See Map Sheet 4

0 50 100 150 200
Meters

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Drawing Status Check

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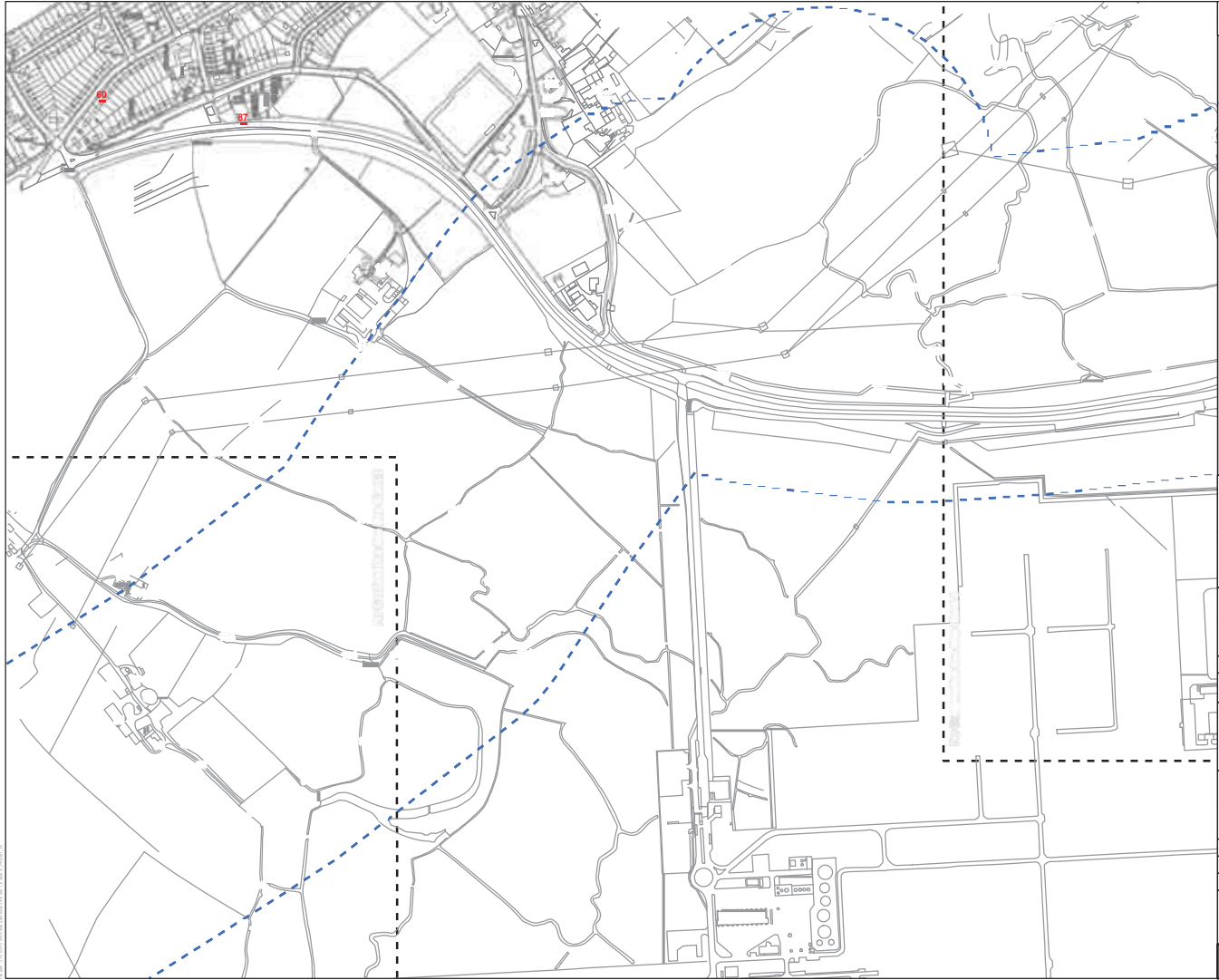
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(Map Sheet 3 of 6)

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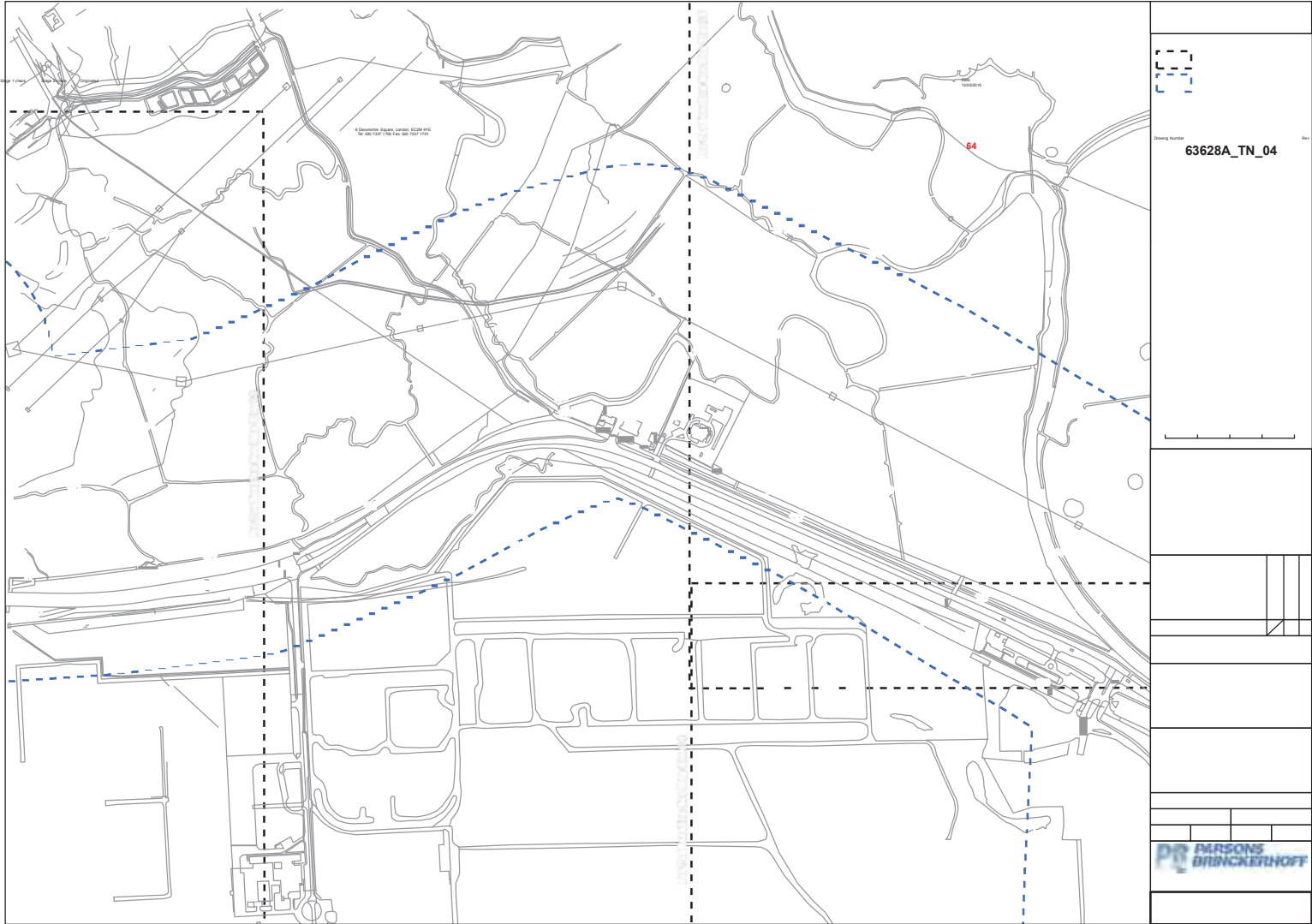
Sheet 1 of 3
Sheet 2 of 3

Original
Date

63628A_TN_03

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Notes

Map Sheet
Total Survey Area
Target Note

0 50 100 150 200
Meters

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Revision Details By Date Suffix
Drawing Status Check

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Job Title

Thames Haven

Drawing Title

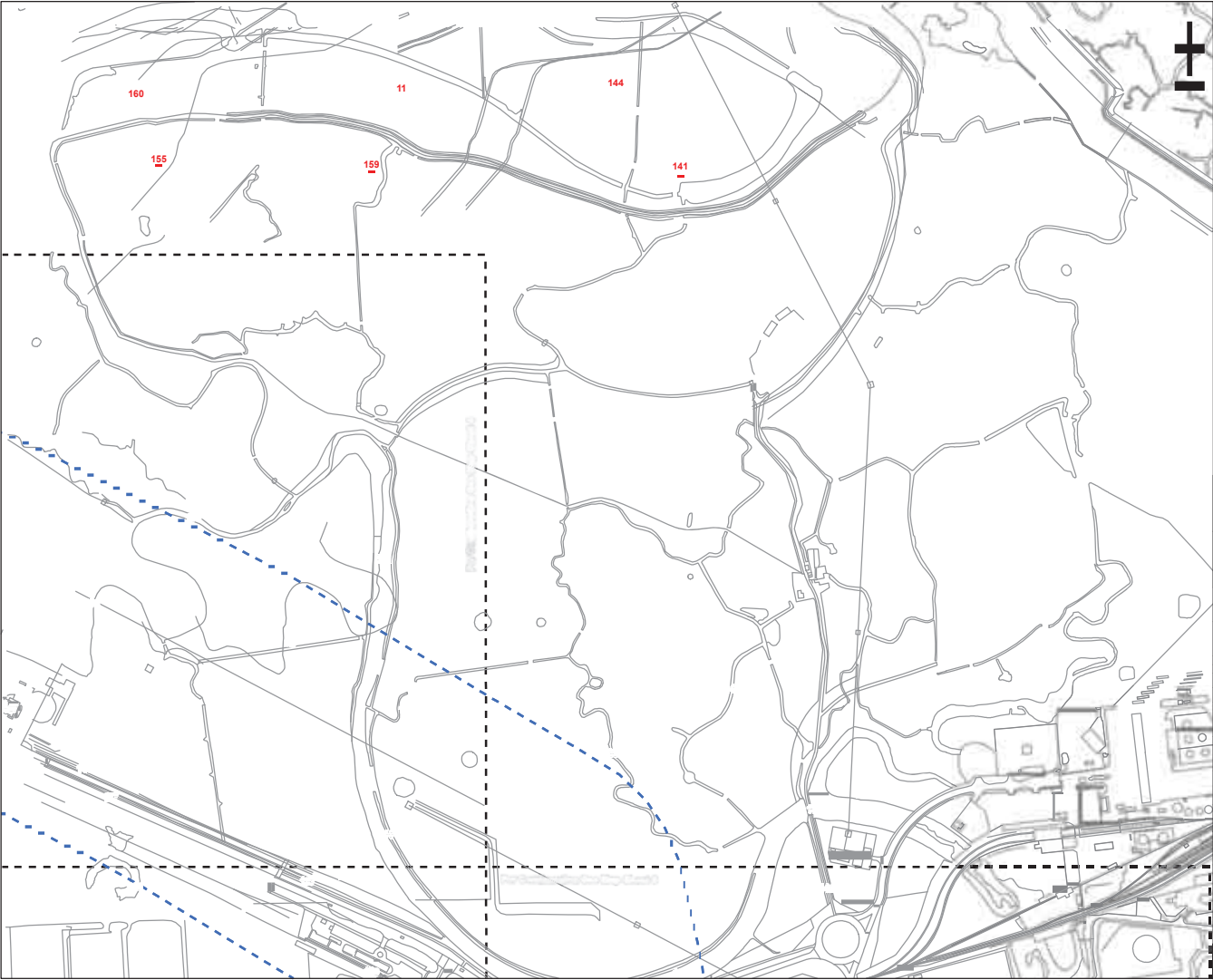
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(Map Sheet 5 of 6)

