ED15

Kent Minerals and Waste Local Plan






Safeguarding Supplementary Planning Document

Adopted March 2021

Kent County Council
kent.gov.uk

Contents

Adoption Draft 2021 - Preface

The Kent Minerals and Waste Local Plan (KMWLP) Safeguarding Supplementary Planning Document (SPD) was adopted in 2017. As part of the Early Partial Review (EPR) of the Kent Minerals and Waste Local Plan, changes were made to the mineral and waste safeguarding policies DM7 and DM8. The Early Partial Review of the Plan was adopted in September 2020. During the examination of the Plan, the County Council committed to review its Safeguarding Supplementary Planning Document to provide greater clarity and guidance as to how safeguarding policies should be implemented. This document has been produced to meet this commitment.

1. Introduction

1.1 This document is a 'Supplementary Planning Document' (SPD) that provides guidance on how the policies on mineral resources and mineral and waste infrastructure safeguarding as set out in the adopted Early Partial Review of Kent Minerals and Waste Local Plan (KMWLP) will be implemented in Kent. It provides guidance to local planning authorities and developers/applicants on the procedures to be followed when development other than mineral or waste management facilities, including local plan allocations, are proposed to be located within safeguarded areas containing economic minerals (these are the Mineral Safeguarding Areas (MSAs), and on or within close proximity to safeguarded mineral or waste infrastructure assets (e.g. wharves, rail depots, mineral processing facilities and waste management facilities).

1.2 The Supplementary Planning Document is structured as follows:

- The importance of Minerals Supply and Waste Management Resources – Section 2
- What is safeguarded – Section 3
- The type and scope of assessment information required by the County Council to be included in proposals for development that may affect economic mineral bearing safeguarded areas and safeguarded minerals and waste infrastructure – Section 4
- The Safeguarding Procedure, information required for safeguarding assessments for planning applications – Section 5
- The Safeguarding Procedure, information required for safeguarding assessments for local plan allocations- Section 6
- Summary- Section 7
- Monitoring – Section 8
- Kent Minerals and Waste Local Plan Safeguarding Policies – Appendix 1
- Kent Minerals and Waste Local Plan Safeguarding Policies – summary of key provisions – Appendix 2
- Economic Geology Information Notes - Appendix 3

1.3 Safeguarding is the responsibility of all planning authorities, not just those responsible for determining minerals and waste management planning applications and plan making. Taking safeguarding into account when preparing local plans forms part of the Duty to Cooperate requirements under the Localism Act (2011)[1]. The County Council understands the need for local plans to be effective in their delivery of sustainable development and wishes to be engaged in this process as early as practicable to ensure that minerals and waste safeguarding is addressed in a timely fashion thereby reducing delay and uncertainty.

1.4 Developers and landowners promoting development are advised to consider safeguarding matters as early as possible in the development process, ideally at option stage when constraints pertinent to a site are being considered and factored into land values and development potential. This should also include consultation with any potentially important mineral operators who would understand more readily the economic and technical issues relevant to any prior extraction operations that may be

[1] In accordance with Section 33(A) that is, in effect, an amending addition to the Planning and Compulsory Purchase Act 2004

necessary to secure mineral resource conservation. In the case of development affecting infrastructure, the operator of the affected facility(ies) should be consulted.

1.5 In planning, safeguarding is the term used to describe the process of ensuring that

- Natural mineral resources are not unnecessarily sterilised by other types of development, so remaining available for use by future generations; and
- The capacity and operation of minerals and waste management and transportation infrastructure is not lost to, or compromised by, other types of development, except in the special circumstances set out in the Kent Minerals and Waste Local Plan.

1.6 Safeguarding is about long-term conservation of resources and assets, throughout and beyond the period of the Development Plan. It is an important aspect in delivering sustainable development. For the purposes of this document, safeguarding includes Mineral Safeguarding Areas as defined in the Kent Minerals and Waste Local Plan and safeguarded minerals and waste Infrastructure.

1.7 The Development Plan for the purposes of determining planning applications and plan making is the Kent Minerals and Waste Local Plan and the relevant District/Borough Local Plan, along with any neighbourhood plan. This includes the suite of policies that provide for safeguarding of mineral resources and waste and minerals infrastructure (those relevant to safeguarding are reproduced in Appendix 1 with their key requirements summarised in Appendix 2).

1.8 This guidance will apply to development management decisions by both the County Council and the relevant Local Planning Authority (LPA) i.e. Kent's twelve borough and district planning authorities and the Ebbsfleet Development Corporation. The determining authority for the majority of planning applications in Kent will be the Local Planning Authority[2]. This guidance is intended to assist both the determining authority and prospective applicants on the preparation and consideration of non-minerals and waste proposals located within or in close proximity to safeguarded areas and assets.

1.9 The adopted Policies Maps of the Kent Minerals and Waste Local Plan show the Mineral Safeguarding Areas (MSA) of Kent that are safeguarded in each borough and district in the County. These are derived from the British Geological Survey (BGS) data on the UK’s stratigraphy, the extent of urban settlement areas and land allocated for built development in adopted Local Plans. Mineral Safeguarding Areas will be updated to take account of British Geological Survey revisions and/or changes to urban settlement areas and allocations in Local Plans. The Mineral Safeguarding Areas should be read alongside the Geological Information Notes in Appendix 3.

1.10 Kent is particularly rich in minerals with a variety of materials. They play a key role in providing construction and non-construction materials needed by society. These include brickearth, river terraces sand and gravels, building sand, silica sand, chalk and ragstone.

[2] N.B. Proposals for Nationally Significant Infrastructure Projects are determined by the Secretary of State

1.11 In accordance with the National Planning Policy Framework (NPPF), this Supplementary Planning Document is intended to add further detail to the policies in the development plan. It is capable of being a material consideration in planning decisions but is not part of the development plan.

1.12 The preparation of this document, as a revision of the original Supplementary Planning Document, has been undertaken in line with the relevant statutory requirements[3], national guidance[4] and the County Council's Statement of Community Involvement (SCI). It does not conflict with the provisions of the adopted Kent Minerals and Waste Local Plan or introduce new policies.

