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Thurrock Council

ENVIRONMENTAL CAPACITY STATEMENT: DESIGNATION OF MINERAL SAFEGUARDING AREA

- Final
- 17 May 2010

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1. Introduction

1.1. Introduction

SKM Enviros was commissioned by Thurrock Council (Thurrock) to undertake an Environmental Capacity Statement (ECS) in relation to the extraction of primary mineral resources within the administrative boundary of Thurrock. This study informs the preparation of the Thurrock Local Development Framework Core Strategy Development Plan Document (CSDPD) and Minerals and Waste Development Plan Document (MWDPD).

'Living within environmental limits' is a central theme of Government policy to meet sustainable development objectives. One of the guiding principles of the UK Sustainable Development Strategy[1] is:

"Respecting the limits of the planet's environment, resources and biodiversity – to improve our environment and ensure that the natural resources needed for life are unimpaired and remain so for future generations."

There is increasing pressure on local authorities to ensure the protection of environmental assets whilst continuing to maintain the supply of materials such as primary aggregate and their prudent use for future generations. Thurrock is no exception and must plan for an appropriate balance between the protection of its environmental assets and the need to provide primary aggregates to support the economy.

1.2. Minerals Planning Context

1.2.1. National Context

Mineral Policy Statement 1 (MPS1) sets out the national planning policy context and framework for minerals planning in England. The framework aims to ensure we sustainably meet the nation's need for minerals and maintain a consistent supply through considering the overarching environmental, social and economic impacts of doing so.

MPS1 sets out a number of objectives to maintain the provision of minerals. Those particularly prevalent to this study are:

- *"to conserve mineral resources through appropriate domestic provision and timing of supply"; and,*

1 'Securing the Future: delivering UK sustainable development strategy', Defra, 2005

- *"To protect internationally and nationally designated areas of landscape value and nature conservation importance from minerals development, other than in the exceptional circumstances detailed in paragraph 14 of (MPS1)."*

For Thurrock, these objectives are particularly difficult to apply as it has limited primary mineral resources which are not constrained by urban areas and environmental assets.

1.2.2. Regional and Local Context

The East of England Plan sets out the strategic planning policy framework for the East of England (EofE) region which must be adopted by MPAs in producing their Local Development Frameworks (LDFs). Regionally, Thurrock and its mineral supply requirements fall under Essex County provisions as a joint sub-region. However, Essex (in conjunction with Southend-on-sea) and Thurrock are producing separate LDFs.

Thurrock is required to play its part in meeting the regional provision of land-won sand and gravel throughout the Plan period. In order to make the necessary provision for land won sand and gravel, Thurrock is required to maintain a landbank (stock of permitted reserves) of at least 7 years supply, based upon the annual apportionment of 0.14 million tonnes per annum (mtpa), as part of the combined regional apportionment of 4.55 mtpa. If the landbank is below 7 years, additional resources (sites) need to be identified, to ensure there is a sufficient landbank to meet the sub-regional apportionment.

1.3. Minerals Supply and Context in Thurrock

The geology of Thurrock is such that sand & gravel, chalk and London Clay are found throughout the borough (Figure 1). Sand and gravel is located throughout the borough except to the north east and central fens. Clay is found in the north and west and chalk in the south-west.

The largest sand and gravel deposits have been found around the Orsett, Linford, Tilbury and East Tilbury areas and around South Ockendon. Most of the workable reserves had been extracted by the early 1990's and only three extraction sites continue working today. These are at Orsett, Linford and East Tilbury. The supply of chalk and clay to the Kent cement industry has declined over recent years and most sites are now closed.

The Borough of Thurrock has a strategic transhipment location along the River Thames, being a major route for the import and distribution of aggregates including the landing of hard rock and marine dredged aggregate. This material has been and continues to be distributed throughout Thurrock, London and the wider region.

In 2007 sales of sand and gravel reached 33,000 tonnes. Currently the existing and active mineral extraction, processing and transportation infrastructure consists of:

- 3 primary mineral extraction sites;
- 3 aggregate recycling sites;
- 2 secondary aggregate sites and processing sites;
- 4 marine wharves.

As at 1 January 2008 there were 4 permitted sand and gravel sites in Thurrock with reserves totalling just over 2 million tonnes. However, by the end of May 2008 planning permission on one site with approximately 0.5 mt of reserves had lapsed. Taking this into account, the current permitted reserves stand at 1.54 mtpa, equivalent to an 11 year landbank.

Over the Plan period (2006-2021), Thurrock is required to plan for a total of 2.1 mt of sand and gravel. This study has identified all known sand and gravel deposits and assessed the environmental acceptability of working these resources. The study has then estimated how much of the resource is likely to be available after the constraints from all environmental assets have been taken into account.

1.4. Informing the Preparation of the Thurrock Local Development Framework

Thurrock's Core Strategy is being prepared using a 'sound' evidence base and this informs its principles, objectives and strategic approach. Thurrock must have a strategic approach to its future mineral supply and as such, have decided to use an ECS to identify an appropriate Mineral Safeguarding Area (MSA). The ECS provides an appropriate robust evidence base to demonstrate the ability of Thurrock to continue to provide mineral resources and identifies the possible limitations of supply.

As well as informing the Core Strategy the ECS informs the preparation of the Minerals and Waste Development Plan Document (MWDPD) for Thurrock, by establishing the potential for mineral extraction within the borough and identifying the MSA. This in turn will be used to inform the mineral site sieving study which identifies potential mineral extraction for allocation within the MWDPD.

Finally, this study informs the approach to the preparation of the criteria-based policies by providing principles to which mineral development located within the MSA will be permitted, and ensure those identified mineral resources are safeguarded from non-mineral related development.

1.5. What is an Environmental Capacity Statement?

The aim of an ECS is to test how much development can be accommodated in an area without causing an unacceptable decline in environmental quality and the benefits or services that people derive from the environment.

In relation to the supply of minerals the ECS identifies the remaining mineral resources available to Thurrock which could potentially be worked from the most environmentally acceptable locations. The study considered a range of mineral resources including the environmental acceptability of maintaining a supply of primary aggregate.

This document does not state where and where not mineral development should take place. It identifies where mineral resources have the potential to be worked. The MWDPD identifies specific site allocations for potential mineral extraction.

This study therefore:

1) Provides an environmental assessment of potentially workable mineral resources and identifies areas where mineral extraction might or might not be environmentally acceptable; and,
2) Identifies a Mineral Safeguarding Area for Thurrock.

1.6. The Minerals Safeguarding Area

The Mineral Safeguarding Area (MSA) identifies and raises awareness to developers of the possible presence of workable mineral deposits. The potential for extracting these deposits must then be taken into account when submitting and determining planning applications for non-mineral related development. This ensures valuable mineral resources are not needlessly sterilised.

The MSA does not identify and define mineral site boundaries. But it does help Thurrock to identify possible mineral extraction sites, based upon the presence of a mineral resource and its relationship to urban development and environmental assets. Potentially workable mineral deposits can then be considered when identifying future housing; employment and industrial site allocations during the LDF process.

The MWDPD will include policy to assess and consider planning applications for non-mineral development in MSAs. Policies will also be provided which assess planning applications for new mineral development. Various tests of appropriateness may be applied depending on the types of minerals being considered. In Thurrock's case, a significant majority, and the most economic and demanded resources, are the sand and gravel deposits. Thurrock is required to meet a sub-regional apportionment of sand and gravel resources and a higher level of safeguarding is appropriate to maintain aggregates supply.

It is crucial in appraising potentially workable mineral deposits that the environmental acceptability of extracting various mineral types is considered against each of the environmental designations. This is to ensure important mineral deposits are not needlessly excluded from the MSA.

The MSA has been identified using the conclusions of the environmental acceptability section of this study. It makes a clear distinction between the areas which could be considered acceptable for mineral development (based upon their environmental acceptability at the national and regional level) and areas which are considered to contain potentially workable mineral deposits but which have not yet been sterilised.

1.6.1. Plan Provision and Supply Scenarios

To assist Thurrock in preparing its strategy and policy framework for the provision of mineral resources, site allocations and assessing proposals for mineral extraction, this study provides an assessment of the provision of potentially workable deposits, based upon the environmentally acceptable areas of potential mineral supply.

Depending upon the outcomes of the environmental acceptance of mineral resources within various ‘grades’ of designations, potential various supply scenarios have been considered, to estimate how much potential sand and gravel provision will be available from the various levels of designations.

2. Methodology

2.1. Introduction

This section outlines the methodology used to identify how the environmental capacity of Thurrock was assessed against the potential areas for minerals supply.

The methodology was appropriate to:

- Assess the environmental acceptability of potential mineral provision; and
- Identify a Mineral Safeguarding Area for Thurrock.

2.2. Environmental Acceptability of Mineral Provision

The first stage was to identify the environmental limits and thresholds of Thurrock, to distinguish between the 'state of the environment' and the current and future pressures placed on it. This was achieved by identifying the receiving environment (environmental assets) and assessing these against potential workable mineral deposits.

The study applied and adapted the principles of a methodology used in the East of England regional ECS study: *'Environmental Capacity in the East of England: Applying an Environmental Limits Approach to the Haven Gateway'* (2008). The regional study developed a method which assists spatial planning in the East of England at the regional and sub-regional scales by taking account of environmental capacity issues. That methodology has been amended to specifically take account of Thurrock's need to identify areas which are, in principle, acceptable for mineral extraction.

A 5-step approach is used:

- Step 1: Characterise the environment and identify the issues.
- Step 2: Assess importance of environmental assets or services.
- Step 3: Define and validate key limits.
- Step 4: Illustrate current state in relation to existing designations.
- Step 5: Assess implications for development.

2.2.1. Step 1: Characterise the Environment and Identify the Issues

In order to define the point at which mineral extraction is deemed acceptable, the study identified the existing environmental assets in Thurrock and their spatial distribution.

The study also identified potential housing; employment and industrial allocations highlighting the issue of sterilisation of mineral resources.

The spatial distribution of the potentially workable mineral resource was identified to provide a baseline comparison of Thurrock's primary resources and their context in relation to the environmental designations and constraints.

2.2.2. Steps 2 (Assessing the Importance of Environmental Assets) & 3 (Defining and Validating Key environmental Limits)

It was important to identify the environmental limits of acceptability for mineral extraction within designations and constraints of differing importance. The significance and relative importance of the environmental assets and constraints within the local context were assessed to provide an understanding of the acceptability for mineral extraction within each of the designations. This ensured appropriate consideration of the environment when making the trade-offs between existing environmental conditions, the need for the development and the potential benefits from it.

