

**Essex County Council, Southend-on-Sea Borough
Council and Thurrock Council**

**Local Aggregate Assessment
for
Greater Essex**

Update: September 2014

This document is published by Essex County Council Minerals & Waste Planning and forms part of the Minerals Planning evidence base for Essex County Council and Thurrock Council.

You can contact us in the following ways:

Helpline: 03330 139 808 (during office hours, Monday to Friday)

Contact Essex: 0845 603 7624 (8am to 8pm, Monday to Friday, 9am to 12 noon, Saturday

By post:

Minerals and Waste Planning
Environment, Sustainability and Highways
Essex County Council Freepost CL 3636
E3 County Hall
Chelmsford
CM1 1QH

By email: mineralsandwastepolicy@essex.gov.uk

This document is available electronically at: www.essex.gov.uk/planning

The information contained in this document can be translated and / or made
available in alternative formats on request

CONTENTS

1	Introduction	1
1.1	Background	1
1.2	Contents	2
1.3	Essex Minerals Local Plan, 2014	4
1.4	Southend-on-Sea Core Strategy, 2007	4
1.5	Thurrock Core Strategy and Policies for Management of Development, 2011	4
1.6	Spatial Context	4
2	The Geology of Greater Essex	6
2.1	Introduction	6
2.2	Economically Viable Mineral Resources within Greater Essex	6
3	Existing Minerals Sites in Greater Essex	10
3.1	Introduction	10
3.2	Primary Sand & Gravel Development in Greater Essex	10
3.3	Primary Processing Plants in Greater Essex	15
4	The Fundamentals of Minerals Planning in Greater Essex	19
4.1	Introduction	19
4.2	Mineral Data Analysis and Mineral Plan Production in Essex and Thurrock	22
5	Planned Sand & Gravel Provision within the Essex Minerals Local Plan 2014	23
5.1	Introduction	23
5.2	Planned Sand & Gravel Provision in the Essex Minerals Local Plan 2014	23
6	Provision and Sales of Sand & Gravel and Silica Sand in Greater Essex	26
6.1	Introduction	26
6.2	Permitted Reserves in Greater Essex	26
6.3	Sand & Gravel Landbank held in Greater Essex	29
6.4	Land Won Sales of Sand & Gravel	30
6.5	Silica Sand Provision in Greater Essex	34
7	Marine Won Sand & Gravel	35
7.1	Introduction	35
7.2	Dredging Areas	35
7.3	Marine Won Sand & Gravel within Greater Essex	36
7.4	Wharves within Greater Essex	36
7.5	Marine Aggregate Landings	37
7.6	Marine Won Sand & Gravel Consumed within Greater Essex	39
7.7	Increasing the Proportion of Marine-won Sand to Offset Land-won Production	39
8	Imports and Exports of Land Won Aggregate in Greater Essex	41
8.1	Introduction	41
8.2	Methods of Mineral Transportation within Greater Essex	41
8.3	Land Won Sand & Gravel Consumed within Greater Essex	42
8.4	Land Won Crushed Rock Consumed in Greater Essex	43
8.5	Total Imports into Greater Essex	44
8.6	Exportation of Land Won Sand & Gravel from Greater Essex	45
8.7	Comparison of Sand & Gravel Importation and Exportation in Greater Essex	46
8.8	Conclusion	47
9	Secondary and Recycled Aggregate	48
9.1	Introduction	48
9.2	Recycled Aggregate Throughput and Capacity	48
9.3	Conclusion	52
10	Conclusion	54
10.1	Sand & Gravel Sales in Greater Essex	54
10.2	Silica Sand	54

10.3 The Importing and Exporting of Minerals.....	54
10.4 Recycling and Secondary Aggregate	55
10.5 The Future of the Local Aggregate Assessment	56

List of Tables

Table 1: Schedule of Updates and New Topics Covered.....	2
Table 2: Permitted Primary Aggregate Sites in Greater Essex, 2014	11
Table 3: Mineral Transshipment Sites in Greater Essex, 2014.....	14
Table 4: Permitted Primary Processing Plants in Greater Essex	17
Table 5: Greater Essex Historic Annual Sand & Gravel Apportionment Figures, 1994 – 2020 (in Millions of Tonnes)	20
Table 6: Difference in Annual Apportionment and Ten Year Sales Average of Sand & Gravel between Greater Essex and its Constituents.....	22
Table 7: Permitted Reserves in Greater Essex in Millions of Tonnes, 1994 – 2013.....	27
Table 8: Landbank held in Greater Essex, 2004 – 2013	29
Table 9: Sales of Land Won Sand & Gravel within Greater Essex, 1994 – 2013 (in millions of Tonnes)	31
Table 10: Sales of Sand & gravel within Greater Essex, 2004 – 2013.....	33
Table 11: Marine Won Aggregate Landing Ports with the Capacity to Serve Greater Essex, 2014.....	36
Table 12: Amount of Marine Won Mineral Landed in Ports with the Capacity to Serve Greater Essex in Tonnes, 2007 – 2013.....	38
Table 13: Marine Won Sand & Gravel Consumed within Greater Essex by Landing Port Location, 2009	39
Table 14: Land Won Sand & Gravel Consumed within Greater Essex by Administrative Area of Origin, 2009.....	43
Table 15: Crushed Rock Importation into Greater Essex by Administrative Area of Origin, 2009.....	44
Table 16: Exportation Destination of Land Won Aggregate Originating from Greater Essex, 2009	45
Table 17: Comparison of Import and Export Quantities of Sand & Gravel in Greater Essex, 2009	46
Table 18: Contribution to Greater Essex Sand & Gravel Consumption made by Imports.....	46
Table 19: Total Aggregate Recycling Facilities – All Types, 2014	49
Table 20: Aggregate Recycling Facilities – Operational, 2014.....	49
Table 21: Aggregate Recycling Facilities – Non Operational Recycling Facilities with Planning Permission, 2014	50

List of Figures

Figure 1: Known and Inferred Mineral Resources in Greater Essex	7
Figure 2: Permitted Operational and Non-Operational Mineral Extraction Sites, and Transshipment Sites in Greater Essex as of September 2014	15
Figure 3: Permitted Reserves in Greater Essex in Millions of Tonnes, 1994 – 2013.....	28
Figure 4: Landbank held in Greater Essex, 2004 – 2013	29
Figure 5: Sales of Land Won Sand & Gravel within Greater Essex, 1994 – 2013 (in millions of Tonnes).....	32
Figure 6: Sales of Sand & Gravel within Greater Essex, 2004 - 2013	33
Figure 7: Marine Dredging Areas in Proximity to Greater Essex, 2013	35

Figure 8: Total Marine Won Mineral Landed in Ports with the Capacity to Serve Greater Essex in Tonnes, 2007 – 2013.....	38
Figure 9: Imports of Mineral to Greater Essex.....	45

Annexes

Appendix 1 – Operating Wharves with the Capacity to Serve Greater Essex, 2014.....	57
Appendix 2 – Active Transshipment Sites in Greater Essex, 2014.....	58
Appendix 3 – Aggregate Recycling Facilities in Greater Essex, 2014.....	66

Glossary of Acronyms

AMR	Annual Monitoring Report
AWP	Aggregates Working Party
BGS	British Geological Survey
CBR	Essex Minerals Development Document: Contextual Baseline Report
CDE	Construction, Demolition and Excavation (waste)
ECC	Essex County Council
EEAWP	East of England Aggregates Working Party
EiP	Examination in Public
EU	European Union
Greater Essex	Essex, Southend-on-Sea and Thurrock
LAA	Local Aggregate Assessment
MPA	Minerals Planning Authority
mt	Million Tonnes
mtpa	Million Tonnes per Annum
MLP	Minerals Local Plan
MWDF	Minerals and Waste Development Framework
MWDPD	Thurrock Minerals and Waste Development Plan Document
MWDS	Minerals and Waste Development Scheme
MWMS	Municipal Waste Management Strategy
NPPF	National Planning Policy Framework
RAWP	Regional Aggregate Working Party
RSS	Regional Spatial Strategy

1 INTRODUCTION

1.1 Background

Paragraph 145 of the National Planning Policy Framework (NPPF) requires Mineral Planning Authorities (MPAs), either individually or jointly by agreement, to produce a Local Aggregate Assessment (LAA) every year. This report represents the first update to the first iteration of the LAA produced in June 2013. The role of the LAA is to aid in the determination of the amount of mineral provision required, and to monitor this supply, to ensure that a steady and adequate supply of minerals is provided throughout the period covered by a Minerals Local Plan (MLP)

Traditionally, the amount of mineral each MPA was expected to provide was apportioned to an MPA through a top down approach known as the Managed Aggregate Supply System (MASS). The MASS calculated the total amount of mineral provision required to facilitate development nationally, and this was then apportioned to all the regions within the UK before being subsequently apportioned to each MPA within each individual region.

The NPPF, which came into force in April 2012 and emphasises planning at the local level, has revised the way in which annual mineral apportioning is to take place. The NPPF suggests calculating the amount of mineral provision required by taking a rolling average of ten years of sales data across the plan area as a basis for provision whilst factoring in other relevant local information. The LAA is also required to incorporate an assessment of all potential mineral supply options, including minerals won from the marine environment as well as those derived from secondary or recycled sources. Although it is the role of the MPA to devise an LAA, the LAA is also required to be informed by an Aggregates Working Party (AWP) and needs to take the National and Sub-National Guidelines for Aggregate Provision 2005 – 2020 into account.

As stated above, this report represents an update to the [LAA June 2013](#) which informed the Essex Minerals Local Plan 2014 and also forms part of ongoing evidence collection in Thurrock and Southend-on-Sea. This 2014 update limits itself to providing an update to those data sets which are calculated annually, reproducing those data sets where no update has been possible and documenting the outcome of the Examination in Public into the Essex Minerals Local Plan 2014 which took place in November 2013. Much of the contextual information previously incorporated to justify the emerging replacement Essex Minerals Local Plan has been removed in recognition of the Essex Minerals Local Plan now being adopted. For ease of navigation between the two reports, each section is linked to its original consideration in the Greater Essex LAA June 2013 within Table 1.

This LAA update covers the administrative areas of the County of Essex and the unitary authorities of Southend-on-Sea and Thurrock. Information relating to these three administrative areas has historically been amalgamated due to the relatively small amount of workings which take place in Thurrock, which creates issues around commercial confidentiality, and the absence of mineral working in Southend-on-Sea due to its tightly defined, urbanised administrative area. Collectively, Essex, Southend-on-Sea and Thurrock are known as Greater Essex and will be referred to as such throughout this report.

Please note that whilst all minerals data relating to Essex is amalgamated with that pertaining to Southend-on-Sea and Thurrock, the Plan Area pursuant to the Essex Minerals Local Plan 2014 covers Essex only. Southend-on-Sea and Thurrock have their own Local Plans relevant to their own administrative areas.

1.2 Contents

This report updates the following datasets in the June 2013 iteration of the LAA. Where considered helpful, this update will incorporate information not updated from the June 2013 iteration for contextual purposes. For example, there has not been an update of the Aggregates Minerals Survey for England and Wales 2009 and as such it has not been possible to update information relating to the import and export of minerals in and out of Greater Essex. Statistics have therefore been taken from the Greater Essex June 2013 LAA.

The following table presents the sections of the Greater Essex LAA June 2013 which are updated in this report:

TABLE 1: SCHEDULE OF UPDATES AND NEW TOPICS COVERED

Section	Topics Covered	Greater Essex LAA 2013
2: The Geology of Greater Essex	<ul style="list-style-type: none"> The minerals of economic value within Greater Essex 	This repeats Section 2: The Geology of Greater Essex for contextual purposes
3: Existing Mineral Sites in Greater Essex	<ul style="list-style-type: none"> Permitted primary aggregate sites in Greater Essex Processing plants on quarry sites 	Section 3: Land Won Minerals In Greater Essex
4: The Fundamentals of Minerals Planning	<ul style="list-style-type: none"> The Historical Context Explanation of minerals planning terminology Mineral data analysis and mineral plan production in Essex and Thurrock 	Section 3: Land Won Minerals in Greater Essex
5: Planned Mineral Provision within the Essex Minerals Local Plan	<ul style="list-style-type: none"> The basis of the mineral provision calculation and the operation of this in Essex 	N/A – This is a new section inserted following the adoption of the Essex Minerals Local Plan
6: Provision and Sales of Sand & Gravel in Greater Essex	<ul style="list-style-type: none"> Information relating to the permitted reserve, landbank and sales of sand & gravel in Greater Essex Information relating to the permitted reserve, landbank and sales of silica sand in Greater 	Section 3: Land Won Minerals in Greater Essex

	Essex	
7: Marine Won Sand & Gravel in Greater Essex	<ul style="list-style-type: none"> • Marine dredging areas in proximity to Greater Essex • Amount of marine won mineral landed in ports with the capacity to serve Greater Essex 	Section 8: Marine Won Sand & Gravel
8: Secondary and Recycled Aggregate	<ul style="list-style-type: none"> • Total capacity of recycled aggregate facilities in Essex and Southend-on-Sea • Capacity and throughput of recycled aggregate facilities in Thurrock 	Section 10: Secondary and Recycled Aggregate
9: Imports and Exports of Land-won Aggregate in Greater Essex	<ul style="list-style-type: none"> • Methods of mineral transportation • Minerals consumed in Greater Essex by place of origin • Exportation destination of minerals won in Greater Essex 	This repeats Section 9: Imports and Exports of Land Won Aggregate in Greater Essex due to the lack of availability of new data

Please note that unlike the June 2013 LAA, this report does not include information relating to the wider East of England region and it is intended that the Greater Essex LAA will no longer do so. Such information can be found in the East of England Aggregates Working Party Annual Monitoring Report. The latest report assessing mineral sales and provision across the East of England by individual MPA can be found [here](#), and this updates all those figures present in the relevant section of the June 2013 LAA.

It is stated within the NPPF that there is a need to consider economic opportunities and 'other relevant factors' which could influence mineral demand. These have been broadly summarised from the June 2013 iteration of the LAA in Section 1.6. Further work which informed the amount of mineral provision made in the Essex Minerals Local Plan 2014 can be found in the '[Review of the Planned Supply of Aggregate Provision in Essex 2012 – 2029](#)'.

At this current time it is considered that there are no further significant updates required to the economic context section presented in the LAA June 2013.

It is the expectation that the evidence informing the LAA will become more robust over time, in particular in relation to capacities and throughputs of secondary processing and aggregate recycling facilities. A survey into Construction, Demolition and Excavation waste arisings has been commissioned by Essex County Council to update a survey undertaken in 2010 but this has not been completed in time to inform this document. It is noted that the government guidance released in October 2012 which requested an assessment of secondary aggregate sources and potential uses of secondary products to be made in the LAA has since been cancelled. As such no specific work has been undertaken in this area.

1.3 Essex Minerals Local Plan, 2014

The Essex Replacement Minerals Local Plan was adopted in 2014 and sets out the long-term direction for minerals development and the plan to deliver this strategy up until 2029. As well as the long term strategy, it contains Development Management policies against which individual planning applications will be determined as well as making strategic site allocations and safeguarding land for mineral extraction, transshipment facilities and other related activities. Section 5.2.1 provides more detail in terms of the operation of the plan with respect to the provision of minerals within Essex.

1.4 Southend-on-Sea Core Strategy, 2007

The Southend-on-Sea Core Strategy was adopted in December 2007 and sets out the spatial strategy and vision for development in the borough to 2021. Policy CP5 of the Core Strategy sets out an approach to the sustainable management of soil and mineral resources. The policy states (inter alia) that permission for the extraction of brickearth will be granted where it can be proven there are workable deposits, a need for the mineral, an agreed scheme for the operation and restoration of the site and that there will be no materially adverse impacts on the environment. Proposals for the importation of minerals to produce secondary and recycled aggregates on industrial sites will be permitted if they can be carried out without a material adverse impact on the environment and transport movements are sustainable.

1.5 Thurrock Core Strategy and Policies for Management of Development, 2011

This document was adopted in December 2011 and sets out a spatial vision, objectives and development strategy and policies for Thurrock to 2026. It includes policies relating to the provision and safeguarding of minerals. The original intention was that this plan would be supplemented by the Minerals and Waste Development Plan Document which amongst other things was to identify a Mineral Safeguarding Area and, as necessary, areas for mineral working. However this document will not now be taken forward as in February 2014 Thurrock Council resolved to prepare a new comprehensive Local Plan. Adoption of the Core Strategy preceded publication of the NPPF and the guidance contained within it as to how to plan for an adequate supply of aggregates. Published against the background of the former Minerals Planning Statement MPS1, Policy CSTP31 of the Core Strategy states that the Council will endeavour to maintain a landbank of at least 7 years and aim to meet the sub-regional apportionment of 0.14mtpa of sand & gravel. The Thurrock Core Strategy and Policies for Management of Development Focused Review: Consistency with National Planning Policy Framework was submitted to independent examination in August 2013.

1.6 Spatial Context

Essex is located to the north-east of London within the old East of England region and borders the counties of Hertfordshire, Suffolk, Cambridgeshire and Kent. These counties were also in the East of England region with the exception of Kent which was in the South East region. The administrative area of Essex also borders the unitary authorities of Southend-on-Sea and Thurrock as well as a number of London

Boroughs. The two-tier administrative system which operates within Essex encapsulates 12 district, city and borough councils.

Generally, the Essex economy has grown rapidly over the last decade whilst the total population has also increased over this time, and is expected to continue to grow. Current forecasts as reported within Essex Trends 2011 show that by 2031 the East of England will be the second fastest growing region in England, with a population increase of more than 25% from 2001. During this period, Essex is expected to see the highest numerical change in population of all counties in the East of England, absorbing some 324,000 additional residents – more than three times the population of Harlow.

In April 2013, DCLG released 2011-base interim household projections for the period 2011 to 2021. These projections indicate a growth of 84,000 households in Greater Essex between 2011 and 2021 compared with a growth of 46,000 between 2001 and 2011. Within Thurrock, the Core Strategy provides for over 18,500 new homes by 2021 and up to 4750 more by 2026. The Thurrock jobs target is 26,000 over the plan period. There are also a number of significant infrastructure schemes either planned or potentially programmed for Essex or adjoining authorities up to 2029 which is the end of the plan period for the Essex Minerals Local Plan. A major infrastructure project, Crossrail, linking Maidenhead (Berkshire) to Shenfield (Essex) is currently being constructed. HS2 is another significant rail infrastructure project which could potentially make a call on Greater Essex reserves. Planning permission has been granted at Shellhaven (Thurrock) for the UK's largest container port and a major business park and logistics centre whilst at Bathside Bay (Harwich) planning approval has been granted for the construction of one of the largest container terminals in the UK.

Further, the National Infrastructure Plan details Crossrail and a potential 'new Lower Thames crossing', the Essex Economic Growth Strategy 2012 contains a number of growth projects and initiatives whilst Essex is also a part of the South East Local Economic Partnership (SELEP) which was formed in November 2010 and who produced their Growth Deal and Strategic Economic Plan in March 2014. Within this document, SELEP commit to spending £100m of their own funds in Essex to supporting early-stage development to help projects get off the ground and leverage extra support, as well as delivering £1bn of infrastructure investment by 2021 to support economic growth. Additionally, all completed and emerging Local Development Framework documents produced by the district, borough and city councils within Essex, as well as Southend-on-Sea and Thurrock Council, predict and support growth. As such it is crucial that Essex County Council (ECC) and Thurrock Council, as the Minerals Planning Authority for their administrative areas, are able to secure and aid in the supply of sufficient mineral to realise these growth aims and maintain the infrastructure already developed. This is within the context of ever changing and competing interests for land threatening the sterilisation of Greater Essex's mineral resources, where the completion of developments supporting growth could potentially take place over mineral-bearing land which would subsequently be lost. As such the respective Mineral Local Plans will need to contain safeguarding policies to ensure that mineral bearing land is not lost to non-mineral development before extraction can take place.