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Stage 1 check Stage 2 check Original Date

For Continuation See Map Sheet 4

For Continuation See Map Sheet 6



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63628A_TN_05



F.2 Ecological Scoping Response

From: Robinson, Andrew (NE) [<mailto:Andrew.Robinson@naturalengland.org.uk>]
Sent: 17 September 2010 11:43
To: McArthur, Thomas
Cc: Sturges, Phil (NE)
Subject: Gateway Energy Centre Ecology Scoping Report

Dear Tom

Thank you for sending the Ecological Scoping Report for the gas pipeline to the Thames Haven CCGT. Having looked through it, I can see no problems with the baseline ecological information available to inform the report, and your proposed methodology for undertaking further surveys if the route varies from within the indicated boundaries is sensible and acceptable. A couple of small points;

The Report does appear to be missing any reference to a SINC (LoWS) close to the termination of the indicated route. Site Th50 Buckingham Hill lies immediately west of the gas pipeline start point, and although significant impacts on this site are extremely unlikely, for completeness it should appear in the relevant section of the report, and be depicted on Figure 12-3. Details are available from Essex Wildlife Trust or their new website <http://www.localwildlifesites.org.uk/>

I also wonder if it would be appropriate to consult the *All of a Buzz* maps and overlay any areas in the vicinity identified for their invertebrate significance onto one of the Figures in Section 12. The significance of any impacts on invertebrates are likely to be minor and temporary during construction - as the assessment in your report indicates - but an area immediately north of the London Gateway site was identified as being of High invertebrate potential during the project, and your indicated pipeline route will probably pass directly through it. It might be better to show this clearly in the information contained in Section 12, rather than risk appearing to downgrade or ignore published information about invertebrate populations which might then be raised by other parties in a planning situation.

Hope that you find these (brief) comments helpful.

Kind Regards

Andrew Robinson
Planning and Biodiversity Adviser
Four Counties Government Team
Natural England
Harbour House, Hythe Quay
Colchester CO2 8JF
Tel: 03000 601964 Mob: 07821 253554

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F.3 Phase II Bat Survey Report

Phase II Bat Report: Gateway Energy Centre Gas and Grid Connection Routes

InterGen

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Report Title	:	Phase II Bat Report: Gateway Energy Centre Gas and Grid Connection Routes
Job No	:	63958A
Date	:	November 2010
		
Prepared by	:	Marianne Curtis
		
Checked by	:	Vicky Smith
Approved by	:	Richard Wearmouth

Document History and Status

Report Issue	Date of Issue	Prepared By:	Checked By:	Approved By:
1	January	Marianne Curtis	Vicky Smith	Richard Wearmouth



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EXECUTIVE SUMMARY

EXECUTIVE SUMMARY

Parsons Brinckerhoff Ltd (PB) was commissioned by InterGen to undertake targeted bat activity surveys south and east of Stanford-le-Hope, Essex, to inform the construction of the proposed gas pipeline and associated AGI / electrical connection and sub-station associated with the Gateway Energy Centre Combined Cycle Gas Turbine (CCGT) Power Station (GEC).

The exact alignment / routes and locations of the proposed gas pipeline and associated AGI / electrical connection and sub-station have yet to be finalised. However, the indicative alignment / routes and locations have been established and form the basis of this assessment. The survey area encompasses a 250 m buffer either side of an indicative approximate 7.7 km long gas pipeline and 6 km long electrical connection. The survey area is situated between TQ 677 810 and TQ 732 817. The habitat is dominated by arable, grazing marsh and brownfield sites, separated by a large branching network of hedgerows with waterbodies present throughout.

The objective of the assessment was to document bat activity levels throughout the survey area, to determine whether the proposed development is going to cause negative impacts on local bat populations and to provide / suggest suitable mitigation.

Targeted bat surveys were undertaken in 2001 / 2002 within the LG Development and its immediate surroundings (Thomson Ecology 2008). Only a limited number of noctules were recorded flying along the southern boundary of the LG Development. Update surveys undertaken in 2008 concluded that there were 'very low' levels of bat activity around the LG Development site; Daubentons, Leisler's, pipistrelle spp. and noctules were recorded. The 2010 survey data confirmed these findings.

In total six of the 18 species of bat known to occur in England were found to be present within the survey area. Bats were mainly found at very low levels throughout the survey area. However, the results of the 2008 and 2010 surveys indicate that a higher number of bats are utilising the area to the east of the nature reserve (an area of arable farm land located immediately south-east of Old Farm) and the area of land that encompasses the northern most boundary of Site A (a receptor site associated with the LG Development - note that Site A is now called 'Stanford Wharf Nature Reserve').

The main impacts that are envisaged to occur from the proposed development of the proposed gas pipeline and associated AGI / electrical connection and sub-station are habitat loss resulting in fragmentation of commuting and foraging areas, and disturbance due to increased light levels associated with the proposed development, particularly at the AGI / sub-station and at any HDD drilling locations.

It is recommended that, wherever possible, linear features that are considered to be valuable for bats are retained and protected throughout the works. Where this is not possible it is recommended that the routes should bisect hedgerows at points where there are already gaps, and enlarge them, to minimise the impact of fragmentation. All gaps should also be bridged using fabric covered fencing, or similar, to maintain the integrity of the commuting feature, and should be re-instated following completion of the works as appropriate.

It is recommended that where possible lighting should be avoided, where this is not possible, directional lighting should be employed and low sodium lights should be used. This is particularly important for the HDD and AGI / sub-station locations as they will result in a respectively higher magnitude of impact due to the increased time scale of works, and in certain areas where higher levels of bat activity were recorded.

Due to the temporary characteristics of the proposed works and the relatively narrow footprint area, it is considered that the long-term ability of this area to be utilised by bats would not be affected by the proposed development. The mitigation measures that have been set out within the document are considered suitable to reduce the impact on local bats to a negligible level.

SECTION 1

INTRODUCTION

1 INTRODUCTION

1.1 Overview

1.1.1 Parsons Brinckerhoff Ltd (PB) was commissioned by InterGen to undertake detailed bat surveys, south and east of Stanford-le-Hope, Essex. The assessment will inform the construction of the proposed gas pipeline and associated AGI / electrical connection and sub-station associated with the Gateway Energy Centre Combined Cycle Gas Turbine (CCGT) Power Station (GEC).

1.1.2 It was identified within the Ecological Scoping Assessment (PB, 2010) that bat surveys should be undertaken within all habitats which could potentially support bats and which could be affected by the proposed development. The surveys were recommended to identify the distribution and abundance of bats in the area and to ensure compliance with the legislation protecting this species group.

1.1.3 Potential impacts on bats have been identified through assessing a combination of data collected in 2008 by Thomson Ecology to inform the London Gateway (LG) Development, and by PB in 2010.

1.2 Site Context

1.2.1 GEC will be location on land within the LD Development.

1.2.2 The GEC site is situated on the north bank of the Thames Estuary and lies approximately 6 km east of the A13. The A1014 dual carriageway (The Manorway) is located to the north of the site and runs east to west to provide a link with the A13, which in turn links in with the M25 at Junction 30. The River Thames runs in a west to east direction to the south of the site where DP World has recently commenced works on the new port facility associated with the LG Development.

1.2.3 The nearest residential settlements to the GEC site are at Stanford-le-Hope, Corringham and Fobbing which lie approximately 4 km to the west, Canvey Island approximately 5 km to the east, and Basildon approximately 7 km to the north.

1.2.4 To the east of the GEC site is the existing Coryton CCGT Power Station (700 m east), Shell Aviation Fuel Storage Farm and Petroplus' Coryton Oil Refinery (950 m east).

1.2.5 The LG Development comprises a deep-sea global container shipping port (LG Port) and a logistics and commercial centre (LG Logistics and Business Park). These are currently being developed on the site of the former Shell Oil Refinery at Shell Haven near Corringham and Stanford-le-Hope (Essex) on the northern banks of the Thames Estuary.

1.2.6 Prior to planning permission being granted, detailed ecological surveys were undertaken within the LG Development footprint and its immediate surroundings.

1.2.7 The underground gas pipeline and associated AGI are required to deliver the natural gas to be used as fuel by the gas turbines at GEC. At the AGI (OS Grid reference TQ 677 810), the natural gas will be taken from a connection to the existing National Grid National Transmission System (NTaS) Number 5 Feeder pipeline.

1.2.8 From the AGI, the underground gas pipeline will cross a range of arable, marsh and brownfield habitats and an area of land designated as a protected species receptor site for the LG Development, eventually connecting to GEC (OS Grid reference TQ 732 817) (see Figure 1). The underground gas pipeline will be laid using a combination of both surface excavation and horizontal directional drilling (HDD). The pipe is expected to measure approximately 16 inches in diameter and will be laid at a depth of approximately 1.2 m, using a working corridor of approximately 30 m where HDD is not used. Works are proposed to commence in either 2012 or 2013 and will take approximately six to nine months to complete.