Guidance on the level of acceptability is derived from current planning guidance, namely Minerals Policy Statement 1 (MPS1) and Planning Policy Statement 9 (Biodiversity and Geological Conservation). The policy framework was used to establish the context of acceptability of minerals development within each of the designations.

This resulted in an appropriate weighting system, based upon designation status at the international, national and regional/local level. A recommendation is made for each designation's weighting to establish its significance in the assessment of the acceptability of mineral development within that environmental asset.

The constraints were segregated and mapped using these weightings. A Geographical Information System (GIS) approach allowed this information to be overlayed against a mineral resources map to sieve out the potentially workable mineral resources based, in principle, on their environmental acceptance (Step 4).

2.2.3. Steps 4 (Illustrate Current State Relative to Environmental Limits) & 5 (Implications for Development)

Step 4 involved illustrating the outputs of Steps 2 & 3, showing the spatial distribution of constraints and their various weightings against the various mineral resources.

Once potential mineral resources and the weightings relating to their location had been applied, the potential implications for extraction from each of the potential locations could be considered. This informed the identification of the MSA, which will in turn inform the preparation of the MWDPD.

This methodology and its outcomes do not overcome conflicts in planning. However, the findings do serve to better articulate conflicts and help inform planning decision and trade offs with other planning objectives which must be made.

2.3. Identifying the Minerals Safeguarding Area

The selected MSA was derived from the assessment outlined above. The MSA seeks to exclude areas within Thurrock where mineral development would be likely to be environmentally unacceptable.

The MSA includes areas of potential urban site allocations to ensure opportunities can be considered to extract mineral resources prior to development. It is important to ensure such allocations and the policies for their development have considered the mineral resources which in turn will make a contribution to the landbank in the form of windfall sites.

The MSA has been mapped using a GIS system at the borough level and is subject to consultation.

2.4. Use of Geographical Information Systems

The majority of the assessment work was undertaken using a GIS desk-based analysis approach. In undertaking each of the 5 Steps outlined above, the GIS was used to;

- Identify the areas of mineral deposits and map estimated volumes and lifespan of the mineral resources;
- Identify locations of national and local environmental designations (e.g. SSSI, SPA's, Local Nature reserves etc);
- Identify areas of Green Belt and locations of locally important environmental sites as specified in the Open Spaces strategy (e.g. Allotments, Children's Play Space, Natural and Semi Natural Greenspace, Parks and Gardens);
- Identify areas susceptible to flooding from the Environment Agency Flood Zones 1 to 3 and other locally identified flooding issues;
- Identify the location and distribution of potential future housing; employment and industrial site allocations; and,
- Analyse the overlap of mineral resources to identified environmental sites and constraints and classify the resources according to their level of 'environmental impact'.

3. Identifying the Environmental Limits and Thresholds

3.1. Step 1: Characterise the Environment and Identify the Issues

3.1.1. Thurrock's Environmental Designations and Constraints

The borough of Thurrock has a number of sites of international and national importance for nature conservation including one Ramsar site, one Special Protection Area (SPA) and 12 Sites of Special Scientific Interest (SSSI). Thurrock also has a number of regional and local designations including:

- 70 Local Wildlife Sites;
- 2 designated Local Nature Reserves (Linford Wood and Grove House Wood);
- One historic Park (Belhus Park) as classified by the Historic Buildings and Monuments Commission for England.

It is important to understand the relative significance and importance of these sites in order to assess the potential impacts of mineral development. It should also be noted that 60% of the land within the borough of Thurrock is Green Belt, some of which contains the above designations. The level of significance and importance are discussed in Step 2 below. All designations are illustrated in Figure 2.

3.2. Steps 2 (Assess Importance of Environmental Assets) & 3 (Define and Validate Key Environmental Limits)

3.2.1. Significance and Issues

Recognising the potential impact of mineral related development. Minerals can only be extracted where they are found. There must be a clear distinction between each of the designations and their relative importance in order to assess the implications of mineral extraction within or adjacent to the designations.

Recognising the significance of each of the designations and the benefits they bring. Primarily this is to assess the potential for restoration of the mineral resource in order that the site might be reverted back to the previous use, or the potential benefit of the extraction and restoration outweighs the adverse effects of the extraction and the previous land use. The Thurrock Green Grid Strategy sets out the Council's approach for the provision and enhancement of infrastructure relating to biodiversity, ecology and recreation.

Recognising areas for potential enhancements of biodiversity, and where possible, contributing to the delivery of the Green Grid Network and enhancing the value of current open space and natural/semi-natural environments, including the provision of north to south links from the river to open space in the Green Belt. This includes the provision of specific planned areas of new urban open space including strategic scale urban parks and smaller areas of urban space.

3.2.2. Relative Importance of Designations and Constraints

Paragraph 3.1.1 outlined the various designations ranging from the international (Ramsar and SSSI) to the local level (local wildlife sites). Each has their varying level of protection based upon their significance. The significance is as follows:

Designation Importance	Example
International	Special Area of Conservation
National	SSSI
Regional/ Local	Local Nature Reserve

When considering any form of development, it is necessary to assess the potential adverse impacts from development adjacent to, or within various designations. However, the key theme of PPS9 is to protect and where possible enhance these areas providing certain acceptable limits on proposed development within the designations.

However, because of the 'temporary' nature of mineral extraction, and the potential benefits obtained through restoration schemes, it might be possible for mineral extraction to take place in areas of local or regional significance, where it is deemed the benefits of development are likely to outweigh the adverse environmental impact caused by the development and an appropriate restoration scheme can be provided.

This section identifies those areas where it is considered certain 'trade-offs' (the benefits from mineral extraction and restoration against the previous land use) are possible within various designations. Figure 2 illustrates all the environmental designations within Thurrock.

3.2.3. Designations of International Importance

Figure 3 identifies the sites of international importance within Thurrock. The Ramsar site and SPA is situated along the south-eastern stretch of the Thames estuary. The SPA is designated a site of international importance as classified under the Habitats Directive. In accordance with Planning Policy Statement 9 (PPS9), Ramsar sites are designated the same protection as SPAs within the planning policy context.

SSSIs are generally designated as sites of national importance, unless they are also identified within areas of SAC or SPA designation, which if this is the case, also fall under international protection.

As identified on Figure 2, Twelve SSSIs are located within Thurrock, one is of international importance occupying the same area as the Ramsar and SPA. Two SSSIs of national importance are situated to the west of the borough.

Minerals Policy Statement 1 (MPS1) states mineral development is required to have regard to PPS9 and Circular 06/2005. Regulation 48 of the Habitats Regulations restricts the granting of planning permission for development which is likely to significantly affect a site designated under the European legislation. If the development were to be allowed, it must be proven there are imperative reasons of overriding public interest, of social or economic nature, sufficient to override the environmental harm to the site. Permission will also be refused where there are alternative sites which are likely to have no or lesser adverse effects upon the designated site.

Recommendation

In considering the national planning policy framework in assessing the environmental acceptability of potential mineral development within designations of international importance, mineral development cannot be completely ruled out, but as identified above, should only be permitted in exceptional circumstances. Therefore, at this strategic level, mineral development can not be fully precluded from such areas.

However, it is recommended that such designations should be deemed to be 'highly unfavourable' in planning terms and any potential mineral workings situated within such areas should be the last of the mineral resources to be considered for mineral development.

3.2.4. Designations of 'National' Importance

As discussed above, one of the SSSIs is designated as a site of international importance. However, Thurrock also has eleven other SSSIs which are not protected under international statutory protection but are of 'national' importance. They should be given a high degree of protection.

MPS1 states that mineral development should not normally be permitted within or outside a SSSI if it is likely to have an adverse effect on a SSSI. However, where a proposed development is likely to result in an adverse effect on the SSSI, an exception should only be made where the benefits of the development, at the site being considered, clearly outweigh the impacts that it is likely to have on the features of the site and any broader impacts on the national network of SSSIs.

Ancient woodlands also obtain a high degree of protection, similar to that of SSSIs in so far as proposals for mineral development, should only be permitted where the development, in the particular location, outweighs the loss of the woodland habitat.

Recommendations

In considering the national planning policy framework in assessing the environmental acceptability of potential mineral development within designations of national importance, mineral development cannot be completely ruled out, but as identified above, only where the benefits outweigh the environmental adverse effects on the designations. Therefore, at this strategic level, mineral development can not be fully precluded from such areas.

It is recommended that mineral workings within such designations should be classed as 'unfavourable' in planning terms and should not be considered for potential mineral workings unless all other environmentally acceptable options have been worked.

3.2.5. Designations of Regional and Local Importance

Areas of regional and local environmental importance such as biodiversity sites of local interest; local nature reserves and conservation areas provide important areas of local intrinsic value, and contribute to the delivery of green infrastructure networks and contribute towards achieving sustainable communities. Figure 2 illustrates the regional and local environmental assets.

MPS1 states that in areas of regional and local sites of biodiversity, geodiversity, landscape, historical, and cultural heritage, mineral proposals which are likely to affect such areas should be carefully considered.

PPS9 reaffirms this point and states policies to asses such proposals should be established within development plan documents (DPD). It also states that where possible networks of natural habitats should be protected and enhanced or integrated within development proposals.

Recommendation

Potential mineral workings cannot be excluded from regional/local environmental designations. However, the impacts will need to be considered on a site-by-site basis as restoration proposals could contribute to the enhancement of the site.

3.2.6. Green Belt

Thurrock is approximately 60% Green Belt designation, as illustrated in Figure 2. The Green Belt of Thurrock is varied in character, consisting of areas of countryside, predominantly agricultural land and remote villages. A significant amount of the area consists of naturally flat, open marsh

land including woodlands, meadows, wetlands and other habitats of nature conservation value discussed above.

MPS1 and PPG2 (Green Belts) advise, unlike other forms of 'permanent' development minerals extraction need not be considered as inappropriate development provided high environmental standards are maintained and the site is well restored, PPG2 states:

"Mineral extraction need not be inappropriate development: it need not conflict with the purposes of including land in Green Belts, provided that high environmental standards are maintained and that the site is well restored."[2]

Recommendation

The Green Belt will not be considered as a 'constraint' toward potential mineral development. Therefore all potentially mineral reserves located within the Green Belt (subject to assessment against other designations and constraints) will be considered as environmentally acceptable within the context of defining a MSA.