2 THE GEOLOGY OF GREATER ESSEX

2.1 Introduction

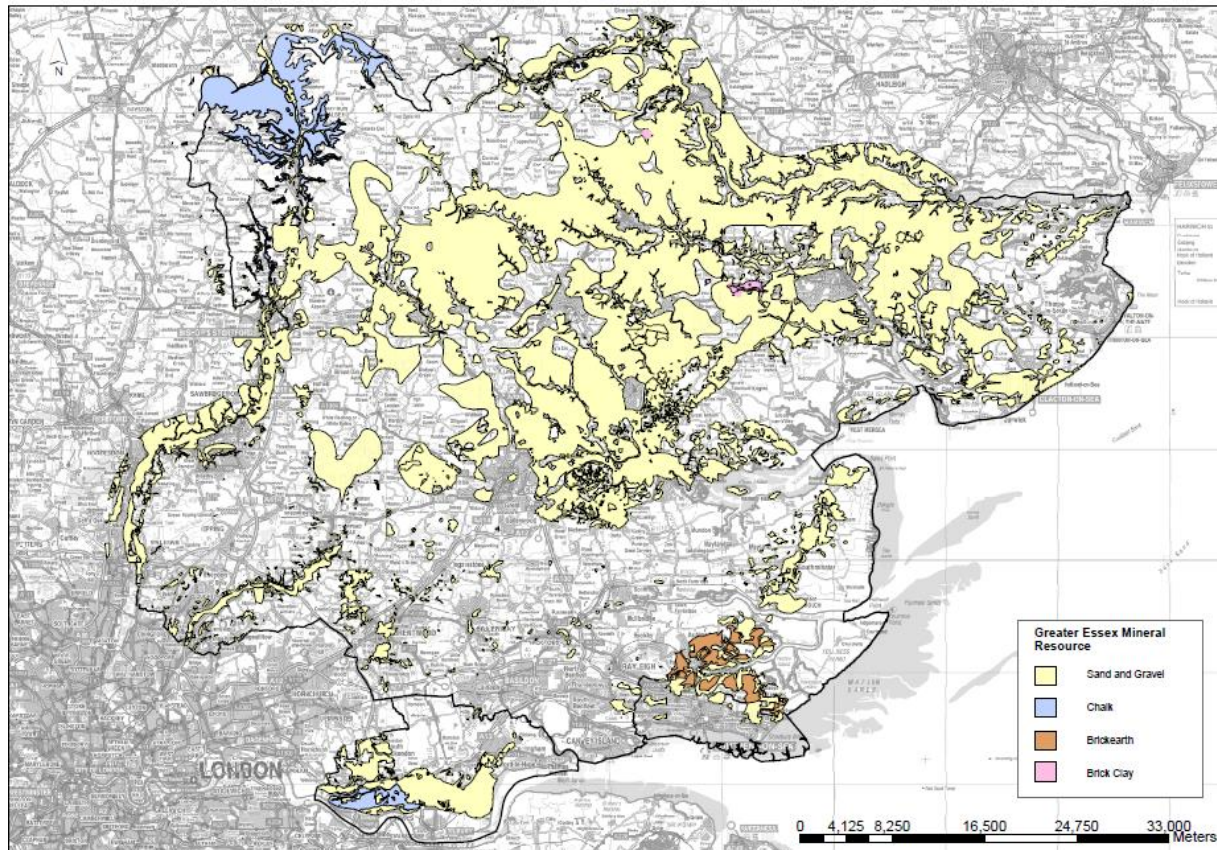
The geology of Greater Essex dictates where mineral resources will occur and consequently where their extraction can take place. The geology of Greater Essex provides for economically viable concentrations of sand & gravel, silica sand, brick clay and chalk although given that there are just two brick clay sites, a single chalk and a single silica sand site with Permitted Reserves in Greater Essex, it is not possible to include detailed information relating to these three resources for reasons of commercial confidentiality. As such figures within this report will relate to marine-won and land-won sand & gravel only, as well as crushed rock which is imported from outside the county.

There now follows a brief description of those mineral resources within Greater Essex which have the economic viability to be worked.

2.2 Economically Viable Mineral Resources within Greater Essex

The map below, based on information supplied by the British Geological Survey (BGS), depicts both known and inferred mineral resources within Greater Essex. When a new minerals application is submitted, Essex and Thurrock Councils require that a geological survey is carried out by the applicant to support their application. This allows for the geological yield and quality of the mineral from the proposed site to be accurately estimated. Subsequently, Essex and Thurrock can then gain a strategic understanding of the deposits being worked which enables calculations to be made relating to existing mineral supply and from that the rate of necessary future provision of mineral sites.

FIGURE 1: KNOWN AND INFERRED MINERAL RESOURCES IN GREATER ESSEX



Source: Based on information supplied by the British Geological Survey, 2002

2.2.1 Sand & Gravel

Greater Essex has extensive river terrace and glacio-fluvial sand & gravel deposits. The majority of these deposits are part of the Kesgrave Formation of river terrace sands and gravels that were laid down as superficial (drift) deposits during the Quaternary period. Thanet sand is an exception having been deposited under marine conditions approximately 60 million years ago and overlies what is referred to as the 'Bullhead Bed', resting directly on Cretaceous Chalk and below London Clays. River terrace deposits are found not only along current river valleys but in historic river channels that are now dry. These are often associated with early paths of the River Thames and River Medway. Glacio-fluvial deposits were deposited as retreating glaciers dropped material they had scoured and picked up during their advance. These deposits are also known as Plateau Deposits, and are usually well sorted (meaning each part of the deposit is of a similar grain size to other proximal deposits). Heavier cobbles were dropped first followed by progressively finer material until the last material was deposited, which is boulder clay.

The resource of sand & gravel in Greater Essex is:

- Significant in the regional and national context i.e., we are one of the largest producers in the UK;
- Most extensive in the centre and north i.e. the Districts of Uttlesford, Braintree, Colchester, Tendring and Chelmsford although there are also significant deposits in Thurrock.

- Least extensive in the south east where deposits appear smallest and least workable;
- Used as a raw material to produce concrete, mortar, asphalt and construction fill which is used in the construction industry and for roads.

2.2.2 Silica Sand

Silica sand is classed as industrial sand and its distinction from construction sand is based on application and market specification. It contains a high proportion of silica in the form of quartz and has a narrow grain size distribution compared to other sand in Greater Essex.

The resource of silica sand in Greater Essex:

- Is extracted for industrial purposes at Ardleigh, north-east of Colchester from the Kesgrave formation and has been since before the Second World War. Industrial uses include glass making, foundry casting, ceramics, chemicals and water filtration rather than any direct application in the construction industry.
- Was noted in a recent planning appeal decision to be suitable for purposes as diverse as geotechnical testing, horticultural composts, resin coating, building repair and restoration, nuclear technology, asphalt roofing, concrete floor levelling and other specialist uses;
- Has a selling price 20 times higher than that of regular construction aggregates, allowing them to serve a wider geographical market.

2.2.3 Brickearth

Brickearth was formed by aeolian (windblown) processes during peri-glacial periods (over the last 25,000 years) and is found in shallow seams in the south east, particularly in Rochford District. It varies in thickness from less than 1m to greater than 6m and is generally a structureless silty deposit formed as a fluvial overbank deposit, a loess (a windblown, fine grained deposit), or a mixture of the two. The deposit is not worked to its full depth; instead the top metre or so is skimmed off when the conditions are dry.

As its name suggests, brickearth is used in the manufacture of bricks and tiles and many of the deposits in Greater Essex were worked back in Tudor times. Brick earth is not currently being extracted in Greater Essex as there are no brick works to currently serve, but there is no compelling reason why it could not potentially be extracted in the future. This material is not an aggregate and therefore it does not come under the landbank requirement. It is however an important resource and remains safeguarded.

2.2.4 Brick Clay

Brick clay, was formed under different processes to brickearth around the same period. It is a sedimentary mudstone that results from the weathering of London Clay. It is located in isolated pockets and in particular to the south west of Sudbury and west of Colchester. Essex was at the forefront of the development of the brick industry in the medieval and early post medieval period. The remaining two sites

actively extracting and processing brick clay in Essex have been doing so for centuries.

Brick clay is currently used in the manufacture of bricks, roof tiles and clay. Brick clay is extracted and processed for specialist brick and tile manufacture at Bulmer and Marks Tey. Bulmer Brickworks works an outcrop of London Clay which contains volcanic ash bands giving a particular character to the products at this site. The site at Marks Tey, which had been operated as a family concern since the 1800's, was taken over by a large brick company relatively recently. The clay worked here is unusual in that it is a lake deposit and part of the site is a geological SSSI.

2.2.5 Chalk

Chalk is one of the mainstays of 'solid geology' under Greater Essex and is the oldest rock exposed at the surface. It is a sedimentary rock that was formed in relatively deep marine conditions during the cretaceous period (between 80m and 100m years before the present). It occurs extensively under the surface but outcrops only in the north-west (particularly in Uttlesford) and the south-west within Thurrock. Chalk is one of the two principal ingredients in the manufacture of Portland Cement, the other being clay. London Clay and Chalk occur close together in Thurrock and the Portland Cement industry operated here for several decades until the 1980s when factories closed and all chalk extraction ceased. Historically, and this is a position maintained in the Essex Minerals Local Plan 2014, chalk is extracted for agricultural purposes in Essex rather than as an Industrial mineral, and as such it is not necessary to define a separate landbank for this resource.

As of September 2014, chalk is extracted at one site (in the form of white chalk at Newport Quarry) and it is used mostly for agricultural use, although small quantities are used by the pharmaceutical industry.

3 EXISTING MINERALS SITES IN GREATER ESSEX

3.1 Introduction

Information on aggregate sales is collected on an annual basis for all Mineral Planning Authorities (MPA) in the East of England by the East of England Aggregates Working Party (EEAWP), and this information is included in individual Annual Monitoring Reports (AMR) for each MPA. An MPA plans for the amount of land won mineral that is to be provided over the period of a plan but has no jurisdiction over aggregate won from the marine environment.

This section documents the mineral sites and facilities within Greater Essex. Land won sand & gravel sales, the landbank and Permitted Reserves are assessed in Section 6 whilst marine won aggregates are assessed separately in Section 7.

3.2 Primary Sand & Gravel Development in Greater Essex

This section details all mineral developments relating to sand & gravel within Greater Essex. These include the extraction sites themselves as well as their associated developments, including processing plants and transhipment sites.

3.2.1 Primary Land-won Aggregate Sites in Greater Essex

‘Primary’ aggregates are those aggregates which are sourced through direct extraction. There are two types of ‘primary’ aggregate, namely ‘land won’ and ‘marine won’, and this refers to whether the aggregate was extracted from the land or the sea bed. As previously stated, land won minerals are assessed in this section with an analysis of marine won mineral presented in Section 7.

Table 2 below captures all the operational and non-operational primary mineral sites with planning permission within Greater Essex.

As of September 2014, there were 25 sand & gravel quarries (21 operational) across Greater Essex, of which one also produces silica sand, as well as two brick clay sites and a single chalk site. There are also a further four sand & gravel quarries which are currently dormant. These dormant quarries are omitted from the calculation of the ‘landbank’ and ‘permitted reserves’. These terms are explained in Section 4.

TABLE 2: PERMITTED PRIMARY AGGREGATE SITES IN GREATER ESSEX, 2014

Operator	Site Name	Cessation Date for Planning Permission
Operational Sand & Gravel Quarries with Permitted Reserves		
Danbury Aggregates	Royal Oak, Danbury	2014
Dewicks	Curry Farm, Bradwell-on-Sea	2014
G&B Finch	Asheldham Quarry, Asheldham	2014
Frank Lyons Plant Services	Blackley Quarry, Great Leighs	2015
Lafarge Tarmac	Wivenhoe Quarry, Wivenhoe	2015
Danbury Aggregates	St Cleres Pit, Danbury	2016
RJD Ltd	Mill House Farm	2017
Hanson Aggregates	Birch Quarry, Birch	2018
S Walsh and Sons Ltd	East Tilbury Quarry	2021*
Blackwater Aggregates	Bradwell Quarry, Silver End	2022
Carr and Bircher	Widdington Pit, Widdington	2025
Aggregate Industries	Martells Quarry, Ardleigh	2026
Brett Aggregates	Brightlingsea Quarry, Brightlingsea	2026
Sewells Reservoir Construction	Highwood Quarry, Little Easton	2026
Sewells Reservoir Construction	Crown Quarry, Ardleigh	2028
Brett Aggregates	Elsenham Quarry, Uttlesford	2030

Hanson Aggregates	Bulls Lodge Quarry, Boreham	2030
Brett Aggregates	Alresford Creek, Alresford	2042
Edwards Waste Management	Crumps Farm, Great Canfield	2042
Lafarge Tarmac	Colchester Quarry, Stanway	2042
JJ Prior Fingringhoe	Fingringhoe Quarry, Fingringhoe	2042
Non Operational Sand & Gravel Quarries with Permitted Reserves		
Brett Aggregates	Lufkins Farm, Thorrington	Commencement within 5 years from July 2014, cessation three years after commencement.
Gent Fairhead & Co Ltd	Rivenhall Airfield Integrated Waste Management Facility - 100kt of material to extract following implementation of ESS/32/11/BTE	Planning permission ESS/37/08/BTE has not yet been implemented and will expire in March 2015
Sewells Reservoir Construction	Cobbs Farm, Goldhanger	Commencement within 5 years from June 2012, cessation four years after commencement.
RJD Ltd	Orsett Quarry, Linford	2042
Dormant Sand & Gravel Quarries		
-	Alton Park	-
Devernish Ltd	Hambro Hill	-
-	Hodgnells Farm	-
S.R. Finch	Straits Mill	-
Operational Brick Clay Sites with Permitted Reserves		

Bulmer Brick & Tile Co	Bulmer Brickworks	2027
W H Collier Ltd	Marks Tey Brickworks	2042
Operational Chalk Sites with Permitted Reserves		
Needham Chalks Ltd	Newport Chalk Pit	2042

Source: Essex County Council and Thurrock Council, 2014

*Date the majority of the site has to be restored by

The location of active and inactive mineral sites across Greater Essex is shown in Figure 2 below.

3.2.2 Mineral Transshipment Sites

A minerals transshipment site is an intermediate minerals facility, where minerals are bought in and then transported to another destination. A minerals transshipment site will typically take the form of either a rail depot or a wharf, and allow for the sustainable long distance movement of minerals outside of the road network. Table 3 details the mineral transshipment sites within Greater Essex.

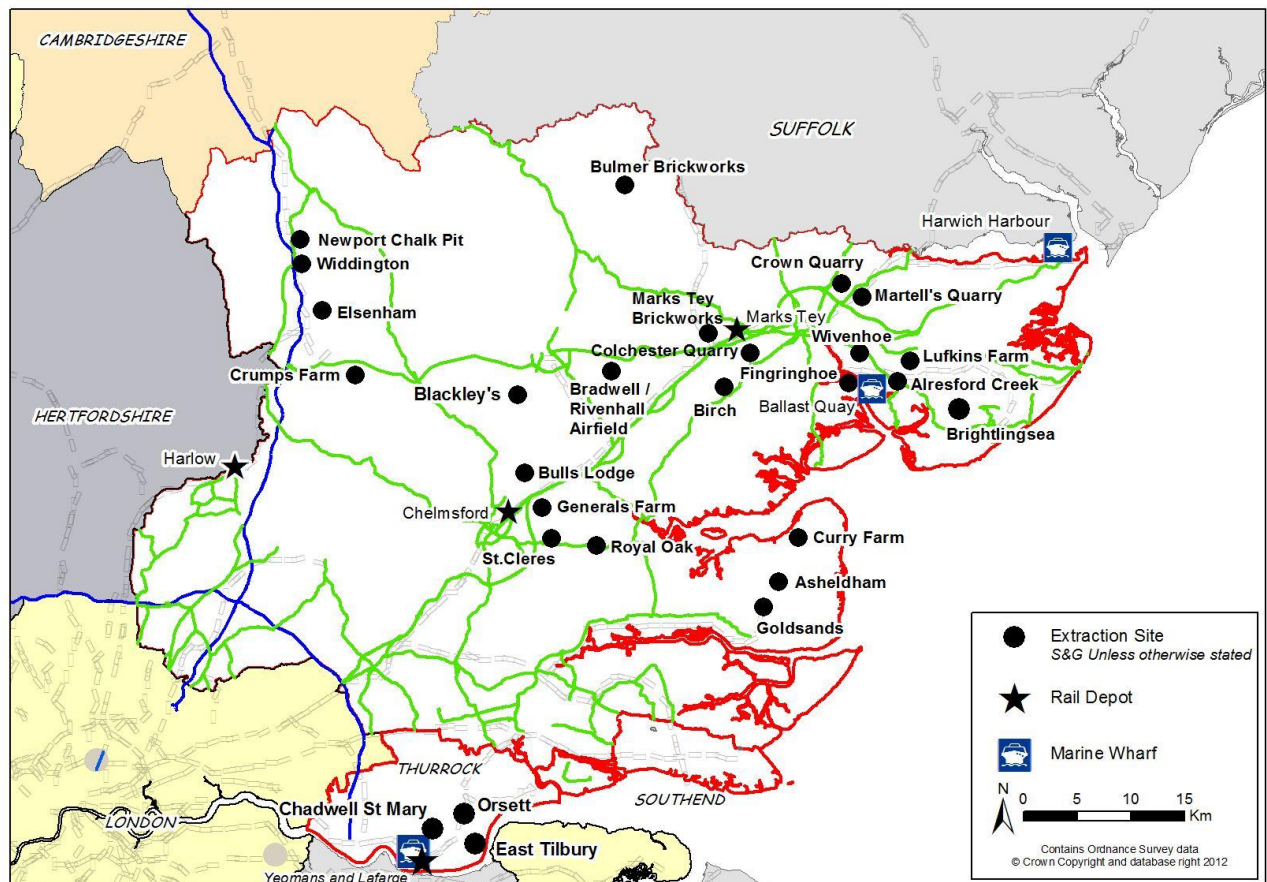
TABLE 3: MINERAL TRANSHIPMENT SITES IN GREATER ESSEX, 2014

Permitted Wharfs		
Civil and Marine / Hansen	Purfleet	-
Harwich International Port Ltd	Parkeston Quay, Harwich	-
Thames & Colne River Aggregates	Ballast Quay, Fingringhoe	-
Permitted Rail Depots		
Aggregate Industries/Lafarge Tarmac	Harlow Rail Depot x2	-
Lafarge Tarmac	Chelmsford Rail Sidings	-
Lafarge Tarmac	Marks Tey Rail Depot	-
Permitted Combined Rail Sidings and Wharf		
Yeoman Asphalt/Aggregate Industries	Purfleet	-
Lafarge Tarmac	West Thurrock	-

Source: Essex County Council and Thurrock Council, 2014

The wharves located in Fingringhoe and Harwich, are, respectively, for the exportation of land-won sand & gravel won from Fingringhoe Quarry and for the exportation of recycled aggregate at Harwich. Harwich could however act as a site for importation and as such it is intended to safeguard Parkeston Quay of the Harwich Port for this potential use. Marine won aggregates are currently imported through Thurrock at Lafarge Tarmac West Thurrock and crushed rock imported by rail at Yeoman Asphalt / Aggregate Industries at Purfleet. Site plans for these facilities can be found in Appendix 2.

FIGURE 2: PERMITTED OPERATIONAL AND NON-OPERATIONAL MINERAL EXTRACTION SITES, AND TRANSHIPMENT SITES IN GREATER ESSEX AS OF SEPTEMBER 2014



Source: Essex County Council, 2014

3.3 Primary Processing Plants in Greater Essex

Primary processing can take a number of forms. Extracted material can be crushed or ground into smaller particles and then sieved to ensure that particle sizes in the extracted material are within a certain classification in order to produce a uniform product. A de-watering process is employed to both reduce the volume of extracted material and ensure it is fit to be turned into its final product. The extracted material can also be further concentrated through an exploitation of its physical and/or chemical properties to increase the proportion of valuable mineral in a load and thereby increasing the value of the final product.

Primary processing of the aggregate material on the same site as where the extraction takes place enables a higher and more sustainable use of aggregates. Encouraging such on site processing reduces the number of lorry movements on the highway network, whilst the importation of non-indigenous material can increase vehicle movements and extend the overall life of a mineral development, thereby prolonging industrial uses within the countryside. The Essex MLP states that all applicants will be required to demonstrate how extracted mineral is to be used in an efficient way by making provision for on-site primary processing plant.

Secondary processing plant, such as for concrete batching, the manufacture of coated materials (asphalt), block / tile / brick making and other concrete products

appear on mineral, industrial and transshipment sites and are currently well spread across Greater Essex. They allow for a greater range of products to be produced on site and therefore make contributions to the economic viability of the mineral developments where they are found. Locating secondary processing plants on active quarries again has the benefit of reducing the amount of mineral miles on Greater Essex infrastructure.

Table 4 below details the processing plants associated with each of the quarry sites within Greater Essex.

TABLE 4: PERMITTED PRIMARY PROCESSING PLANTS IN GREATER ESSEX

Operator	Quarry	Plants Present on Site					
		Primary Processing	Bagging	Concrete / Mortar	Asphalt Coating	Aggregate Recycling	Transshipment Facility
Aggregate Industries	Martells Quarry, Ardleigh						
Blackwater Aggregates	Bradwell Quarry, Rivenhall Airfield (inc Extension A2)						
Brett Aggregates	Alresford Creek, Tendring						
	Brightlingsea Quarry, Brightlingsea						
	Elsenham Quarry, Uttlesford						
Carr and Bircher	Widdington Pit, Widdington						
Danbury Aggregates	St Cleres, Danbury						
	Royal Oak, Danbury						
Dewicks	Curry Farm, Bradwell-on-Sea						
Edviron	Crumps Farm, Great Canfield						
Frank Lyons Plant Services	Blackley Quarry, Great Leighs						
G&B Finch	Asheldham Quarry, Asheldham						
Hanson Aggregates	Birch Quarry, Birch						

	Bulls Lodge Quarry, Boreham						
Lafarge Tarmac	Colchester Quarry, Stanway						
	Wivenhoe Quarry, Wivenhoe						
S Walsh and Sons Ltd	East Tilbury Quarry						
Sewells Reservoir Construction	Crown Quarry, Ardleigh						
	Highwood Quarry, Little Easton						
Thames and Colne River Aggregates	Fingringhoe Quarry, Fingringhoe						

Source: Essex County Council, 2014

4 THE FUNDAMENTALS OF MINERALS PLANNING IN GREATER ESSEX

4.1 Introduction

This section explains the historical context within which minerals planning was based, the terminology commonly used and explores the issues relating to commercial confidentiality that governs the reporting of information in Greater Essex.