1.13 Once adopted, this Supplementary Planning Document guidance will be a material consideration in relevant planning decisions. It will act in support of the adopted Kent Minerals and Waste Local Plan.

[3] Regulations 8 & 10-16 of the Town and Country Planning (Local Planning) (England) Regulations 2012

[4] MHCLG (updated March 2019) Planning Practice Guidance on Plan Making https://www.gov.uk/guidance/plan-making

2. The Importance of Minerals Supply and Waste Management Resources

2.1 Minerals are essential to support sustainable economic growth and our quality of life. They are the raw materials for our construction industry and play a key role in food, pharmaceutical and manufacturing industries. Infrastructure such as wharves, rail depots and processing plant is essential for the steady and adequate supply of minerals and minerals related products.

2.2 The National Planning and Policy Framework (NPPF) advises that it is essential that there is a sufficient supply of minerals to provide the infrastructure, buildings, energy and goods that the country needs. Since minerals are a finite natural resource, and can only be worked where they are found, best use needs to be made of them to secure their long-term conservation.

2.3 Primary minerals can only be worked where they naturally occur, and important mineral infrastructure such as wharves have locational requirements, as they need access to water of sufficient depth.

2.4 Figure 1 shows the flows from the raw mineral resources to the areas of the economy that these products are needed.

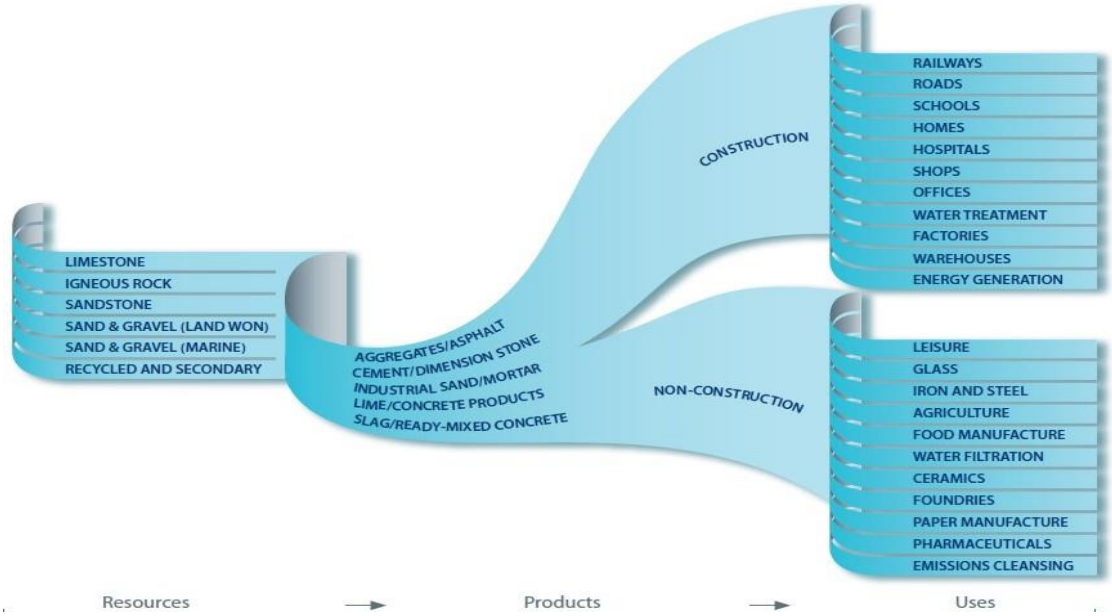


Figure 1 – Extraction to final use flow
http://www.mineralproducts.org/documents/Mineral_Products_Industry_At_A_Glance_2016.pdf

2.5 Figure 2 below illustrates the quantities required to be sourced by the minerals industry to meet the requirements of certain types of construction.

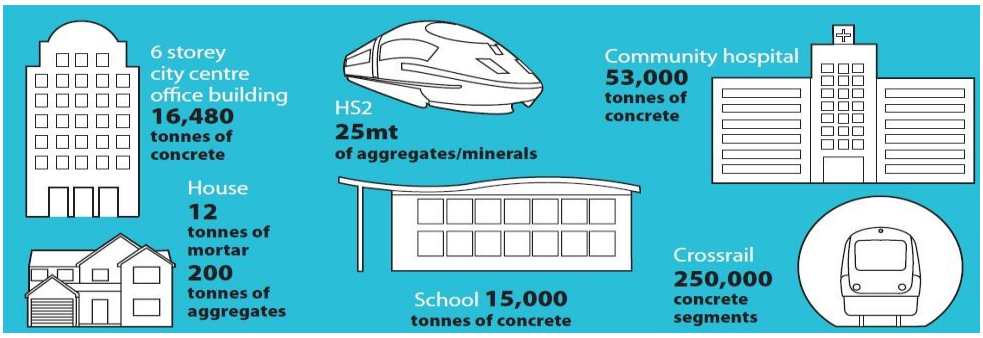


Figure 2 - Amount of mineral resources required per type of construction http://www.mineralproducts.org/documents/Mineral_Products_Industry_At_A_Glance_2016.pdf

2.6 Despite their obvious importance mineral resources can be (and have been) sterilised through non-mineral development over them, rendering the minerals beneath or in close proximity to the development unavailable for extraction for future generations. This is diagrammatically illustrated in Figure 3.