- 1.2.9 If the electrical connection is over ground, it is likely to be fitted to new overhead pylons. It will run for approximately 6 km from GEC to a sub-station to be consented and constructed by National Grid. At the time of writing there are four possible sub-station locations, all situated to the west of the GEC site. All four possible locations have been included within this assessment (Figure 1). However, it should be noted, that a separate detailed assessment of the four sub-station locations, the inter-connecting cabling and all associated infrastructure is being undertaken independently of this assessment.
- 1.2.10 The exact alignment / routes and locations of the proposed gas pipeline and associated AGI / electrical connection and sub-station have yet to be finalised. However, the indicative alignment / routes and locations have been established and form the basis of this assessment. The indicative route for the gas pipeline and electricity connection will follow the alignment of an existing CECL Power Station gas pipeline as it is most likely that they will be laid as close to one another as possible to allow for easy management and maintenance. The 'proposed development' for the purposes of this Document therefore includes the gas pipeline and associated AGI / electrical connection and 4 preferred sub-stations (see Figure 1).
- 1.2.11 Thomson Ecology undertook bat surveys of suitable habitat within and immediately around the LG Development boundary, its receptor sites (Great Garlands Farm, Northern Triangle, and Site A (now called 'Stanford Wharf Nature Reserve'), shown on Figure 2) and the key access routes such as the rail corridors and the A1014 (The Manorway), in June and July 2008.
- 1.2.12 The majority of the indicative route is located outside but in close proximity to the LG Development, its receptor sites and access routes, and as such, much of the habitat considered suitable to support bats within the current assessment area has already been surveyed. Some of the data collated for the LG development is therefore relevant to this assessment and has been used to form much of the baseline.
- 1.2.13 This report collates and assesses the data collected by Thomson Ecology and PB to determine the potential impact of the proposed development on local bat populations and proposes mitigation measures where necessary.
- 1.3 Legislation and Planning Context**
- 1.3.1 All 18 native UK bat species are fully protected by UK Law under Schedule 5 of the Wildlife and Countryside Act 1981 (WCA) (as amended). The Countryside and Rights of Way Act 2000 (CROW) has amended the WCA in England and Wales and this act adds additional enforcement, making offences arrestable, increasing time limits for some prosecutions and increasing penalties.
- 1.3.2 As European protected species, all UK bat species are included in Schedule 2 of the Conservation of Habitats and Species Regulations 2010. This legislation is commonly referred to as the 'Habitats Regulations' (2010).
- 1.3.3 Combined the legislation makes it illegal to:
- Intentionally or deliberately kill, injure or capture bats;
 - Deliberately disturb bats whether in a roost or not;
 - Recklessly disturb roosting bats or obstruct access to their roosts;
 - Damage or destroy bat roosts;
 - Possess or transport a bat or any part of a bat unless acquired legally; and
 - Sell or exchange bats, or parts of bats.

- 1.3.4 The protection of bat roosts is considered to apply regardless of whether bats are present, and there is no guidance on when a roost ceases to be protected if it is not used by bats.
- 1.3.5 Bats are also listed as a priority species under the UK, Essex and Thurrock Biodiversity Action Plans (BAPs).
- 1.3.6 Furthermore, the Natural Environment and Rural Communities Act (NERC Act) 2006 and Planning Policy Statement 9 (PPS9) Biodiversity and Geological Conservation, require that due consideration be given to biodiversity and its potential enhancement when considering proposed developments. This is generally read in conjunction with Circular 06/05: Biodiversity and Geological Conservation – Statutory Obligations and their Impact on the Planning System.

SECTION 2

METHODOLOGY

2 METHODOLOGY

2.1 Introduction

2.1.1 The purpose of the surveys undertaken by both Thomson Ecology and PB was to determine how bats utilised the site for foraging, commuting, and roosting. It was not considered necessary for Thomson Ecology to survey habitats outside of their initial site boundary. The bat activity surveys undertaken by PB in 2010 therefore focused on the habitats not covered by Thomson Ecology in 2008 thereby providing sufficient data for the whole of the assessment area. Both Thomson's and PB's surveys have been supplemented by a desk top study which collated all historically held bat data for the local area.

2.1.2 All surveys undertaken by Thomson Ecology and PB complied with standard survey methodologies; Bat Surveys – Good Practice Guidelines (Bat Conservation Trust, 2007) and with reference to Bats; Guidelines for Developers (English Nature, 2004) and the Bat Workers' Manual (Joint Nature Conservation Committee, 2004).

2.2 Desk Study

2.2.1 A desk study was undertaken in 2010 as part of the Ecological Scoping Report (PB, 2010) to collate data relating to the survey area (see Figure 1) and a 2 km search radius. Records were collected from the Essex Mammal Group, the County bat recorder and from any previous surveys reports, such as those for the LG Development.

2.3 Field Surveys

PB Activity Surveys (2010)

2.3.1 Targeted manual and automated activity surveys were undertaken to observe and record bats within the survey area. The aim of the activity surveys was to determine the following:

- Presence / absence of bats and determination of species present;
- Location of bat activity and / or bat roosts; and
- The type of activity (foraging, commuting or social).

2.3.2 As bats can be extremely seasonal in their activities and movements, the surveys were undertaken throughout the summer. Four dusk surveys were undertaken on the 17th June, 1st, 18th, and 19th July, and two dusk and dawn surveys were undertaken on the 22nd, 23rd June and the 6th and 7th September 2010 respectively. All surveys were undertaken in suitable weather conditions as recommended within the Bat Conservation Trust (2007) guidelines.

2.3.3 During the 2010 surveys, the land not previously surveyed by Thomson was split into two sections. Survey 'Area B' is located within farmland around Mucking village (at the western end of the assessment area) and survey 'Area D' is located north of the A1014 (The Manorway). These two areas were subsequently divided into three sub-areas, referred to as B1, B2 and B3, & D1, D2 and D3. Refer to Figure 3 for locations of each sub-area. The six sub-areas or survey transects, focused on habitat features likely to be used by bats, such as hedgerows, mature trees and ditches, which may be adversely affected by the proposed works. Each transect was surveyed by one bat worker using walked transect methodologies (see below).

2.3.4 Each predetermined route was walked during daylight hours to ensure the surveyor was familiar with the habitat features most likely to be used by bats. The surveyor would use these features as listening stations during the survey. Listening stations are points where the surveyor would stop for between two and five minutes to listen for any bat activity. With at least three listening stations per transect, each route

would take at least 45 minutes to complete, therefore ensuring that at least two full circuits of the transects could be completed during each survey.

- 2.3.5 The dusk activity surveys commenced approximately 15 minutes before sunset and continued for approximately 120 minutes after sunset. The dawn activity surveys commenced at least 120 minutes before sunrise and ceased 15 minutes after sunrise. The surveyors walked each transect at a slow and steady pace, stopping at the predetermined listening stations.
- 2.3.6 The species of bat(s), number of passes and the time of activity were recorded. In addition, where possible, bat behaviour such as commuting, feeding, and flight paths was also noted.
- 2.3.7 All surveys were carried out by PB's Natural England licensed and experienced bat surveyors. Bat Box Duet (time expansion and frequency division) bat detectors were used in association with MP3 or H2 Zoom recording devices to record any bat activity. The species, type of activity (including foraging and commuting) and other details, such as the location, time, direction and specific flight details were recorded.
- 2.3.8 To obtain a greater level of survey intensity and to supplement the walked transect results, Anabat static detectors, were employed at targeted locations along the rail tracks which could not be surveyed for health and safety reasons. The Anabats were programmed to begin recording 30 minutes before sunset and continue until 30 minutes after sunrise.
- 2.3.9 All recorded data was subsequently analysed using a either Batsound or Anabat software to confirm species presence and key behaviour types.

Thomson Ecology Activity Surveys (2008)

- 2.3.10 During the 2008 surveys a total of four transects were surveyed during any one night. To facilitate analysis of results each transect was broken up into smaller transects measuring approximately 600 m in length with listening stations being located every 200 m; each of the split transects took 30 minutes to complete.
- 2.3.11 A total of 40 transects were surveyed three times each. The first round of surveys were undertaken between 30th June and the 16th July and the second round between the 11th August and the 27th August. Data for the third round is not available. Of the 40 transects only 19 are considered relevant. The other 21 transects occur outside of our assessment area. Therefore in total 19 transects were surveyed in 2008 and 6 in 2010, a total of 25.

2.4 Assessment of Bat Activity

- 2.4.1 To ensure the 2008 and 2010 data could be assessed collectively, the same methodologies used by Thomson in 2008 to gauge the levels of bat activity were employed by PB in 2010. This standardisation allows for comparison of bat activity which received varying degrees of survey effort. The methodologies rely on the total number of all bat passes, irrespective of the species. The activity level calculated broadly allows habitat features which are of importance to bats to be identified. Features important to any rare species can be assessed separately.
- 2.4.2 The total number of bat passes for all species recorded during each transect is divided by the duration time (in minutes) of the survey and multiplied by 100 to give a standard measure of bat activity along each transect (Thomson Ecology, 2008). The following equation was used:

$$\text{Bat Activity Level} = \frac{\text{Number of Bat Passes} \times 100}{\text{Total Duration of Survey}}$$

- 2.4.3 The resulting score was then categorised into one of five activity levels of 'very low – very high' (see Table 2.1).

TABLE 2.1: CATEGORISATION OF ACTIVITY LEVEL (THOMSON ECOLOGY, 2008)

Activity Score	Assessment of Activity
Up to 5	Very Low
6 – 30	Low
31 – 50	Medium
51 – 90	High
90 plus	Very High

2.5 Survey Limitations

- 2.5.1 During the 2008 Thomson Ecology surveys heavy rain was experienced on the 18th August 2008, (Thomson Ecology, 2008).
- 2.5.2 The Thomson Ecology surveys (2008) were designed to inform how bats were using the wider area. As such, detailed survey data was not collected for every hedgerow or waterbody across the site.
- 2.5.3 It was not possible to undertake bat surveys within St Cleres golf course, located at the western end of the indicative route, due to access restrictions. However, the pipeline will be laid along the edge of an arable field, south of the golf course and is therefore unlikely to affect any habitat considered suitable to support bats at this location.
- 2.5.4 It was not possible to undertake bat surveys within the Stanford-le-Hope industrial estate due to access restrictions. However, static bat detectors (Anabats) were placed along the boundary of the industrial estate adjacent to the rail tracks (a likely commuting corridor). It is considered that the results from the static detectors combined with the Thomson Ecology survey data for the northern boundary of receptor Site A (now called 'Stanford Wharf Nature Reserve') is sufficient to indicate the presence, abundance and behaviour of bats in the area.
- 2.5.5 Only the results of Thomson Ecology's first two surveys were available during this assessment; the data from the third and final survey was not obtainable. However, given the consistently low levels of bat activity and the dominance in common species recorded during the first two surveys, these results are considered sufficient to accurately indicate the level of bat activity within the survey area.
- 2.5.6 It was not possible to survey all habitats that were considered to be valuable for bats within the assessment area such as hedgerows and waterbodies. Therefore, targeted surveys were undertaken of areas that were considered to be most important, and / or likely to be impacted upon; this was considered sufficient due to the narrow footprint, and temporary characteristics of the proposed development works.