4.1.1 The Historical Context

Historically, Central Government set the supply of aggregates required to meet projected national demand within the National and Regional (now Sub-National) Guidelines for Aggregate Provision, which were first introduced in 1989. This document recognised that minerals can only be extracted where they occur and that imbalances between the location of each mineral supply and the location of demand for that supply would necessitate the movement of minerals around the country. This imbalance resulted in some areas being required to extract more of a certain mineral than what would be used on a purely local basis.

Central Government took the figure for the amount of mineral that would be required to support growth on a national scale and divided this into a regional apportionment figure to be allocated to each region, having regard to forecasted growth and supply. Major national surveys are published every four years and sales figures can be obtained nationally from Annual Monitoring Reports. This exercise was completed in the context of having to recognise the geographic inequality of sand & gravel, crushed rock and other aggregates, as well as all existing environmental constraints which exist upon mineral development. Originally Regional Aggregate Working Parties, subsequently aided by Regional Assemblies (who have since been dissolved as a consequence of the new planning system), had the role in conjunction with Mineral Planning Authorities of dividing these regional apportionment figures into an annual apportionment for each Mineral Planning Authority. These figures were underpinned by the 'National and Sub National Guidelines for Aggregates Provision in England' documents of which the latest covers the period 2005 – 2020. This practice has seen Greater Essex being attributed with a number of different annual apportionment figures over time as shown in Table 5 below. Each annual apportionment has been lower than that before in recognition of the utilisation of more sustainable construction techniques and an increasing use of secondary and recycled material.

Since 2003, the apportionment for Greater Essex was split into that being expected to be provided in Essex and Thurrock separately. It was agreed that Thurrock Unitary would be responsible for the provision of 0.14mt of the total apportionment which was set in both 2003 and 2009.

TABLE 5: GREATER ESSEX HISTORIC ANNUAL SAND & GRAVEL APPORTIONMENT FIGURES, 1994 – 2020 (IN MILLIONS OF TONNES)

Year Set	Period Covered by Guidelines	Apportionment
1989	1989 - 1994	6.9mtpa
1994	1994 - 2003	6.2mtpa
2003	2001 - 2016	4.55mtpa (4.41mtpa for Essex, 0.14mtpa for Thurrock)
2009	2005 - 2020	4.45mtpa (4.31mtpa for Essex, 0.14mtpa for Thurrock)

Source: East of England Aggregates Working Party, 2010 AMR

An 'apportionment' is expressed in (millions of) tonnes of aggregate per year (mtpa). An apportionment of 4.45mtpa would mean that an MPA is planning on the basis of allowing the extraction of 4.45 million tonnes of aggregate per year over the lifetime of their adopted plan. Setting a needs based plan provision broadly ensures that only mineral required to support development in each particular minerals planning area is extracted in that area, subject to the need to supply areas lacking in any particular resource.

It is important to note that an MPA cannot control the sales destination of mineral. There will be some cross-boundary movement of minerals at sites close to administrative borders and most mineral planning areas are reliant on the importation of minerals that do not occur in their minerals planning area. For example, Greater Essex is reliant on the importation of crushed rock which is primarily imported from Somerset and Leicestershire.

4.1.2 Determining the Planned Provision under the NPPF

The revocation of Regional Spatial Strategies through the adoption of the NPPF removed the statutory requirement to plan on the basis of an apportionment in favour of a localised approach. This requires each MPA to take an average of the last ten year sales of each mineral pursuant to their planning area and then multiplying this annual figure by the number of years covered by their minerals plan.

The NPPF and accompanying National Planning Policy Guidance does however state that this figure should form a basis for the amount of mineral to be provided and that it can be varied should other information suggest that this would be a prudent course of action. The NPPF also requires that the latest 'National and Sub-National Guidelines for Aggregates Provision in England' are taken into account although the need to directly conform to this document was removed. This 'annualised planned provision' replaces the 'annual apportionment' as described in Section 4.1.1 above.

In light of this, all graphs will be labelled with 'annualised plan provision' as a replacement to the 'annual apportionment'. Please note that this term is directly

substitutable with the term 'annual apportionment' in all historic documents relating to Essex.

4.1.3 Permitted Reserves

'Permitted reserves' are the total amount of mineral that the Mineral Planning Authority has given permission to extract. For example, if there were three extraction sites which have been awarded permission to extract material, containing 20mt, 10mt and 5mt of sand & gravel respectively, this would amount to a permitted reserve of 35mt (20mt + 10mt + 5mt).

The total sales of mineral extracted from all permitted sites contribute towards meeting the agreed provision to be made across the lifetime of the plan.

An important consideration is that the permitted reserves are an estimation as the nature of the underlying geology will have an impact on the amount of mineral that is present. Whilst the amount of mineral can be broadly quantified through the digging of exploratory boreholes across the site, which is a mandatory requirement before planning permission is awarded, this is still recognised and accepted as an estimate. Whilst resources can be inferred from the data obtained, until a particular part of the site between boreholes is worked, it is not possible to assess with certainty what the underlying geology is. As such, estimated remaining reserves are periodically revised through Annual Monitoring Reports.

4.1.4 Landbanks

The 'landbank' is calculated by taking the total amount of permitted reserve and dividing it by the annualised plan provision. Each mineral type (i.e. sand & gravel, brick clay, crushed rock etc) will have its own individually calculated landbank. The resulting figure, reported in years, is the length of time that the 'permitted reserves' would last if material is extracted at the rate of the 'annualised planned provision'. In the hypothetical example of 35mt of 'permitted reserve' given above, and given a current 'annualised planned provision' of 4.45mtpa, the landbank would be calculated as follows:

$$\text{Landbank} = 35\text{mt} / 4.45\text{mtpa} = 7.87 \text{ years}$$

As such, the permitted reserves would be exhausted in 7.87 years at the given annualised planned provision of 4.45mtpa if no further planning permissions were granted. Under the NPPF, there is a requirement to maintain a landbank of at least 7 years for sand & gravel. A low landbank may be an indicator that suitable applications should be permitted to ensure the steady and adequate supply of aggregates. The seven year requirement reflects the lead in time for the planning of quarries and ensures a steady and adequate supply of aggregates. The landbank for sand & gravel is a relatively low minimum figure in comparison to other minerals and this is reflective of its relative commonality. As previously discussed, within Essex there is also the extraction of silica sand, brick clay and chalk. The NPPF requires a landbank of 10 years for silica sand and 25 years for brick clay. Chalk does not have a landbank in Greater Essex as it is extracted as an industrial mineral rather than as an aggregate. Within Essex the small-scale extraction of chalk will only be supported for agricultural and pharmaceutical uses at Newport Quarry as identified in the

Submission Policies Map. Extraction of chalk for other uses, such as aggregate, as fill material or for engineering will not be supported.

4.2 Mineral Data Analysis and Mineral Plan Production in Essex and Thurrock

As explained in Section 1.1, Southend-on-Sea and Thurrock are Unitary Authorities and therefore planning documents published by Essex County Council do not apply to these localities unless jointly prepared. The Essex Minerals Local Plan for example does not cover the Thurrock authority area.

Due to the number of mineral operations in Thurrock, it is not possible to provide accurate statistics for the industry separately for Essex and Thurrock due to reasons of commercial confidentiality. As such, a proxy has to be used to estimate sales in these individual mineral planning areas. As addressed in Section 4.1.1, through negotiation it was agreed that of the 4.45mtpa of sand & gravel to be provided across Greater Essex, 4.31mtpa was to be provided in Essex and 0.14mtpa was to be provided by Thurrock. Therefore when assessing sales data, it is assumed that every year the amount of mineral sold in the Thurrock minerals planning area equates to 0.14mt.

Southend-on-Sea is not required to make a contribution due to it being a constrained urban authority.

TABLE 6: DIFFERENCE IN ANNUAL APPORTIONMENT AND TEN YEAR SALES AVERAGE OF SAND & GRAVEL BETWEEN GREATER ESSEX AND ITS CONSTITUENTS

	Annual Plan Provision	Ten Year Sales Average 2004 - 2013 ¹
Greater Essex	4.45mtpa	3.52mt
Essex	4.31mtpa	3.38mt
Thurrock	0.14mtpa	0.14mt
Southend-on-Sea	0mtpa	0mt

Source: Essex County Council, 2014

The LAA June 2013 provided a breakdown of both actual sales in Greater Essex as well as assumed sales in Essex only by subtracting the Thurrock proxy of 0.14mtpa from the amalgamated data returns from all sites in Greater Essex. This was considered to be necessary as the LAA June 2013 was a key component of the evidence base underpinning the Essex Minerals Local Plan when it was submitted to the Secretary of State in 2013. Now that the Essex Minerals Local Plan has been adopted, it is not considered that this requirement exists. As such, following a more detailed explanation of how the planned provision of sand & gravel has been addressed in the Essex Minerals Local Plan 2014 in Section 5, all remaining statistics in this report will be at the reporting level of Greater Essex which is in line with all other mineral reporting documents both nationally and sub-nationally.

¹ As required by the NPPF, please see Section 6.4.2

5 PLANNED SAND & GRAVEL PROVISION WITHIN THE ESSEX MINERALS LOCAL PLAN 2014

5.1 Introduction

Please note that this section applies only to Essex and not Greater Essex and therefore does not apply to the Unitary Authorities of Thurrock or Southend-on-Sea. This section has been inserted to provide a link between the issues raised in the Greater Essex Local Aggregate Assessment June 2013 and the final form of the Essex Minerals Local Plan 2014.

5.2 Planned Sand & Gravel Provision in the Essex Minerals Local Plan 2014

At the Examination in Public in November 2013, the planned mineral provision within the submitted Essex Minerals Local Plan was based on the proposed rate of annual release for the East of England region, as quoted in the 'National and Sub-National Guidelines', and subsequently apportioned to each mineral planning area by the East of England Aggregate Working Party (EEAWP). This figure was 4.31mtpa. This was an alternative to the NPPF derived methodology of taking an average of ten years sales as a means by which to base mineral provision which would have been 3.62mtpa. The approach taken was endorsed by EEAWP in a letter to all constituent MPAs issued by its chairman in March 2013.

This issue was discussed at the Examination in Public into the Essex Minerals Local Plan in November 2013 and the outcome is detailed within the Inspectors Report associated with that examination. It is considered prudent within this iteration of the LAA to reproduce those sections of the Inspectors report relevant to the issue of mineral provision within Essex.

5.2.1 The Planning Inspectorate – Report on the Examination of the Essex County Council Replacement Minerals Local Plan, 23rd June 2014

The following text repeats paragraphs 40 – 47 of the Planning Inspectorate's report to Essex County Council. The full text of the Inspectors Report can be found [here](#). The following paragraphs reference a number of supporting background documents and these can all be accessed [here](#). References to the PPG are references to National Planning Policy Guidance, of which the mineral section pursuant to the Inspector's Report can be found [here](#). Please note that this guidance has been updated since the Examination in Public and therefore the PPG paragraph numbers are no longer applicable.

Plan Requirement

40. In terms of overall land-won sand & gravel requirement for the 18 year period 2012 to 2029, the Plan provides for the full 4.31mtpa, equivalent to 77.58mt total. After deduction of 36.03mt existing supply as identified in the LAA, the shortfall at the end of 2011 was 41.55mt. Allowing for recent permissions, the required yield from Preferred Sites in the Plan amounts to 40.67 million tonnes. If the sales-based 3.62mtpa were used, the total requirement would reduce to 65.16mt and the shortfall to be met from Preferred Sites to

29.13mt. [CED-05 Table 14] In the calculation of existing supply, it is important to note that this can only practically be based on the estimate of total reserves with current permission for extraction as indicated in PPG para 083. Actual output can vary according to commercial practice and is beyond the control of the MPA.

41. ECC cites a range of economic factors, specific to the County of Essex, in support of the continued use of the former sub-regional apportionment figure, as opposed to the lower annual requirement derived from sales data. ECC reasonably argues that, as over 80 per cent of aggregates consumed in Essex are produced within the County, any economic recovery is likely to be related to increased activity in house building to which the mineral industry would need to respond.

42. Several indicators predict economic recovery within the timeframe of the RMLP [FI-05 paras 4.3-14]. The Oxford Econometrics East of England Forecasting Model (EEFM) shows Gross Value Added (GVA) in construction of the order of 17.9 per cent to 2031 compared with the decade to 2011, alongside an equivalent increase in demand for new dwellings over a comparable period. These figures are born out by Government household projections [RED-05] and by the former EEP, as well as rising forecast dwelling completions in several Districts within Essex, including in response to the requirement of the NPPF since March 2012 to boost housing provision. However, total future completions, following a peak in 2014-15, are hard to estimate due to Local Plans being at differing stages of preparation.

43. The Plan at para 2.19 and the LAA at paras 6.4 and 6.7 [CED-05] also envisage that major infrastructure projects will generate extra demand for aggregates from Essex. These include Crossrail, the Lower Thames Crossing, the Shellhaven Container Port and Bathside Bay business park, Harwich, within the Haven Gateway, where development is strongly promoted.

44. However, there is no quantitative evidence of such extra demand or that it would be required to be met from Essex. Moreover on the contrary, there is a history of reducing demand for aggregates, with the annual apportionment for Essex falling from over 6mtpa in the 1990s to some 4.5mtpa between 2003 and 2009 and finally to the current level favoured by the EEAWP of 4.31mtpa, itself in excess of actual sales for the past decade. Although the economic recession caused a sudden and unprecedented downturn in aggregate sales since 2007, distorting past trends, this underlying downward trend in demand must also be taken into account.

45. It does not appear on this evidence that the local factors cited will necessarily lead to an overall uplift in demand for aggregates from Essex that will set the County apart from other MPA areas. Although it is evident that the national economy is recovering, the progress of that recovery remains uncertain. These considerations militate against the allocation of Preferred Sites for land-won sand & gravel extraction equivalent to the full 40.67mt, based on the County sub-regional apportionment, and in favour of the lesser amount of 29.13mt, related to past sales. As submitted, the RMLP provides for Preferred Sites yielding the full 40.67mt, to come forward without further consideration of need. In the circumstances, and given the generally adverse environmental impact of mineral workings, this provision is to be regarded, on balance, as excessive and the submitted RMLP as unsound in this respect.

46. At the same time, it is appropriate, and consistent with national policy, that the RMLP remains positively prepared to cater for economic recovery and a boost in home building, should these considerations lead in practice to an increase in aggregate sales within its time frame. The appropriate solution is for the Plan to continue to identify sufficient new or extended sites for sand & gravel extraction in the order of 40.67mt but only to allocate Preferred Sites sufficient to yield an amount of sand & gravel close to the 29.13mt based on sales data. However, to allow for the possibility of economic recovery, and thus maintain an appropriate degree of flexibility, the Plan should identify further sites to bring the supply up to the full sub-regional apportionment, if need arises. This would be indicated by the landbank, based on permitted reserves compared with the full requirement of 4.31mtpa, falling below the requisite 7 years. This change is achieved by allocating Reserve Sites.

47. National mineral planning policy and guidance are silent with respect to this approach. On the evidence however, it is appropriate in this particular case and ECC, although preferring to allocate the Preferred Sites as submitted, considers it to be workable. Nor is the designation of Reserve Sites a measure supported by the EEAWP. However, its approval of the regional apportionment stops short of commenting on other aspects of the LAA in any event and there is no question of reducing the total of the identified supply.

5.2.2 Monitoring of the Essex Minerals Local Plan 2014

The Minerals Local Plan 2014, including its approach to mineral provision, is subject to periodic monitoring on a five yearly cycle as per Policy IMR1 – Monitoring and Review. The first review will take place on or before July 2019.

6 PROVISION AND SALES OF SAND & GRAVEL AND SILICA SAND IN GREATER ESSEX

6.1 Introduction

This section documents sand & gravel sales, the landbank and Permitted Reserves in Greater Essex. It is important to note that the minerals accounted for in this section do not account for the total mineral supply either required by Greater Essex or used within Greater Essex as minerals are the subject of importation and exportation. Whilst an MPA can set the quantity of mineral that can be extracted in its planning area, it has no jurisdiction over where this mineral is sold. Importation and exportation of sand & gravel is assessed in Section 8 but please note there have been no available updates since the information presented in the LAA June 2013 as a further iteration of the Aggregates Minerals Survey for England and Wales 2009 has not been published. Contributions are also made by recycled aggregate which are assessed within this report in Section 9.

The data presented details the current position in the calendar year 2013. This is the latest information available.

6.2 Permitted Reserves in Greater Essex

There now follows an assessment of the permitted reserves of sand & gravel held by Greater Essex. Please note that dormant mineral developments are not included in these calculations

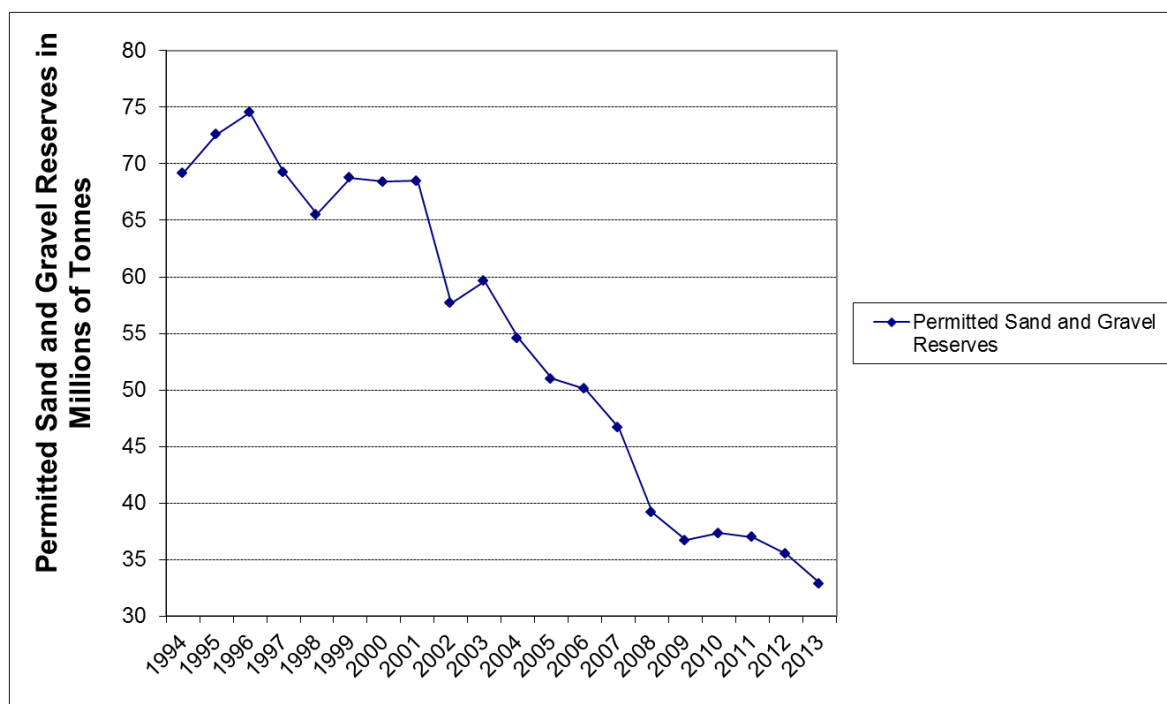
TABLE 7: PERMITTED RESERVES IN GREATER ESSEX IN MILLIONS OF TONNES, 1994 – 2013

Permitted Sand & Gravel Reserves in Essex, Thurrock & Southend	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
	69.14	72.59	74.55	69.28	65.52	68.76	68.42	68.48	57.69	59.64

Permitted Sand & Gravel Reserves in Essex, Thurrock & Southend	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
	54.6	51	50.12	46.68	39.19	36.71	37.36	37.01	35.5	32.88

Source: Essex County Council Annual Monitoring Repots and Annual Mineral Survey 2013

FIGURE 3: PERMITTED RESERVES IN GREATER ESSEX IN MILLIONS OF TONNES, 1994 – 2013



Source: Essex County Council 2014

There has been a clear reduction in the amount of mineral that Greater Essex has permitted for extraction over the last 20 years. Permitted reserves were 69.14mt in 1994 before increasing to 74.55mt which is the highest permitted reserve across the study. Whilst the subsequent decrease in permitted reserves has not been year-on-year, there has been a general pattern of reduction, a year-on-year reduction between 2003 and 2009 followed by an increase to 2010 before further year-on-year reductions to 2013. The 2013 permitted reserve equates to 47.56% of that recorded in 1994. The general trend of a falling reserve is the result of sales being higher than the amount of material being added to the reserve by planning permissions. A declining permitted reserve within Greater Essex is however comparable to the national picture. The principle reason for this downturn nationally was identified by the British Geological Survey in a 2008 report (BGS: Reasons for the Decline in Aggregate Reserves in England, 2008) as being due to insufficient planning applications coming forward relating to extraction rather than too conservative an approach on behalf of Mineral Planning Authorities in awarding planning permissions. Further, as explored in Section 6.3, a reduction in permitted reserves only reaches particular significance when such a reduction results in the landbank within a minerals planning area falling below the national statutory minimum of seven years.

The upturn shown in the recent period is partly due to a reduction in sales but also to the awarding of planning permissions to extract, including Crown Quarry in Ardleigh, Tendring (App no. ESS/57/04/TEN), Little Easton, Gt Dunmow (App no. ESS/65/06/UTT) and Lufkins Farm, Thorrington (App no. ESS/10/13/TEN).