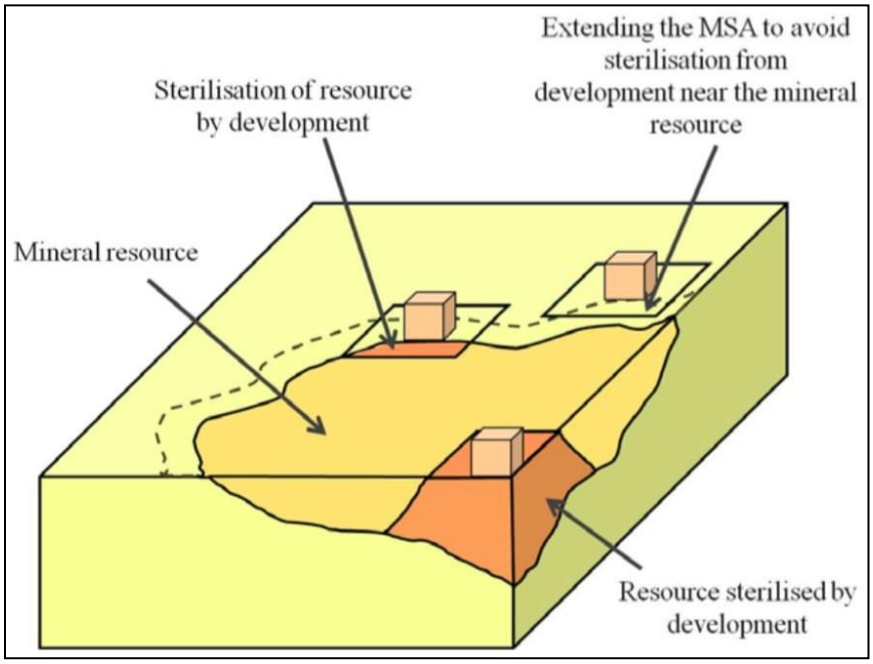


Figure 3 - The sterilisation of mineral resource by surface development. Reproduced from 'Mineral safeguarding in England: good practice advice', British Geological Survey, 2011

2.7 Notwithstanding the importance of minerals supply, waste management infrastructure is essential to enable sustainable management of waste and these facilities are similarly safeguarded by the Kent Minerals and Waste Local Plan.

2.8 The operation of minerals and waste infrastructure can also be constrained by inappropriate development, such as that sensitive to noise, dust and vibration, and also visual impact, being located on or in proximity to a site. This will include residential and some commercial activities.

2.9 These potential conflicts can be avoided through ensuring allocations or planning applications for sensitive development consider the need for safeguarding and avoidance of conflict between uses at an early stage. The potential sensitivities and conflicts are recognised in the National Planning Policy Framework (para 182) and the need to apply the 'agent of change' principle:

> ***"Existing businesses and facilities should not have unreasonable restrictions placed on them as a result of development permitted after they were established. Where the operation of an existing business or community facility could have a significant adverse effect on new development (including changes of use) in its vicinity, the applicant (or 'agent of change') should be required to provide suitable mitigation before the development has been completed."***

2.10 Development in proximity to safeguarded infrastructure should be avoided where possible. However, where this is unavoidable, or the need for the development is demonstrated, appropriate mitigation must be incorporated into the design of the development (fabric, layout/orientation, openings etc.) that will reduce and avoid potential conflicts. This will require appropriate assessments of noise and demonstration of measures that will ensure noise levels experienced by the new occupants will be acceptable. Such assessment should be based on 'worst case' operating scenarios and in the case of wharves this may involve 24-hour operations. Clearly the earlier this is considered, the better in terms of delivering suitable solutions and avoiding cost and delay later on in the design and planning process.

Figure 4 - Examples of new development adjacent to an existing mineral processing facility in Greenwich.

Figure 5 - Noise barrier between buildings installed as part of a new development to mitigate noise from a nearby existing mineral processing facility.

3. Minerals and Waste Safeguarding in Kent

What is safeguarded in Kent?

3.1 As set out in the policies of the Kent Minerals and Waste Local Plan (KMWLP), the following are safeguarded from non-minerals and waste development in Kent:

- Economic mineral resources: brickearth, sharp sand and gravel, soft sand, silica sand, ragstone and building stone, as shown on the Mineral Safeguarding Area adopted policies maps;
- Mineral haul roads;
- Existing, planned and potential wharves and rail transport infrastructure; Existing, planned and potential other mineral plant infrastructure;
- Existing waste management facilities with permanent planning permission;
- Minerals Sites Plan allocations in the Mineral Sites Plan and strategic allocations (Holborough Cement Works, Holborough and Norwood Farm, Sheppey) in the adopted Kent Minerals and Waste Local Plan; and
- Sites with active planning permissions for minerals (including those not identified above, such as chalk for agricultural lime production) are lawful and are by that fact safeguarded for the duration of the active planning permission.

Mineral Resources

3.2 National policy and guidance[5] require that Local Planning Authorities should not normally permit other development proposals in mineral safeguarding areas where they might constrain potential future use for these purposes. In two-tier authority areas such as Kent, Mineral Safeguarding Areas should be included on the Policies Maps of the Development Plan maintained by the district and borough councils.

Mineral Safeguarding Areas (MSA)

3.3 Kent Minerals and Waste Local Plan Policy CSM5 identifies the areas in which safeguarding applies to primary land-won mineral resources in Kent. The Mineral Safeguarding Areas cover the known locations of specific mineral resources that are, or may in future, be of sufficient economic value to warrant protection for future generations. The boundaries of the adopted Mineral Safeguarding Areas for each district and borough authority area in Kent are set out in the Policies Maps in Chapter 9 of the Kent Minerals and Waste Local Plan.

3.4 The purpose of the Mineral Safeguarding Areas safeguarding designations is to ensure that mineral resources are properly considered in planning decisions for non-mineral development proposals, in order to prevent unnecessary sterilisation of Kent's potentially economic minerals assets. They play an important role in forward planning as a high-level consideration, to be taken into account when conducting assessments of the main areas of potential for future development and where to avoid, similar to consideration given other land designations such as Area of Outstanding Natural Beauty (AONB) designation and areas identified as high flood risk.