3.2.7. Flood zones

In accordance with MPS1 and PPS25 (Development and Flood Risk), mineral extraction in areas subject to flooding are acceptable in principle, where it can be demonstrated the proposal will not materially increase the risk of flooding. However in some instances, sand and gravel workings with low-level restoration can provide a positive impact on flood alleviation by providing additional storage capacity.

Recommendation

It is considered that the significance of flood zones and the impact of mineral proposals is an issue which can only realistically be considered at individual site allocation and planning applications stages.

In the strategic context of this study, it is recommended that mineral resources in areas liable to flooding will be considered as potentially workable. However, in allocating sites, further consideration will need to be given to local flood risk issues.

3.2.8. Thurrock Urban Area and Thames Estuary Exclusion Zone

Figure 6 illustrates the Thurrock Urban Area and Thames Estuary Exclusion Zone (or 'urban area'). These areas are excluded from the study. At this strategic level it is not necessary to exclude

2 PPG2 Green Belts Paragraph 3.11

all urban areas and it is recognised that there are a number of urban areas and dwellings which fall outside the exclusion zone. Planning applications for development within these areas of 'major' urban development would need to be subject to more detailed site assessments.

3.2.9. Potential Housing, Employment and Industrial Site Allocations

A number of housing; employment and industrial site allocations are being proposed in the Core Strategy DPD and accompanying Site Allocations DPD. It is important that these potential site allocations are mapped against the potentially workable mineral resources to understand the implications for the mineral resources and to inform the site allocations DPD and MWDPD. The MSA itself may need to be revised to take into account the adopted DPD position.

3.3. Steps 4 (Illustrate Current State Relative to Environmental Limits) & 5 (Implications for Development)

This step involved implementing the environmental acceptability weighting for each of the environmental designations/constraints. Each of these have been overlaid against the potentially workable mineral resources and spatially illustrated.

3.3.1. International, National and Regional/Local Environmental Designations

Figure 3 illustrates the grading of the environmental designations under international, national and regional/local level significance.

Figure 5 illustrates the relationships between these designations and types of mineral resource and in doing so shows which resources are 'constrained' by each of the designation groups. The illustrations show

- No potentially workable mineral reserves are located within sites if international importance; and
- A small area of SSSI lies north of Purfleet, and situated in South Stifford, located on an areas of chalk deposits, surrounded by dense urban development;

Pockets of local designations were found:

- west of Aveley (biodiversity sites of local interest) located on areas of both sand and gravel and common clay and shale deposits;
- west of South Ockendon (biodiversity sites of local interest) located on area of sand and gravel; and
- south of South Ockendon.

In total 3% of the potentially workable sand and gravel resources are situated in areas of local importance (biodiversity sites of local interest) and 4% of chalk resources are situated within areas of national importance (SSSIs).

Implications for Development

There are relatively few potentially workable minerals resources located within environmental designations of international, national and regional/local importance.

At this strategic level it can be said that almost all potentially workable mineral resources located within Thurrock are environmentally acceptable, and no resources, at this level of assessment should be excluded from potential mineral development. However, the site appraisal study will need to consider those areas of potential mineral resource which are situated in close proximity to the areas with local designation status and could therefore pose a possible negative impact.

The mineral resources located within the SSSIs and their suitability for potential extraction do not need to be considered as these areas are unlikely to represent economically viable opportunities.

3.3.2. Green Belt

Figure 4 illustrates the Green Belt overlaid against the mineral resources. Almost all sand and gravel and clay and shale deposits are situated within the Green Belt.

Implications for Development

Paragraph 3.2.6 outlined the status of potential mineral development in the Green Belt. There are very few potentially workable mineral resources situated outside the Green Belt, therefore it is recommended that proposals and policies within the LDF should look to ensure mineral development is an acceptable form of development within the Green Belt to ensure all the potentially workable mineral resources can be obtained.

3.3.3. Flood zones

Figure 8 identifies all mineral reserves situated within Environment Agency Flood Zones 1 to 3. The most significant areas of resources situated within flood zone 2 are the sand and gravel resources west of the Mucking Flats due to the locality being adjacent to the River Thames.

Implications for Development

Although it has been recognised that potential mineral workings should not be excluded from areas subject to flooding, careful consideration, and consultation with the Environment Agency prior to allocating sites is recommended.

3.3.4. Potential Housing, Employment and Industrial Site Allocations

Housing, employment and industrial site allocations considered for inclusion in the CSDPD are included in Figure 9, overlaid against the mineral resources.

Implications for Development

In preparing the site allocations DPD and MWDPD, regard must be given to the deposits identified in Figure 9. It is recommended that a strategy and associated policy context is in place to ensure prior extraction of the mineral resource is considered before any Greenfield sites are developed and the resource is sterilised. It is also recommended the MWDPD consider these sites when identifying and appraising potential future mineral site allocations, to ensure, if deemed acceptable, the safeguarding of the available resources.

3.4. Conclusions and Recommendations

This study has identified a broad spatial distribution of potentially workable mineral resources within the borough of Thurrock against the context of the national planning policy framework.

The study provides a strategic overview of the environmental acceptability of minerals provision within the borough. There are few limitations for potentially working the available mineral resources and there are no significant losses of these resources due to environmental limitations. These means there are no significant mineral supply constraints for Thurrock at this strategic level as it prepares its CSDPD and MWDPD.

This study will inform the site allocations DPD and MWDPD, ensuring the resources which are potentially available, are properly considered when making appropriate urban and mineral site allocations. It will be the role of the MWDPD site appraisal study to identify possible mineral sites and consider the direct local context, using the environmental acceptability identified above as a steer toward identifying acceptable mineral proposals in order to meet the sub-regional apportionment. It will also inform the preparation of the policy framework context for delivering acceptable sites and proposals.

The majority of mineral resources are situated in areas not designated under any particular environmental designation or statutory protection. If worked appropriately, mineral extraction within Thurrock can be undertaken with little impact upon the various environmental designations, and importantly can contribute to environmental, ecological and recreational enhancements, contributing to the delivery of the Thurrock Green Grid Strategy.

4. Identifying the Mineral Safeguarding Area

4.1. Introduction

Following the establishment of the overarching environmental acceptability of mineral resources within Thurrock, a Mineral Safeguarding Area (MSA) can now be defined. As outlined above, the key role of the MSA is to safeguard and raise awareness to developers of potentially workable mineral deposits.

This section outlines the methodology used to identify the MSA. It applies the outputs from the sieving process outlined in section 3. It draws upon a previous round of consultation undertaken by Essex County Council which asked mineral operators the approach to be taken in identifying the MSA for both Essex and Thurrock councils. The study implements five of the steps toward mineral safeguarding provided in guidance produced by the British Geological Survey[3] (BGS).

4.2. Consultation on defining the MSA

Essex County Council undertook a consultation exercise with the minerals industry operating within this sub region. No response or information was provided in relation to Thurrock sites. Given the existing large reserves of primary aggregates and landbank in Thurrock this is not unsurprising.

4.3. Identifying the Mineral Safeguarding Area

4.3.1. Methodology

The BGS minerals safeguarding guidance recommends this approach:

Step one: Assess what is the best geological and resource information available for the authority area;

Step two: Decide which minerals within the authority area are or may become of economic importance in the foreseeable future;

Step three: Decide how the physical extent of the resource areas to be safeguarded should be determined;

Step four: Incorporate the outcome of these processes into planning policy for the identification/designation of MSAs for inclusion in the development plan document. The

3 A Guide to Mineral Safeguarding in England, BGS, October 2007

accompanying text should set out clearly the assumptions that have been made in order to define the MSAs; and

Step five: Decide how MSAs can be used most effectively to safeguard mineral resources in the specific authority area including defining those applications which will be exempt because of their minor nature, from consideration in the process.

4.3.2. Step One

Step one, assessing the best geological and resource information available for the authority area, has already been undertaken through the sieving process in section 3. Consultation with the mineral industry to provide information relating to mineral resources has already been undertaken (Section 4.2) but resulted in no additional information. Therefore this study has used of the latest BGS mineral resource layer.

This is the *'BGS Economic Minerals Reserves Layer'* and was supplied by Essex County Council with an *"active and previously worked"* mineral layer. The two layers were combined in this study to generate an *"Active and previously worked minerals workings and other Economic Minerals Reserves"* layer in the GIS. Figure 1 shows all of the available mineral resources within Thurrock using this data.

4.3.3. Step Two

Step two, identifying those mineral which are deemed to be of economic importance, or potentially workable has also been undertaken within Section 3.

Figure 1 illustrates the resources within Thurrock which are deemed to be potentially workable. No further sieving of the resources is required.

4.3.4. Step Three

The outputs of the sieving process undertaken in Section 3 describe the extent of the resource areas to be safeguarded. Section 2.4 outlines the sieving approach which has been used to identify the extent of Thurrock's potentially workable resources against a range of environmental designations and constraints.

In identifying the MSA, the study has incorporated the layers of each of the sieving processes and combined them to sieve out all potentially workable resources which could, in national and regional planning policy terms, be considered for possible extraction, before detailed land use planning considerations have been applied (the role of the MWDPD).

The result is the output illustrated in Figure 11 which shows the proposed Thurrock MSA, inclusive of a breakdown of the mineral types.

4.3.5. Step Four

The MSA is referred to in Policy CSTP32 (Safeguarding Minerals Resources) of the Proposed Submission Draft of the Core Strategy and Policies for Management of Development (February 2010) which indicates that the MSA will be identified on the Proposals Map.

4.3.6. Step Five

In preparing the MWDPD, an opportunity will arise for consultees to determine how the Thurrock MSA should be most effectively applied. This in turn will inform policy which ensures the most appropriate use of the MSA to safeguard resources, whilst ensuring Thurrock is able to meet its infrastructure requirements.