6.3 Sand & Gravel Landbank held in Greater Essex

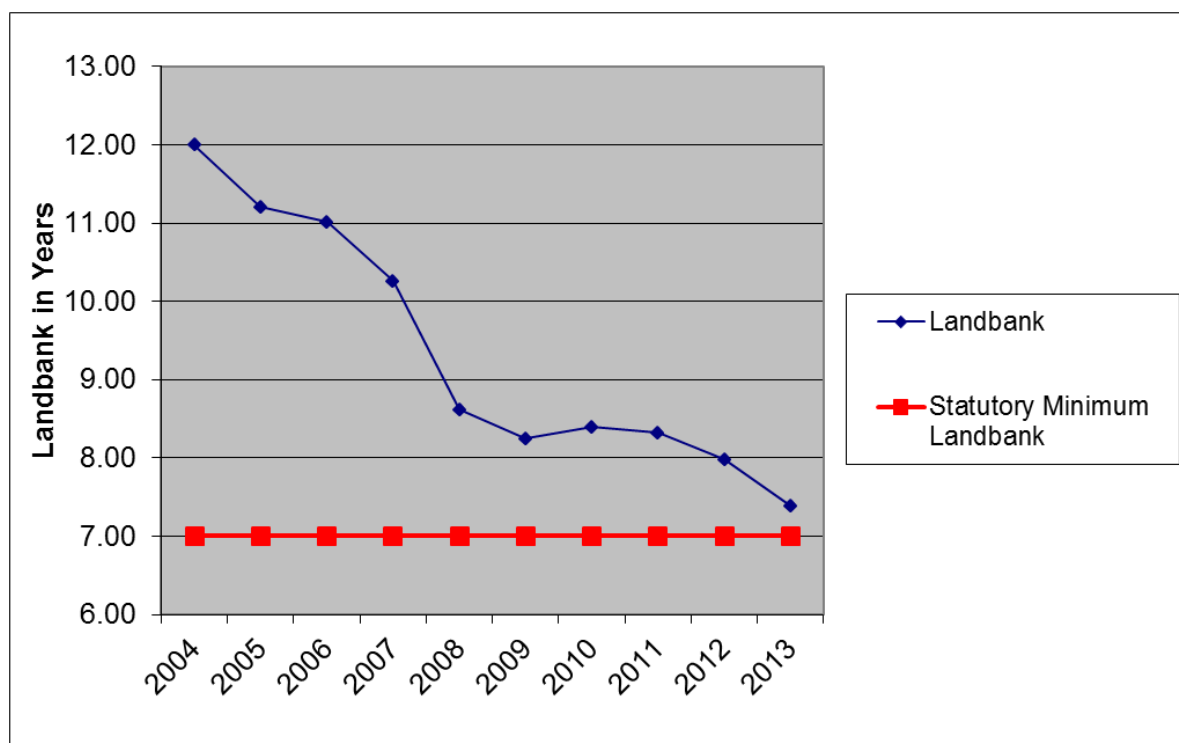
The following table and associated figure charts the landbank held within Greater Essex between 2003 and 2012. As explained above, there is a statutory requirement to maintain a sand & gravel landbank of at least seven years. Should the landbank fall below this minimum, planning applications could be bought forward on land not allocated as a Preferred Site and be assessed in light of there being an assessed need for the mineral which isn't currently being provided for through existing sites.

TABLE 8: LANDBANK HELD IN GREATER ESSEX, 2004 – 2013

Year	Permitted Reserve (a)	Annualised Plan Provision (b)	Landbank in Years (a/b)
2004	54.6mt	4.55mtpa	12.00
2005	51mt	4.55mtpa	11.21
2006	50.12mt	4.55mtpa	11.02
2007	46.68mt	4.55mtpa	10.26
2008	39.19mt	4.55mtpa	8.61
2009	36.71mt	4.45mtpa	8.25
2010	37.36mt	4.45mtpa	8.40
2011	37.01mt	4.45mtpa	8.32
2012	35.5mt	4.45mtpa	7.98
2013	32.88mt	4.45mtpa	7.39

Source: Essex County Council Annual Monitoring Reports and Annual Mineral Survey 2013

FIGURE 4: LANDBANK HELD IN GREATER ESSEX, 2004 – 2013



Source: Essex County Council 2014

The landbank held within Greater Essex can be seen to reduce over the previous ten years, from 12.00 years in 2002 to 7.39 years in 2013. The landbank can be seen to reduce year on year between 2003 and 2009 before an upturn in 2010. The upturn is as a result of the granting of planning permissions as described in the section above. Since that date that landbank has again reduced.

It is important to note that the landbank is a figure dependent on a calculation involving the amount of permitted reserve and the annual apportionment as shown in Section 4.1.4 so the landbank is not directly comparable across the period of study. For example, the planned provision in 2004 was 4.55mtpa whilst in 2009 it was 4.45mtpa. A lower annual planned provision equates to a lower assumed annual usage rate of the permitted reserves, which manifests as a larger landbank. As such, whilst the amount of permitted reserves has fallen, Greater Essex has partly been able to maintain its seven year landbank due to the annual apportionment figure reducing over time as shown in Table 5 above.

In the period assessed, it can be said that Greater Essex has maintained its landbank above the statutory minimum period of seven years.

6.4 Land Won Sales of Sand & Gravel

6.4.1 Historical Sales, 1994 - 2014

Greater Essex is the largest producer of sand & gravel in the East of England. Sales data for primary, land won aggregate has been produced for the period 1994 – 2013, representing a sales period of 20 years inclusive. This sales data is obtained through site operators within Greater Essex filling in an annual mineral survey. The amount of sand & gravel sold is taken as being broadly analogous to that which is extracted. Given the commercial sensitivity of the data, it is necessary to present the data as amalgamated annual totals rather than on a site-by-site basis to ensure that individual operators are not identifiable. This is in accordance with Aggregates Working Party requirements.

The graph also incorporates a 20 year sales average, a ten year sales average as per the NPPF requirement and the combined annual plan provision for Greater Essex as detailed in the adopted Essex Minerals Local Plan 2014 and the Thurrock Core Strategy 2011.

TABLE 9: SALES OF LAND WON SAND & GRAVEL WITHIN GREATER ESSEX, 1994 – 2013 (IN MILLIONS OF TONNES)

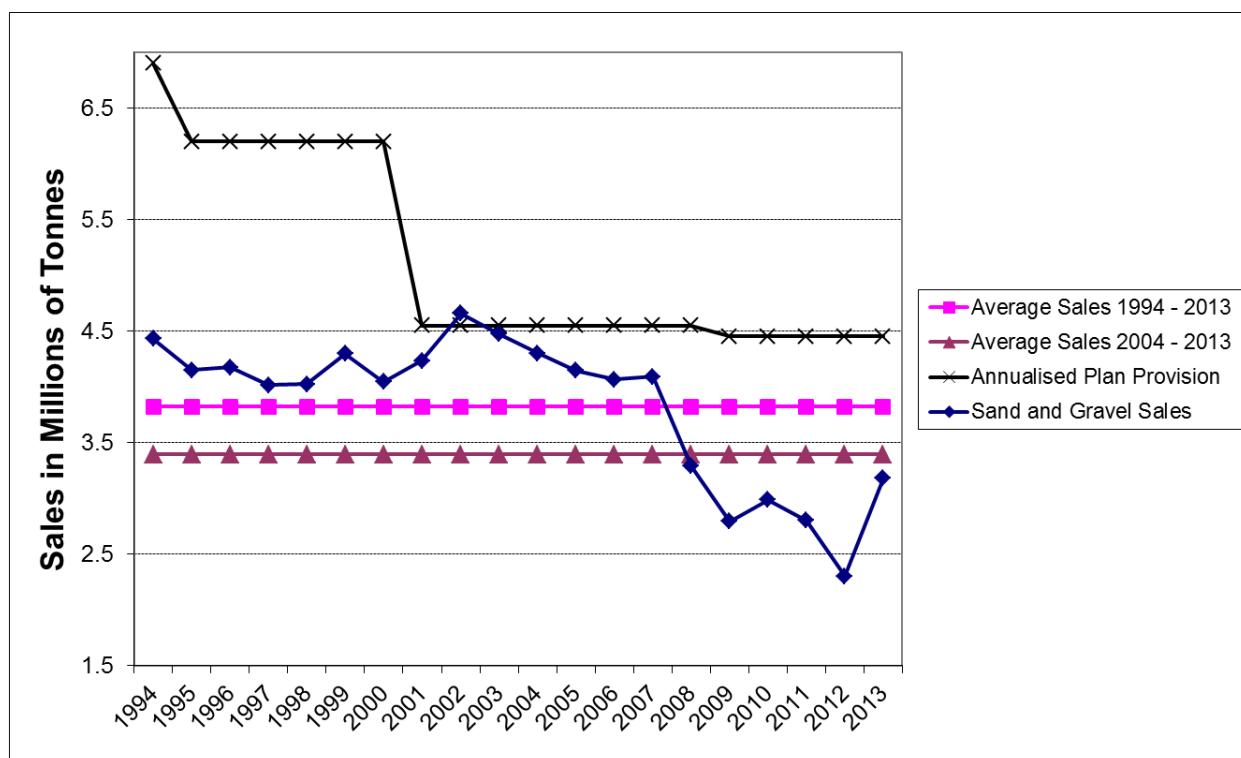
Sand & gravel Sales in Essex, Thurrock and Southend	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
	4.43	4.15	4.18	4.02	4.02	4.30	4.04	4.23	4.66	4.47

Sand & gravel Sales in Essex, Thurrock and Southend	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
	4.30	4.14	4.07	4.09	3.29	2.79	2.99	2.80	2.30	3.18

Average Annual Sales 1994 – 2013	3.82mt
Average Annual Sales 2004 – 2013	3.39mt

Source: Essex County Council Annual Monitoring Reports and Annual Mineral Survey 2013

FIGURE 5: SALES OF LAND WON SAND & GRAVEL WITHIN GREATER ESSEX, 1994 – 2013 (IN MILLIONS OF TONNES)



Source: Essex County Council Annual Monitoring Reports and Annual Mineral Survey 2013

There has been a general downward trend witnessed in sand & gravel sales across the period covered in the above figure although this downward trend has not been uniform. The highest sales were reported in 2002 at 4.66mt with the years immediately following 2002 also displaying relatively high sales. Sales in 1994, representing the start of this period of analysis, were recorded as 4.43mt and there then follows a period of fluctuating but broadly decreasing sales through to 2002 where sales ranged from the aforementioned 4.66mt recorded in 2002 down to 4.02mt in 1997 and 1998. Following 2002, there was a decrease of sand & gravel sales year-on-year to 2009 other than for a small upturn in 2007. The biggest drop in sales came between 2007 and 2008 with a further drop recorded in 2009. An up-turn was recorded in 2010 before a further decrease in 2011 and 2012, with sales in 2012 recorded as 2.30mt which is the lowest across the period assessed. 2009 to 2012 marks the only period where sand & gravel sales have dropped below 3mtpa. Sales in 2013 represent an increase to 3.18mtpa which is the highest sales figure since 2008, with sales in 2013 representing 72% of those recorded in 1994 and 68% of peak sales recorded in 2002

The annual apportionment has historically been noticeably higher than actual sand & gravel sales but this was due to delays in plan formation at the national level. Before 1991 sales of sand & gravel in Greater Essex were around 8mtpa and as such historic apportionments were once closely analogous to actual sales. With the reduction of the Greater Essex apportionment to 4.55mtpa in 2003, sales of sand & gravel again closely mirrored the apportionment until the aforementioned economic recession caused sales to fall.

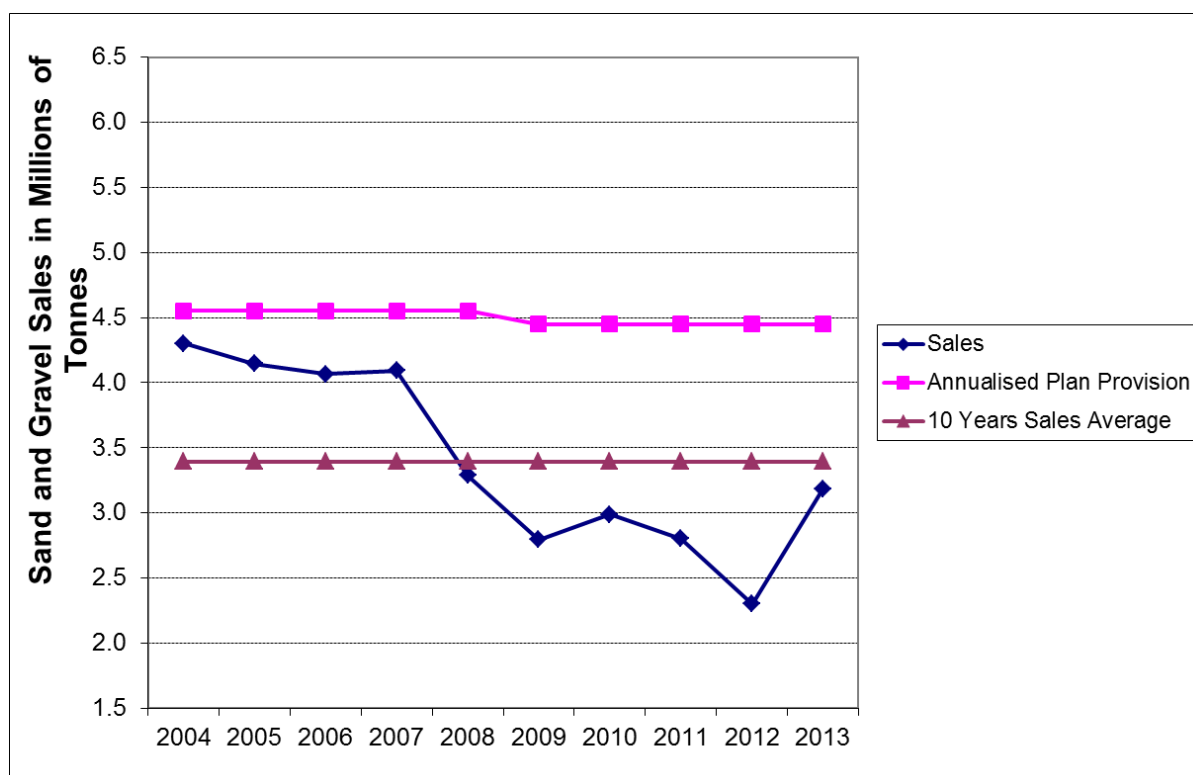
6.4.2 An Assessment of the Last Ten Years of Sand & Gravel Sales

TABLE 10: SALES OF SAND & GRAVEL WITHIN GREATER ESSEX, 2004 – 2013

Year	Sales	Annualised Plan Provision	10 Year Sales Average
2004	4.30mt	4.55mt	3.39mt
2005	4.14mt	4.55mt	3.39mt
2006	4.07mt	4.55mt	3.39mt
2007	4.09mt	4.55mt	3.39mt
2008	3.29mt	4.55mt	3.39mt
2009	2.79mt	4.45mt	3.39mt
2010	2.99mt	4.45mt	3.39mt
2011	2.80mt	4.45mt	3.39mt
2012	2.30mt	4.45mt	3.39mt
2013	3.18mt	4.45mt	3.39mt

Source: Essex Minerals and Waste Annual Monitoring Report 2012/13

FIGURE 6: SALES OF SAND & GRAVEL WITHIN GREATER ESSEX, 2004 - 2013



Source: Essex Minerals and Waste Annual Monitoring Report 2012/13

The recession beginning in 2007 has had a marked effect on the sales of sand & gravel within Greater Essex. Prior to the recession, sales were within 10% of the annualised plan provision, suggesting that this was a realistic basis on which to base the provision of minerals within the plan areas making up Greater Essex. Since 2007 however, sales have primarily fallen until 2013 where proportionately the biggest yearly increase was recorded. The latest data point represents 71% of the adopted annualised plan provision compared to 52% the year before. The MPAs of both

Essex and Thurrock will continue to monitor the pattern of sales and ascertain whether the current annualised plan provision stated in their respective mineral policies remain an appropriate basis upon which to release mineral.

6.4.3 The 'Average Three Year Sales' of Sand & Gravel in Greater Essex

National Planning Policy Guidance states that MPAs should also look at the average of the previous three year sales to identify the general trend of demand as part of the consideration of whether it might be appropriate to increase mineral supply. The last three years of sales show an overall increase from 2.80mt to 3.18mt, representing an increase of 13.6%. This overall increase is despite a decrease in sales between 2011 and 2012, with the proportional increase between 2012 and 2013 being 38.3%. As stated, sales of sand & gravel will continue to be monitored to ascertain whether this upward trend continues.

6.5 Silica Sand Provision in Greater Essex

Silica sand in Greater Essex is produced at a single site (Martells Quarry, Ardleigh) and it is therefore not possible to provide sales data due to reasons of commercial confidentiality. In order to maintain the statutory ten year minimum landbank for this mineral, and when making allowances for the already permitted reserves at the site (0.42mt as per application reference ESS/18/07/TEN), the proportional split of the resource of 54% silica sand and 46% sand & gravel and the processing plant capacity to produce silica sand which is 0.045mtpa, there was a requirement to allocate an additional 0.39mt of silica sand to maintain the landbank across the plan period. This was achieved through the allocation of a site extension to Martells Quarry at Slough Farm. This provided a total estimated mineral yield at the site of 0.86mt, of which 0.46mt comprises of silica sand. The assumed annual output of the site remains at 0.045mtpa.

7 MARINE WON SAND & GRAVEL

7.1 Introduction

Marine won aggregates are an alternative to land won aggregates. The marine won sand & gravel landed in the East of England is primarily sourced from the Thames Estuary Licensed Area as shown in Figure 7 below. Like land won aggregate, marine won aggregate can be used for a variety of construction purposes including mortar and road sub-base, to reclaim land from the sea prior to engineering works being carried out and as beach nourishment.

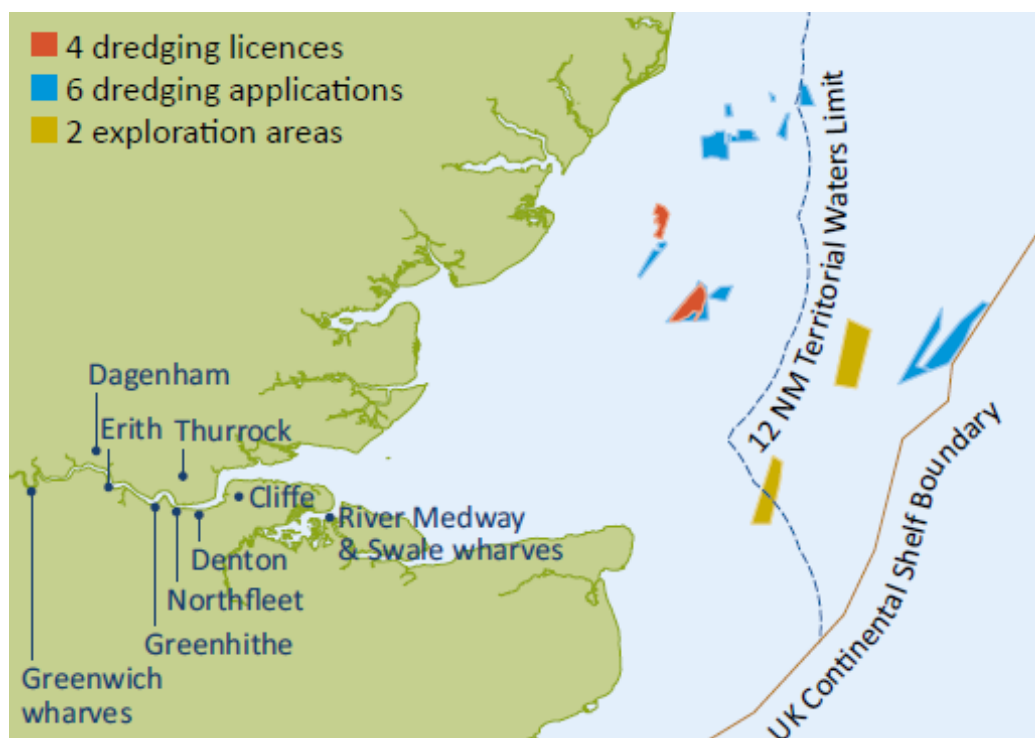
Please note that this section largely identifies the total amount of marine won sand & gravel that is landed within the Thames Estuary region. A broad analysis of the importation of marine won sand & gravel into Greater Essex itself is presented in Section 7.6.

7.2 Dredging Areas

The East of England is a major point of entry for marine dredged aggregates, with the National and Regional Guidelines for Aggregate Provision in England 2005 – 2020 making the assumption that 14mt of marine sand & gravel will arrive in the region between 2005 and 2020. This equates to 0.93mt a year although this figure is not apportioned to individual authorities.

The following figure shows the operational wharf facilities and the four licensed marine dredging areas in closest proximity to the coast of Essex along with six dredging application areas and two exploration areas:

FIGURE 7: MARINE DREDGING AREAS IN PROXIMITY TO GREATER ESSEX, 2013



Source: Crown Estate: Marine Aggregates – Capability and Portfolio, 2013

7.3 Marine Won Sand & Gravel within Greater Essex

Marine landed minerals contribute to the supply of minerals coming into Greater Essex from elsewhere. Essex itself does not have an entry point for marine landed aggregates and instead relies on marine landing points in adjoining authorities, namely Suffolk (Ipswich) and the Thames Estuary (including Thurrock). Ports can be considered to be 'virtual quarries' in that they are sites where saleable mineral can be distributed from whilst many ports will also have processing facilities to allow imported mineral to be graded.