[5] MHCLG (2019) National Planning Policy Framework, para.204 c) and Planning Policy Guidance Paragraph: 003 reference ID:27-003-20140306

3.5 There is no presumption that the mineral present in the Mineral Safeguarding Areas will be extracted, or that these areas would be considered acceptable for mineral extraction works. The Kent Mineral Safeguarding Areas are based on the mapped mineral resource prepared by British Geological Survey (BGS). For practical reasons, urban settlement areas and land allocated for built development in adopted Local Plans, where these local plan allocations had considered mineral and waste management facility safeguarding at the time of their adoption, are excluded from the Kent Mineral Safeguarding Areas. However, in principle, the County Council would be supportive of any viable opportunities for extraction of minerals being pursued prior to development in these areas.

3.6 The coverage of the Mineral Safeguarding Area designations will be reviewed by the County Council on an annual basis. The reviews will be to ensure that the urban and settlement boundaries are correct (given that they have an exemption effect on land-won safeguarded minerals within them) and also that the safeguarded minerals are still of economic importance and whether additional mineral resources require to become safeguarded given changes in the economics of minerals. A review will not necessarily lead to an update of the Mineral Safeguarding Area – this will occur when the review identifies that substantive changes to the Mineral Safeguarding Area are required and will invoke a formal policy update process as set out in plan making legislation and guidance which will involve public consultation.

3.7 Allocations for non-mineral (or waste) development in adopted local plans that have been assessed for mineral (and waste) safeguarding and been found to be appropriate and exempt from further safeguarding requirements will be reported in the County Council's Annual Monitoring Report (AMR). This will enable monitoring against Kent Minerals and Waste Local Plan policies and provide clarity over areas of land identified for development in Kent's local plans which have satisfied safeguarding requirements and to which safeguarding no longer applies.

Mineral Consultation Areas (MCA)

3.8 These cover the same areas as Mineral Safeguarding Areas, plus an additional area around the mineral reserves of the allocated Strategic Site for Minerals (Kent Minerals and Waste Local Plan Policy CSM 3). The Mineral Consultation Area (MCA) designation ensure that consultation takes place between county and district/borough planning authorities and the Ebbsfleet Development Corporation where mineral resources, and mineral related infrastructure, could be compromised by non-minerals development.

Existing and Allocated Mineral Sites

3.9 Policy CSM 5 of the Kent Minerals and Waste Local Plan also applies to mineral resources at:

- Existing sites for mineral working in Kent, including those sites which have planning permission but are not yet active; and
- Kent Mineral Sites Plan allocations for mineral working

3.10 The existing sites at the time of the Kent Minerals and Waste Local Plan preparation are listed in Appendix C of the Kent Minerals and Waste Local Plan; this list was

updated each year in the Kent Minerals and Waste Annual Monitoring Report (AMR)[6] produced by the County Council. It is now published alongside the Annual Monitoring Report and this allows this element of monitoring to be updated when necessary. The safeguarded area of these sites applies up to the site boundary and surrounding Mineral Consultation Area, not purely the extraction area. Policy CSM 5 applies to the areas allocated for mineral extraction in the adopted Kent Mineral Sites Plan. The status of these sites will be monitored annually.

Infrastructure

3.11 The Kent Minerals and Waste Local Plan (KMWLP) policies CSM 6, CSM 7 and CSW 16 apply safeguarding to all existing, planned and potential minerals and waste infrastructure sites in the county, such sites host various facilities including the following:

- Waste management
- Secondary and recycled aggregate processing
- Minerals processing and product manufacture e.g. concrete batching and asphalt plants
- Minerals wharves
- Railheads used to transport waste and minerals

3.12 The policies also apply safeguarding to land **within 250m of these sites**, as non-minerals and waste developments which are sensitive to noise, dust, lighting and vibration may be adversely affected by minerals and waste activities which can in turn lead to mitigation causing constraints to be placed on operations.

3.13 Development management Policy DM 8: *Safeguarding Minerals Management, Transportation Production & Waste Management Facilities* sets out the circumstances when non minerals and waste developments development may be permitted that would be incompatible with safeguarded infrastructure. This includes ensuring that where existing minerals and waste capacity is lost, a replacement facility is available and suitable that provides at least an equivalent capacity to that which it is replacing.

3.14 This policy was subject to review as part of the Kent Minerals and Waste Local Plan's Early Partial Review (EPR) in 2019. The changes to this policy were adopted in 2020. These clarify that an exemption to safeguarding can be applied where the non-minerals/waste development is identified as an allocation in an adopted local plan, and in that local plan's formulation and examination it was demonstrated that safeguarding issues were fully considered, and the development would be acceptable. Otherwise, an exemption does not apply.

Minerals Management and Transportation Infrastructure

3.15 National policy requires Local Plans to safeguard existing, planned and potential minerals transport, processing and manufacturing infrastructure[7]. Development proposed on or in proximity to these facilities could result in the loss of, or constraints

[6] Kent Minerals and Waste Annual Monitoring Reports are available online from: http://www.kent.gov.uk/mwlp

[7] MHCLG (2019) National Planning Policy Framework, para. 204 (e).

applied to, current or future operations.

3.16 Minerals infrastructure is essential for the transport of minerals into and out of the County as well as for the recycling and/or processing of minerals into products.

3.17 In particular, Kent's wharves receive a range of construction aggregates from mainland Europe, as well as Marine Dredged Aggregates (MDA) and imported recycled and secondary materials. Minerals can also be imported and exported via Kent's railheads, lessening the impact on the highway network. The production of secondary and recycled aggregates is an important component of overall mineral supply and provides a sustainable replacement for primary land-won sharp sand and gravel.

3.18 Safeguarded Wharves and Rail Depots (Policy CSM 6) are shown in Figure 13: Minerals Key Diagram of the Kent Minerals and Waste Local Plan and their site boundaries are shown in Chapter 9: Adopted Policies Maps of the Kent Minerals and Waste Local Plan.

3.19 Policy CSM 7 safeguards the numerous existing, planned and potential other mineral plant infrastructure facilities in Kent and their capacity. A list of the permitted mineral plant infrastructure sites is published alongside the Annual Monitoring Report (AMR) on the County Council's website. It is updated periodically outside the Annual Monitoring Report process.