5. Appendices

Figure 1 Minerals - Minerals Reserves

Figure 2 Minerals - Environmental Designations

Figure 3 Minerals - Designation Classifications

Figure 4 Minerals - Minerals Reserves and Greenbelt

Figure 5 Minerals - Reserves and Environmental Constraints

Figure 6 Minerals - Urban Areas

Figure 7 Minerals - Reserves and Urban Areas

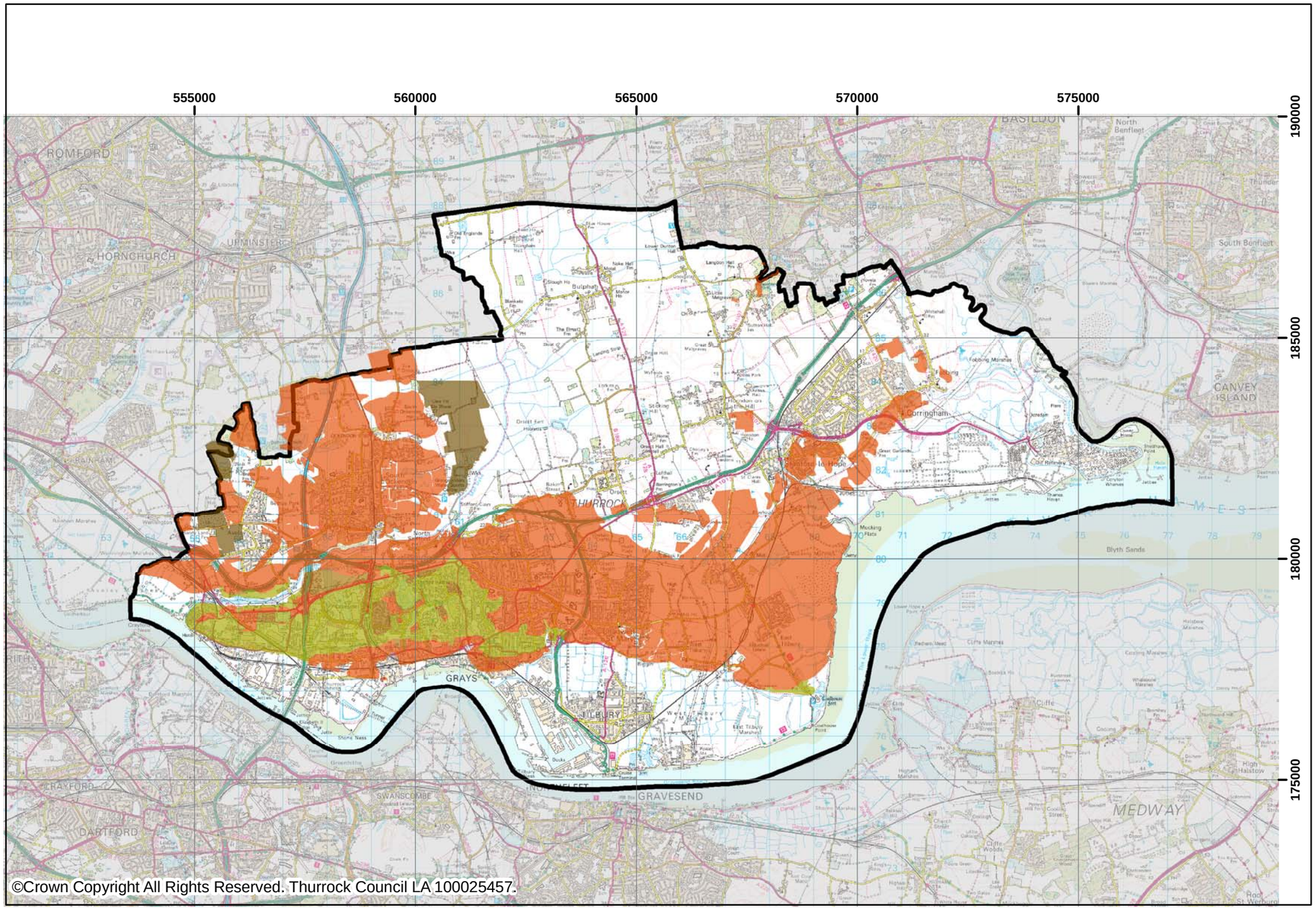
Figure 8 Minerals - Reserves and Flood Zones

Figure 9 Minerals - Potential Housing, Employment and Industrial Sites

Figure 10 Minerals - All Constrained Reserves

Figure 11 Minerals - Safeguarding Areas

Figure 12 Minerals – Green Infrastructure Plan



THURROCK COUNCIL

Key

Mineral Reserves

- Unknown
- Chalk
- Clay and Shale
- Sand and Gravel
- Sand and Gravel Over Chalk
- Thurrock District Boundary
- Thurrock District 10km Buffer

Kilometers
0 1 2 3 4

N

Thurrock Waste Planning

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Figure 1
All Mineral Resources

SCALE
1:100,000

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J.G

DATE
MARCH 2010

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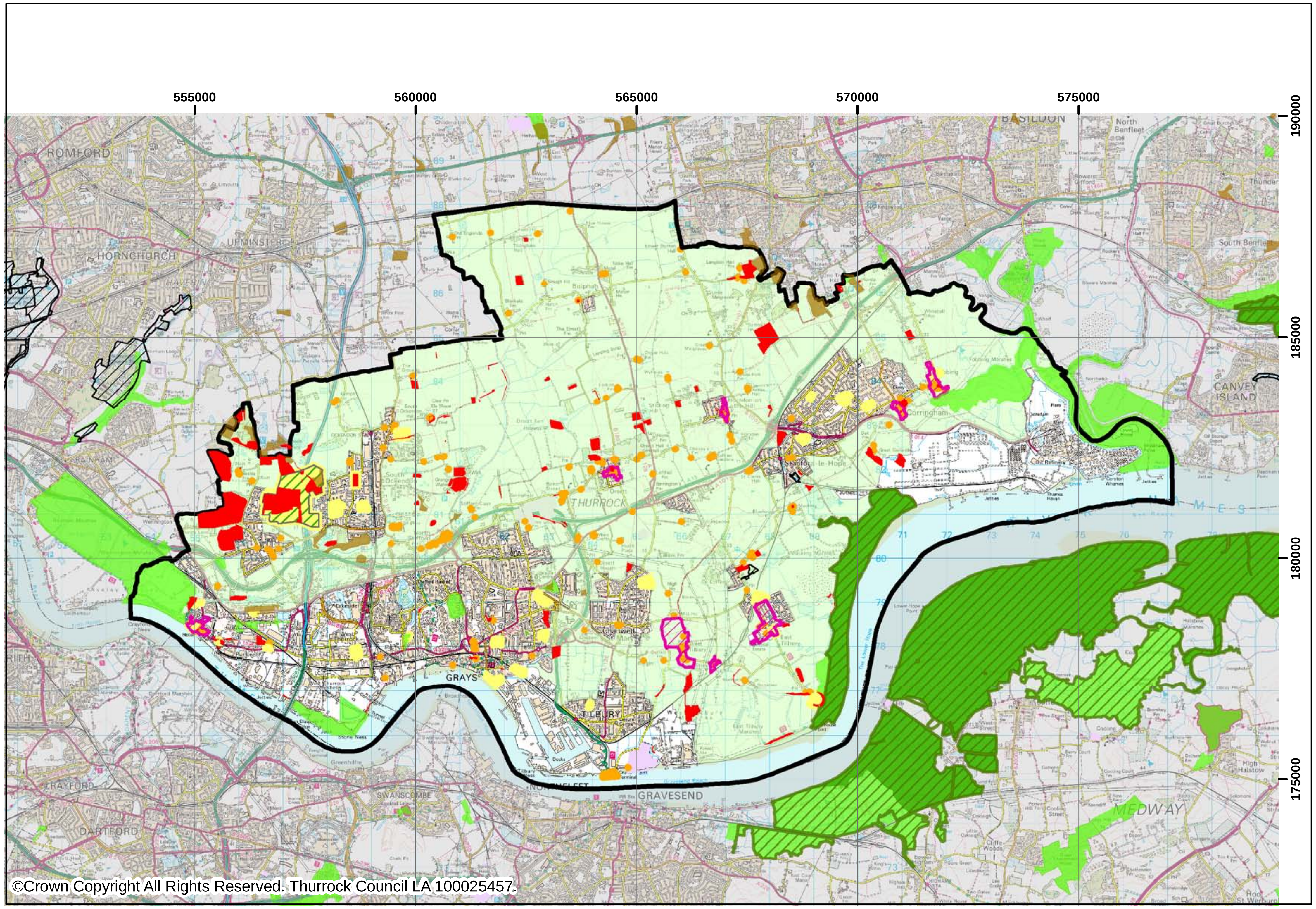

Key

- Biodiverisity Sites of Local Interest
- Ancient Woodland
- Local Nature Reserves
- RAMSAR
- Special Area of Conservation (SAC)
- Special Protection Area (SPA)
- Thurrock District Boundary
- Sites of Special Scientific Interest (SSSI)
- National Nature Reserves
- Conservation Areas
- Registered Park
- Other Parks and Gardens
- Listed Buildings
- Green Belt
- Scheduled Ancient Monument (SAM)
- Thurrock District 10km Buffer

N

Kilometers
0 1 2 3 4

Thurrock Waste Planning

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Figure 2
Environmental Designations