Those aggregate landing ports in the Thames Estuary Region as well as those in Ipswich (within the East Coast Region) are shown below. Please note that each landing port will have a number of associated wharves. For example, the landing port of West Thurrock includes the wharves of Purfleet and West Thurrock. A full list of operating wharves can be found in Appendix 1.

TABLE 11: MARINE WON AGGREGATE LANDING PORTS WITH THE CAPACITY TO SERVE GREATER ESSEX, 2014

Thames Estuary Region			East Coast Region
London	Thurrock	Kent	Suffolk
Denton	West Thurrock	Cliffe	Ipswich
Erith		Northfleet	
Greenhithe		River Medway & Swale	
Greenwich Wharves			
Dagenham			

Source: Adapted from The Crown Estate: Summary of Statistics, 2014

7.4 Wharves within Greater Essex

As previously noted, all wharves within Greater Essex receiving water borne aggregate are located in Thurrock. As of 2012, only one wharf is being used to import marine dredged sand & gravel. This is the relatively new Lafarge Aggregates site to the immediate east of the QEII bridge, known as 'Thurrock' within the Crown Estate statistics and Oliver Road, West Thurrock in the Essex Minerals Local Plan, 1996.

The Civil and Marine / Purfleet Aggregates Ltd wharf (on the immediate western side of the QEII bridge, and called Purfleet Wharf in the Essex Minerals Local Plan, 1996) is only being used by Hansen / Civil and Marine for the importation by river of ash used in slag cement production. Purfleet Aggregates have ceased operating. The Yeoman Asphalt (part of Aggregate Industries) site at Jurgens Road, Purfleet is now only being used for coated roadstone production using aggregate delivered by road and rail. Historically, crushed rock was imported by river but Thurrock Council are not aware that it was ever used for the importation of sand & gravel. No use of the river is now made by this wharf.

The former Gibbs Wharf site at Purfleet, formerly used by Foster Yeoman / Aggregate Industries was granted permission in 2012 by the Thurrock Thames Gateway Development Corporation for trailer parking. Proctor and Gamble were the applicants and the company has now implemented the permission having absorbed the site into their much larger adjacent site. As such, it is considered it may be difficult to re-establish a minerals use.

7.5 Marine Aggregate Landings

The Crown Estate collects statistics on the amount of marine won mineral that is landed at each of its landing ports although these do not define the final destination of the mineral. Marine aggregates are also an assumed supply and are not apportioned between Mineral Planning Authorities. As such the figures presented do not relate to the amount of marine won aggregate that is used within Greater Essex, rather it is the amount of marine won aggregate that is landed within or in proximity to Greater Essex and could be used within Essex, Thurrock, Southend, Kent, Suffolk, London and potentially further afield. However it can be said that due to their mass, landed minerals do not have a large economically viable transportation distance, unless transported by rail, and as such minerals landed in the Thames Estuary region and Suffolk will be utilised in the surrounding vicinity. Studies carried out by the British Geological Survey suggests that the cost of a lorry load of primary aggregate doubles at a transportation distance of 40km, with 60km being the maximum typical trading distance by road.

Marine Aggregates – Capability & Portfolio 2013 (Crown Estate) stated that during 2012, 97% of material extracted from the Thames Estuary region was delivered to the Thames Estuary region, with the remainder going to the Humber, East Coast, South Coast and mainland Europe. The resources in the region consist of a variety of grade of sand ranging from fine to very coarse sands as well as fine to medium gravels. Currently 1.75mt of material is permitted for extraction per annum from the four licences within this region although over the last ten years on average only just over 40% of the permitted tonnage has been dredged. At present there is the opportunity to extract approximately 0.66mt of extra material per annum whilst additional applications may deliver permits for a further 5.35mtpa. The report further states that nearly 5.7mt of the material dredged from UK licences was landed across the nine locations in the Thames Estuary, with most going to wharves at Greenwich.

Regarding the East Coast Region, 54% of material extracted within the region was delivered to the Thames Estuary region and 43% to mainland Europe in 2012. The resources in the region also range from fine sand through to very coarse sand and fine to medium gravel. Currently 10.8mt of material is permitted for extraction per annum from the licences within this region although over the last ten years, on average 60% of the permitted tonnage has been dredged.

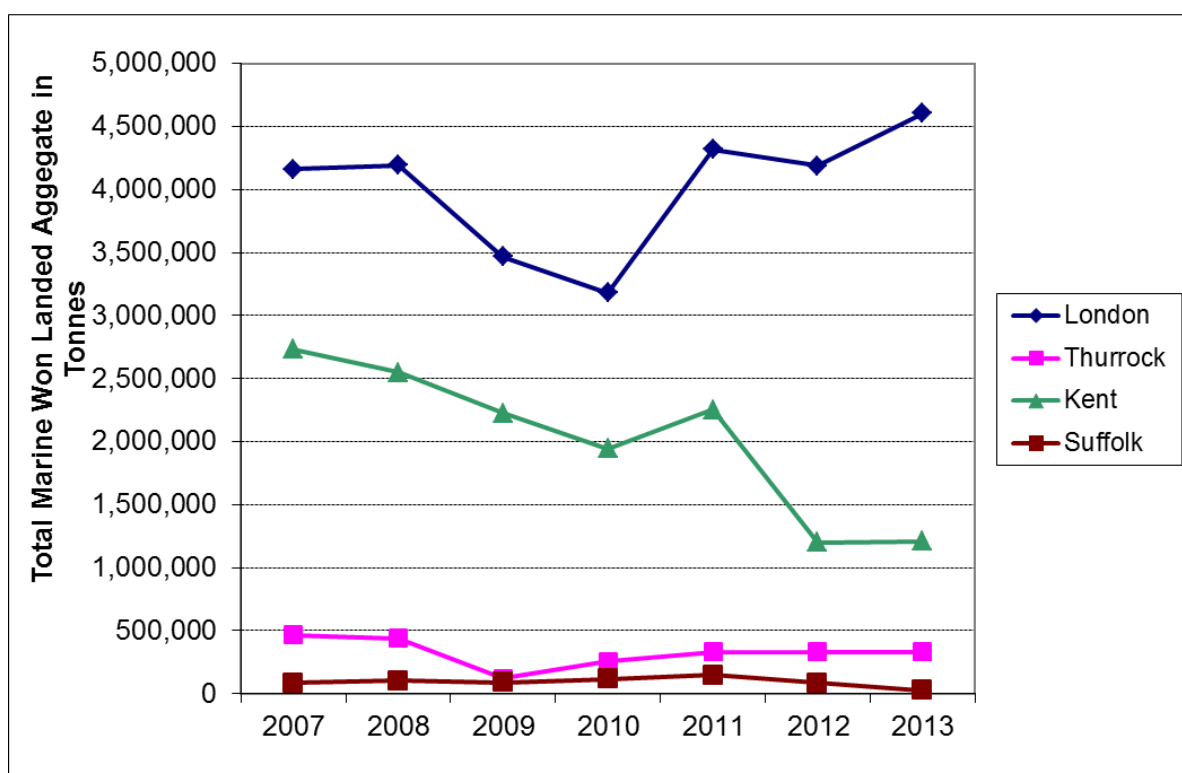
The following table details the amount of marine won mineral landed in ports within London, Thurrock, Kent and Suffolk. It is considered that marine dredged minerals landed at these ports have the capacity to enter Essex.

TABLE 12: AMOUNT OF MARINE WON MINERAL LANDED IN PORTS WITH THE CAPACITY TO SERVE GREATER ESSEX IN TONNES, 2007 – 2013

	2007	2008	2009	2010	2011	2012	2013
London	4,160,917	4,192,187	3,466,777	3,178,872	4,319,908	4,188,757	4,606,442
Thurrock	464,404	439,723	121,852	255,527	329,376	329,376	329,376
Kent	2,731,623	2,550,640	2,226,380	1,944,763	2,252,864	1,200,040	1,211,574
Suffolk	85,608	100,941	87,459	114,468	148,483	83,865	27,931
Total	7,442,552	7,283,491	5,902,468	5,493,630	7,050,631	5,802,038	6,175,323

Source: The Crown Estate, Summary of Statistics, 2007 – 2013

FIGURE 8: TOTAL MARINE WON MINERAL LANDED IN PORTS WITH THE CAPACITY TO SERVE GREATER ESSEX IN TONNES, 2007 – 2013



Source: The Crown Estate, Summary of Statistics, 2007 – 2013

Between 2007 and 2013 there has been a reduction in the total amount of marine won mineral landing within the regions assessed, from 7.44mt to 6.18mt, representing a reduction of 17%. Between 2007 and 2010 there was a yearly reduction although the period 2010 – 2011 shows an increase in marine won minerals landed, from 5.49mt to 7.05mt. This figure reduced again in 2012 before climbing to 6.18mt in 2013.

When ports are analysed by administrative region, it can be seen that there has been an increase in the amount of marine won aggregate coming into ports within London but a reduction in all other areas. Kent, comprising of three wharves as shown in Table 11, saw a reduction of 56% of the amount of material landed whilst Suffolk, comprising of a single wharf, saw a reduction of 67%.

7.6 Marine Won Sand & Gravel Consumed within Greater Essex

The following table collates the total marine won aggregate tonnage consumed in Greater Essex as reported in the 2009 national aggregate aggregate minerals survey for England and Wales, with the proportional origin data obtained separately from the British Geological Survey. Please note that the data presented below is the same as that within the Greater Essex LAA 2013 and is the latest available.

TABLE 13: MARINE WON SAND & GRAVEL CONSUMED WITHIN GREATER ESSEX BY LANDING PORT LOCATION, 2009

Total Marine Won Sand & Gravel Consumed	277,000t	
Landing Port Location	Proportion	Assumed Figure
Greater Essex	>95%	>263,150t
Greater London East	1 - 5%	2,770t - 13,850t

Source: British Geological Survey and 'Collation of the results of the 2009 aggregate minerals survey for England and Wales'

As can be seen from a comparison of the total amount of marine won sand & gravel landed in ports with the capacity to serve Essex (Table 12, 7.05mt in 2011) with that consumed in Greater Essex (Table 13). Greater Essex receives a far smaller proportion of marine won sand than it could potentially have access to.

The vast majority of marine won sand & gravel consumed in Greater Essex is also landed within Greater Essex. A proportion of greater than 95% of the total means that over 263,150t of the total 277,000t of marine won sand & gravel consumed in Greater Essex was landed within Greater Essex. Given the absence of landing ports in Essex and Southend, the majority of marine sand & gravel consumed in Greater Essex is likely landed in Thurrock. Within the Thurrock Council Core Strategy and Policies for Management of Development document adopted in 2011, Policy CSTP32 – Safeguarding Minerals Resources states that 'all existing aggregate wharves will be safeguarded against proposals which prejudice their use for the importation of aggregates'. As such it is considered that, following additional formal confirmation with Thurrock Council, Essex and Southend-on-Sea will continue to be able to receive the majority of its marine won sand & gravel via Thurrock.

Please note that the BGS also evidenced a very small proportion of marine won sand & gravel arriving in Greater Essex via Kent. This amount was considered to amount to 'only a few lorry loads' and as such a proportion was not supplied by the BGS and Kent have therefore been omitted from Table 13.

7.7 Increasing the Proportion of Marine-won Sand to Offset Land-won Production

With regard to increasing the proportion of marine won sand & gravel to offset the amount of provision that is required to be made from land won material, this is outside of the remit of both Essex County Council and Thurrock Council as marine extraction areas are leased by the Crown Estate with licenses to dredge issued by the Marine Management Organisation (MMO). Discussions with the MMO evidenced that whilst the marine environment has the capacity for significantly more extraction, applications are not being made. The main reason given was that start-up

investment for marine extraction is significant, due to the potential need for additional vessels and infrastructure as well as the need to compile impact studies on the potential impacts on features including International Maritime Organisation shipping routes, erosion and Natura 2000 sites.

8 IMPORTS AND EXPORTS OF LAND WON AGGREGATE IN GREATER ESSEX

8.1 Introduction

As well as being the largest producer of sand & gravel in the East of England, Greater Essex both imports and exports aggregate. Historically, approximately 75% of the mineral extracted within Greater Essex has been used within the county, with the majority of that exported going to London. Greater Essex is also heavily reliant on the importation of hard rock, used, for example, as rail ballast as well as limestone which is used in cement making. Traditionally, and especially so since the 1940s, a pattern of long-distance supply to Greater Essex has emerged where mineral types absent or scarce in Greater Essex have had to be imported. Important sources of imports are the East Midlands for hard rock and limestone sourced from the South West. Additionally, Greater Essex imports a small quantity of marine sand which is dredged outside of Greater Essex as shown in Table 13

The data comprising much of this section has been supplied by the British Geological Survey (BGS). The data is presented in accordance with existing commercial confidentiality agreements which mean it is not possible for the BGS to reveal actual figures for mineral importation. Instead they are able to supply a percentage range detailing an approximation of the proportion of mineral imported from each Mineral Planning Area outside of Greater Essex. This proportion can be used to calculate an approximate actual figure through a comparison with the total import figures presented for Greater Essex within the national aggregate minerals survey for England and Wales 2011. Whilst published in 2011, this document incorporates data relating to 2009. Both the BGS obtained proportion and the resultant calculation based on the 2009 Annual Monitoring Report are presented in the data tables within this section. The information in this section largely repeats that included within the Greater Essex LAA 2013 and remains the latest available.

8.2 Methods of Mineral Transportation within Greater Essex

There are three bulk transport modes for the movement of minerals in, out and around Greater Essex. These are by road, rail and water. Both the road and rail networks within Greater Essex reflect the significance and relationship to London, with a wheel and spoke layout being evident. Additionally there are also a number of relevant port and wharf facilities (Thurrock only) on the coast as well as navigable sections of inland waterway. For internal movements the road network is the most effective and heavily utilised form of transportation as this mode offers flexibility of route and provides the ability to deliver to any final destination, reflecting the relatively short journeys to the local Essex Market.

There are safeguarded mineral transshipment sites at the following locations within Essex:

- **Chelmsford Rail Depot** – used both for the import of limestone and the export of sand & gravel
- **Harlow Mill Rail Station** – used both for the import of limestone and the export of sand & gravel
- **Marks Tey Rail Depot** – used for the export of sand & gravel

- **Ballast Quay, Fingringhoe** – a marine wharf used for the export of sand & gravel originating from the associated quarry to the London market

Ballast Quay is however only safeguarded as a transshipment site for the lifetime of extraction at Fingringhoe Quarry. This marine wharf is poorly connected to the strategic highway network and so is not suitable for the exportation of minerals from other extraction sites or for the importation of minerals into Essex.

Within Thurrock, the following site operates as a transshipment site:

- **Jurgens Road, Purfleet** – used for coated roadstone production using aggregate delivered by road and rail. Historically, crushed rock was imported by river but Thurrock Council are not aware that it was ever used for the importation of sand & gravel. No use of the river is being made at present.

There is also some cross-boundary movement of aggregate by road into and from neighbouring areas although exportation to London is predominantly by rail. Evidence does however suggest that it is more efficient to transport aggregate over short distances by road.

A demonstrable adherence to the road network hierarchy forms part of Essex County Council's Call for Site's assessment procedure, where Essex asks for land owners to submit sites to be assessed for their suitability for mineral uses in principle. Additionally, a full detailing of mineral traffic routing would be expected alongside any formal planning application for mineral use on a site, which would be binding. It is worth noting that because Essex is not planning on increasing its annualised planned provision, there will be no additional mineral movements on the road hierarchy at the county level, rather there will be a re-allocation of current levels of mineral transport as old sites close and new sites begin to be worked.

8.3 Land Won Sand & Gravel Consumed within Greater Essex

The following table collates the total land won aggregate tonnage consumed in Greater Essex as reported in the 2009 national aggregate annual monitoring report with the proportional origin data obtained from the BGS.

TABLE 14: LAND WON SAND & GRAVEL CONSUMED WITHIN GREATER ESSEX BY ADMINISTRATIVE AREA OF ORIGIN, 2009

Descending order of importance	Total Land Won Sand & Gravel Consumed	2,389,000t	
	Administrative Area of Origin	Proportion	Assumed Figure
	Essex, Southend & Thurrock	90%	2,150,100t
	Greater London East	5 - 10%	119,450t - 238,900t
	Surrey	1 - 5%	23,890t - 119,450t
	Hertfordshire	1 - 5%	23,890t - 119,450t
	Central Bedfordshire	<1%	<23,890t
	Suffolk	<1%	<23,890t
	Kent	<1%	<23,890t
	Norfolk	<1%	<23,890t
	Cambridgeshire	<1%	<23,890t
	Oxfordshire	<1%	<23,890t
	Cheshire East	<1%	<23,890t

Source: British Geological Survey and 'Collation of the results of the 2009 aggregate minerals survey for England and Wales'

Note: Berkshire and Staffordshire also supplied less than 1% of the total sand & gravel consumed in Essex but BGS considered the figures too small to be reported.

Similar to that seen with marine won sand & gravel, the majority of the total land won sand & gravel consumed within Greater Essex was extracted from within Greater Essex. Greater London East was the second largest contributor, with between 5 – 10% of the total amount of land won aggregate originating from authorities within this sub-region. Not including Berkshire and Staffordshire as per the BGS recommendation, there are a further nine mineral planning areas through which Greater Essex receive land won sand & gravel. Whilst individually small totals per authority, information received from the BGS suggests that combined they provide a maximum of approximately 5% of the total amount of land won sand & gravel consumed in Greater Essex and are therefore important in facilitating sustainable growth. Dialogue will continue to take place with all of the Mineral Planning Authorities identified in the above table to ensure that the importation arrangements upon which Greater Essex currently depend will be maintained. A summary of such discussions informed Section 12 of the LAA June 2013 and will be presented in future updates of the LAA.

8.4 Land Won Crushed Rock Consumed in Greater Essex

The following table collates the total crushed rock tonnage consumed in the sub-region as reported in the 2009 national aggregate annual monitoring report with the proportional origin data obtained from the BGS.

TABLE 15: CRUSHED ROCK IMPORTATION INTO GREATER ESSEX BY ADMINISTRATIVE AREA OF ORIGIN, 2009

Total Crushed Rock Consumed	744,000t	
Administrative Area of Origin	Proportion	Assumed Figure
Somerset	>45%	>334,800t
Leicestershire	25 - 30%	186,000t - 223,200t
Outside of England and Wales	15 - 20%	111,600t - 148,800t
Conwy	5 - 10%	37,200t - 74,400t
Powys	1 - 5%	7,400t - 37,200t
Derbyshire	<1%	<7,400t
Neath Port Talbot	<1%	<7,400t
North Somerset	<1%	<7,400t
Oxfordshire	<1%	<7,400t

Source: British Geological Survey and 'Collation of the results of the 2009 aggregate minerals survey for England and Wales'

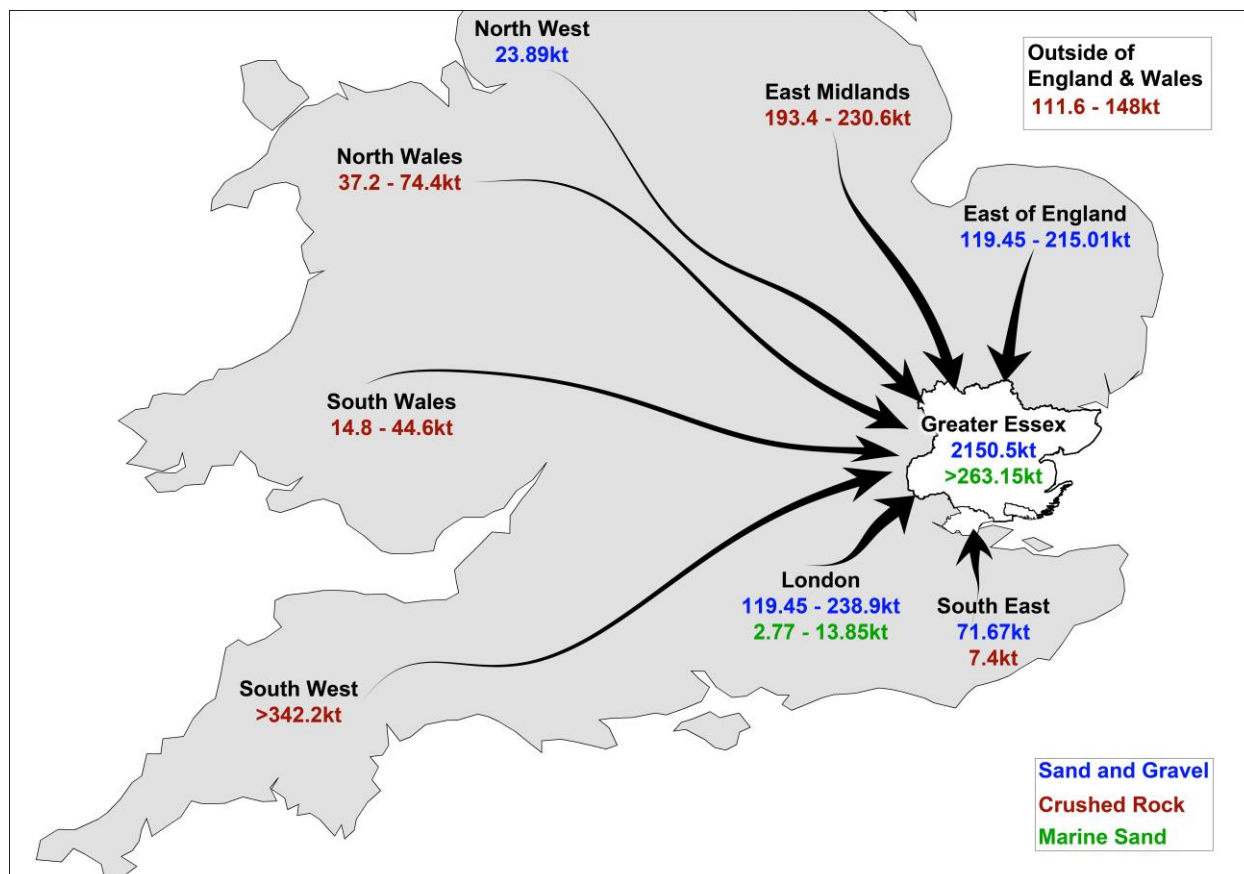
Note: Northumberland National Park, Norfolk, Caerphilly and Gloucestershire also supplied less than 1% of the total crushed rock consumed in Essex but BGS considered the figures too small to be reported.