SECTION 3

RESULTS

3 RESULTS

3.1 Desk Study

3.1.1 The majority of the County Recorder's records, not associated with the LG Development, were concentrated around the residential areas of Stanford-le-Hope and along the A1014 (The Manorway). The majority of the recordings from the County Recorder comprise sporadic single passes of pipistrelle species and brown long-eared bats with only a few accounts where bats were recorded foraging in one area or in groups of two or more bats.

3.1.2 Dedicated bat surveys were undertaken in 2001 / 2002 by Environmental Services Limited within the LG Development and its immediate surroundings (Thomson Ecology, 2008). Only noctules (*Nyctalus noctula*) were recorded flying along the southern boundary of the LG Development.

3.1.3 The Scoping Report (PB 2010) identified various species of bat within the search area which included some of the data recorded by Thomson Ecology in 2008. The species recorded before 2010 comprise: common pipistrelle (*Pipistrellus pipistrellus*); soprano pipistrelle (*Pipistrellus pygmaeus*); noctule, serotine (*Eptesicus serotinus*); Leisler's (*Nyctalus leisleri*); Daubenton's (*Myotis daubentonii*) and brown long-eared (*Plecotus auritus*) bats.

3.2 Field Surveys

Habitat Description

3.2.1 The survey area is dominated by arable fields, grassland, waterbodies, residential properties and a large area of brownfield land located within the confines of the LG Development. These habitats are considered suitable for foraging bats. The survey area also supports a number of linear features such as ditches, rail tracks and hedgerows which provide ideal flight corridors for commuting bats. Devoid of large mature trees there are few roosting opportunities recorded within the survey area itself. The majority of suitable roosts were recorded within and around the farm buildings. The survey area is considered to be suitable to support bats.

2010 Activity Surveys

3.2.2 Each of the 2010 surveys were undertaken in weather conditions considered optimal for bat surveys, details are provided in Table 3.1.

SECTION 3 RESULTS



TABLE 3.1: SURVEY TIMES AND WEATHER CONDITIONS DURING THE SURVEY

Date	Survey time	Sunset / Sunrise	T°C	Cloud Cover (Octas)	Wind Strength (m/s)	Rain	Notes
17 th June 2010	20:50 – 23:00	21:18	16°C	5 / 8	1 m/s	Nil	Clear and calm with scattered clouds
22 nd June 2010	20:50 – 22:50	21:19	24°C	0 / 8	0.3 m/s	Nil	Clear and calm with scattered clouds,
23 rd June 2010	03:15 – 04:50	04:40	16°C	2 / 8	0.3 m/s	Nil	Clear and calm with scattered clouds
1 st July 2010	20:50 – 22:50	21:22	18°C	1 / 8	0.7 m/s	Nil	Warm and calm
19 th July 2010	20:30 – 22:40	21:05	25°C	2 / 8	0 m/s	Nil	Warm and calm
18 th August 2010	19:50 – 22:30	20:25	19°C	6 / 8	0.5 m/s	Light shower before survey	Overcast with clear patches
6 th September 2010	19:00 – 21:50	19:36	18°C	8 / 8	3.3 m/s	Rain during the day	Overcast with early rain
7 th September 2010	04:50 – 06:30	06:26	13°C	0 / 8	0	Heavy rain during the night	Calm and Clear

- 3.2.3 As no potential roosts which could be directly affected by the proposed development were identified along the indicative route, no specific emergence surveys were undertaken. Furthermore, no bat roosts were recorded during the transect surveys. Common pipistrelle, soprano pipistrelle, serotine, noctule, and brown long-eared bats were recorded foraging and commuting during the surveys. Bat activity was recorded along all six transects (B1, B2, B3, D1, D2, D3) and at the static detector C1 (Figure 3 & 4). Common pipistrelles and noctules comprised the majority of the activity recorded.
- 3.2.4 At least three species of bat were recorded in survey Area B, around Mucking village. Common pipistrelles and noctules were recorded on transects B1 and B2 see Figure 4. Noctules, common and soprano pipistrelles were recorded on transect B3.
- 3.2.5 Four bat species were recorded in survey Area D, located north of the A1014 (The Manorway). Common pipistrelle and brown long-eared bats were recorded along transect D1. Common pipistrelle and noctule species were recorded on transect D2. Noctule, common and soprano pipistrelle species were recorded along D3.
- 3.2.6 The surveys of transects B2, B3 and D1, D2 and D3 all recorded activity levels that were calculated to be 'Very Low' (Figure 5). Only within transect B1 was a higher level of activity recorded, although this was recorded as 'Low'.
- 3.2.7 The static detector, located north of the Stanford Warren industrial estate (C1 on Figure 3) recorded at least four bat species, including; soprano pipistrelle, common pipistrelle, noctule, and serotine (Figure 4). However, despite the four species being recorded, activity levels were also recorded as 'Low' (Figure 5). The most abundant species was common pipistrelle.
- 3.2.8 Table 3.2 summarises the species recorded and the relevant peak number of bat passes for each transect and the static detector. Pipistrelle species that were unidentifiable were classed as common pipistrelles.

SECTION 3 RESULTS



TABLE 3.2 SUMMARY OF RESULTS FOR THE 2010 BAT ACTIVITY SURVEYS

Survey Area*	Date	Species	Peak Number of Passes	Overall Level of Activity	Notes
D1	1 st July 2010	Common Pipistrelle	6	A total of 7 passes 4.7 = Very Low activity level	Brown long eared bats were recorded near buildings. Pipistrelles were found using some linear features within the study area and the wooded area adjacent to Manor Way
	6 th September 2010	Brown Long Eared	1		
D2	1 st July 2010	Common Pipistrelle	2	A total of 3 passes 2 = Very Low activity	No bats were observed emerging from the buildings or trees present within the site.
	7 th September 2010	Noctule	1		
D3	1 st July 2010	Common Pipistrelle	1	A total of 5 passes	No bats were observed emerging from the buildings or trees present within the site.
	1 st July 2010	Noctule	1	3.3 = Very Low activity	
	1 st July 2010	Soprano Pipistrelle	3		
B1	18 August 2010	Common Pipistrelle	4	A total of 11 passes 7.3 = Low activity levels	
	22 nd June 2010	Noctule	7		
B2	18 August 2010	Common Pipistrelle	5	A total of 8 passes 5.3 = Very Low activity	
	18 August 2010	Noctule	3		
B3	22 nd June 2010	Common Pipistrelle	6	A total of 8 passes	Bats may be using the tree line and railway line as a commuting route.
	22 nd June 2010	Soprano Pipistrelle	1	5.3 = Very Low activity	
	18 August 2010	Noctule	1		
C1 Anabat	22 nd June 2010	Common Pipistrelle	118	A total of 126 passes 27.3= Low activity	Bats may be using the tree line and railway line as a commuting route, and the industrial estate for foraging.
		Soprano Pipistrelle	6		
		Noctule	6		
		Serotine	1		

*Refer to Figures 3 & 4 for survey area locations

2008 Activity Surveys

- 3.2.9 During the 2008 bat activity surveys four species of bat were recorded; common and, soprano pipistrelle, noctule, and Leisler's bat species (see Table 3.3 and Figure 3 for locations).
- 3.2.10 Leisler's, common and soprano pipistrelles were recorded utilising hedgerows within the centre of the survey area south of Old Farm on transect F10 (Figure 4). Soprano pipistrelles and Leisler's were recorded on transect F12 and common pipistrelles were recorded on transect F15. Transect F10 was recorded as having a 'Very High' level of bat activity, transects F12 a 'Medium' level of activity and F15 a 'Low' level of activity (see Figure 5). No bats were recorded on transects F13, F14, and F16.
- 3.2.11 Common pipistrelles and noctules were recorded within the Northern Triangle Receptor Site, north of the A1014 (The Manorway) (transects N24 & N25). However, a total of only four bat passes were recorded within the area resulting in 'Low' and 'Very Low' bat activity levels (Table 3.3 & Figure 5). No bats were recorded on transect N22 also located within the Northern Triangle.
- 3.2.12 Soprano pipistrelles were recorded using hedgerows immediately south of the industrial park and east of Stanford Warren Nature Reserve (A2), a total of 25 passes were recorded resulting in a 'High' bat activity level (Table 3.3). No bats were recorded on transect A4 located along the southern boundary of the survey area (Figure 4).
- 3.2.13 Leisler's bats were recorded foraging along the railway at transect R5 located immediately north of Stanford Warren Nature Reserve; a total of 25 passes were recorded, resulting in a 'High' bat activity level (Table 3.3 and Figure 5).
- 3.2.14 A single common pipistrelle was recorded on transect M29 located to the north of the survey area along the A1014 (The Manorway); only three passes were recorded resulting in 'Very Low' bat activity levels. No bat activity was recorded along transect M28 located further west along the A1014 (The Manorway).
- 3.2.15 No bats were recorded along the transect routes of the LG Development site (transects Pa 32, 37, 29, and 40).
- 3.2.16 The highest bat activity levels were noted along transects F10, F12, and R5, which are all located within the large area to the south of Old Hall Farm and Great Garlands Farm. A high level of bat activity was also recorded along the A2 transect located immediately east of Stanford Warren Nature Reserve within the northern boundary of the habitat creation / enhancement area Site A (now called 'Stanford Wharf Nature Reserve').
- 3.2.17 Table 3.3 below summarises the number of bat passes and species recorded for the 19 transects surveyed (see Figure 3 for their locations). Pipistrelle species that were unidentifiable were classed as common pipistrelles.

SECTION 3 RESULTS



TABLE 3.3 SUMMARY OF RESULTS OF THOMSON ECOLOGY 2008 BAT SURVEYS

Survey Area*	Date	Species	Number of Passes	Overall level of Activity	Notes
A2	14 th August	soprano pipistrelle	25	A total of 25 passes 83 = High activity level	
A4	14 th August	N / A	N / A	N / A	No bats recorded
F10	26 th August	common pipistrelle	7	A total of 39 passes 130 = A very high level of activity	
		soprano pipistrelle	6		
		Leisler's	26		
F12	26 th August	soprano pipistrelle	1	A total of 10 passes 33 = A medium activity score	
		Leisler's	9		
F13	13 th August	N / A	N / A	N / A	No bats recorded
F14	13 th August	N / A	N / A	N / A	No bats recorded
F15	26 th August	common pipistrelle	5	A total of five passes 17 = Low activity	
F16	13 th August	N / A	N / A	N / A	No bats recorded
M28	21 st August	N / A	N / A	N / A	No bats recorded
M29	21 st August	common pipistrelle	1	A total of one pass 3 = Very low level of activity	
N22	27 th August	N / A	N / A	N / A	No bats recorded
N24	27 th August	common pipistrelle	1	A total of one pass 3 = Very low level of activity	
N25	27 th August	common pipistrelle	3	A total of four passes 13 = Low level of activity	
		Noctule	1		
Pa 32	12 th August	N / A	N / A	N / A	No bats recorded
Pa 37	18 th August	N / A	N / A	N / A	No bats recorded
Pa 39	18 th August	N / A	N / A	N / A	No bats recorded
Pa 40	18 th August	N / A	N / A	N / A	No bats recorded
R5	26 th August	Leisler's	28	A total of 28 passes 93 = A very high level of activity	
R6	26 th August	N / A	N / A	N / A	No bats recorded

*Refer to Figure 3 for location

Roosts

- 3.2.18 There are no suitable built structures that are likely to be impacted upon by the development which could be utilised by bats as a roost. There are some trees within the survey boundary which have a potential to be utilised by bats as roosts, however, these trees are considered to have low potential. No bats were observed leaving any trees within or surrounding the survey area.