3.20 Policy DM 8 sets out when development can be considered exempt from the safeguarding requirements. As stated in para. 3.14 above, the early Partial Review of the Kent Minerals and Waste Local Plan has clarified the circumstances when an exemption can be applied in relation to an allocation in an adopted local plan. Such an exemption will only apply if all relevant infrastructure safeguarding issues had been considered during the local plan formulation and examination process and was subsequently adopted afterwards.

Waste Management Facilities

3.21 It is important to ensure that sufficient capacity exists for Kent to manage its waste arisings and future needs sustainably, and to maintain overall net self- sufficiency in waste management in accordance with the waste strategy of the Kent Minerals and Waste Local Plan.

3.22 National policy on waste requires existing waste management capacity to be safeguarded; the likely impact of proposed, non-waste related development on existing waste management facilities and on sites allocated for waste management should be acceptable without prejudicing the efficient operation of such facilities, or the implementation of the waste hierarchy[8]. Nearby non- waste developments can also impact the operation of existing sites or the viability of planned sites.

[8] DCLG (2014) National Planning Policy on Waste, para.8 clause 1

3.23 Protection for waste management facilities with permanent planning permission is provided by Policy CSW 16: *Safeguarding of Existing Waste Management Facilities*. This policy safeguards sites that have permanent planning permission for waste management. A list of the waste management sites with permanent planning permission are periodically updated and published alongside the Annual Monitoring Report. Development management Policy DM 8 sets out the criteria that may be used to apply an exemption from the presumption to safeguard, provided the evidence justifies this. The early Partial review of the Kent Minerals and Waste Local Plan, as referred to above in para. 3.14 and 3.20, has further clarified when an allocation in an adopted local plan may be used as a justification to apply an exemption to safeguarding.

4. Minerals and Waste Safeguarding Procedure- Main Considerations – Planning Applications and Plan Making

4.1 The key to ensuring safeguarding is properly taken into account in decision making is the early and constructive consultation between the local planning authorities and the County Council, and with prospective developers. Further guidance is provided in the Mineral Products Association/Planning Officers' Society guide on safeguarding[9].

4.2 The consultation process between the relevant Kent local district and borough authority (the LPAs) and the County Council (the Minerals Planning Authority and/or Waste Planning Authority) will be triggered by proposals for conflicting and non-exempt development within the Mineral Safeguarding Area/Mineral Consultation Area areas and the 250m consultation zones surrounding the safeguarded minerals (the safeguarded minerals are denoted as the varying colour washes on the Mineral Safeguarding Area policy maps) and waste sites, infrastructure and allocations; this will apply in the case of both development proposals and proposed site allocations in District/Borough Local Plans. The Ebbsfleet Development Corporation (EDC) is the determining authority for minerals and waste development in the EDC area, the processing function of such applications is being carried out by the County Council for the EDC on a Service Level Agreement at this time.

4.3 The Local Planning Authority must take the Kent Minerals and Waste Local Plan policies (as part of the development plan) and County Council's comments into account when determining applications for potentially conflicting development, including imposition of appropriate conditions on planning permissions to mitigate the potential effects of development on the safeguarded resource and/or infrastructure.

4.4 Any objection made by the County Council on safeguarding grounds will be a statutory objection and a material consideration for the determination of proposals.

4.5 As set out in Section 3, applicants will be expected to provide adequate information in the form of a Minerals Assessment (for Policy DM 7) or a Minerals and Waste Infrastructure Assessment (for Policy DM 8) accompanying a planning application to enable the County Council to assess the application against the safeguarding policies of the Kent Minerals and Waste Local Plan.

Consultation on Planning Applications- Main Principles

Pre-application

4.6 Pre-application discussions with the relevant district/ borough authority, in conjunction with the County Council, are strongly encouraged to identify proposals within safeguarded areas and indicate the level and scope of Minerals or Infrastructure Assessment and information that may be required. Discussions with the operators of any existing facilities are also strongly encouraged, to get an idea of the scope of any mitigation measures that may be required.

[9] https://mineralproducts.org/documents/MPA_POS_Minerals_Safeguarding_Guidance_Document.pdf

Validation of Planning Applications

4.7 The inclusion of these Assessments in the local Validation Local List would ensure that all necessary information required to determine the application is provided at the time of submission. This would avoid unnecessary delays when the application is being considered. The County Council recommends that all Kent district and borough councils include Minerals Assessments and Minerals and Waste Infrastructure Assessments in the local list of validation information requirements for planning applications within Mineral Safeguarding Areas and Mineral Consultation Areas and within 250m of safeguarded minerals and waste facilities.

Consultation

4.8 Local planning authorities will consult the County Council on applications for development within Mineral Safeguarding Areas and Mineral Consultation Areas and within 250m of safeguarded infrastructure, accompanied by the appropriate Minerals or Infrastructure Assessment prepared by the applicant. These should be sent to mwlp@kent.gov.uk.

4.9 The County Council will provide an initial response to consultation requests within 21 days, which may include a request for further information if the Assessment is considered to be inadequate or unclear. If no response is received within this timescale it can be assumed that information provided is adequate, this can be subject to any request for confirmation of this conclusion.

4.10 If no response is received by the end of the consultation period or any agreed extension of time, the determining authority can proceed with the determination of the application without the views of the County Council on a proposal's compatibility with minerals and waste safeguarding policies.

4.11 The relevant port authority (such as the Port of London) should be consulted on all applications which have safeguarding implications for mineral wharves and any mineral related infrastructure at the operational wharf site. The Marine Management Organisation (MMO) supports the safeguarding of mineral importation facilities on coastal locations in its relevant area plan policies. The Marine Management Organisation should also be consulted in accordance with the Marine and Coastal Act 2009 (Section 58) on applications that threaten loss of such facilities, or their continued operation.

Consultation on Local Plan Preparation and Allocations

4.12 Kent district and borough councils are required to have regard to the Kent Minerals and Waste Local Plan safeguarding policies when identifying suitable areas for non-mineral and non-waste development in their local plans, as well as showing Mineral Safeguarding Areas and Mineral Consultation Areas on their policy maps[10]. This is necessary to satisfy the Duty to Cooperate.