As evidenced in Table 15, Greater Essex consumed 744,000t of crushed rock but none of this mineral originated from within the combined Minerals Planning Area of Greater Essex. As explained previously, crushed rock does not exist in Greater Essex and therefore Greater Essex is entirely reliant on the importation of this mineral. The single largest exporter to Greater Essex is Somerset who contributed over 45% of the total proportion of crushed rock consumed. In total, and not including those mineral planning areas which the BGS highlighted as providing nominal amount of crushed rock, Greater Essex is reliant on eight separate mineral planning areas for their crushed rock supply, with a further 15 – 20% coming from outside England and Wales. The majority of this 15 – 20% originates from Scotland and Guernsey. Dialogue will continue to take place with all of the Mineral Planning Authorities identified in the above table to ensure that the importation arrangements upon which Essex, Southend and Thurrock currently depend will be maintained. These discussions form the basis of the Duty to Co-operate programme undertaken in the planning areas of Essex and Thurrock.

8.5 Total Imports into Greater Essex

The following figure graphically depicts the information presented in Table 13, Table 14 and Table 15:

FIGURE 9: IMPORTS OF MINERAL TO GREATER ESSEX



Source: BGS and Essex County Council, 2012

8.6 Exportation of Land Won Sand & Gravel from Greater Essex

Unfortunately exportation data is not collected as part of minerals monitoring in the East of England and as such it is not currently possible to provide a detailed breakdown of the destination of land won aggregate sourced from the East of England region. The national 2009 aggregate minerals survey provides the following information:

TABLE 16: EXPORTATION DESTINATION OF LAND WON AGGREGATE ORIGINATING FROM GREATER ESSEX, 2009

Total Sales of Land Won Sand & Gravel	2,746,000t	
Destination	Proportion	Assumed Figure
Essex, Thurrock & Southend	78%	2,141,880t
East of England	8%	219,680t
Elsewhere	14%	384,440t

Source: British Geological Survey 'Collation of the results of the 2009 aggregate minerals survey for England and Wales'

Note: The national aggregate survey presents a smaller figure for land won sand & gravel sales in Greater Essex than that reported in the East of England monitoring report. This is because the national aggregate survey does not include sand & gravel used for undifferentiated non-aggregate use whereas this is included in the East of England monitoring report. In 2009 undifferentiated non-aggregate use accounted for approximately 47,000t of mineral, the difference between the two figures.

The majority of sand & gravel extracted within Greater Essex in 2009 was used within Greater Essex, with a total of 86% of land won sand & gravel being sold in the East of England. At 384,440t, Greater Essex exports a smaller tonnage of aggregate outside of the East of England region than it imports.

8.7 Comparison of Sand & Gravel Importation and Exportation in Greater Essex

The table below compares the importation and exportation of sand & gravel in and out of Greater Essex by combining the data presented in Table 13 and Table 16.

TABLE 17: COMPARISON OF IMPORT AND EXPORT QUANTITIES OF SAND & GRAVEL IN GREATER ESSEX, 2009

Sand & gravel in Greater Essex	Amount of Sand & gravel in Tonnes
Total Sales of Land Won Sand & Gravel (a)	2.746mt
Total Land Won Sand & Gravel Consumed (including imports) (b)	2.389mt
Total Greater Essex Origin Land Won Sand & Gravel Consumed (c)	2.150mt
Total Imported Marine Won Sand & Gravel (d)	0.277mt
Total Land Won Sand & Gravel Exported (a-c=e)	0.596mt
Net Consumption of Sand & Gravel (b+d=f)	2.666mt
Total Imported Land Won Sand & Gravel (b-c=g)	0.239mt
Total Imports of Sand & gravel (d+g=h)	0.516mt
Difference between Land Won Exports and Imports (e-g=i) (e>g, therefore Essex is a net exporter of land won sand & gravel)	0.357mt
Net Balance of Imports / Exports from All Sources (i-d=j) (i>d so Essex is a net exporter of sand & gravel from all sources)	0.08mt

Source: Adapted from British Geological Survey

TABLE 18: CONTRIBUTION TO GREATER ESSEX SAND & GRAVEL CONSUMPTION MADE BY IMPORTS

Source of Sand & Gravel	Amount of Sand & Gravel (Proportion of Total)
Total Consumption of Sand & Gravel (f)	2.666mt (100%)
Total Greater Essex Origin Land Won Sand & Gravel Consumed (c)	2.150mt (80.65%)
Total Imported Land Won Sand & Gravel (g)	0.239mt (8.96%)
Total Imported Marine Won Sand & Gravel (d)	0.277mt (10.39%)

Source: Adapted from British Geological Survey

Greater Essex is a net exporter of sand & gravel, with 0.596mt of sand & gravel (e) leaving Greater Essex. With 2.746mt of Greater Essex origin sand & gravel being sold within Greater Essex (a), this equates to 21.7% of the total amount of sand & gravel sold in Greater Essex being exported. As shown by Table 18 however, Greater Essex is also reliant on imports, with 19.35% (h) of the net total amount of sand & gravel consumed in Greater Essex (f) being imported. Table 17 states that the net balance in imports / exports is 0.08mt (j), or 2.91% of the total sand & gravel sold in Greater Essex.

8.8 Conclusion

Greater Essex is a net exporter of sand & gravel, exporting 2.91% of the total amount of sand & gravel sold within Greater Essex. Out of necessity, Greater Essex is an importer of crushed rock, importing 0.744mt of this mineral annually.

This chapter forms the basis for Essex County Council's approach to the Duty to Co-operate programme. By assessing the mineral planning areas which Greater Essex both imports from and exports to, it was clear which Mineral Planning Authorities Greater Essex would need to enter into dialogue with. Through the Duty to Co-operate, it is hoped to be ascertained that Greater Essex can continue to rely on importation sources whilst, by maintaining our current apportionments, the Mineral Planning Authorities of Essex and Thurrock can offer security of supply to those Mineral Planning Authorities' who depend on sand & gravel sourced from within Greater Essex.

9 SECONDARY AND RECYCLED AGGREGATE

9.1 Introduction

Along with 'primary' aggregate, described in Section 3.2 as being minerals extracted directly from the ground, there are also 'secondary' and 'recycled' aggregates. 'Recycled' aggregates are those derived via methods analogous to the traditional idea of recycling. Examples include the re-use of brick and concrete obtained from construction and demolition work being re-processed to be used in new developments, rather than being disposed of in a landfill site. 'Secondary' aggregates are created as a by-product of a construction or industrial process. Examples include power station ash resulting from combustion (fly ash) which can be turned into bricks and cement, and slag from iron smelting which can be manufactured into mineral wool and subsequently be used as a heating pipe insulator. A large amount of recycled and secondary aggregate is processed on redevelopment and construction sites. These can be stand-alone permanent facilities on industrial estates or temporary facilities co-located with existing quarries, landfill sites and recycling sites that remain operational until such a time that quarrying or landfilling ceases.

The benefits for maximising the use of both secondary and recycled aggregate are two-fold. Firstly, the use of these aggregates reduces the need to extract primary material in the first instance, leading to a reduction in the need for quarry sites. Secondly, the re-use of aggregate reduces the amount of waste that needs to be disposed of, reducing the need for landfill sites. Such a reduction in the need for quarry and landfill sites has clear economic, environmental and social benefits. Essex County Council, Southend-on-Sea and Thurrock Council positively encourage the re-use and recycling of Construction, Demolition and Excavation (CDE) waste through development plans and operation policies. Through the Essex MLP, the emerging Southend-on-Sea Development Management DPD and Thurrock Minerals and Waste Development Plan Document (MWDPD), each authority will enable and encourage the construction industry and mineral industry to invest in creating and maintaining an effective network of aggregate recycling facilities across Greater Essex to meet demand. However this should not be taken to mean that increasing the importation of waste into Essex or Thurrock from outside these areas would always be acceptable.

A list of known operational and non-operational aggregate recycling facilities is provided in Appendix 3.

9.2 Recycled Aggregate Throughput and Capacity

Policies in the existing Minerals and Waste Local Plans for Essex, Southend-on-Sea and Thurrock encourage the use of alternative aggregate sources and the development of facilities for the recycling of mineral wastes, and construction and demolition waste (Essex Minerals Local Plan Policy S4 and S5, Essex and Southend-on-Sea Waste Local Plan Policy W7D, and Thurrock Core Strategy Policies CSTP29 and CSTP31). Southend-on-Sea also seeks to encourage the re-use and recycling of construction waste through its emerging Development Management DPD. However the supply of recycled aggregate is largely an assumed supply, due in part to the difficulty that Essex County Council, Southend-on-Sea and Thurrock Council have

had in obtaining existing throughput figures. This is particularly true for secondary aggregate where no figures exist. The 'National and Sub-National Guidelines for Aggregate Provision in England 2005 – 2020' document proposes that the East of England region should provide 117mt of alternative aggregate materials between 2005 and 2020, equating to 7.8mt a year. This is equivalent to 31% of the region's total aggregate supply, so the re-use of recycled and secondary aggregate is expected to be a major feature of mineral supply. There is however no apportionment of the 117mt figure to individual Mineral Planning Authorities in the region.

9.2.1 Total Capacity of Recycled Aggregate Facilities in Essex and Southend-on-Sea

The following three tables detail the capacity of CDE (Aggregate) Recycling sites within Essex and Southend-on-Sea which process recycled aggregate as well as screen soils associated with this type of aggregate. A list of all recycled aggregate facilities in Essex, Southend-on-Sea and Thurrock are presented in Appendix 3.

TABLE 19: TOTAL AGGREGATE RECYCLING FACILITIES – ALL TYPES, 2014

Number of Facilities	Total Known Permitted Capacity
38 (33 with known capacity)	1,527,393t

Source: Essex County Council and Southend-on-Sea Borough Council Capacity Gap Report 2014 (draft)

Of the 38 total facilities, eight have had their contribution to Total Permitted Capacity calculated via information contained in their EA permitted license whilst a further five have had their capacity omitted due to the absence of this information. This can be for a number of reasons, including the operation of the site not needing a license from the EA as their operations fall below relevant thresholds and/or because the permissions are historic and capacity wasn't requested at the time of permission being granted.

Of this total capacity, 54% (823,768t) is permanent capacity with the remaining 44% being located in temporary facilities on existing mineral sites.

In order to account for the capacity of facilities which are not known, the total known capacity by type of facility has been divided by the total number of facilities per type known to contribute to that capacity. This provides an average contribution per facility per type which can then be multiplied up to equate to the five facilities where capacity is not known.

TABLE 20: AGGREGATE RECYCLING FACILITIES – OPERATIONAL, 2014

Operational Facilities	Total Permitted Capacity
Known Capacity (28 facilities)	1,454,268t
Permanent Known Capacity (21 facilities)	811,268t
Assumed Capacity (33 facilities)	1,636,237t

Source: Essex County Council and Southend-on-Sea Borough Council Capacity Gap Report 2014 (draft)

Of the 33 operational facilities, eight have had their contribution to Total Permitted Capacity calculated via information contained in their EA permitted license whilst a

further five have been estimated due to the absence of capacity information. Of the total capacity above, 811,268t is considered to be permanent capacity. In total, there are 27 permanent facilities although five of these have unknown capacities. No account of these is taken in the 811,268t figure above.

TABLE 21: AGGREGATE RECYCLING FACILITIES – NON OPERATIONAL RECYCLING FACILITIES WITH PLANNING PERMISSION, 2014

Non-Operational Facilities	Total Permitted Capacity
Known Capacity (5 facilities)	73,125t
Permanent Capacity (1 facility)	12,500t

Source: Essex County Council and Southend-on-Sea Borough Council Capacity Gap Report 2014 (draft)

Of these five facilities, the capacity has been able to have been informed by planning permission. 17% of the total permitted capacity of non-operational facilities with planning permissions, equating to 12,500t, is designed to be permanent capacity.

A comparison of this information suggests that 95% of total known permitted capacity is operational.

As stated previously, 44% of existing known recycling capacity is of a temporary nature and therefore there will be reductions in total permitted capacity in CDE recycling during the period covered by the Minerals Local Plan (to 2029) as temporary permissions expire.

The Capacity Gap Report 2014 states that there is estimated to be a stable CD&E waste arisings during the plan period (due to lack of data to prove otherwise) between 2.71 million to 2.82 million tonnes, with an additional inert importation from Greater London of just over 300 thousand tonnes by 2032. At present there is no robust data to indicate how much of this CD&E waste is recovered / recycled through temporary facilities at redevelopment sites or how much is beneficially re-used through engineering projects, although anecdotally this is suggested to be a significant but unquantifiable amount.

Taking into account those facilities where the capacity is unknown by way of a calculated average for those facilities which are known, the Waste Capacity Gap Report 2014 states that there is currently 1.64mt of operational capacity at CDE recycling facilities but this will decrease during the plan period. By 2031/32 there would need to be an increase in capacity of between 1.69kt and 1.91kt to eliminate this type of waste being landfilled

The EU Framework Directive requires waste planning authorities, which includes Essex and Thurrock, to plan on the basis that over time there should be a significant reduction in the amount of CDE waste that is sent to landfill. This is the key policy driver behind increasing the proportion of CDE waste that must be reused or recycled. At this current time, all district, borough and city authorities within Essex have aggregate recycling facilities within their administrative area with the exception of Castle Point borough. A list of aggregate recycling facilities within Greater Essex can be found in Appendix 3

9.2.2 Throughput of Recycling Aggregate Facilities in Essex and Southend-on-Sea, 2010

Please note that this section reports on data collated in 2010 and therefore is not directly applicable to the capacity assessment undertaken in September 2014 above.

The 'throughput' is a measure of the amount of recycled aggregate that passes through the recycling facilities. This differs from the capacity which is the total amount of recycled aggregate that could be processed at recycling sites given an infinite supply. For reasons explained below, the throughput at aggregate recycling sites has been estimated. This has been done through analysing surveys that a proportion of mineral site operators were able to return, and then extrapolating the findings across the total number of aggregate recycling facilities that are known to exist in Essex. Essex does not have the legal jurisdiction to stipulate that these surveys be completed. Of the 28 recycling CDE sites then known to exist, nine operators returned a survey in the latest round in 2010, equating to 32.1% of the total known sites.

A further issue is that the throughput of aggregate recycling facilities does not necessarily equate to the production of recycled aggregate. The suitability of material for different uses will depend on its characteristics and as such this does not necessarily mean it can substitute for primary aggregate.

The total throughput from these nine aggregate recycling facilities totalled 0.189mt. Through planning applications and information received from the Environment Agency it was possible to ascertain the total capacity of these nine sites and it was found that the throughput of these nine sites was 46% of their total capacity. This estimate of recycled aggregate throughput being 46% of total capacity was applied to all 28 known operational recycling sites, providing an estimated total recycled aggregate production figure for Essex of 0.678mtpa out of a total capacity of 1.47mtpa.

This figure of 0.678mtpa does not take into account recycled aggregate that is processed by mobile facilities that can be temporarily located in close proximity to demolition sites. A Communities and Local Government report entitled 'Survey of Arisings and Use of Alternatives to Primary Aggregates in England: Construction, Demolition and Excavation Waste 2005' states that an additional figure equating to 19.8% of fixed site throughput can be estimated for the contribution to total throughput made by mobile sites. Given the estimate of 0.678mt for the 28 fixed aggregate recycling sites in Essex, an additional 19.8% results in a total recycled aggregate throughput of 0.812mt in 2010.

This methodology was also followed in 2009 where a total recycling aggregate throughput of 0.842mt was estimated. The 2010 and 2009 figures exceed those recorded in the preceding two years. In 2007 recycled aggregate throughput was recorded as 0.48mt whilst in 2008 it was 0.42mt. The large discrepancy can be explained by the fact that these figures represent only those sites where the operator returned their survey. No extrapolation was carried out across those sites which did not return a survey in order to estimate a total recycled aggregate throughput across Essex and Southend-on-Sea.

Please note that no survey has been carried out since 2010. Essex County Council have recently appointed consultants to undertake another survey to better understand CDE arisings in the Essex plan area. Unfortunately the findings were not ready to inform this report.

9.2.3 Capacity and Throughput of Recycled Aggregate Facilities in Thurrock

Within Thurrock there are six authorised sites which process recycled aggregate as well as screen soils associated with this type of aggregate. Of these six sites, two are associated with mineral and landfill sites and are thus of a temporary nature, and four are 'permanent' sites. However one of the latter is within an area proposed for comprehensive redevelopment and thus is likely to be lost at some time in the future. There are no non-operational sites. These facilities are also detailed in Appendix 3.

It should be noted that although the planning permissions for these sites do not impose capacity limitations by reference to tonnages, capacities are in some instances limited by reference to maximum vehicle movements. It is understood from those operators who have volunteered information that total throughput is likely to be substantially less than total permitted capacity. The Thurrock Waste Management Capacity Needs Assessment Update 2010 indicated that Thurrock had an oversupply of CDE recycling capacity to meet its own waste arisings. It was forecast that Thurrock would fall short of capacity before 2015/16 but that this could be addressed with one or two new or retained sites. Since then the life of two of the temporary facilities has been extended such that this capacity shortfall will probably not occur as envisaged. Furthermore any undersupply would be reduced by the extent of recycling carried out on development sites by mobile crushers and screens. This latter type of capacity will fluctuate markedly depending on the number and type of development sites within Thurrock at any one time with marked results on total capacity. In theory the provision made for primary aggregate provision could be reduced to a degree to reflect the availability of recycled materials. It is noteworthy that provision of the latter is likely to be greater than the regional apportionment for sand & gravel of 0.14mtpa. However the CDE recycling capacity from which this recycled material is derived is 'fueled' to a large degree by imports of waste, with London being in close proximity. Thus for Thurrock it would be inappropriate to reduce primary aggregate provision as perhaps suggested by the NPPF when the supply of recycled material is underpinned by imports of waste.

9.3 Conclusion

Whilst it can be certain that recycled and secondary aggregate reduces the amount of primary aggregate required to facilitate development, the data currently available is extremely raw and is not considered to be suitably robust to enable a recycling target to be set. However, the Essex Minerals Local Plan 2014 demonstrates a strong support for aggregate recycling, with Policy S5: Creating a network of aggregate recycling facilities stating that proposals for new aggregate recycling facilities will normally be supported in a list of stated locations provided they are environmentally acceptable and in accordance with other policies in the development plan. The Southend-on-Sea Core Strategy outlines broad locational criteria for recycling aggregates and secondary material development proposals.

Within Thurrock, Policy CSTP31 of the Adopted Core Strategy and Policies for the Management of Development DPD indicates that the Council will encourage the use

of facilities for recycling aggregate or secondary materials, or processing of such materials, as alternatives to land won aggregate. Proposals on unallocated sites which come forward must meet criteria to be set out in the MWDPD. Policy CSTP32 indicates that permanent authorised aggregate recycling capacity will be safeguarded from non-mineral related development unless the proposals meet criteria to be outlined in the MWDPD and / or are identified for alternative use.

10 CONCLUSION

10.1 Sand & Gravel Sales in Greater Essex

Following an assessment of the historic sales of sand & gravel within Greater Essex, it can be seen that there has been a general reduction in sales over time. Whilst the general trend can be attributed to the proliferation of more sustainable construction techniques and an increased use of secondary and recycled aggregate, the significant fall seen since 2007 is believed to be indicative of the current economic recession.

2009 to 2012 marks the only period in the period 1993 – 2012 where sand & gravel sales have dropped below 3mtpa, with sales in 2012 representing 56% of those recorded in 1993 and 49% of peak sales recorded in 2002. Sales in 2013 showed an increase to 3.18mt.

When assessing the last ten years of sales, between 2004 – 2007 sales were within 10% of the current annualised plan provision of 4.45mt, suggesting that this was a realistic basis on which to base the provision of minerals within the plan areas making up Greater Essex. Since 2007 however, sales have primarily fallen with recorded sales in 2012 representing 52% of the adopted annualised plan provision. This has since increased to 71% in 2013.

An upturn of sales is primarily reliant on an upturn in the general economy. Paragraph 174 of the NPPF is clear that Local Plans are required to facilitate development across the whole of the economic cycle. Adequate mineral resources are essential for the achievement of 'sustainable development' and Mineral Local Plans will need to demonstrate that they are capable of playing their part in facilitating an adequate and steady supply of minerals in order to assist in delivering the growth agenda espoused by the Government.