Summary

- 3.2.19 Six species of bat were recorded during the 2008 and 2010 surveys. The species present within the survey area were; common pipistrelle, soprano pipistrelle, serotine, Leisler's, noctule, and brown long-eared bats. Common and soprano pipistrelles, and noctules, comprised the majority of calls recorded and the Leisler's calls were recorded predominantly along the railway only.
- 3.2.20 Bats were recorded throughout the survey area, however there are key areas of utilisation concentrated within the central section of the survey area, around the borders of Stanford Warren Nature Reserve (transects A2, B1, and R5), along the hedgerows located south of Old Farm (transects F10, 12, and 15) and within the industrial site located to the east of the Stanford Warren (static detector C1). Low bat activity levels were recorded along the northern boundary of the survey area north of the A1014 (The Manorway) which is dominated by arable and pasture fields.

SECTION 4

DISCUSSIONS AND RECOMMENDATIONS

4 DISCUSSION AND RECOMMENDATIONS

4.1 Overview

- 4.1.1 Of the 18 species of bat known to occur in England, six species were recorded within the survey area during the 2008 and 2010 surveys. Bats were recorded throughout the survey area but in larger numbers to the east of Stanford Warren Nature Reserve and south of Old Hall Farm. Both foraging and commuting behaviour were identified for each species of bat recorded.
- 4.1.2 As no potential roosting sites or features suitable to support roosting bats were identified along the alignment of the indicative route, no specific roost surveys were undertaken. No bat roosts (including summer, maternity and / or hibernation) were found during the surveys undertaken. Given the large size of the survey area, it is likely that bat roosts will be present in proximity to the indicative route, particularly around Old Farm and Great Garlands Farm where levels of bat activity were at their highest. However, given that the majority of the proposed development passes through open fields it is considered unlikely that any bat roosts will be impacted as a result of the proposed works.
- 4.1.3 The proportionate increase in levels of bat activity indicates that Stanford Warren Nature Reserve, its immediate surroundings and an area of arable farmland located immediately south-east of Great Garlands Farm and Old Farm are the most valuable areas for bats. It is likely that the nature reserve provides good foraging habitat due to the high numbers of invertebrates associated with the wetlands present. The nature reserve will be bypassed by HDD technology and will therefore not be directly affected by the pipeline installation. The hedgerows and tree lines surrounding the nature reserve will, however, be subject to direct effects, particularly those located to the west of the reserve as they run perpendicular to the indicative route and cannot be avoided. The mature trees, hedgerows and old buildings associated with the farms are considered suitable for roosting and foraging for a number of species but will not be directly affected. These two areas of high bat activity are well connected by a series of hedgerows, ditches and the railway line to the south.
- 4.1.4 The area north of the A1014 (The Manorway) and the Northern Triangle Receptor Site are dominated by large arable fields, semi-improved grassland, and associated hedgerows. Small numbers of more common species of bat were recorded here. The area is very open, relatively isolated from suitable roosting or other foraging sites and was noted to be very well lit by the adjacent commercial site and existing power station located to the south-east. The area is therefore considered to provide habitats of low suitability for bats.
- 4.1.5 Construction of the linear gas pipeline and electric cabling, following the indicative route, would potentially result in temporary habitat loss, and increased disturbance along the majority of the alignment caused by the increased noise, vibration, and lighting associated with the works.
- 4.1.6 The majority of the indicative route will be situated within arable or grazing fields which themselves provide little opportunity for bats. However, the indicative route is also likely to bisect a number of hedgerows and linear features that bats use as commuting and foraging routes. Such an impact could result in the fragmentation of habitats known to support bats and thus inhibit the bats natural commuting behaviour. Such fragmentation may result in a breach of the Wildlife and Countryside Act 1981, (as amended) or the Habitats Regulations 2010. The following section provides an overview of the likely potential impacts which will, in turn, inform the mitigation requirements.

4.2 Potential Impacts

Impacts Associated with the Construction of the Pipeline

- 4.2.1 The 30 m wide working corridor associated with the construction of the pipeline and reinstatement of the ground is anticipated to take approximately six months to complete. It is understood that installation works are only likely to be carried out at any one point along the route for one to two weeks as the pipeline is laid in stages. During this time the boundary of the pipeline route where works are being undertaken would be fenced, the topsoil stripped, and the trench excavated prior to construction and installation of the pipeline commencing. Increased noise, light and vibration disturbance and an increase in dust deposition are therefore likely to be highly localised and very temporary in nature.
- 4.2.2 Under the current plans no trees or buildings with the potential to be used as bat roosts will be directly affected as a result of the works. However, should the route alter significantly resulting in impacts on any trees or buildings that have the potential to support roosting bats, further surveys would be required.
- 4.2.3 The fragmentation of habitats used by bats is likely to constitute the greatest impact resulting from the works. Bats use linear features such as rivers, hedgerows and tree lines as commuting routes to foraging grounds (Limpens and Kapetyn, 1991). The creation of a small gap (approximately 5 m in length) in a hedgerow can restrict bats movements along such corridors. The integrity of these habitat features is important as bats need to be able to move freely between roost sites and foraging areas (Mitchell-Jones and McLeish, 1999). Therefore, small scale modifications to such features, for example the creation of a 30 m wide gap within a hedgerow may isolate roosts or foraging sites and must be taken into consideration when predicting the impacts of a development (Warren et al 2000). However, the anticipated fragmentation impacts are only envisaged to occur during the construction stage of the pipeline as all habitats will be reinstated to their original condition or better post completion of works.
- 4.2.4 Fragmentation of suitable linear features is envisaged throughout the survey area. The majority of the field boundaries located along the route are delineated by a hedgerow, row of trees, vegetated ditch or fence. An estimated 24 hedgerows, vegetated ditches or tree lines would be affected, some intact and continuous, others defunct. The hedgerows which support the greatest abundance of bats are located directly south of Old Farm. Bats may roost in the buildings and mature trees associated with Great Garlands Farm and Old Farm and use the hedgerows to commute to suitable foraging areas or as foraging habitats themselves.
- 4.2.5 It is acknowledged that many of the hedgerows and other linear features within the survey area are already defunct and incorporate large gaps. The temporary creation of additional, similar gaps to facilitate the construction works may therefore not prove as significant as creating gaps in fully intact linear features. The temporary fragmentation of already broken or defunct hedgerows is envisaged to result in minor affects.
- 4.2.6 The construction works associated with the proposed development would result in an increase in human activity, noise, vibration, and dust resulting in indirect disturbances. These indirect impacts are not envisaged to be significant as works will be undertaken during day light hours when bats are inactive and are programmed to take only one to two weeks to complete.
- 4.2.7 The increased levels of artificial lighting associated with the construction works may also indirectly affect bats. Lighting can lead to the fragmentation of commuting corridors as light can act as a barrier which bats will not cross. However, under current plans the normal working hours should be restricted to occur between 07:00

and 19:00. It is therefore envisaged that only limited security lighting will be required during the construction phase, reducing the potential for impacts on bats.

- 4.2.8 The construction of the pipeline will result in the temporary loss of habitat, fragmentation of commuting and foraging habitats and an increase in indirect disturbances such as increased lighting. These impacts are likely to have an adverse effect on bats if unmitigated.

Impacts Associated with the HDD Tunnelling

- 4.2.9 Under current plans three sections of the proposed pipeline are to be laid using HDD technology; under Stanford Warren Nature Reserve and twice under the A1014 (The Manorway).
- 4.2.10 The exact locations of the HDD tunnelling sites are still to be confirmed. It is understood, however, that the HDD bore-holes will be positioned in arable fields which are not considered to be optimal habitats for bats. The temporary loss of such habitat is therefore unlikely to adversely affect bats. Despite this the access tracks required to remove the excavated spoil could fragment or disturb known foraging or commuting routes. The remainder of the HDD route is likely to remain unaffected as the pipeline or cable is laid deep underground. Assuming that existing roads or tracks can be used to access the preferred sites, the HDD technology is therefore unlikely to cause significant direct impacts.
- 4.2.11 Indirect disturbances from increases in noise, vibration and lighting are expected in association with the HDD tunnelling works. Although still considered to be temporary, any indirect disturbances may continue for longer than the two weeks envisaged for the pipeline excavations as the HDD tunnelling works will be located in one fixed point for a longer period of time.
- 4.2.12 The proposed works are likely to result in increased levels of lighting during the construction phase. However, it is assumed that works will occur only within the hours of 07:00 to 19:00 (as above) and limited security lighting will be required. The resulting impact of increased lighting at the HDD access and egress sites is therefore likely to be negligible.
- 4.2.13 It is assumed that any increases in noise, lighting or vibration will not adversely affect any roosting bats as construction works are not currently planned to occur within close proximity to any known roosts.
- 4.2.14 The effects of disturbance during construction, combined with temporary loss of habitat, are likely to have a minimal impact on foraging and commuting bats due to the abundance of suitable foraging and commuting habitat in the surrounding area. A further review of the HDD compounds should be undertaken once the final locations of the compounds have been agreed.

Impacts Associated with the Construction of the Sub-Station Options

- 4.2.15 It is envisaged that the preferred sub-station options 1, 5a, and 10, would not result in any direct permanent impacts on bats via habitat loss, as each option will be situated within large arable fields which provide sub-optimal habitat for bats.
- 4.2.16 The direct impact of permanent habitat loss associated with the sub-station option 5b may result in a greater impact on bats as a larger abundance of bats were recorded using the rail way corridor immediately to the north of the site and the wetland habitat immediately to the south. The site also comprises an area of scrub which could be used as a foraging ground.
- 4.2.17 Several large mature oak trees are also located immediately to the south of the proposed sub-station 5b. These trees may be suitable for roosting bats. Furthermore, the trees located along the railway line, and a large derelict building located immediately to the east of the proposed 5b site could provide further potential

roosting opportunities for bats. These opportunities are, however, considered to be sub-optimal for bats as the trees are mostly semi-mature with few suitable features for roosting, and the derelict building located to the east is a large flat-roofed concrete building that is unlikely to provide many suitable roosting opportunities.