4.13 The process of allocating land for non-minerals and non-waste uses in the district/ borough authority Local Plans will therefore need to take account of the presence of

[10] Planning Practice Guidance Paragraph: 005 Reference ID: 27-005-20140306

minerals within Mineral Safeguarding Areas and any existing, planned or potential minerals and waste infrastructure. The relevant factors for consideration are the same as those for a planning application, as set out in Policies DM 7, DM 8, CSM 5, CSM 6, CSM 7 and CSW 16. The adopted Policies Maps display the Mineral Safeguarding Areas in all the administrative areas of Kent, detail the location of all the economic safeguarded minerals, in conjunction with the information provided in Appendix 3.

4.14 The County Council can offer advice to support the district and borough authorities during the site allocation process and should be formally consulted on any proposals in the safeguarded areas. Any prior extraction of mineral resources will flow from the process of assessment. Investigation of the feasibility of prior extraction should be a central part of any Minerals Assessment before an exemption to the presumption to safeguard is invoked.

4.15 Local planning authorities will consult the County Council when preparing development plans to ensure that safeguarding is properly taken into account when sites are allocated for non-minerals and non-waste development. Development within Mineral Safeguarding Areas and Mineral Consultation Areas and within 250m of safeguarded infrastructure should be avoided where possible.

4.16 In preparing local plans and identifying allocations, local planning authorities should fully consider the presence of Mineral Safeguarding Areas and safeguarded infrastructure. Where allocations are proposed in these areas, the local planning authority will need to demonstrate the need for the development at the location and consult the County Council to consider how the requirements of the Kent Minerals and Waste Local Plan policies will be satisfied. Where it is determined that the need for development outweighs safeguarding, measures to mitigate the effect of the development on the safeguarded resources or assets, should be identified and required. This will need to be done through Minerals Assessments and Minerals/Waste Infrastructure Assessments. The detail required for these assessments is the same as would be required for a planning application but is subjective to the scope of the development.

4.17 A list of allocations in District and Borough Local Plans that the County Council consider have adequately taken waste and mineral safeguarding into account at the plan making stage will be included and updated in the County Council's Annual Monitoring Report. Development which comes forward within these allocations will be exempt from safeguarding provisions.

Adopted Policies Maps and Geographic Information System (GIS) Information

4.18 GIS information files have been provided to all district and borough councils, with the expectation that safeguarded areas will be shown on each authority's own policy maps in line with national planning policy guidance.

4.19 The GIS files include:

- Mineral Safeguarding Areas (MSAs) and Mineral Consultation Areas (MCAs)
- Existing mineral working sites

- Safeguarded Wharves and Rail Transportation Adopted Policies Maps: Sites A - Q
- Existing other (recycling/secondary aggregate production) mineral plant infrastructure sites
- existing waste management facility sites

4.20 GIS information for all allocated waste and minerals sites will also be provided for inclusion on the Kent district and borough authority's policy maps.

4.21 Sites with planning permission for other mineral plant infrastructure and permanent planning permission for waste management are reviewed as part of the overall monitoring of the Plan. The updated GIS information, as developed, will be provided by the County Council to the district/ borough authorities.

4.22 The following table summarises the various organisations' roles involved in minerals and waste safeguarding.

Table 1: Organisational Roles in Mineral safeguarding

Applicants/developers	When compiling a planning application or a local plan submission, the applicant should consult the safeguarding maps and policies within the Kent Minerals and Waste Local Plan Minerals to identify safeguarding requirements and whether an Assessment is required.
	If so, then the relevant Assessment should be undertaken and submitted as part of the application or plan submission to the relevant authority
	It is recommended that mineral safeguarding matters are considered at the earliest stage of the development process, ideally at option stage. This will help to ensure that safeguarding matters are factored into land assembly considerations**.**
District/Borough Councils within Kent	Any applications which are within a Mineral Safeguarding Area or the proximity of a safeguarded facility, and do not meet the exemptions listed in Policies DM 7 and DM 8 will need to be accompanied by the appropriate assessment. The assessments will also need to be prepared by a local authority when they are producing sites plans. Ideally this should take place between the call for sites and the preferred options stages. The local planning authority should consult the County Council on any planning application or potential site allocation which may have safeguarding implications and does not meet the exemptions.

Kent County Council	The County Council will offer comments on a planning application or local plan submission which has minerals or waste safeguarding implications. When determining applications for Regulation 3 proposals (KCC community development), the County Council will also need to consider any mineral safeguarding implications.

5. Planning Applications - Information Requirements for Development Affecting Land-Won Mineral Safeguarding

5.1 This section sets out the Information Requirements to accompany planning applications for Non-Minerals Proposals in Minerals Safeguarding Areas (MSA). The process for considering submissions for local plan allocations is essentially the same and is addressed in section 7.0. In the case of Nationally Significant Infrastructure Projects (NSIP) applications the County Council would be a consultee to any pre-application, pre-examination consultations. At any resultant Examination of an NSIP the County Council may be an expert witness in relation to any minerals or waste safeguarding matters that have come to light as a consequence of the preceding stages in the NSIP process. The bulk of the advice in this document is aimed at local authorities and applicants so that the requirements and application of the mineral and waste safeguarding process as set out in the relevant policies of the Kent Minerals and Waste Local Plan (KMWLP) 2013-30 are better understood.

5.2 Kent Minerals and Waste Local Plan Policy CSM5 Land-won Mineral Safeguarding identifies and protects the Minerals Safeguarding Areas. A proposal for non-minerals development in a Mineral Safeguarding Area is the trigger for an assessment process of the potential effects of the development on the safeguarded minerals resource.

5.3 For the purposes of this Supplementary Planning Document, these circumstances can be divided into two main categories:

- Development Excluded from Mineral Safeguarding
- Development Potentially Incompatible with Mineral Safeguarding.

This is considered further below.