The MPAs of both Essex and Thurrock will continue to monitor the pattern of sales and ascertain whether the current annualised plan provision stated in their respective mineral policies remain an appropriate basis upon which to release mineral.

10.2 Silica Sand

Silica sand in Greater Essex is produced at a single site (Martells Quarry, Ardleigh) and it is therefore not possible to provide sales data due to reasons of commercial confidentiality. In order to maintain the statutory ten year minimum landbank for this mineral there was a requirement to allocate an additional 0.39mt of silica sand to maintain the landbank across the plan period. This was achieved through the allocation of a site extension to Martells Quarry at Slough Farm. This provided a total estimated material mineral at the site of 0.86mt, of which 0.46mt comprises of silica sand. The assumed annual output of the site remains at 0.045mtpa.

10.3 The Importing and Exporting of Minerals

There are currently no transshipment sites within Essex or Southend-on-Sea that receive marine won imports. All such facilities located in Greater Essex are found within the Unitary Authority of Thurrock. The Thurrock Council Core Strategy and

Policies for Management of Development 2011 document contains Policy CSTP32 – Safeguarding Minerals Resources which states that ‘all existing aggregate wharves will be safeguarded against proposals which prejudice their use for the importation of aggregates’. As such it is considered that, following additional formal confirmation with Thurrock Council, Essex and Southend-on-Sea will continue to be able to receive the majority of its marine won sand & gravel via Thurrock.

In 2009, which represents the latest data available, Greater Essex is a net exporter of sand & gravel, with 0.596mt of sand & gravel leaving the plan areas. With 2.746mt of Greater Essex origin sand & gravel being sold within Greater Essex, this equates to 21.7% of the total amount of sand & gravel sold in Greater Essex being exported. However, Greater Essex is also reliant on imports, with 19.35% of the total amount of sand & gravel consumed in Greater Essex being imported. The net balance in imports / exports is 0.08mt, or 2.91% of the total sand & gravel sold in Greater Essex.

Out of geological necessity, Greater Essex is required to import all of its crushed rock, importing 0.744t of this mineral annually.

10.4 Recycling and Secondary Aggregate

Whilst there is a very strong likelihood that recycled and secondary aggregate reduces the amount of primary aggregate required to facilitate development, the data currently available is extremely raw and is not considered to be suitably robust to enable a recycling target to be set.

There are 38 aggregate recycling facilities within Essex and Southend-on-Sea. Of these, the capacity of 33 is known, amounting to 1,527,393t. Of those sites which are operational, 28 contribute to a total known capacity of 1,454,268t, of which 811,268t is known and permanent capacity. Of the 27 permanent facilities, capacity is unknown for five of them. Total operating capacity across all 38 facilities has been estimated at 1,636,273t.

There are five non-operational aggregate recycling facilities with planning permission. These provide a total capacity of 73,125t of which 12,500t is permanent capacity.

Of the 28 recycling CD&E sites known to exist in Essex in 2010, nine operators returned a survey carried out in that year, equating to 32.1% of the total known sites. This is the latest survey data available although Essex County Council has recently commissioned consultants to provide an update to this survey.

The total throughput from these nine aggregate recycling facilities totalled 0.189mt. Through planning applications and information received from the Environment Agency it was possible to ascertain the total capacity of these nine sites and it was found that the throughput of these nine sites was 46% of their total capacity. This estimate of recycled aggregate throughput being 46% of total capacity was applied to all 28 known operational recycling sites, providing an estimated total recycled aggregate production figure for Essex of 0.678mtpa out of a total capacity of 1.47mtpa.

This figure of 0.678mtpa does not take into account recycled aggregate that is processed by mobile facilities that can be temporarily located in close proximity to demolition sites. A Communities and Local Government report entitled ‘Survey of

Arising from 'Use of Alternatives to Primary Aggregates in England: Construction, Demolition and Excavation Waste 2005' states that an additional figure equating to 19.8% of fixed site throughput can be estimated for the contribution to total throughput made by mobile sites. Given the estimate of 0.678mt for the 28 fixed aggregate recycling sites in Essex, an additional 19.8% results in a total recycled aggregate throughput of 0.812mt in 2010.

Within Thurrock there are six authorised sites which process recycled aggregate as well as screen soils associated with this type of aggregate. Of these six sites, two are associated with mineral and landfill sites and are thus of a temporary nature, and four are 'permanent' sites. It is understood from those operators who have volunteered information that total throughput is likely to be substantially less than total permitted capacity.

10.5 The Future of the Local Aggregate Assessment

The NPPF intends for the LAA to be an annual document and the authorities comprising Greater Essex are committed to updating this LAA on an annual basis. No decision has yet been formally taken regarding the format of updates to this LAA. However given that this LAA has been a joint project between Essex County Council, Thurrock Council and Southend-on-Sea Borough Council, and all three authorities have or are preparing separate mineral planning documents, either standalone in the case of Essex or as part of wider Core Strategies in the Unitary Authorities, it is envisaged that the LAA will remain as a separate document. Current Guidance suggests that the LAA and the traditional minerals Annual Monitoring Report be amalgamated and this potential will be investigated in the future.

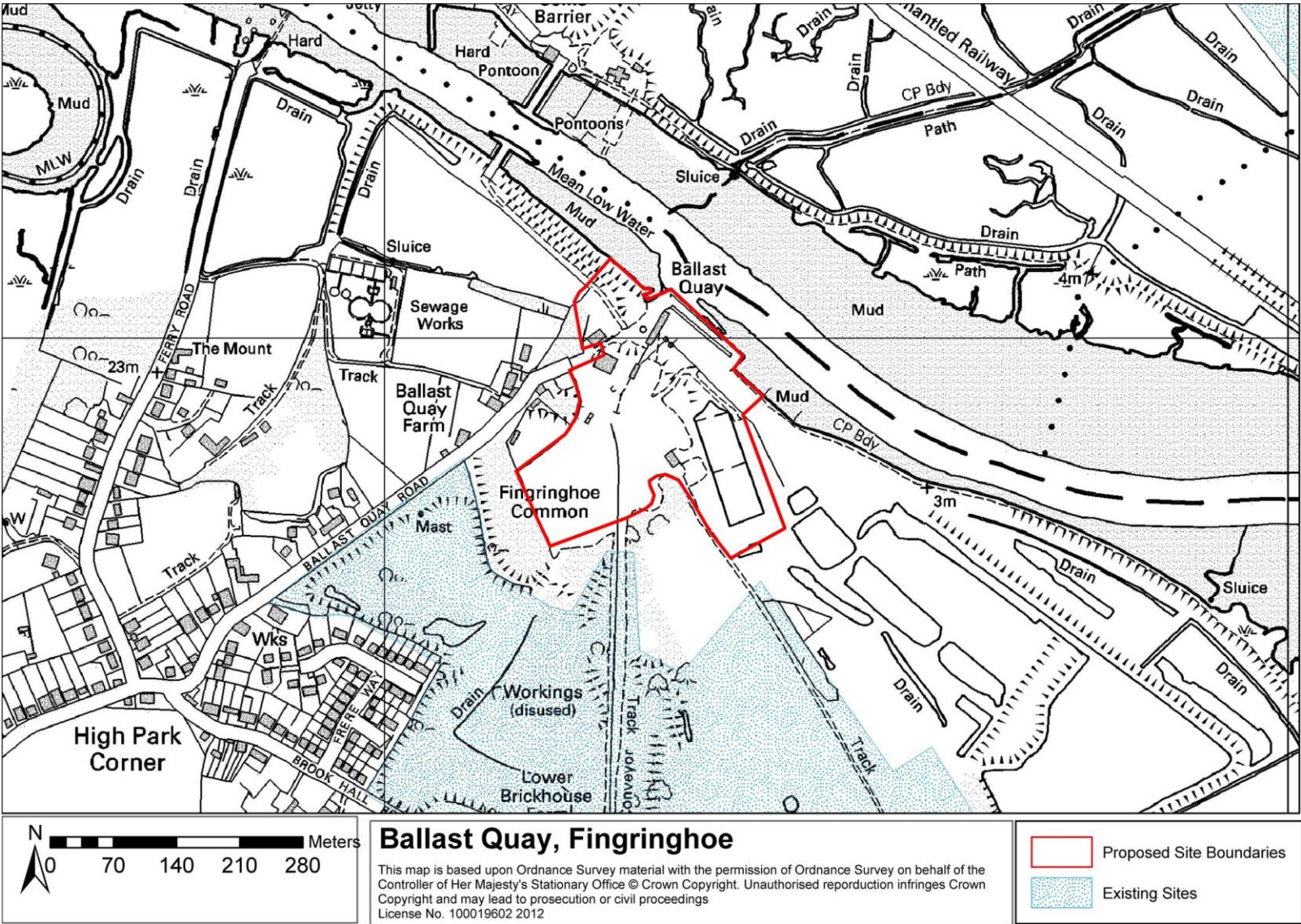
Appendix 1 – Operating Wharves with the Capacity to Serve Greater Essex, 2014

Thames Region	
Barking	Barking, Docklands Wharf
Cliffe	Alpha Wharf, Cliffe, North Sea Terminal
Dagenham	Hanson/ARC Dagenham, Dagenham
Denton	Denton, Denton B.A.D, Denton Sand
Erith	Erith, Pioneer Wharf
Greenhithe	Greenhithe
Greenwich Wharves	Angerstein, Blackwall Wharf, Charlton, Delta Wharf, Greenwich, Murphy's Wharf, Phoenix Wharf, Victoria Deep Wharf
London Docklands Wharves (mostly disused)	Canning Town, Cargo Fleet Wharf, Clarence Wharf, East India Dock, Heron Quay, Millwall, Orchard Wharf, Peruvian Wharf, Rotherhithe, Silvertown, Thames Wharf, Thamesmead, Union Wharf, Victoria Wharf
Northfleet	Northfleet, Northfleet Brett, Robin's Wharf
River Medway & Swale Wharves	Queenborough, Ridham, Rochester, Rochester Hanson, Sheerness
Thurrock	West Thurrock, Purfleet, Purfleet PAL
East Coast Region	
Ipswich	Hanson/ARC Ipswich, Ipswich

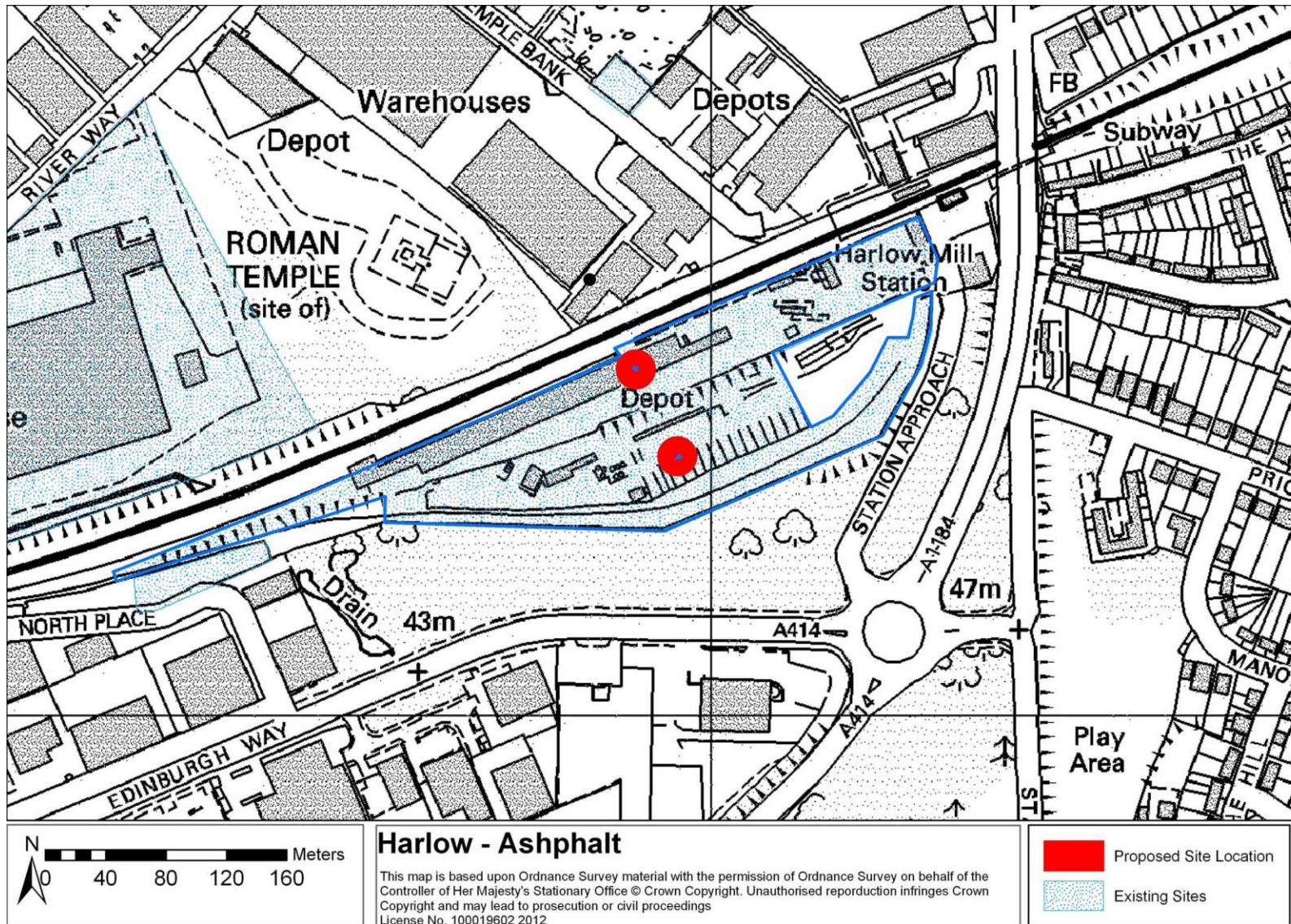
Appendix 2 – Active Transshipment Sites within Greater Essex, 2014