4.2.18 The indirect impacts from increased noise, dust, vibration and lighting are envisaged at all of the sub-station options but are likely to be most adverse around option 5b given the suitability of the surrounding habitat and the higher levels of bat activity in the area. The operational lighting of the chosen sub-station may also result in permanent indirect impacts.

4.2.19 It is understood that further, more detailed assessments will be undertaken on behalf of National Grid when more details are available about the size and location of the options.

4.3 General Recommendations

4.3.1 In accordance with PPS9 and the NERC Act (2006), linear features such as tree lines and hedgerows should be protected during developments, as they act as important features for commuting and foraging bats. It is understood that the larger the gap in such a feature, the greater the fragmentation. It is therefore recommended that any gaps created in hedgerows, vegetated ditches or any other linear feature are minimised. For example, rather than removing the full width of the working corridor (30 m) it is recommended that only a 10-15 m section of hedgerow is removed, where possible. The retained hedge can be fenced and protected. Existing gaps in hedgerows and vegetated ditches should be utilised or enlarged rather than creating new gaps. This is particularly important in areas surrounding the Stanford Warren Nature Reserve and in areas south-east of Old Farm, where higher levels of bat activity were observed during the surveys.

4.3.2 To further avoid any potential fragmentation of important habitats, it is recommended that any key commuting corridors which will be bisected by the indicative route are bridged at night and when not being worked on. The bridge feature will maintain the connectivity along the corridor ensuring bats can move freely across the site. The bridging could simply constitute the fitting of Heras fencing within the newly created gap. The fencing should be covered in a fabric, such as camouflaged netting or simply dust suppressant sheeting to mimic the tree line or hedgerow and encourage bats to continue using the linear features. The temporary fence can be easily moved into place at the end of the day and out of the way when works recommence. Such fences can also be left in situ if the hedgerows are removed weeks or months before they can be reinstated. These fences should be fitted along all bisected linear corridors where possible, but particularly along the hedgerows which support medium or high abundances of bats.

4.3.3 A relatively small amount of foraging habitat (approximately 720 m²) is likely to be temporarily removed and the majority of this constitutes the hedgerows. It is recommended that following the completion of the pipeline installation suitable habitats that have been bisected during the construction phase be reinstated to at least the same and preferably improved condition as prior to excavation works. Additional planting may be necessary; this should include species that are native to the area and are known to support native and local insect fauna, such as hazel (*Corylus avellana*), hawthorn (*Crataegus monogyna*), blackthorn (*Prunus spinosa*), and elder (*Sambucus nigra*). This will be beneficial for bats and for a range of other native wildlife.

4.3.4 Trees can provide important roosting sites for certain species of bats, dependant on the size of the internal cavities available. Under the current plans no trees are likely to be directly impacted as a result of the works, however, where development may disturb a potential bat roost, it is recommended that a survey is undertaken to confirm the value of the tree or building for bats and mitigation implemented as necessary.

- 4.3.5 Where possible, it is recommended that vegetation clearance is carried out between November to March when bats are hibernating and thus causing minimum disturbance to them.
- 4.3.6 It is recommended that where possible all artificial lighting should be avoided; where this is not possible low sodium lights should be used as they are known to have less significant effects on some bat species. This is relevant to any operational or security lighting and across the entire length of the survey area. Light spillage onto any of the identified linear corridors or foraging areas should be avoided by the use of sensitive, directional lighting, hoods and / or cowls. Any lighting schemes associated with the proposed development should be reviewed by an experienced ecologist once the route and sub-station locations have been finalised.
- 4.3.7 It is understood that the construction works will be undertaken under a Construction Environmental Management Plan (CEMP). The CEMP will ensure best practice will be followed and indirect impacts such as increased noise, dust, and vibration are minimised. Significant adverse impacts on bats from indirect disturbances are not envisaged and no further recommendations are considered necessary at this point. However, should the indicative route alter significantly from the current alignment, further ecological mitigation may be required.
- 4.3.8 With the implementation of the above recommendations and understanding the proposed development will not significantly affect any known bat roosts or key foraging or commuting sites, it is not likely that a Natural England Development Licence will be required. Development Licences are usually required to legally permit any works which fall outside of best practice and / or adversely affect any European protected species, such as bats. Should the proposed development be altered and the recommended mitigation be unsuitable or impacts unknown it is likely that a development licence will be required. This could potentially result in significant delays to a project, if not considered as early as possible.

SECTION 5

CONCLUSIONS

SECTION 5 CONCLUSION

5 CONCLUSIONS

- 5.1.1 Bats were recorded throughout the survey area with higher bat activity levels noted to the south of the survey area near Old Farm, and around the Stanford Warren Nature Reserve. The construction of the proposed development is likely to adversely affect bats in the absence of any mitigation.
- 5.1.2 The main anticipated impacts constitute the temporary loss of commuting habitats, such as hedgerows which may result in the fragmentation of commuting, roosting and foraging areas, and increased indirect disturbance of bats due to increased light levels; potentially resulting in the further fragmentation of the area.
- 5.1.3 Mitigation such as the use of directional and sensitive lighting, working during daylight hours and reducing the width of and / or bridging the working corridor where it bisects linear features such as hedgerows, have been provided. The reinstatement of any adversely affected habitats such as hedgerows and the landscaping of the preferred sub-station could enhance connectivity across the site and provide a net gain in foraging or commuting habitats.
- 5.1.4 Due to the temporary characteristic of the proposed development and the relatively narrow footprint area, it is considered that the long-term ability of this area to be utilised by bats would not be affected by the current proposed development. The generic mitigation measures set out within this report are designed so that the disturbance, habitat loss and fragmentation impacts associated with the route are likely to be minimal on bat species within the area. No further habitat creation or manipulation has been recommended at this stage.

SECTION 6

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6

REFERENCES

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FIGURES

FIGURE 1: LOCATION OF THE SURVEY AREA AND THE CCGT SITE LOCATION, GAS INLET LOCATIONS, AND FOUR POSSIBLE SUB-STATION LOCATIONS



THIS DRAWING MAY BE USED ONLY FOR THE PURPOSE INTENDED AND ONLY WRITTEN INSTRUCTIONS SHALL BE USED

Legend

- Total Survey Area
- CCGT Power Station
- Start of Gas Pipeline
- Potential Sub Station Location

0 100 200 300 400 500
Metres

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Sheet	1 of 1		
Drawing Status	FINAL		
Site Name	Thames Haven		
Drawing Title	Total Bat Survey Area		
Scale at A3	1:20,000		
Drawn by	JL	Reviewed by	TM
Stage 1 checked by	Stage 2 checked by	Project Manager	Drawn by

PARSONS BRINCKERHOFF

Project No: 63958A
Client: Thames Haven
Date: 01/07/2010
Drawing No: 63958A_BAT_SA

