

Chapter 7

Soil

Policy context

International

7.1 The 2030 Agenda for Sustainable Development (2015) [See reference 198]: This initiative, adopted by all United Nations Member States, provides a shared blueprint for peace and prosperity for people and the planet and includes 17 Sustainable Development Goals (SDGs), designed to achieve a better and more sustainable future for all. Relevant to this topic are:

- SDG 15: Life on Land

National

7.2 The NPPF (2021) [See reference 199] states that planning policies and decisions should contribute to and enhance the natural and local environment by protecting and enhancing valued soil and the economic and other benefits of the best and most versatile agricultural land. Policies should also prevent new and existing development from “contributing to, being put at unacceptable risk from, or being adversely affected by unacceptable levels of soil, air, water or noise pollution.”

7.3 The document also requires that strategic policies should seek to make the most effective use of land in meeting local requirements making as much use as possible of previously developed or ‘brownfield’ land. Furthermore, policies

should “support appropriate opportunities to remediate despoiled, degraded, derelict, contaminated or unstable land”.

7.4 The NPPF is supported by planning practice guidance relating to:

- **Effective use of land** (2019) [\[See reference 200\]](#) - Provides guidance on making effective use of land, including planning for higher density development.
- **Green Belt** (2019) [\[See reference 201\]](#) - Provides advice on the role of the Green Belt in the planning system, removal of land from the Green Belt and compensatory improvements.
- **Land affected by contamination** (2019) [\[See reference 202\]](#) - Outlines guiding principles on how planning can deal with land affected by contamination.
- **Land stability** (2019) [\[See reference 203\]](#) - Sets out advice on how to ensure that development is suitable to its ground condition and how to avoid risks caused by unstable land or subsidence.
- **Natural environment** (2019) [\[See reference 204\]](#) - Highlights key issues in implementing policy to protect and enhance the natural environment, agricultural land, soils and brownfield land of environmental value, green infrastructure, biodiversity, geodiversity, ecosystems and landscapes.
- **Brownfield land registers** (2017) [\[See reference 205\]](#) - Provides guidance on the purpose, preparation, publication and reviewing of brownfield land registers.

7.5 The **Environment Act 2021** [\[See reference 206\]](#) sets statutory targets for the recovery of the natural world in four priority areas: air quality, biodiversity, water, and resource efficiency and waste reduction. It also establishes the Office for Environmental Protection which will act as an impartial and objective body for the protection and improvement of the environment. The Act sets out legislation which covers:

- Resource efficiency, producer responsibility, and the management, enforcement and regulation of waste;

- Local air quality management frameworks and the recall of motor vehicles etc; and
- Plans and proposals for water resources, drainage and sewerage management, storm overflows, water quality and land drainage.

7.6 A Green Future: Our 25 Year Plan to Improve the Environment [See reference 207]: Sets out goals for improving the environment within the next 25 years. It details how the Government will work with communities and businesses to leave the environment in a better state than it is presently. Identifies six key areas around which action will be focused. Those of relevance to this chapter are:

- Using and managing land sustainably:
 - f) Embed a ‘net environmental gain’ principle for development, including natural capital benefits to improved and water quality.
 - g) Protect best agricultural land.
 - h) Improve soil health and restore and protect peatlands.

7.7 Safeguarding our Soils – A Strategy for England (2009) [See reference 208]: Sets out how England’s soils will be managed sustainably. It highlights the areas that Defra will prioritise, including better protection for agricultural soils; protecting and enhancing stores of soil carbon; building the resilience of soils to a changing climate; preventing soil pollution; effective soil protection during construction; and dealing with contaminated land.

7.8 Environmental Protection Act 1990 [See reference 209]: makes provision for the improved control of pollution to the air, water and land by regulating the management of waste and the control of emissions. Seeks to ensure that decisions pertaining to the environment are made in an integrated manner, in collaboration with appropriate authorities, non-governmental organisations and other persons.

Regional and local

7.9 South Essex Green and Blue Infrastructure Strategy: Resilient by Nature [See reference 210]: This strategy sets out a vision for an integrated green and blue infrastructure (GBI) network across South Essex and key objectives and projects to achieve this. The protection and enhancement of GBI will help to improve air, water and soil quality throughout the region.

7.10 Green Essex Strategy [See reference 211]: This Strategy seeks to enhance, protect and create an inclusive and integrated network of high-quality green infrastructure in Greater Essex, to create a county-wide understanding of green infrastructure – its functions and values, and to identify opportunities for implementing green infrastructure. The Strategy recognises the importance of GI in terms of environmental benefits, including improving air, water and soil quality. The Strategy highlights the importance of GI in providing ecological networks of all scales, from regional to neighbourhood scale.