Development Exempt from Mineral Safeguarding

5.4 The reviewed and adopted[11] Policy DM 7: Safeguarding Mineral Resources sets out the circumstances when non-minerals development may be considered acceptable at a location within a Mineral Safeguarding Area. The policy's exemption criteria 4, 6 and 7 describe the types of proposals for development that are excluded from mineral safeguarding consideration:

4. the development is of a temporary nature that can be completed and the site returned to a condition that does not prevent mineral extraction within the timescale that the mineral is likely to be needed; or

6. it is exempt from mineral safeguarding policy, namely: householder applications, infill development of a minor nature in existing built-up areas, advertisement applications, reserved matters applications, minor extensions and changes of use and buildings, minor works, non- material amendments to current planning permissions; or

[11] Reviewed and adopted as part of the Early Partial Review of the KMWLP, adopted September 2020.

7. *it constitutes development on a site allocated in the adopted development plan, where consideration of the criteria 1-6 of the policy concluded that mineral resources will not be needlessly sterilised.*

5.5 Proposals covered by these exemption criteria should be accompanied by information demonstrating that they are exempt from mineral safeguarding. This will indicate to the relevant local planning authority that the presence of the safeguarded mineral resources has been acknowledged and that the development is in conformity with Kent Minerals and Waste Local Plan Policy CSM 5 and Policy DM 7.

5.6 The County Council need not necessarily be consulted on the types of developments falling under paragraph 5.4 above. If there is any uncertainty, the district and borough planning authority will discuss and agree the approach to be taken with the County Council.

Acceptability of Development within Mineral Safeguarding Areas

5.7 Exemption criteria 1,2,3 and 5 of Policy DM 7 describe the circumstances where planning permission can be granted for development that is not excluded from mineral safeguarding but could potentially sterilise mineral resources. It should be noted that only one of the policy's exemption criteria need to be successfully invoked to gain an exemption:

1. *the mineral is not of economic value or does not exist; or*

2. *that extraction of the mineral would not be viable or practicable; or*

3. *the mineral can be extracted satisfactorily, having regard to Policy DM 9, prior to the non-minerals development taking place without adversely affecting the viability or deliverability of the non-minerals development; or*

5. *material considerations indicate that the need for the development overrides the presumption for mineral safeguarding such that sterilisation of the mineral can be permitted following the exploration of opportunities for prior extraction;*

5.8 However, where criterion 5 is met, developers should be encouraged to mitigate the sterilising effects of the development, such as investigating and delivering prior extraction of as much material as possible.

5.9 Where an applicant seeks to satisfy any one of the criteria in paragraph 5.7 and for an exemption to be applied to the presumption to safeguard the mineral, it is necessary for the proposal to be accompanied by a 'Minerals Assessment'. Further advice on the content and form of the Mineral Assessment is set out below.

Minerals Assessments – General elements to be addressed

5.10 While the Kent Minerals Safeguarding Areas (MSAs) are based on the British Geological Society (BGS) information of where minerals may occur, the practicability and economic viability of extraction will need to be determined by a more detailed '**Minerals Assessment'** (MA) that demonstrates to the satisfaction of both the County Council and the relevant district/borough authority that the mineral resource has been

adequately considered and Policy DM 7 has been complied with. This reflects the requirement in the National Planning Policy Framework[12] that development proposals in Mineral Safeguarding Areas that might constrain potential future minerals use should not normally be permitted. The evidence that is required in a more detailed Minerals Assessment can range from verifiable documentation that demonstrates that the deposit is uneconomic (or potentially absent because of incorrect mapping or from past extraction) to fully invasive explorations using trial trenching/borehole surveys and laboratory analysis of the materials to demonstrate viability or the lack of viability of the relevant safeguarded mineral in the Mineral Safeguarding Area.

5.11 It is not considered appropriate to apply a size threshold for proposals (other than those of exempt development under Policy DM 7 criterion 6) that require a Minerals Assessment (MA) or set out requirements for different levels of assessment in proportion to the proposed development. This is because a small development in a Mineral Safeguarding Area still has the potential to sterilise a large area of mineral resource.

5.12 Pre-application discussions between the promoter/applicant of a non-minerals development in a Mineral Safeguarding Area/Mineral Consultation Area and the relevant district/borough authority, in conjunction with the County Council, are strongly encouraged before any survey works are undertaken on the proposed development site. Discussions with the operator of any existing site are also encouraged.

5.13 Discussions will help inform what level and scope of Mineral Assessment is required, and that these are proportionate, taking into account factors such as:

- the type of mineral resource(s) thought to be present;
- the potential extent of sterilisation which could occur as a result of the development;
- the extent or distribution of survey boreholes/pits;
- site specific considerations;
- potential options for prior extraction; and
- Economic viability of the mineral, i.e. the local market interest.

5.14 It is recommended that a draft trial pit/borehole location plan is agreed with the County Council at the pre-application stage in order to avoid delays and the need for further surveys at a later stage.