SCALE
1:100,000

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DATE
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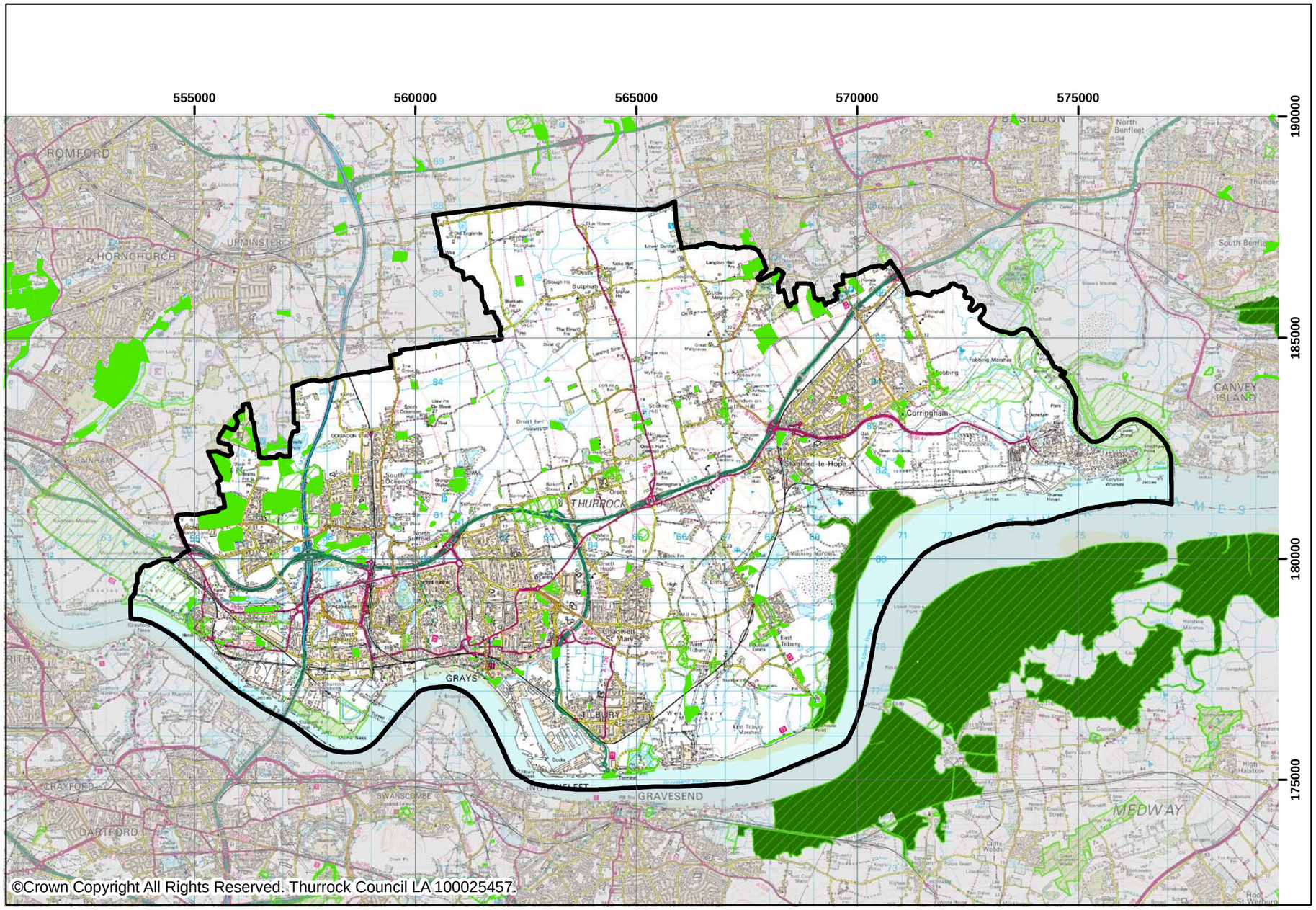

THURROCK COUNCIL

Key

- Thurrock District Boundary
- Regional/Local Designations
- National Designations
- International Designations

Kilometers
0 1 2 3 4

N

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Figure 3
Designation Classifications

SCALE
1:100,000 (Inset scale 1:450,000)

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DATE
MARCH 2010

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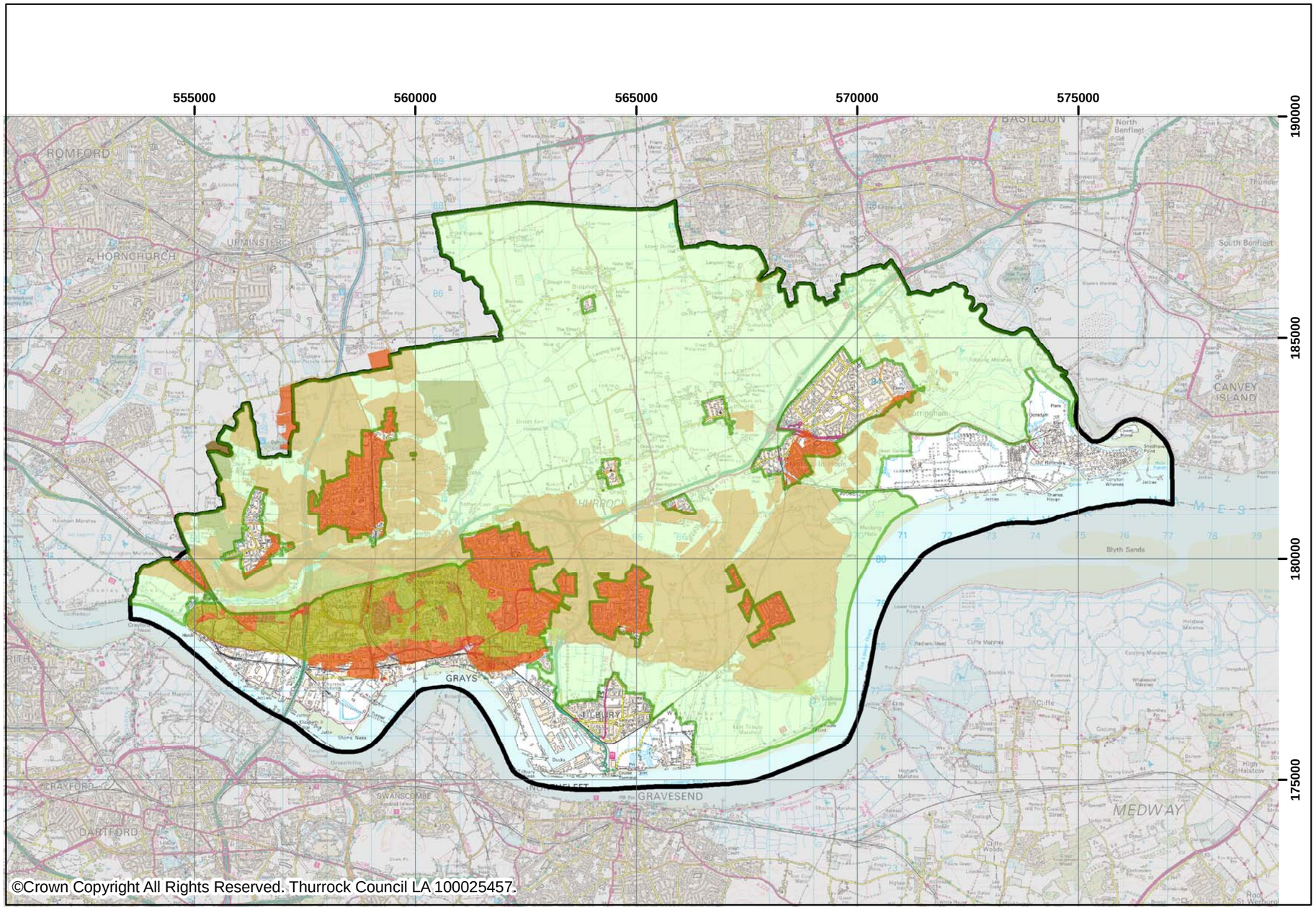

THURROCK COUNCIL

Key

- Green Belt

Mineral Reserves

- Unknown
- Chalk
- Clay and Shale
- Sand and Gravel
- Sand and Gravel Over Chalk
- Thurrock District Boundary

Kilometers
0 1 2 3 4

N

Thurrock Waste Planning

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Figure 4
Green Belt and all Minerals Resources

SCALE
1:100,000

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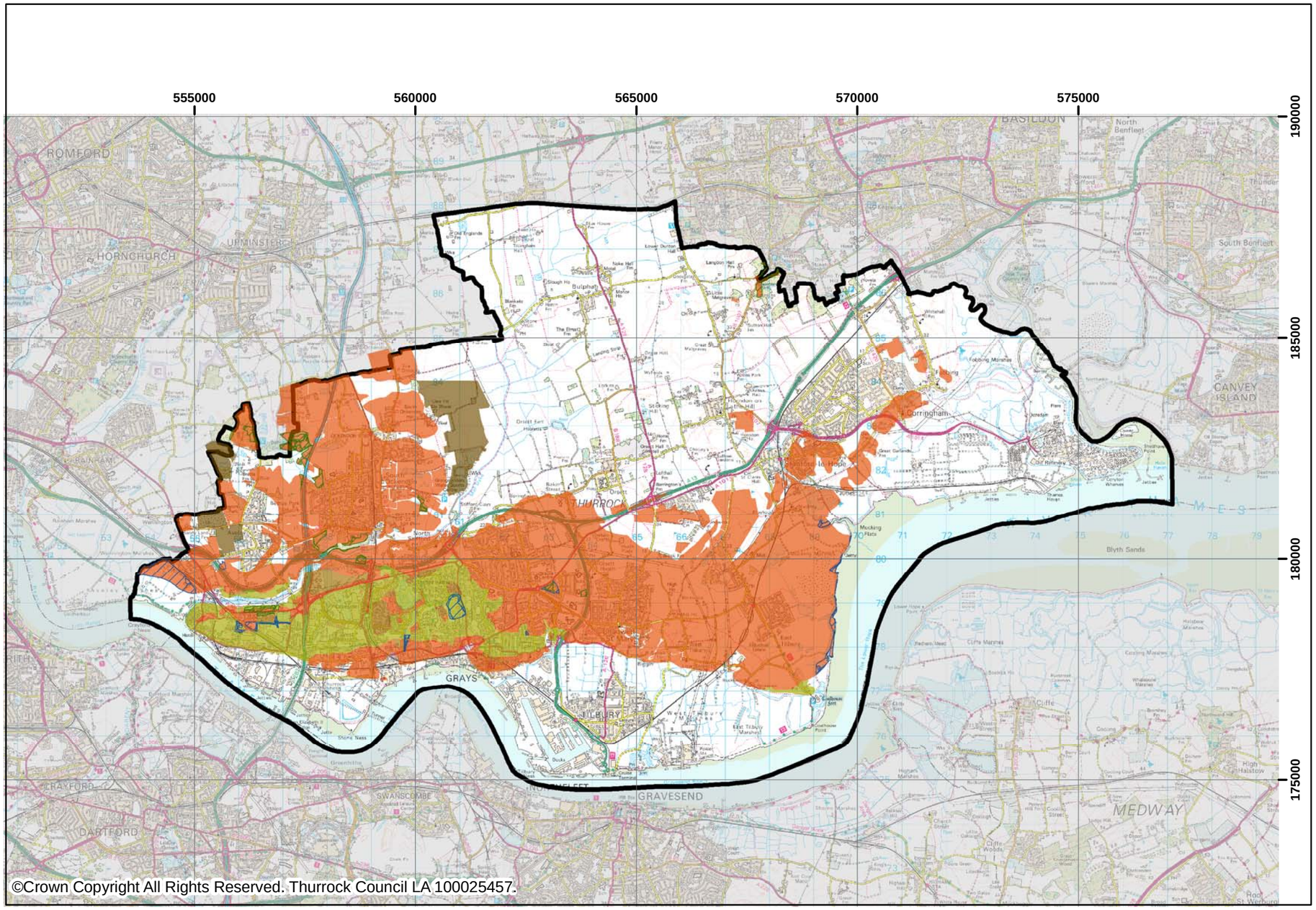