7.11 Thurrock Climate Change Scoping Study [See reference 212]: The Thurrock Climate Change Scoping Study was commissioned in 2019 to inform the integration of climate change into the Council's planning policy, in accordance with NPPF. The study's aims are to provide a baseline assessment of the Borough's current climate impacts (emissions) and risks (hazards); summarise existing climate change legislation and policy; review existing documents, local plan processes, policy and operation; outline initiatives to focus on in the Local Plan; and to define what the requirements should be if a climate change strategy were to be developed for the Borough. The study provides a series of recommendations and next steps for the process including stakeholder engagement and establishing timescales and accountability. It also highlights core focus areas and priorities for the Borough including land-use and access issues, carbon emissions relating to buildings, retail and industry, infrastructure, natural resources, the environment and waste.

7.12 Thurrock Council is currently preparing a **Climate Change Strategy** and a **Green and Blue Infrastructure Strategy** which will be taken into account in the next iteration of the SEA.

Implications of the policy review for the Interim TTS and SEA

In order to align with the international, national, regional and local policies outlined above, the Interim TTS should seek to minimise adverse impacts on the soil environment from transport development. The SEA is able to respond to this through the inclusion of SEA objectives relating to the protection and enhancement of soil resources and geological assets.

Baseline information

Geology

7.13 The County of Essex, including Thurrock, has extensive deposits of sand and gravel. There are more localised deposits of silica sand, chalk, brickearth and brick clay. There are no rock deposits in the County, so this material must be imported into Essex. Thurrock lies on four main types of underlying geology in the north of the Borough: the Thames Group (clay, silt, sand and gravel); the Lambeth Group (clay, silt, sand and gravel); Thanet formation (sand, silt and clay); and the White Chalk Subgroup (chalk) **[See reference 213]**. In the south of the Borough, near Purfleet and Grays, there is a band of upper chalk, exposed at the surface. This is the oldest rock in the Borough and was extensively quarried for the Portland cement industry, particularly around West Thurrock and Grays **[See reference 214]**. **Figure 7.1** shows the different types of geology in the Borough. There are four geological SSSIs in Thurrock: Lion Pit

SSSI; Purfleet Chalk Pits SSSI; Grays Thurrock Chalk Pit SSSI: and Globe Pit SSSI.

Soils

7.14 The Agricultural Land Classification (ALC) system classifies agricultural land in five categories according to versatility and suitability for growing crops. The main settlements are classified as 'urban'. A number of areas are classified as 'other land primarily in non-agricultural use'. Thurrock also contains a large amount of productive agricultural land:

- The majority of land north of the A13 in Thurrock is Grade 3 (i.e. good to moderate);
- Land south of the A13, surrounding urban areas, is a mixture of Grade 2 and 3 (i.e. very good and good to moderate); and
- There are areas of Grade 1 (excellent) land near the M25, north of South Ockendon and surrounding Aveley [\[See reference 215\]](#).

7.15 **Figure 7.2** shows the range of agricultural land grades in the Borough.

7.16 Soilsclapes published by Cranfield University [\[See reference 216\]](#) shows what the likely soil conditions are in the landscape by reference to one of 27 different broad types of soil. The main soil types in Thurrock include:

- Large areas north of the A13 have slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils. This soil has moderate fertility.
- Loamy and clayey floodplain soils with naturally high groundwater. This soil has moderate fertility.
- Loamy soils with naturally high groundwater. This soil has low fertility.
- Freely draining slightly acid loamy soils. This soil has low fertility.
- Freely draining slightly acid but base-rich soils. This soil has high fertility.

- Slightly acid loamy and clayey soils with impeded draining. This soil has moderate to high fertility.
- Loamy and clayey soils of coastal flats with naturally high groundwater, along the coast of the River Thames. This soil has lime-rich to moderate fertility.

7.17 Figure 7.3 shows the range of soil types in the Borough.

7.18 Soil is a finite natural resource which regenerates only over extremely long geological timescales and provides many essential services including food production, water management and support for valuable biodiversity and ecosystems. It also plays a role in preventing climate change as a larger storer of carbon. Soils in England have degraded significantly over the last two decades due to intensive agricultural production and industrial pollution, and continue to face threats. These are:

- Soil erosion by wind and rain, affects the productivity of soils as well as water quality and aquatic ecosystems;
- Compaction of soil, reduces agricultural productivity and water infiltration and increased flood risk through higher levels of runoff; and
- Organic matter decline, affects the supply of nutrients in soil moisture (particularly during summer and autumn months) in the future, which is likely to affect the natural environment and the landscape.