FIGURE 2: LOCATION OF HABITAT CREATION / ENHANCEMENT AREAS ASSOCIATED WITH THE LARGER DP WORLD AND LG DEVELOPMENT

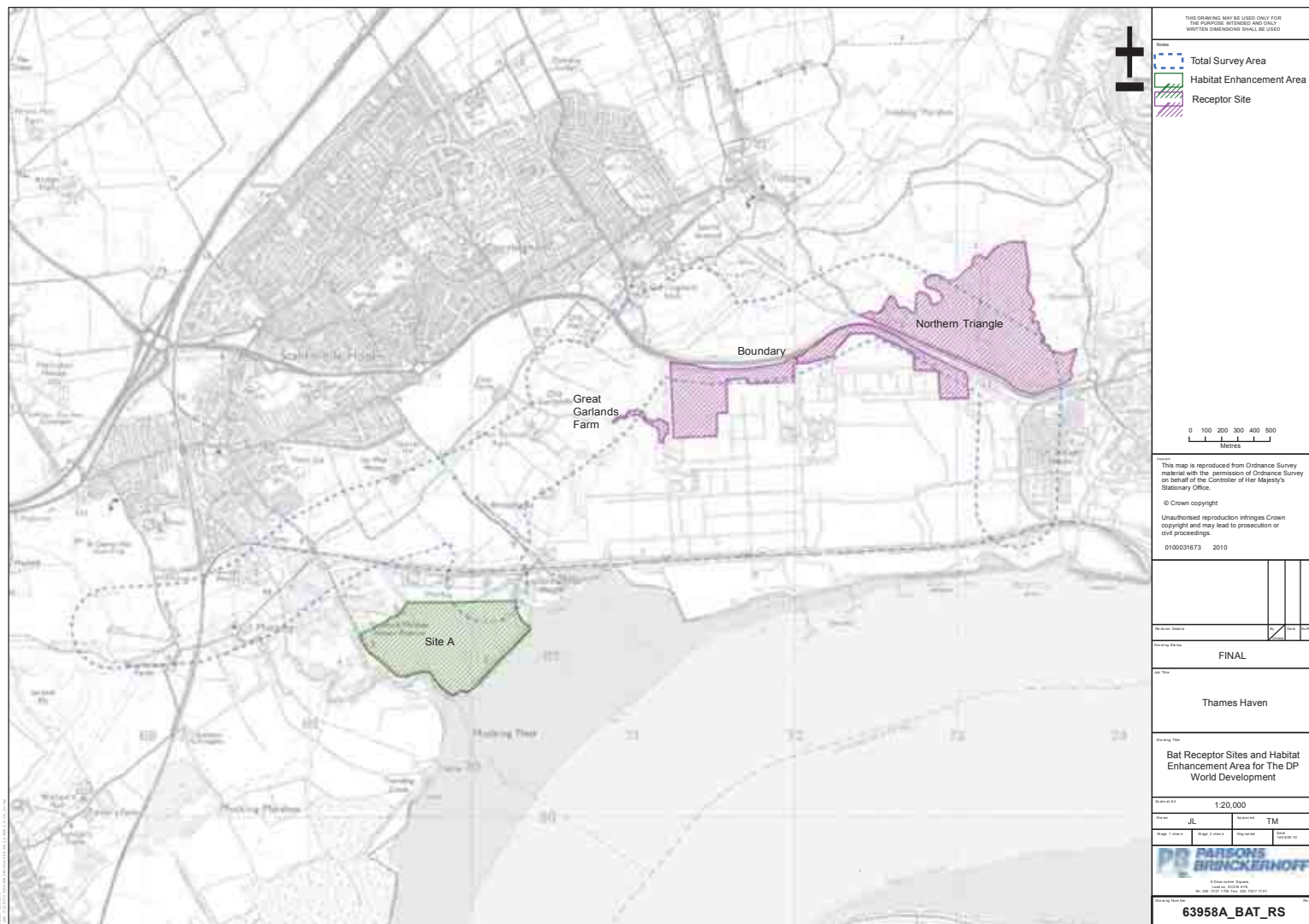
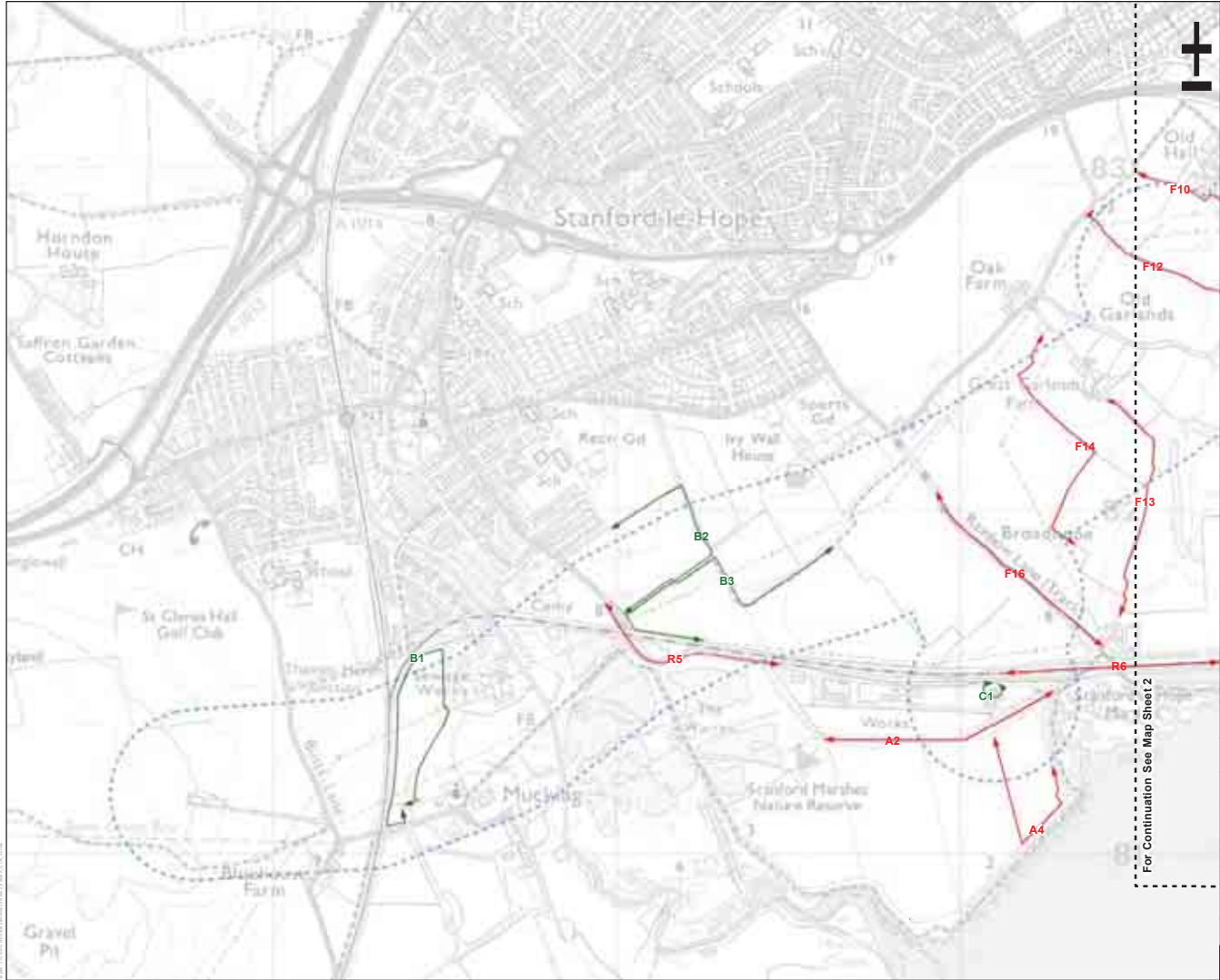


FIGURE 3: BAT ACTIVITY TRANSECT ROUTES OF SURVEYS UNDERTAKEN IN 2008 AND 2010



THIS DRAWING MAY BE USED ONLY FOR THE PURPOSE INTENDED AND ONLY WRITTEN DIMENSIONS SHALL BE USED

Map Sheet
Total Survey Area
Transect Lines
Thompson Ecology 2008
Parsons Brinckerhoff 2010

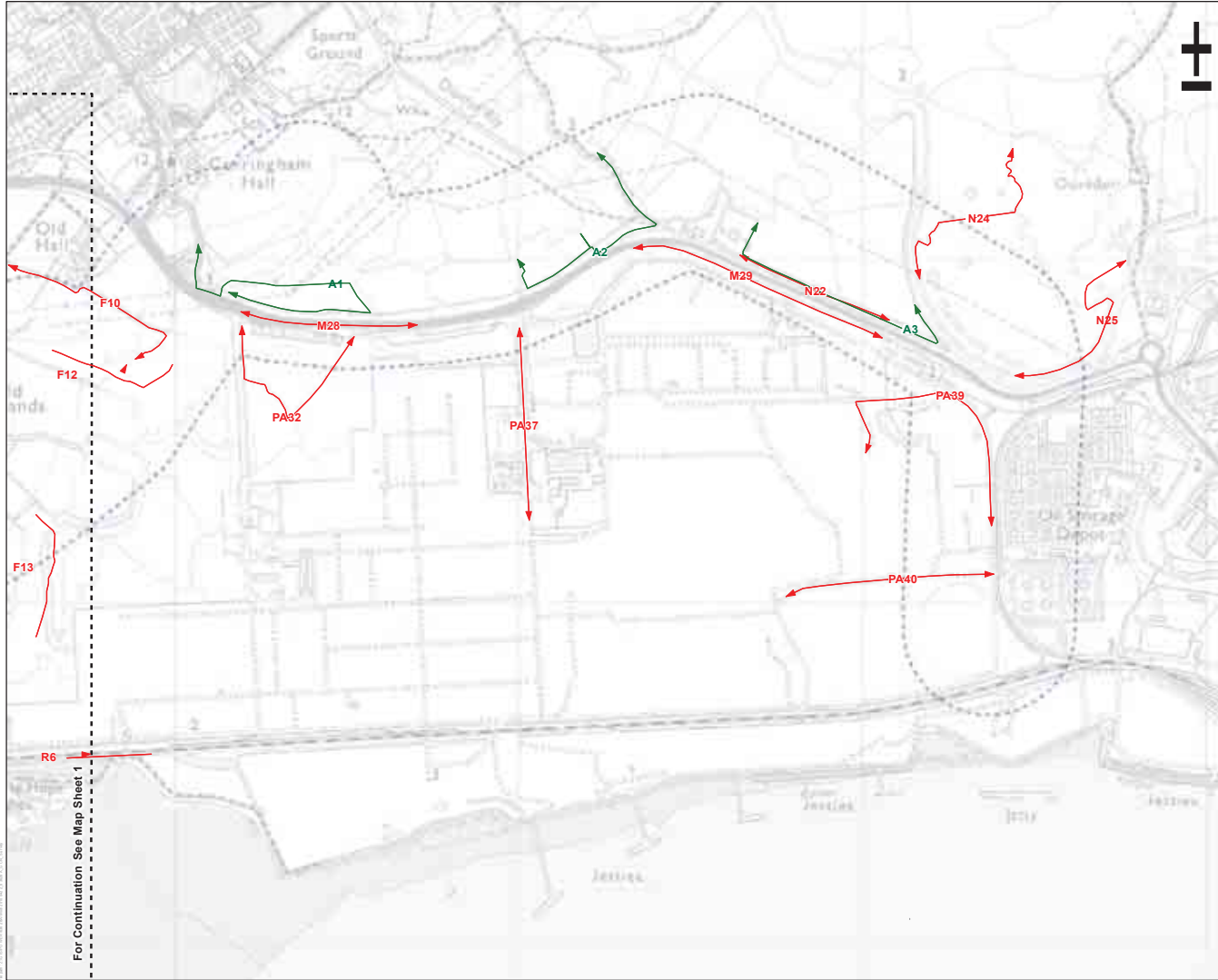
0 50 100 150 200 250
Metres

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0100031673 2010

Project Name	Thames Haven		
Project Status	FINAL		
Project Title	Transect Survey Effort (Map Sheet 1 of 2)		
Scale	1:10,000		
Drawn	JL	Reviewed	TM
Project Manager	Project Engineer	Project Manager	Project Engineer

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63958A_BAT_TS_01



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Map Sheet
Total Survey Area

Transect Lines
Thompson Ecology 2008
Parsons Brinckerhoff 2010

0 50 100 150 200 250
Metres

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Project Name	63958A		
Drawing Name	FINAL		
Job Title	Thames Haven		
Drawing Title	Transect Survey Effort (Map Sheet 2 of 2)		
Scale	1:10,000		
Drawn	JL	Reviewed	TM
Checked	TM	Design	TM

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Drawing Number
63958A_BAT_TS_02