THURROCK COUNCIL

Constrained Mineral Resources

Environmental Grade

- National
- Local

Mineral Reserves

- Unknown
- Chalk
- Clay and Shale
- Sand and Gravel
- Sand and Gravel Over Chalk
- Thurrock District Boundary

N

Kilometers

0 1 2 3 4

Thurrock Waste Planning

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Figure 5
Mineral Resources (including Environmentally Constrained)

SCALE
1:100,000

DRAWN
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DATE
MARCH 2010

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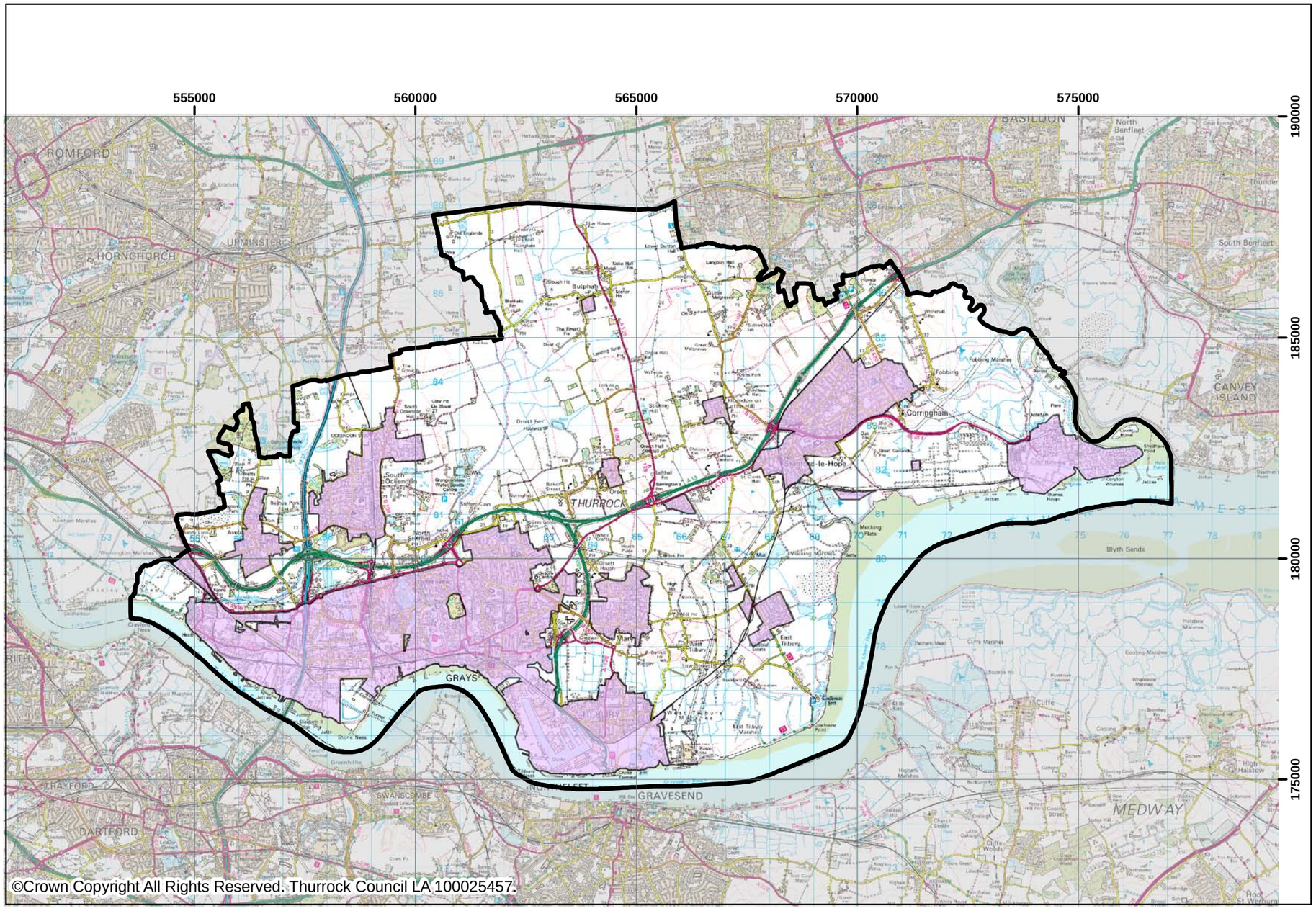

Key

- Thurrock District Boundary
- Urban

Note: 'Urban Areas' defined as areas lying outside Greenbelt and not including the Thames Estuary (mean high water mark).

N

Kilometers

0 1 2 3 4

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Figure 6
Urban Areas and Thames Estuary (Excluded Areas)

SCALE
1:100,000

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DATE
MARCH 2010

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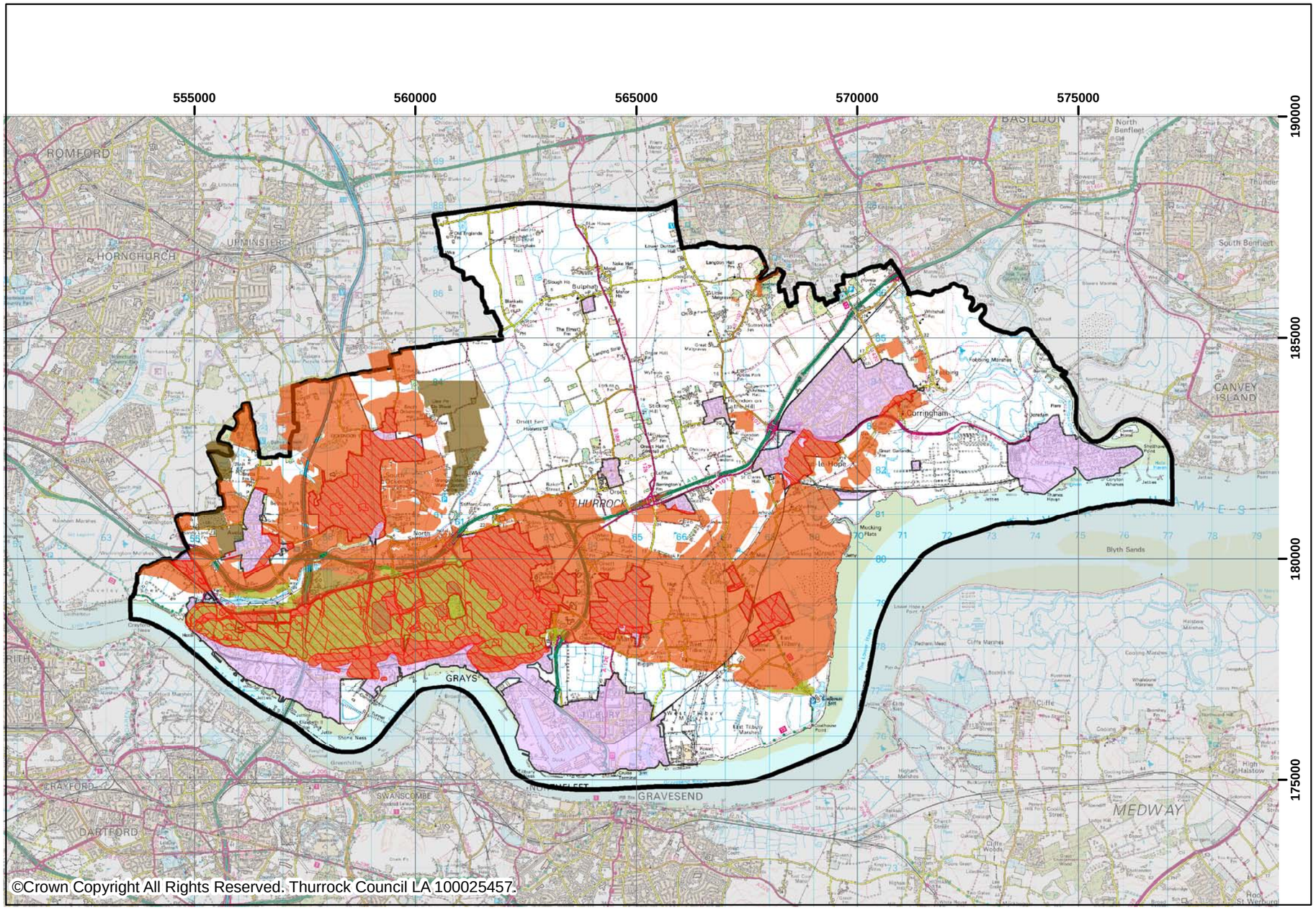

THURROCK COUNCIL

Key

Constrained Mineral Resources

Mineral Reserves

COMMODITY

- Unknown
- Chalk
- Clay and Shale
- Sand and Gravel
- Sand and Gravel Over Chalk
- Urban
- Thurrock District Boundary

Urban constrained mineral resources account for 22.6% of total.