Contaminated land and previously developed / brownfield land

7.19 Thurrock has an extensive industrial, quarrying and land-filling past. Due to this, the area has a legacy of contaminated land. In accordance with Section 78R of the Environmental Protection Act 1990, the Council is required to maintain a public register of contaminated land, which serves as a permanent record of all regulatory action undertaken to ensure remediation of any site that

has been classified as contaminated. There are several contaminated sites in Thurrock including waste and former landfill sites, dockyards, power stations, cement or asbestos manufacturers, petrochemical installations, petroleum storage sites, diesel storage tanks, paper manufacturers and agricultural activities (mainly north of the A13) [\[See reference 217\]](#).

7.20 There are also 24 sites on the Council's Brownfield Land Register, amounting to 72.95 hectares throughout the Borough [\[See reference 218\]](#).

Figure 7.1: Bedrock geology

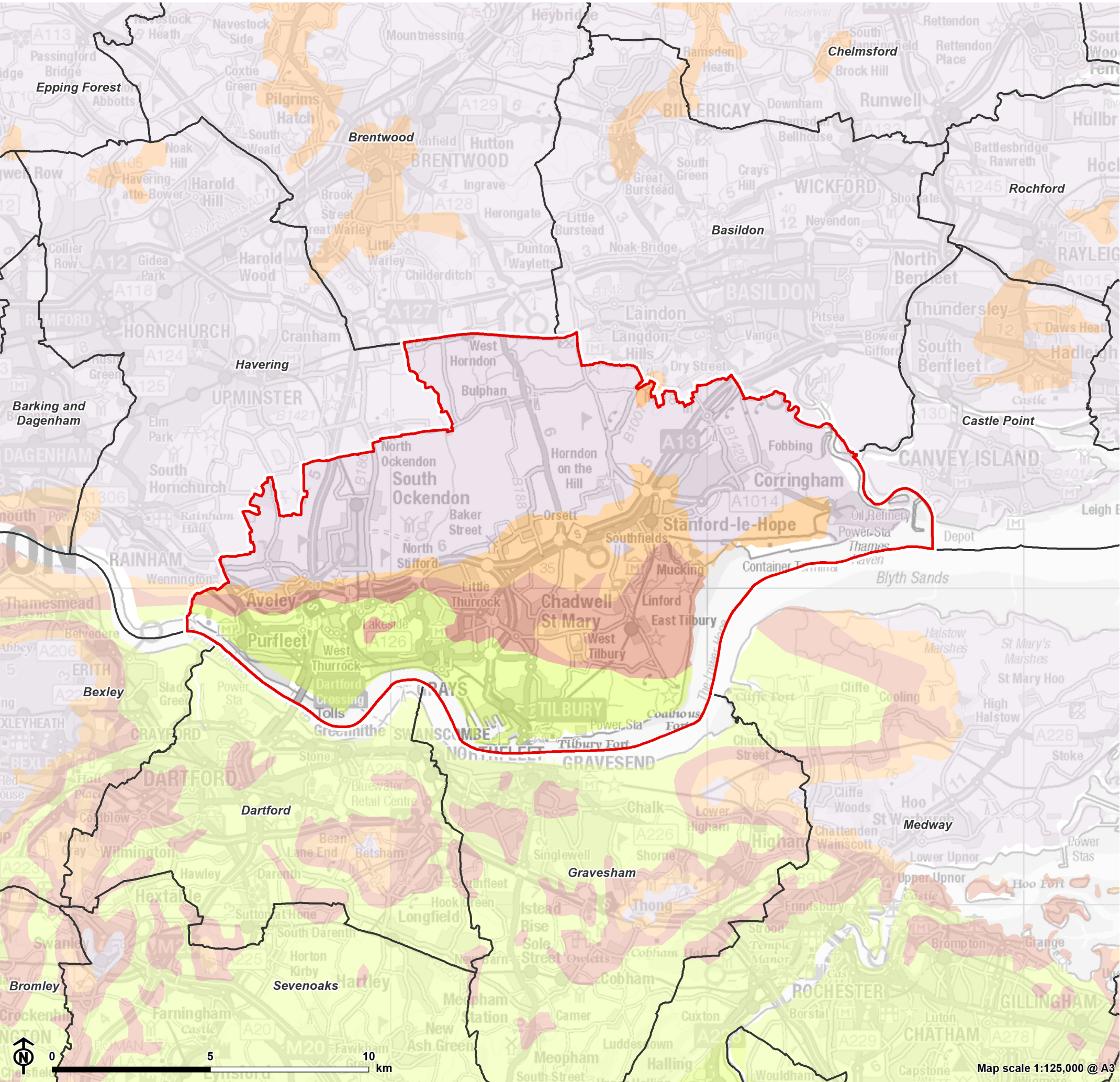


Figure 7.2: Agricultural land classification

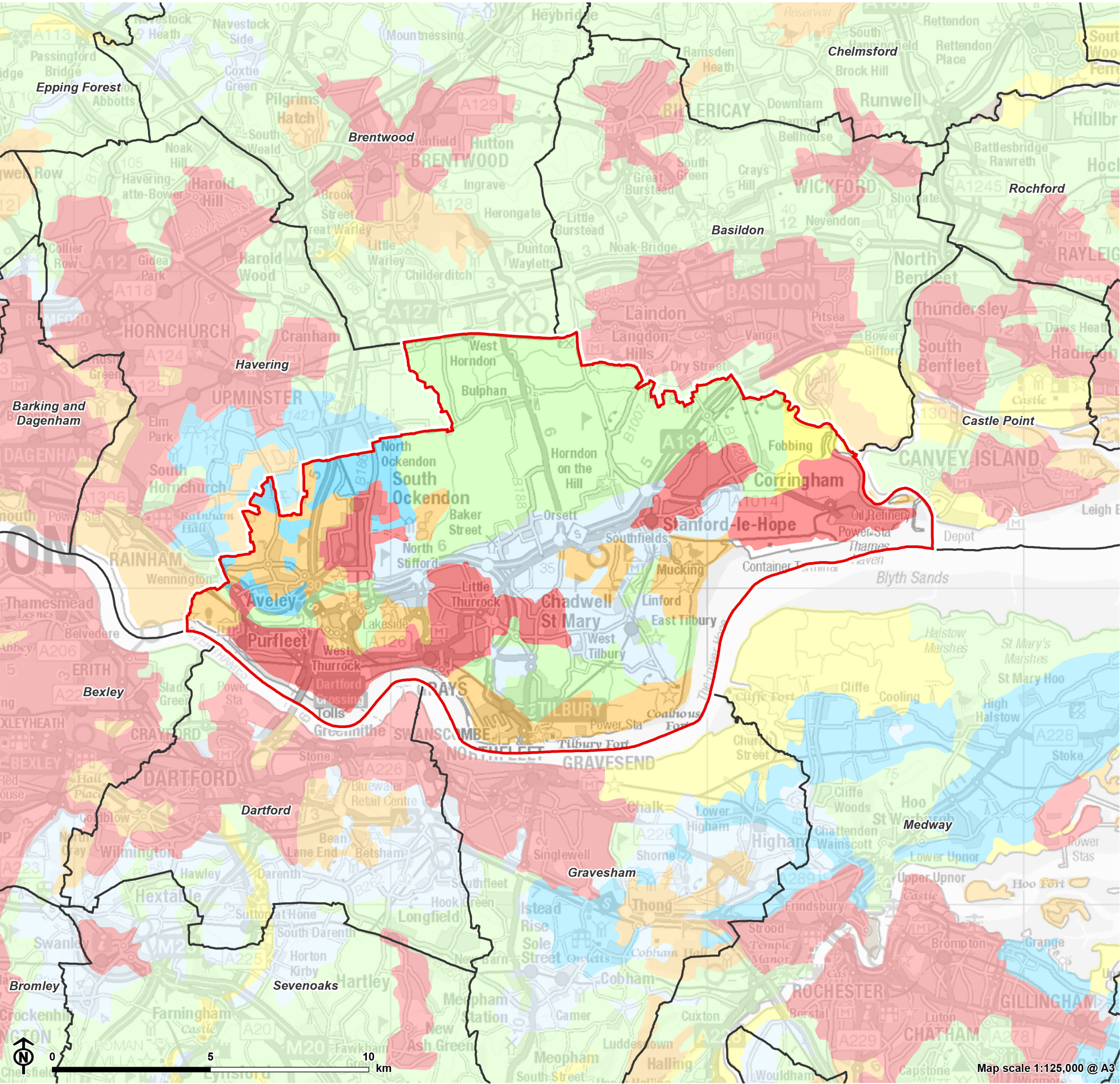
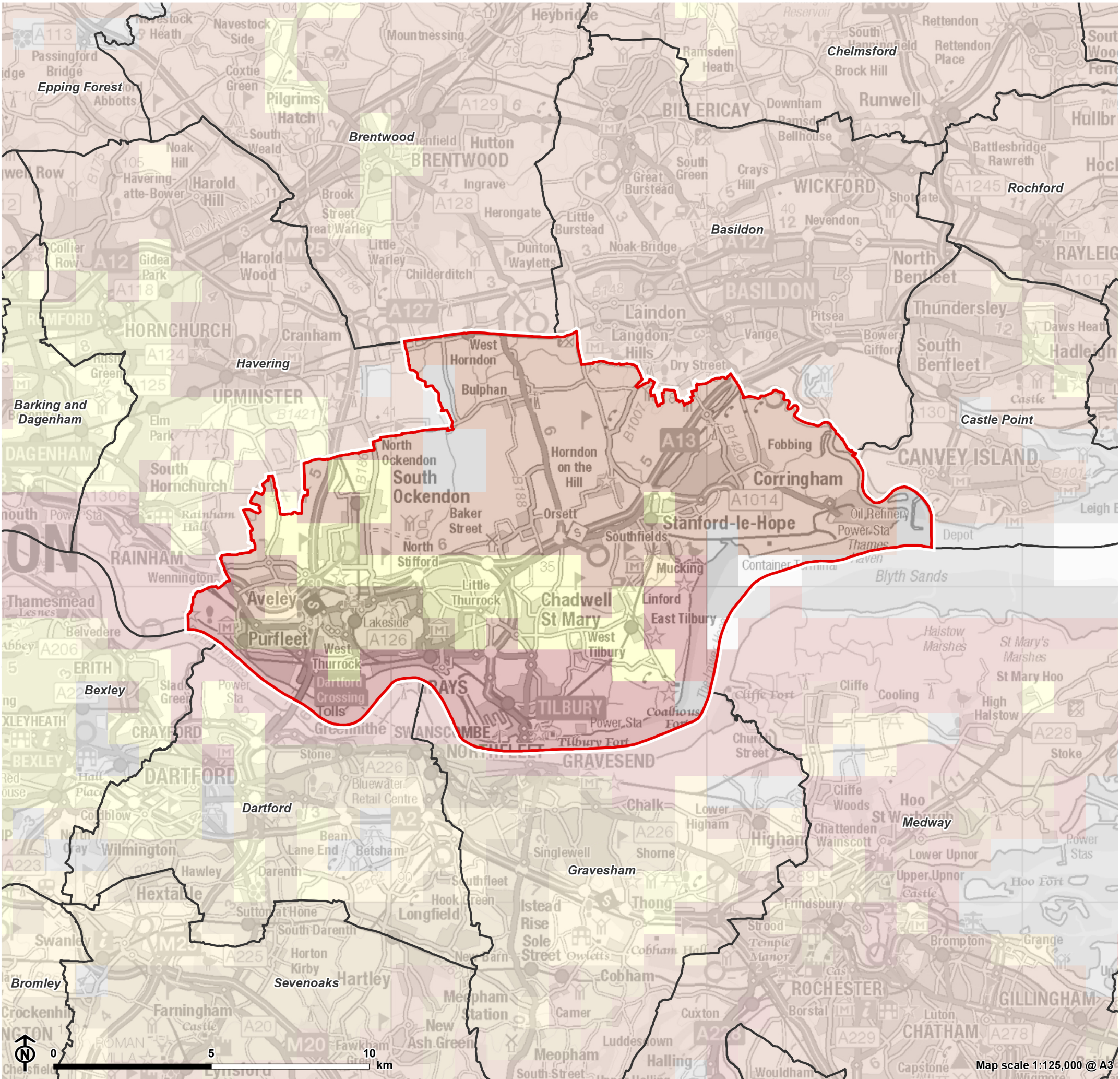


Figure 7.3: Soil types



Key environmental issues and likely evolution of these issues without the Interim Thurrock Transport Strategy

7.21 Thurrock comprises large swaths of high quality, productive agricultural land which is under pressure particularly from new development, including transport infrastructure, resulting in the loss of valuable soils. Geological SSSIs could also be affected by transport infrastructure developments. There are several contaminated sites in Thurrock and 72.95 hectares of brownfield / previously developed land in the Borough.

7.22 Without the Interim TTS, it is possible that transport developments could be located in areas that could lead to the further loss of best and most versatile agricultural land. The Interim TTS provides an opportunity to ensure that transport development is located and designed to take into account the sensitivities of the soil environment by directing new transport infrastructure to lower quality agricultural land, where possible. The Interim TTS provides an opportunity to ensure that transport infrastructure is directed away from geological sites of value. The Interim TTS also provides an opportunity to encourage the remediation of contaminated land and to support the use of brownfield / previously developed land over greenfield land. Without the Interim TTS, these sustainability issues would be less well addressed, and the opportunities may not be fully exploited.