For Continuation See Map Sheet 1

FIGURE 4: BAT ACTIVITY TRANSECT RESULTS

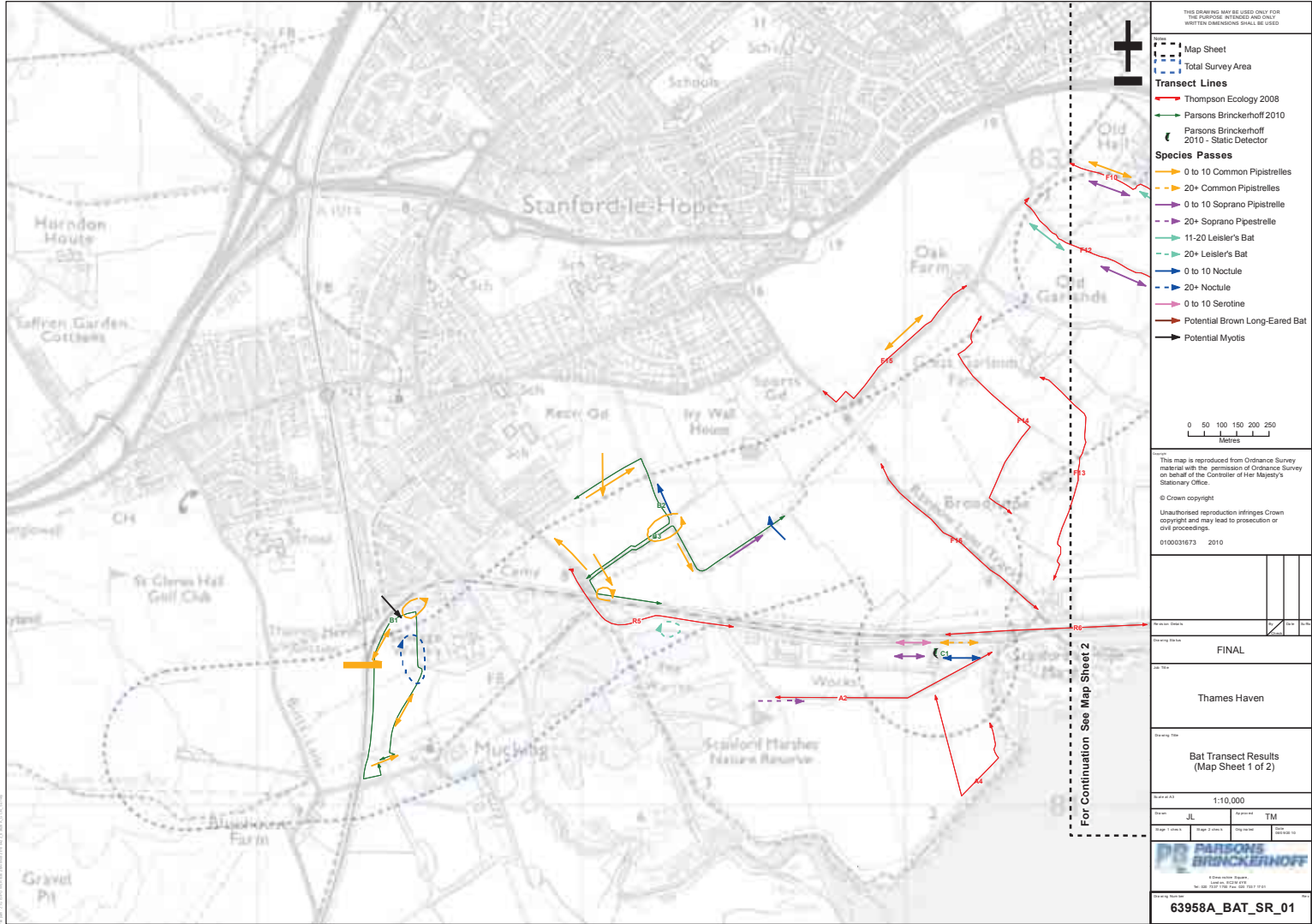
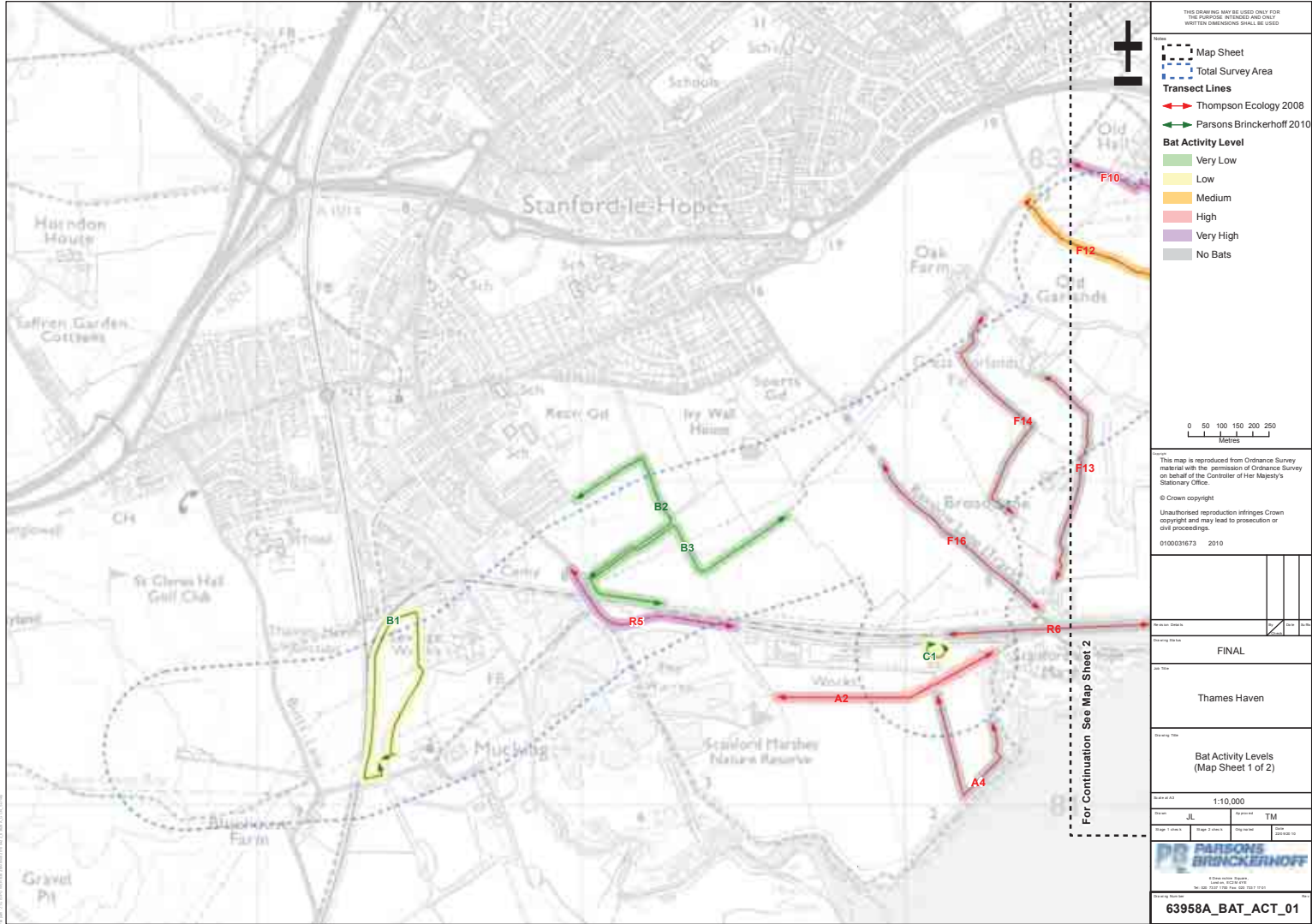
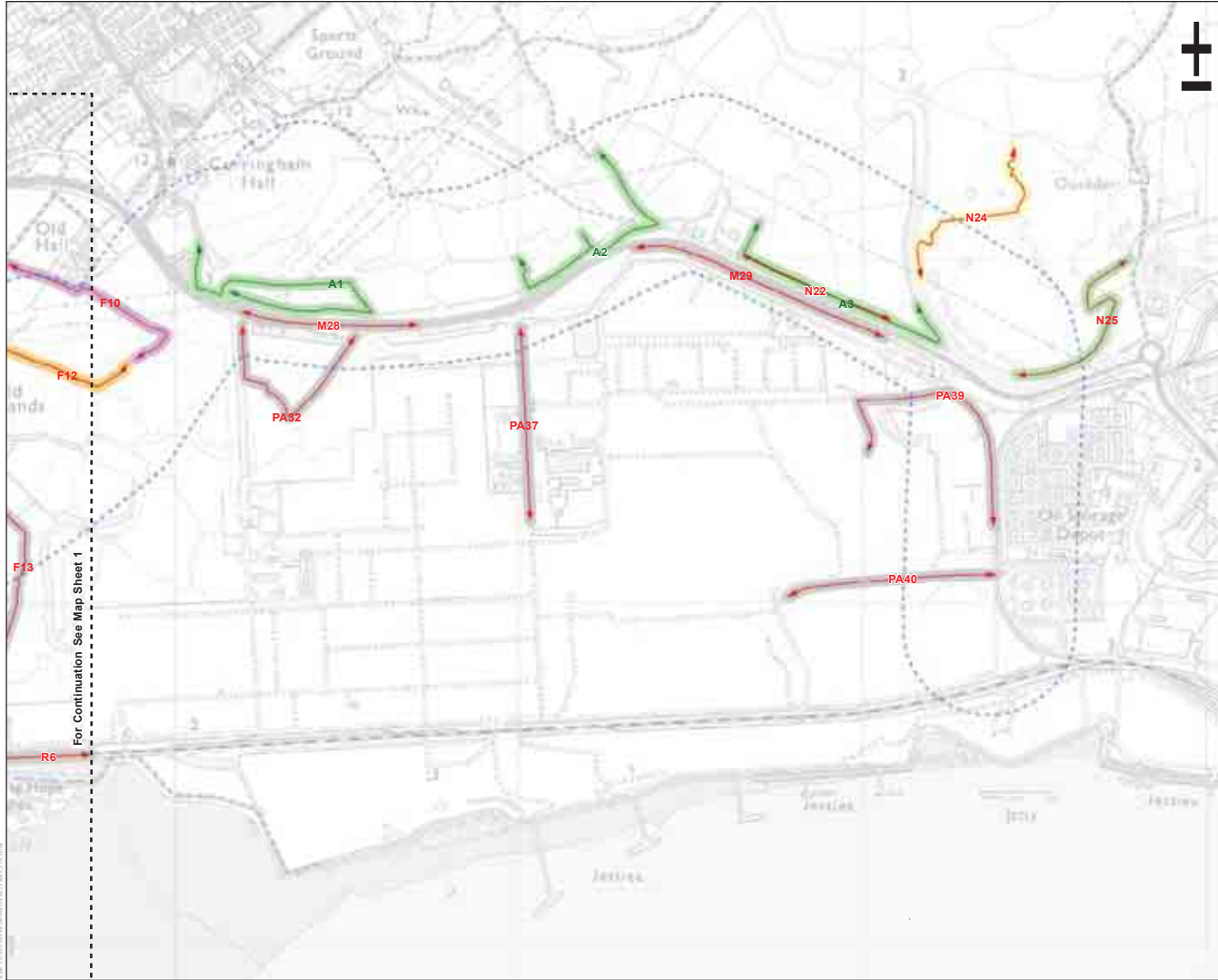


FIGURE 5: BAT ACTIVITY LEVELS WITHIN THE SURVEY AREA





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Legend

- Map Sheet
- Total Survey Area
- Transect Lines
- Thompson Ecology 2008
- Parsons Brinckerhoff 2010
- Bat Activity Level
 - Very Low
 - Low
 - Medium
 - High
 - Very High
 - No Bats

0 50 100 150 200 250 Metres

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0100031673 2010

Project Name	Final		
Project Status	FINAL		
Project Title	Thames Haven		
Project Area	Bat Activity levels (Map Sheet 2 of 2)		
Scale	1:10,000		
Drawn	JL	Approved	TM
Check	TM	Check	TM
63958A_BAT_ACT_02			

F.4 Phase II Reptile Survey Report