N

Kilometers

0 1 2 3 4

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Figure 7
Mineral Resources
(with Urban Constraints)

SCALE
1:100,000

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DATE
MARCH 2010

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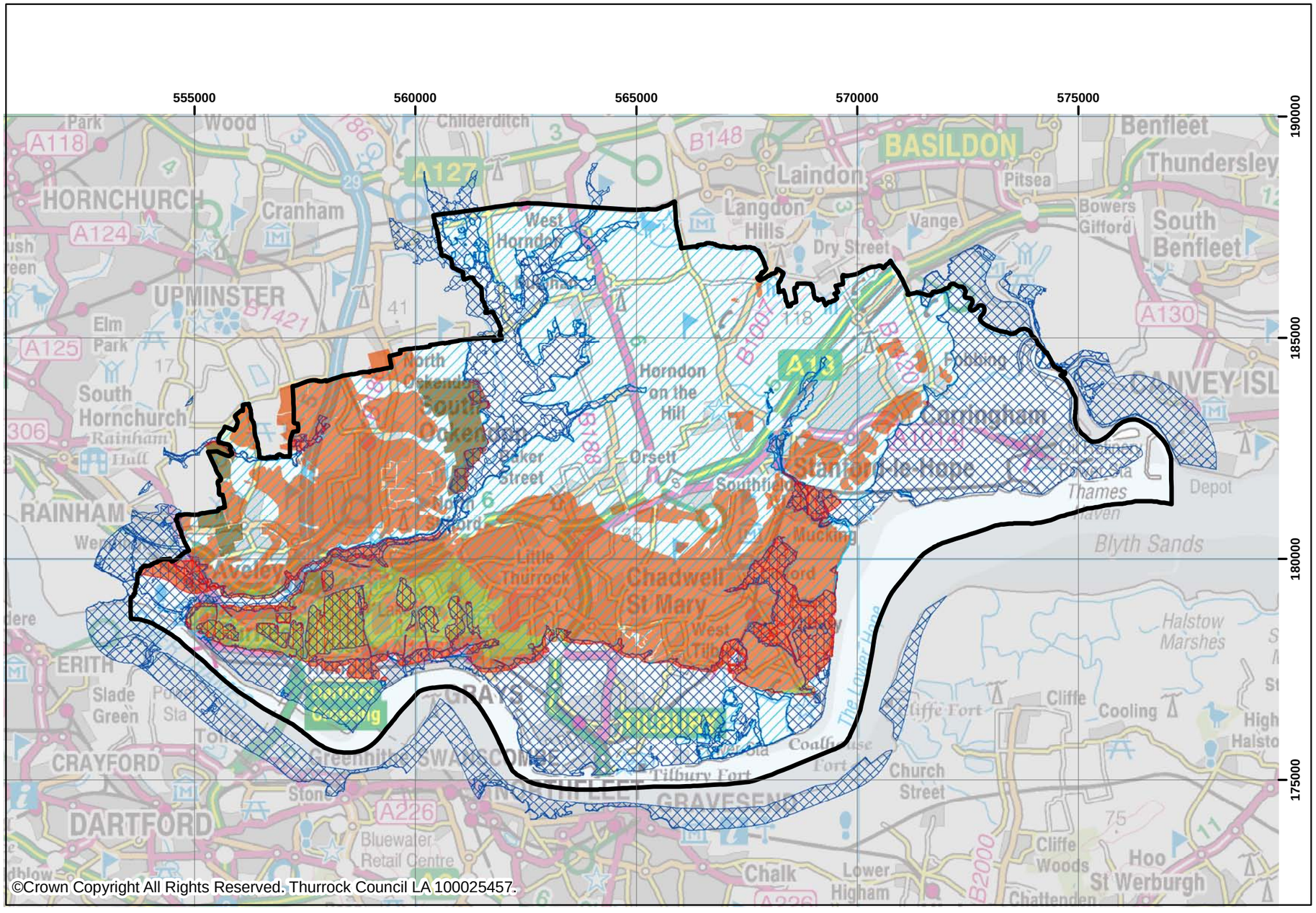

Key

Thurrock District Boundary

Mineral Reserves

- Unknown
- Chalk
- Clay and Shale
- Sand and Gravel
- Sand and Gravel Over Chalk
- Mineral Reserves within Flood Zones

Environment Agency Flood Zones

- EA Flood Zone 1
- EA Flood Zone 2
- EA Flood Zone 3

N

Kilometers

0 1 2 3 4

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Figure 8
Mineral Resources
(with Flood Zone Areas)

SCALE
1:100,000

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DATE
APRIL 2010

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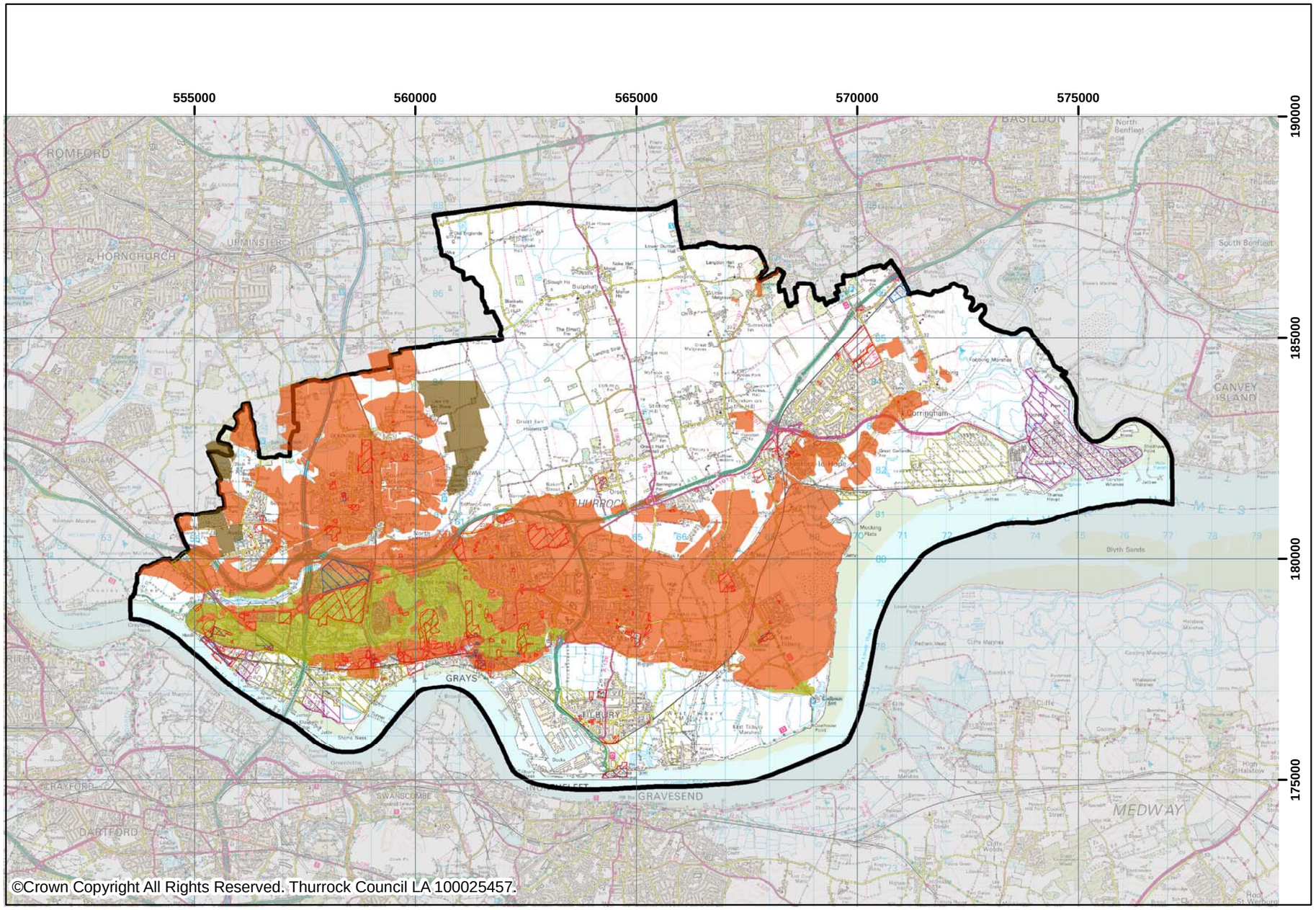

THURROCK COUNCIL

Key

- Housing
- Employment Zones
- Oil & Chemical Industry
- Mixed Use

Mineral Reserves

- Unknown
- Chalk
- Clay and Shale
- Sand and Gravel
- Sand and Gravel Over Chalk
- Thurrock District Boundary

Kilometers
0 1 2 3 4

N

Thurrock Waste Planning

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Figure 9
Potential Housing, Employment and Industrial Sites

SCALE
1:100,000

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DATE
MAY 2010

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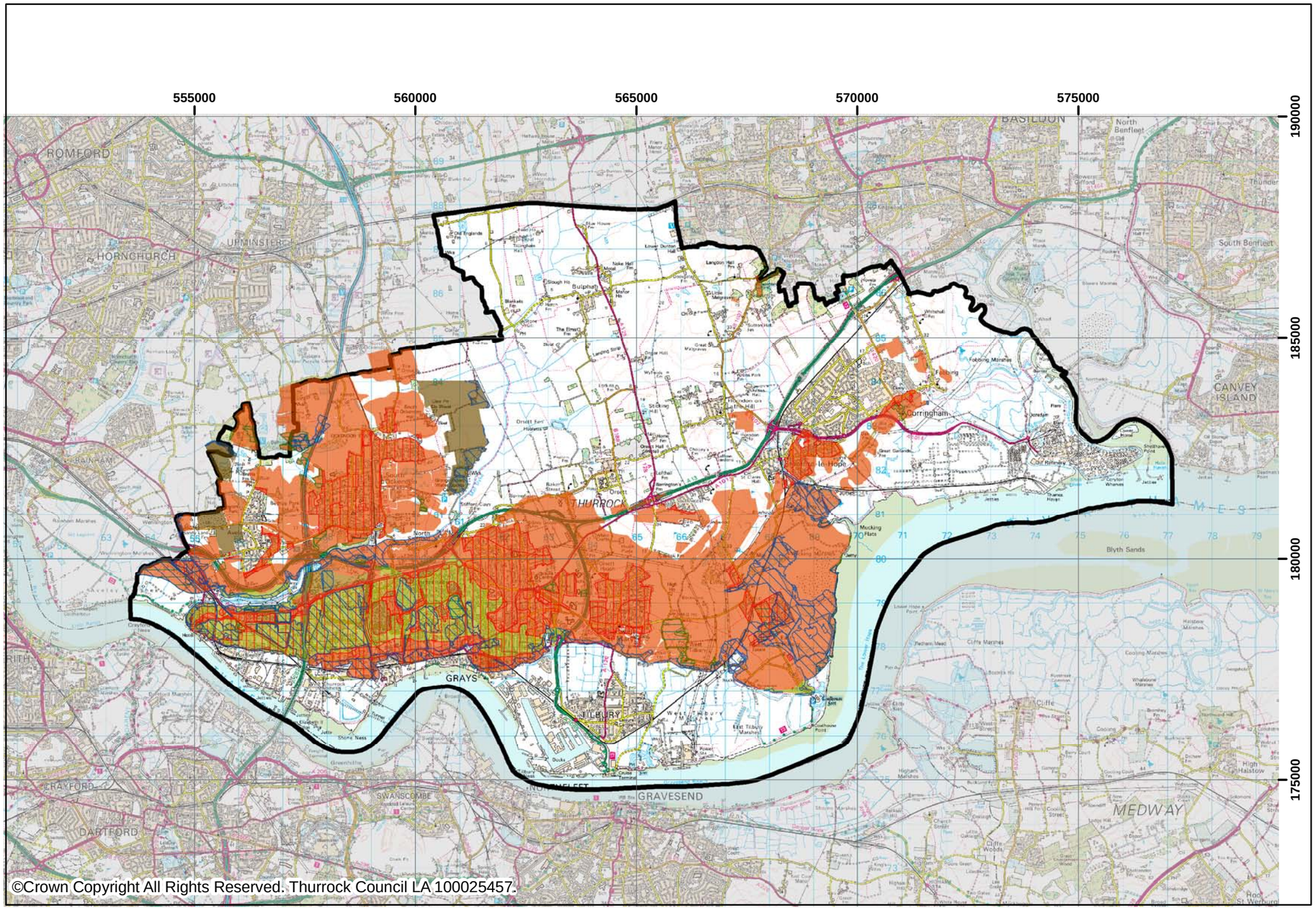