A. Active Transshipment Sites within Essex

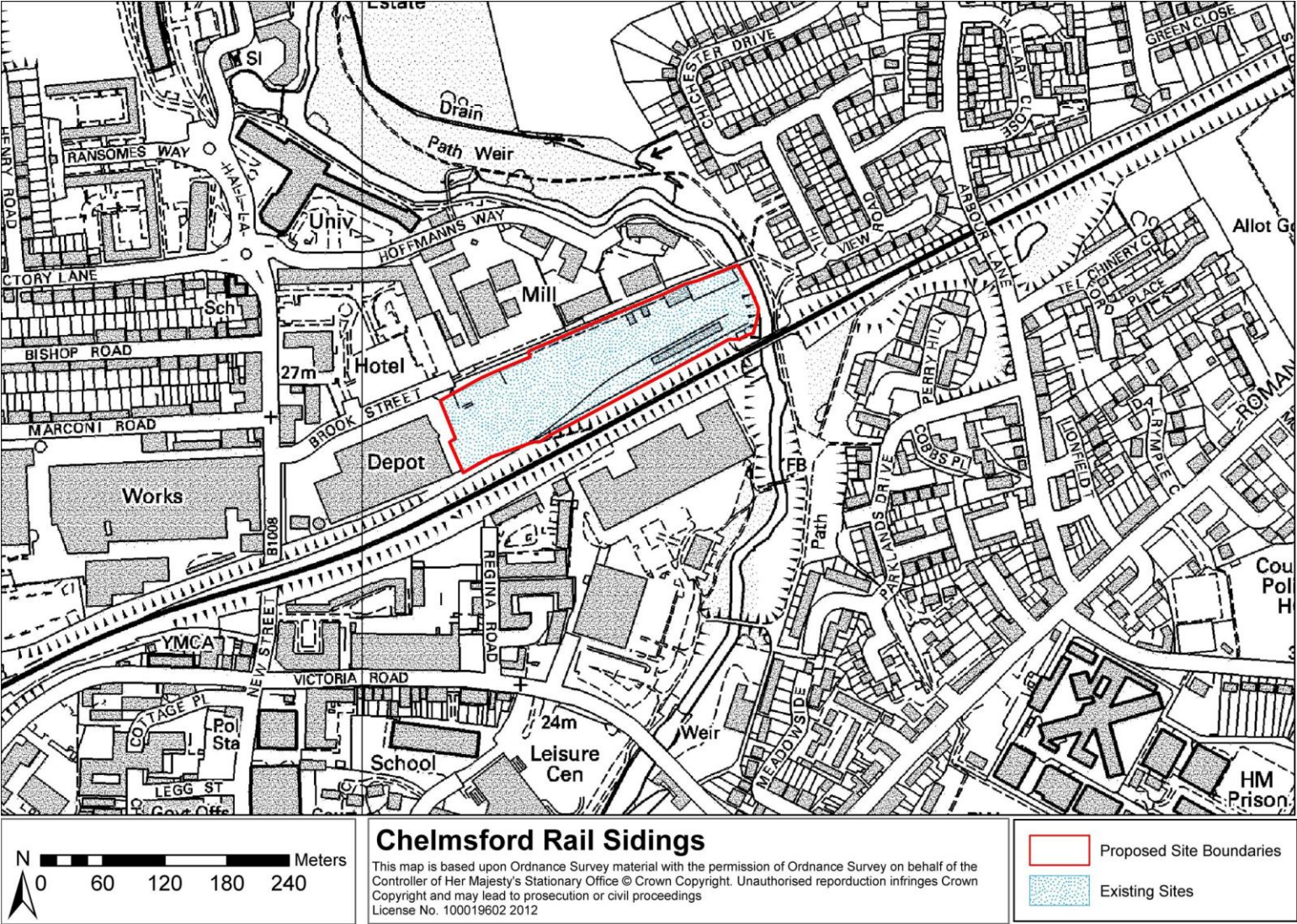
1. Ballast Quay, Fingringhoe



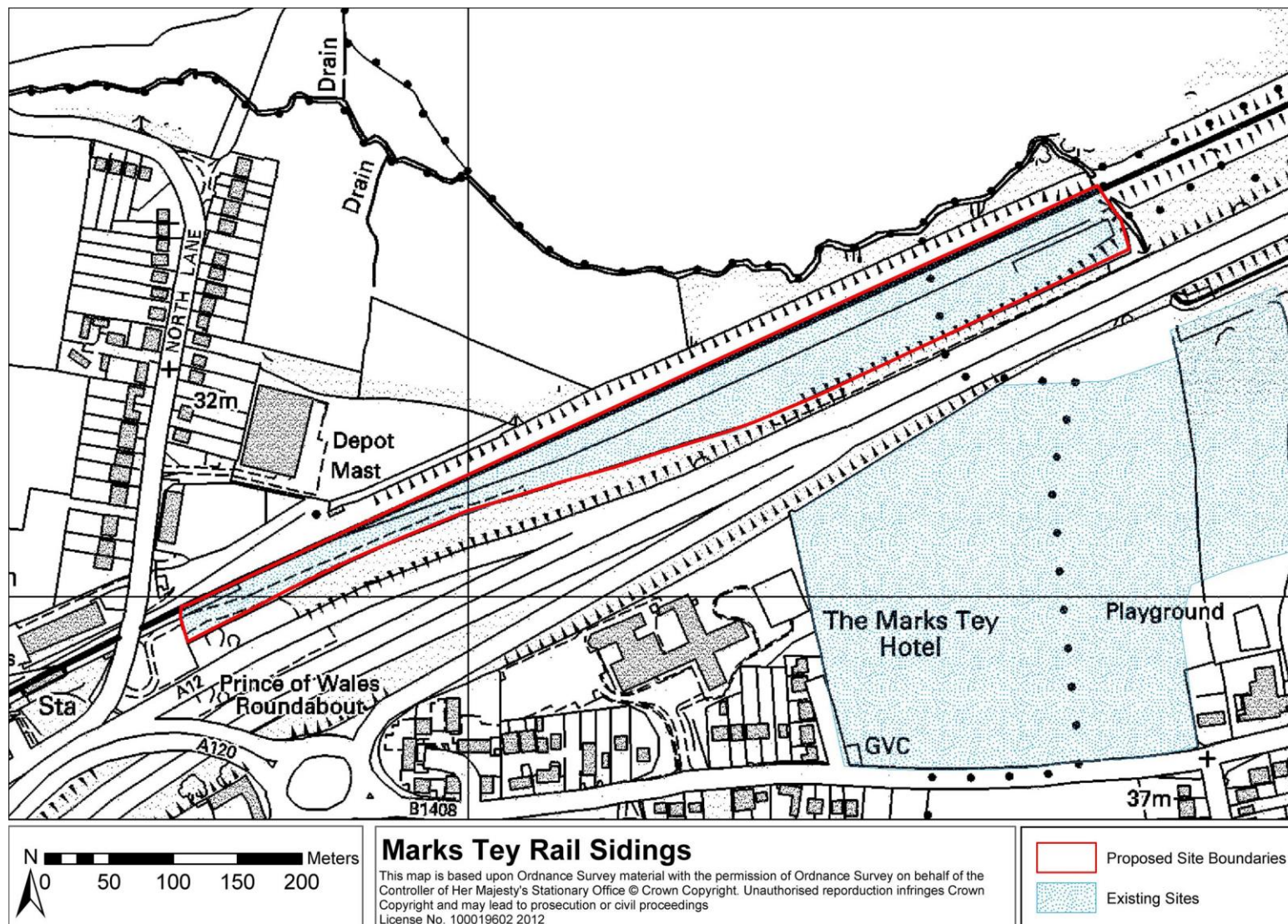
2. Harlow Rail Coated Plant



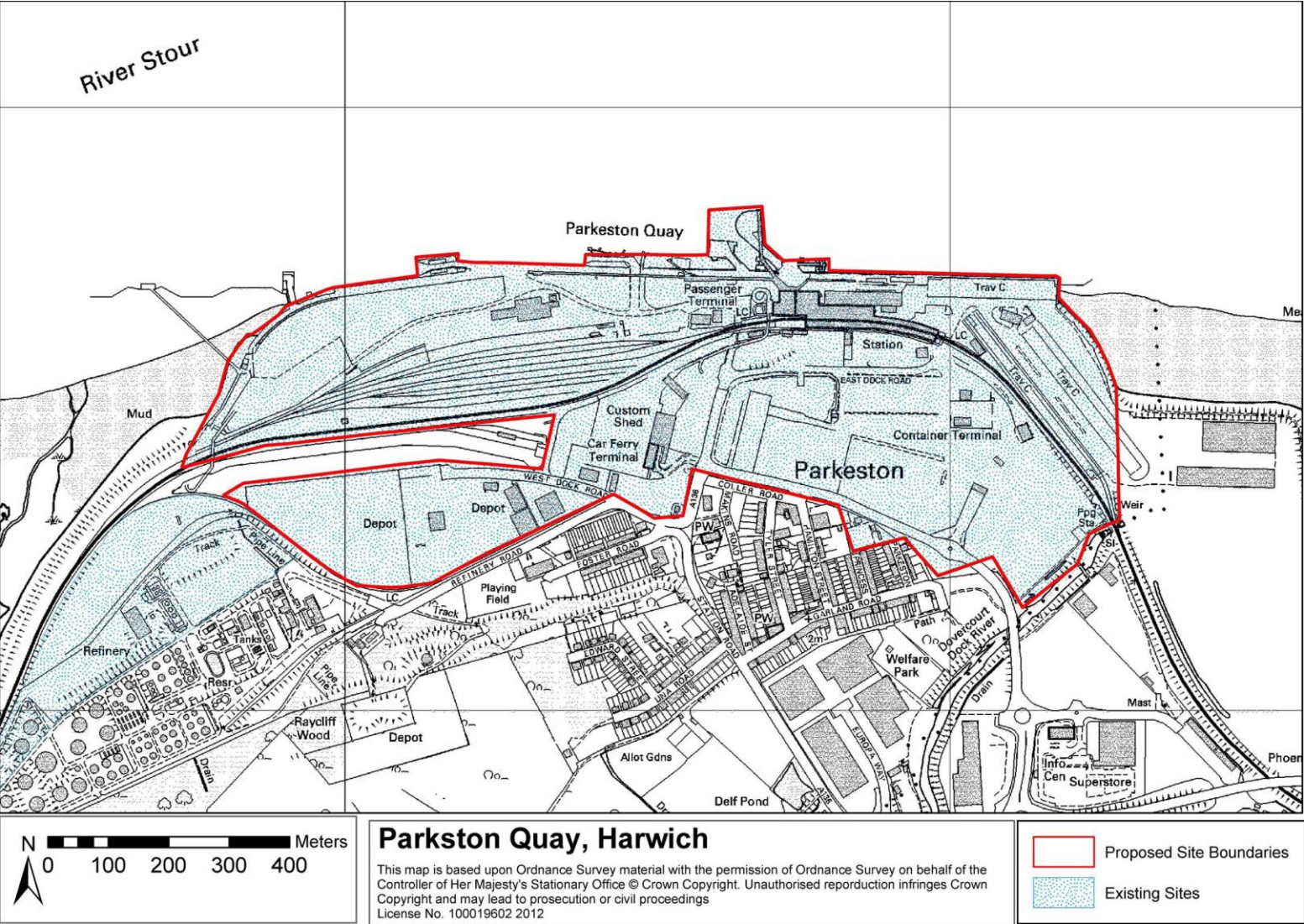
3. Chelmsford Rail Sidings



4. Marks Tey Rail Sidings

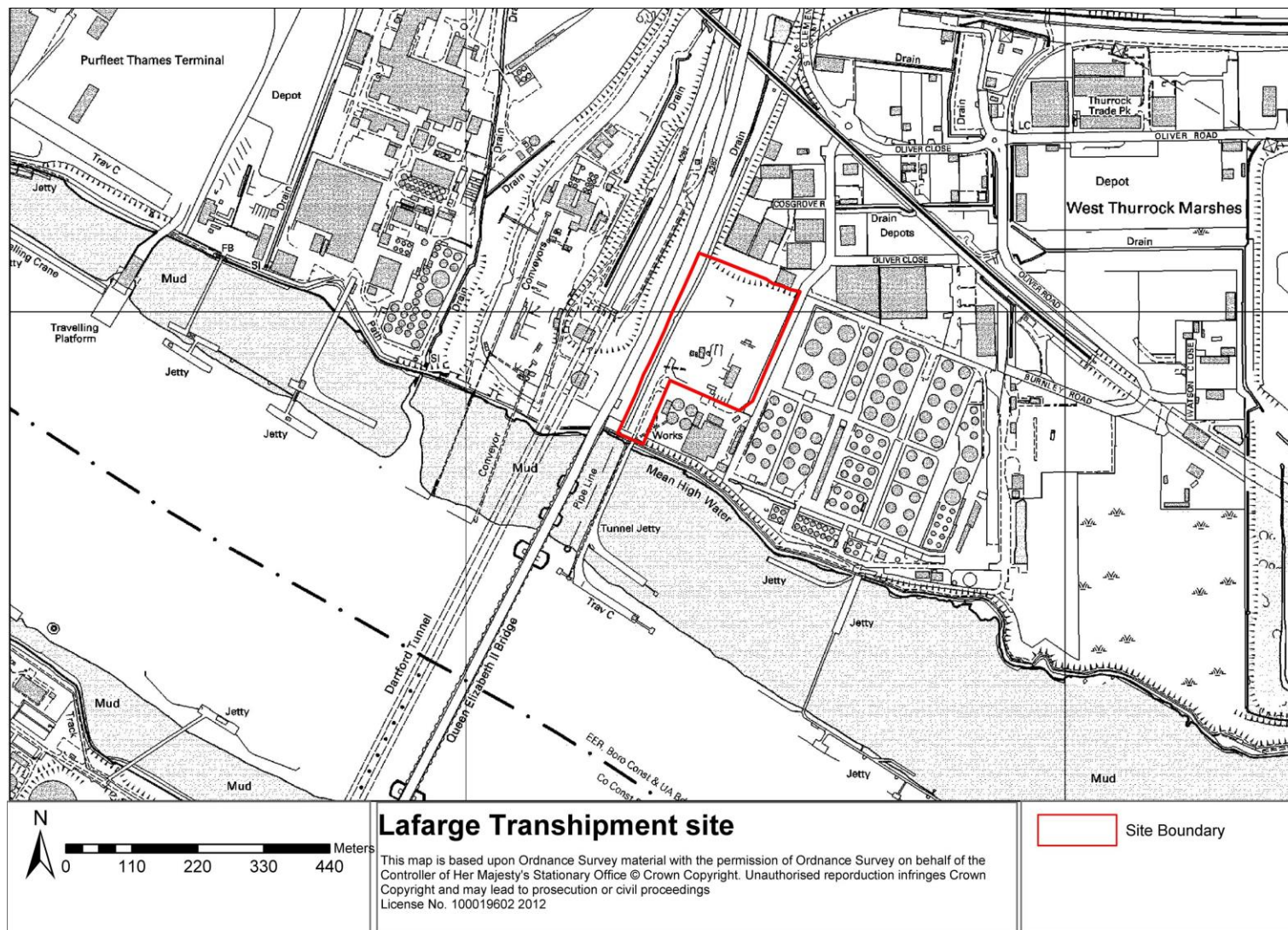


5. Parkeston Quay, Harwich

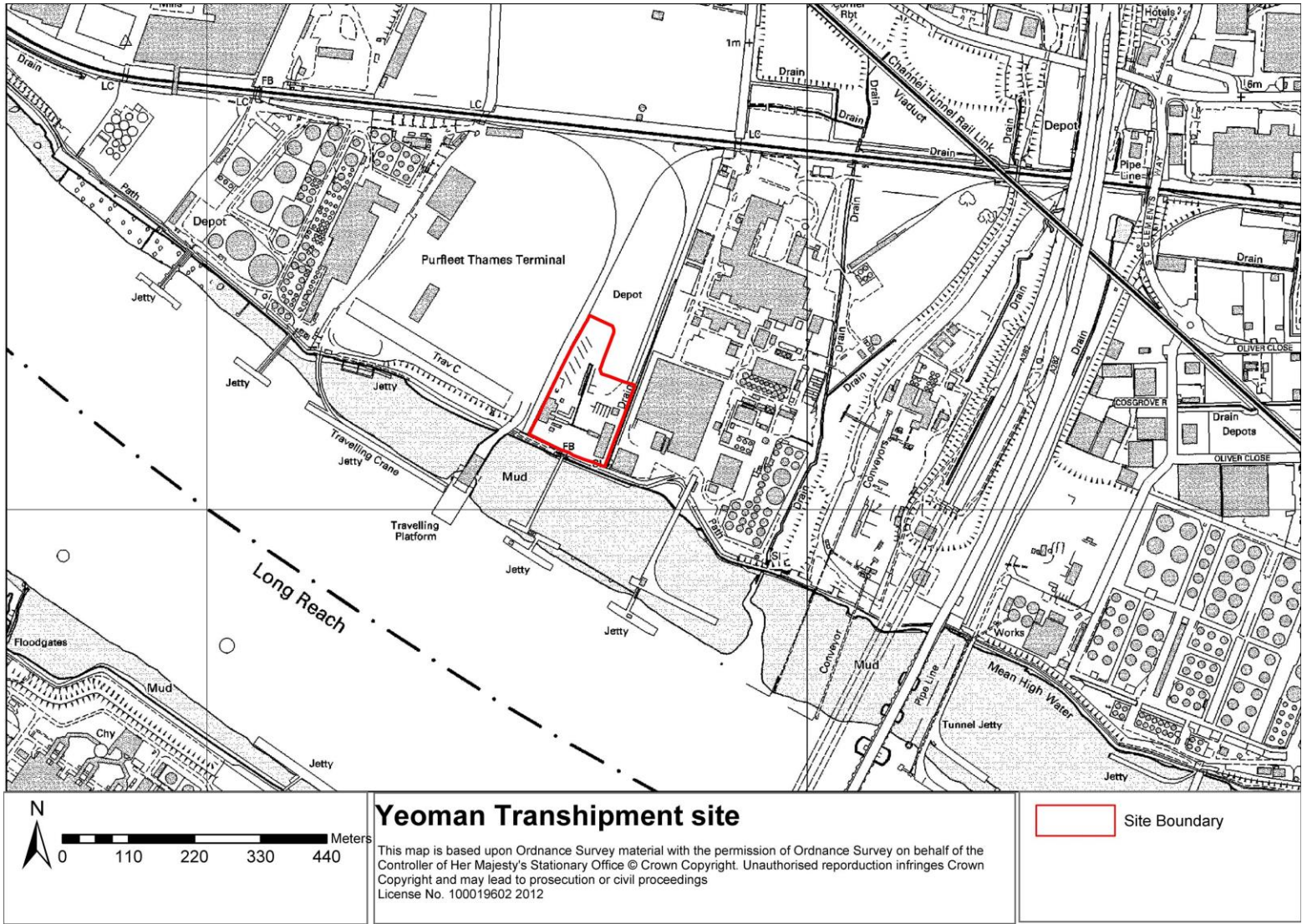


B. Active Transshipment Sites within Thurrock

1. Lafarge Transshipment Site



2. Yeoman Transhipment Site



Appendix 3 – Aggregate Recycling Facilities within Greater Essex, 2014

CDE Recycling Facilities – Operational in Essex

BROAD FACILITY TYPE	SITE NAME	SITE ADDRESS	SPECIFIC FACILITY TYPE	PERMITTED CAPACITY (Tonnes)	
				Planning Permission / EA	End Date?
Recycling / Materials Recovery	Land Adjacent to Taylors Farm	Takeley Essex CM22 6LY	Non-Strategic Aggregate Recycling Site		Permanent
Recycling / Materials Recovery	Loppingdales	Gaunts End, Elsenham Bishops Stortford CM22 6DR	Non-Strategic Aggregate Recycling Site	90,000	Permanent
Recycling / Materials Recovery	CLC Construction	25/26 Childerditch Industrial Estate, Brentwood, CM13 3HD	Non-Strategic Aggregate Recycling Site	75,000	Permanent
Recycling / Materials Recovery	Codham Hall Farm	Unit A Codham Hall Lane Gt Warley Brentwood CM13 3JT	Non-Strategic Aggregate Recycling Site	80,000	30/08/2017
Recycling / Materials Recovery	Haven Road	Haven Quay Haven Road Colchester Essex	Non-Strategic Aggregate Recycling Site	75,000	Permanent
Recycling / Materials Recovery	Wivenhoe Quarry,	Alresford Road Wivenhoe Colchester Essex CO7 9JY	Non-Strategic Aggregate Recycling Site	50,000	31/12/2012
Recycling / Materials Recovery	Patterns Yard	Patterns Yard Nayland West Bergholt Colchester	Non-Strategic Aggregate Recycling Site	300	Permanent
Recycling / Materials Recovery	Colchester Skip Hire		Non-Strategic Aggregate Recycling Site	15,000	Permanent

Recycling / Materials Recovery	Evans Thornwood	Marlow, High Road, Thornwood Common, Epping, CM16 6LU	Non- Strategic Aggregate Recycling Site	5,000	Permanent
Recycling / Materials Recovery	Green Recycling	Quayside Industrial Estate, Bates Road, Off the Causeway Maldon, CM9 5FA	Non- Strategic Aggregate Recycling Site	5,000	Permanent
Recycling / Materials Recovery	Essex Recycling Wix	Lane Farm, Harwich Road, Wix CO11 2SA	Non- Strategic Aggregate Recycling Site	50,000	Permanent
Recycling / Materials Recovery	EWD Carters Haulage Yard	Morses Lane Industrial Estate Brightlingsea Colchester Essex CO7 0SD	Non- Strategic Aggregate Recycling Site	75,000	Permanent
Recycling / Materials Recovery	Martell's Quarry	Slough Lane, Ardleigh, Colchester, Essex, CO7 7RU	Non- Strategic Aggregate Recycling Site	10,000	Permanent
Recycling / Materials Recovery	Armigers Farm	Armigers Farm, Thaxted, Essex, CM6 2NN	Non- Strategic Aggregate Recycling Site	100,000	Permanent
Recycling / Materials Recovery	Widdington Pit,	Hollow Road Widdington Saffron Walden Essex CB11 3SL	Non- Strategic Aggregate Recycling Site	65,000	Permanent
Materials Recycling / Recovery Facility	Pitsea	Pitsea Hall Lane Pitsea Basildon Essex SS16 4UH	Non- Strategic Aggregate Recycling Site	208,000	31/12/2015
Recycling / Materials Recovery	Hallsford Bridge	Plot 9 Hallsford Bridge Industrial Estate Stondon Road Massey Ongar Essex CM5 9RB	Non- Strategic Aggregate Recycling Site	1,534	Permanent

Recycling / Materials Recovery	Telent	Temple Wood Industrial Estate Stock Road, West Hanningfield, Chelmsford, Essex, CM2 8LP	Non- Strategic Aggregate Recycling Site	5,466	Permanent
Recycling / Materials Recovery	Hill Demolition & Skip Hire	1-3 Edinburgh Place Edinburgh Way Harlow Essex CM20 2DJ	Non- Strategic Aggregate Recycling Site	5,840	Permanent
Recycling / Materials Recovery	Franklin Hire	Unit 1, Rawreth Industrial Estate Rawreth Lane, Rayleigh Essex, SS6 9RL	Non- Strategic Aggregate Recycling Site	885	Permanent
Recycling / Materials Recovery	TJ Cottis	Cottis Yard, Welton Way, Rochford SS4 1LB	Non- Strategic Aggregate Recycling Site	892	Permanent
Recycling / Materials Recovery	Silverton Aggregates	Devereaux Farm, Walton Road, Kirby Le Soken, CO13 0DA	Non- Strategic Aggregate Recycling Site	28,321	Permanent
Recycling / Materials Recovery	The Yard	New Parsonage Lane, Gt Saling, Braintree CM7 5ER	Non- Strategic Aggregate Recycling Site		Permanent
Recycling / Materials Recovery	Severnside Recycling	The Lilac Site, Hovefield Av, Nevendon Industrial Estate, Basildon, SS13 1EB,	Non- Strategic Aggregate Recycling Site		Permanent
Recycling / Materials Recovery	GBN - Archer's Fields	Archers Fields, Burnt Mills, Basildon, SS15 6DX	Non- Strategic Aggregate Recycling Site		Permanent
Recycling / Materials Recovery	C A Blackwell (Contracts) Ltd,	The Works, Stock Road, West Hanningfield, Chelmsford, Essex, CM2 8LA	Non- Strategic Aggregate Recycling Site		Permanent

Recycling / Materials Recovery	Bateman's Farm,	Great Leighs, Chelmsford, Essex, CM1 2QF	Soil Screening	25,000	Permanent
Recycling / Materials Recovery	Curry Farm	New House Mill End Bradwell-Juxta- Mare, Maldon, CM0 7HL	Soil Screening	15,000	31/12/2018 Restoration by 31/12/2019
Recycling / Materials Recovery	Woolmongers Lane BRW	The Elms Woolmongers Lane Blackmore, Epping Forest Essex CM4 0JX	Soil Screening	3,777	Permanent
Recycling / Materials Recovery	Harvey Automobile Engineering	Payne's Lane, Nazing, EN9 2EX	Soil Screening	14,255	Permanent
Recycling / Materials Recovery	Bulls Lodge	Bulls Lodge Quarry, Generals Lane, Boreham, Chelmsford, CM3 3HR	Strategic Aggregate Recycling Site	100,000	30/06/2030
Recycling / Materials Recovery	Colchester Quarry (Colchester Recycling)	Warren Lane, Stanway, Colchester, CO3 0NN	Strategic Aggregate Recycling Site	190,000	11/01/2015
Recycling / Materials Recovery	JKS	Roach Valley Works, 53 Purdey's Way, Purdey's Industrial Estate Rochford, Essex, SS4 1LZ	Strategic Aggregate Recycling Site	160,000	Permanent
TOTAL KNOWN CAPACITY (28 facilities)				1,454,268	
TOTAL ASSUMED CAPACITY (33 facilities)				1,636,237	
TOTAL KNOWN CAPACITY (PERMANENT)				811,268	

Source: Essex County Council and Southend-on-Sea Borough Council Capacity Gap Report 2014 (draft)

CDE Recycling Facilities – Non-operational with Planning Permission in Essex

BROAD FACILITY TYPE	SITE NAME	SITE ADDRESS	SPECIFIC FACILITY TYPE	PERMITTED CAPACITY (Tonnes)	
				Planning Permission / EA	End Date?
Recycling / Materials Recovery	Harlow Mill	Aggregate Depot, Station Approach, Old Harlow	Non-Strategic Aggregate Recycling Site	12,500	Permanent
Recycling / Materials Recovery	Little Easton - Highwood Quarry	Little Easton Airfield Little Easton Gt Dunmow CM6 2BB	Non-Strategic Aggregate Recycling Site	20,000	25/03/2027
Recycling / Materials Recovery	St Cleres	St Cleres Pit Main Road Danbury Essex CM3 4AR	Non-Strategic Aggregate Recycling Site	5,625	12 years from commencement
Recycling / Materials Recovery	Elsenham Quarry	Henham Road Elsenham Bishop's Stortford Herts. CM22 6DJ	Non-Strategic Aggregate Recycling Site	30,000	10/05/2029
Recycling / Materials Recovery	Elsenham Quarry	Henham Road Elsenham Bishop's Stortford Herts. CM22 6DJ	Non-Strategic Aggregate Recycling Site	5,000	10/05/2029
TOTAL KNOWN CAPACITY				73,125	
TOTAL KNOWN CAPACITY (PERMANENT)				12,500	

Source: Essex County Council and Southend-on-Sea Borough Council Capacity Gap Report 2014 (draft)

Aggregate Recycling Facilities in Thurrock

SITE NAME	SITE ADDRESS	SPECIFIC FACILITY TYPE	PERMITTED CAPACITY (Tonnes)	
			Planning Permission	EA Licence
Clearserve Rainbow Shaw	Holford Road Linford Essex SS17 0PJ	CD&E Inert & Non Inert		74,999
S Walsh and Sons East Tilbury Quarry	Princess Margaret Road East Tilbury Essex RM18 8PA	CD&E Inert & Non Inert		759,000
Killoughery	Beacon Hill Industrial Estate Botany Way Purfleet Essex RM19 1SR	CD&E Inert & Non Inert	No capacity limit	75,000
Sims Milling Burrows Farm	Brentwood Road, Bulphan Essex RM14 3TL	CD&E Inert & Non Inert	No capacity limit	24,999
Seales Road Haulage	Juliette Way Purfleet	CD+E +Non Inert	No capacity limit	250,000
Brocks Haulage	Watson Close West Thurrock	CD+E +Non Inert	No capacity limit	75,000

Source: Thurrock Council, 2014