THURROCK COUNCIL

Key

- Minerals Flood Risk Areas
- Urban Constraint
- Environmental Designation Constraint

Mineral Reserves

- Unknown
- Chalk
- Clay and Shale
- Sand and Gravel
- Sand and Gravel Over Chalk
- Thurrock District Boundary

N

Kilometers

0 1 2 3 4

Thurrock Waste Planning

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Figure 10
All Constrained and Unconstrained Mineral Resources

SCALE
1:100,000

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DATE
APRIL 2010

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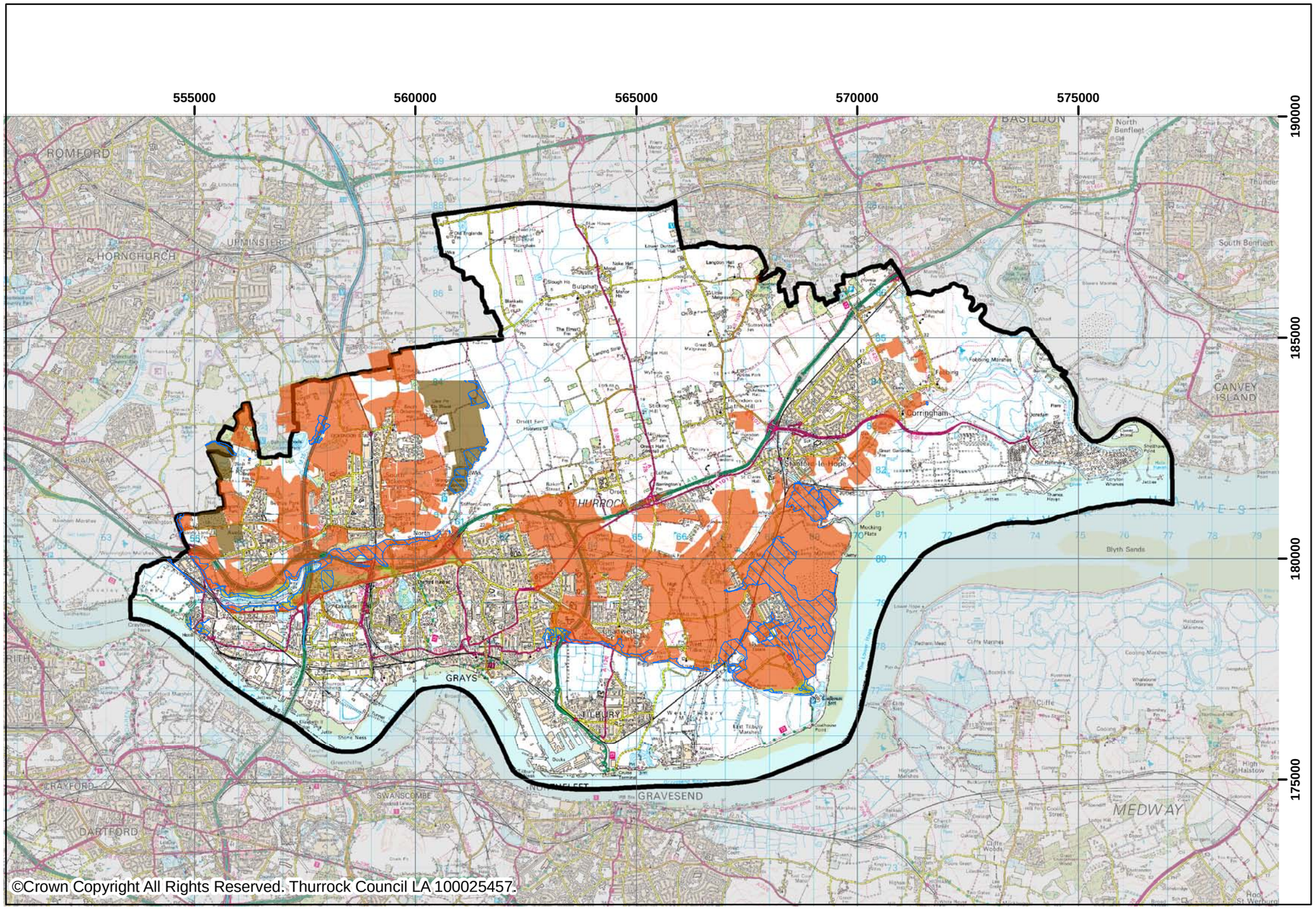

Key

Mineral Reserves

- Unknown
- Chalk
- Clay and Shale
- Sand and Gravel
- Sand and Gravel Over Chalk
- Minerals Reserves In Flood Risk Areas
- Thurrock District Boundary

N

Kilometers

0 1 2 3 4

Thurrock Waste Planning

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Figure 11
Mineral Safeguarding Area

SCALE
1:100,000

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APRIL 2010

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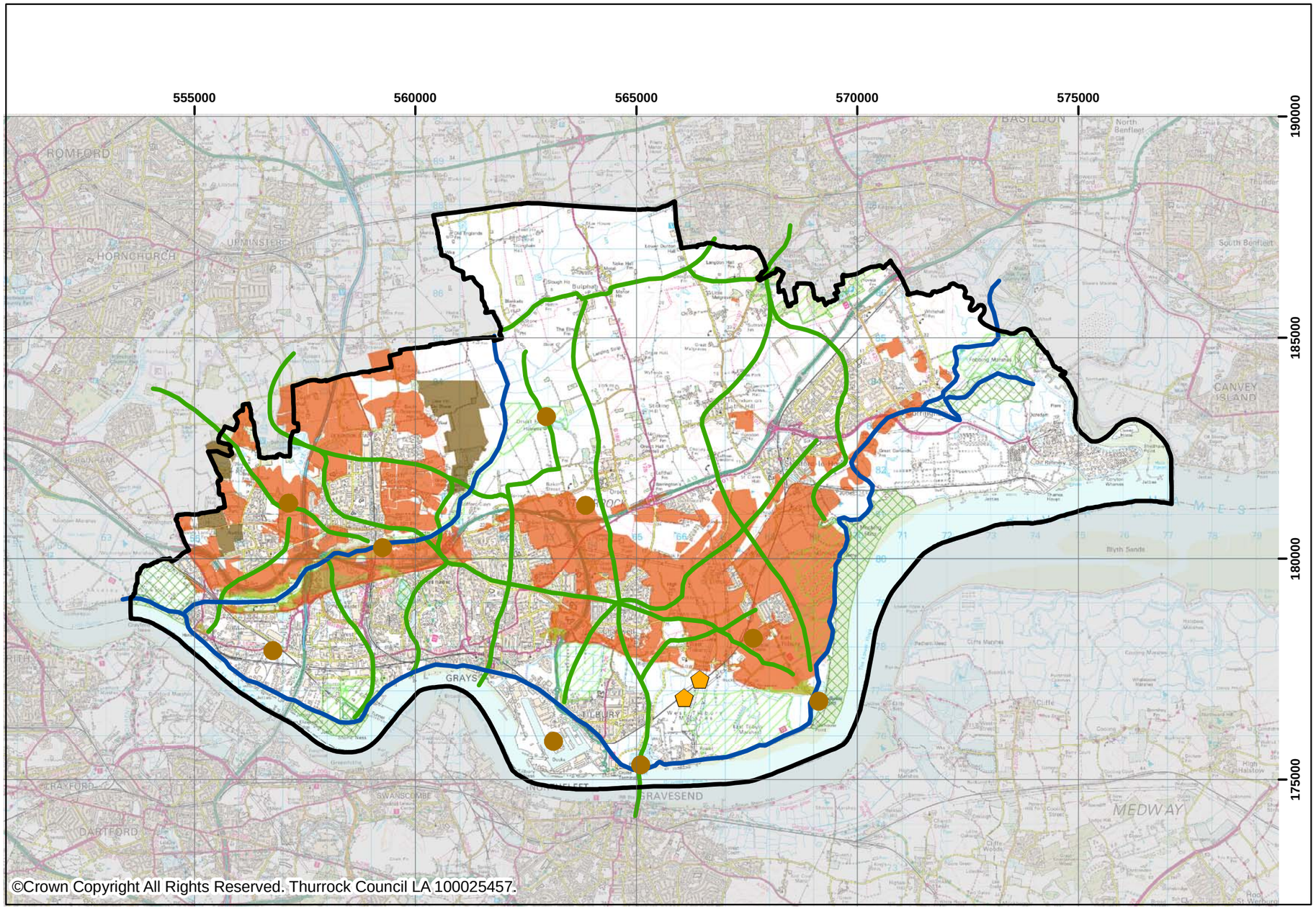

THURROCK COUNCIL

Key

- Strategic Heritage Assets
- Potential Heritage Assets
- Riverways
- Proposed Strategic Rural Green Links

Green Infrastructure Categories

- Proposed Semi-Natural Greenspace
- Sites Safeguarded for Biodiversity

Mineral Reserves

- Unknown
- Chalk
- Clay and Shale
- Sand and Gravel
- Sand and Gravel Over Chalk
- Thurrock District Boundary

N

Kilometers

0 1 2 3 4

Thurrock Waste Planning

CAN
TH0770006

Figure 12
Green Infrastructure Plan

SCALE
1:100,000

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DATE
APRIL 2010

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