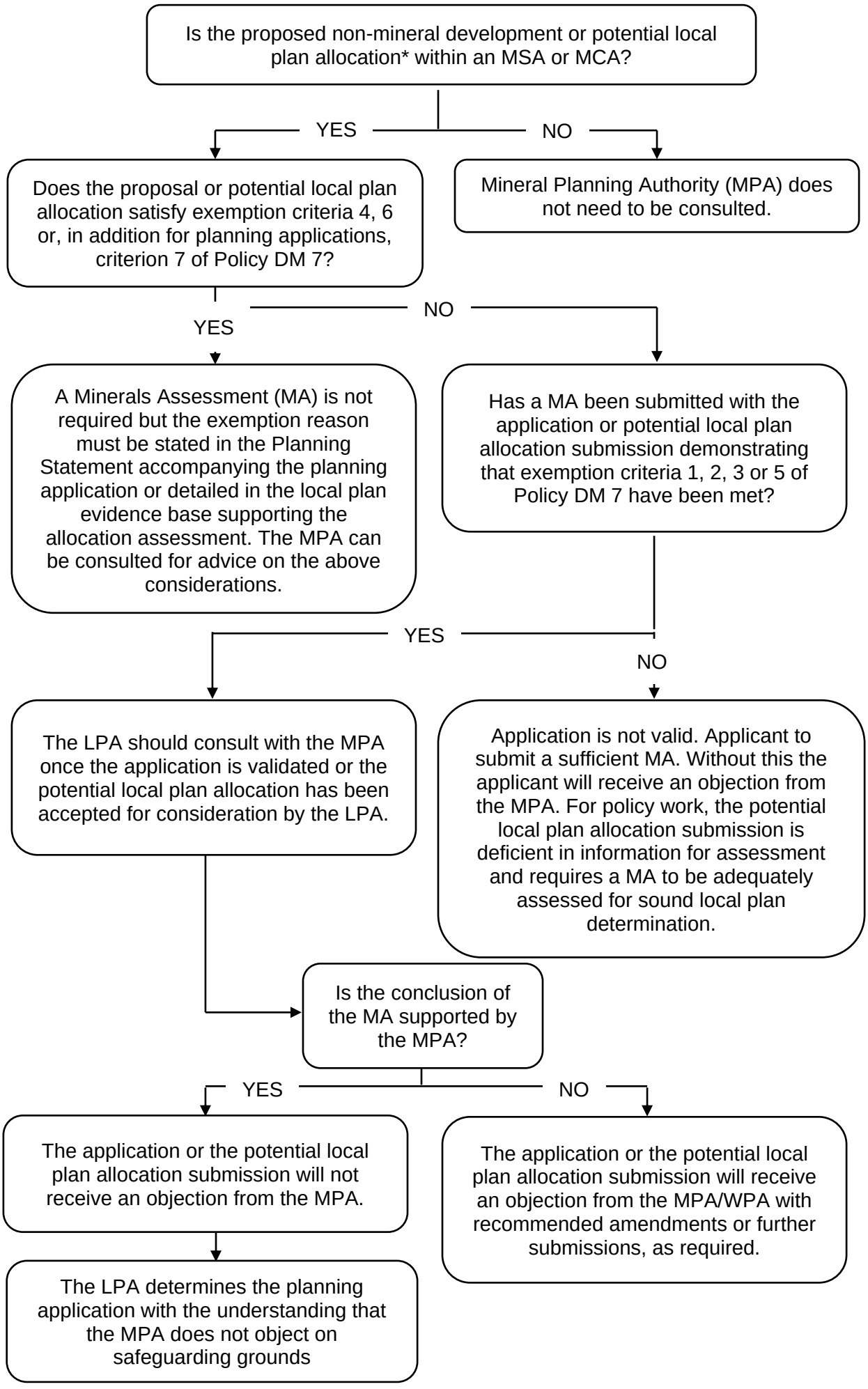
5.15 Prior extraction and on-site use of the material should be considered early on during the initial master-planning stages of the proposed development. The presence of the mineral resource could present opportunities to influence the design of the proposal. The consideration of prior extraction is a necessary step in the investigation of how to safeguard any economic minerals found present at the site. If the deposit is extensive it may be possible to use a program of phasing extraction with development, thus reducing delays. However, it is emphasised that the presence of safeguarded minerals at a development site should be part of the early stages of planning for how development may come forward on the site. The presence of safeguarded minerals should be factored into both the viability and timing of delivery of the development and

[12] National Planning Policy Framework 2019 Paragraph 205 also stresses that 'When determining planning applications, great weight should be given to the benefits of mineral extraction, including to the economy.'

should be part of any site's initial development appraisal.

5.16 The British Geological Survey has prepared good practice advice for mineral safeguarding[13] and this has informed the guidance in this Supplementary Planning Document. In preparing Minerals Assessments necessary to accompany planning applications, applicants promoting development should assess the quality and quantity of mineral resource at a site with the following information which includes site specific desk-based assessment and detailed analysis. The flowchart overleaf suggests a logical process that a Local Planning Authority should follow when processing applications with land-won mineral safeguarding implications:

[13] British Geological Survey (2/011) Mineral Safeguarding in England: good practice advice



*Potential local plan allocation is in the broadest sense and includes site assessment work leading to allocation.

Mineral Assessment - Site specific desk-based assessment of the existing surface and solid geological and mineral resource information

5.17 This may comprise existing information on the mining and quarrying history, mineral assessments and market appraisals, boreholes, site investigations, geological memoirs, technical reports, mining plans and the thickness of superficial geological deposits.

5.18 Desk-based survey work should be supported by:

- Any existing site investigation reports that are available
- Mineral Safeguarding Maps (part of the adopted Kent Minerals and Waste Local Plan 2013-30)
- British Geological Survey Geological maps and resources: https://www.bgs.ac.uk/discovering-geology/maps-and-resources/maps/

Mineral Assessment - Detailed analysis of the site-specific information

5.19 This should be prepared by a suitably qualified and competent professional (geologist or minerals surveyor). This should include:

- An estimate of the economic value, quality and quantity of the mineral;
- Its potential for on-site use and whether it is feasible and viable to extract the mineral resource ahead of development to prevent unnecessary sterilisation;

5.20 Where prior extraction can be undertaken, an assessment of the amount of material that can be extracted and an explanation of how this will be carried out as part of the overall development scheme.

5.21 It is likely that in most cases more detailed site-specific information will be required to provide sufficient information to inform the County Council's response to a consultation on the planning application and to enable the Borough/District Council to be satisfied of its requirements in respect of the National Planning Policy Framework (NPPF), paragraph 205.

Minerals Assessment Methods

5.22 Depending on the nature of the safeguarded resource (e.g., superficial deposits such as sand and gravel or crustal mineral deposits such as Kentish Ragstone), the County Council recommends that trial pits or boreholes typically to a depth of approximately 2.5 - 3.5m would generally be appropriate, although depending upon available geological data this may need to be extended to 5m in some areas. Table 2 provides further detail.

Figure 5 – Example Trial Pit

5.23 Ground investigations undertaken as part of a geotechnical study to support a Flood Risk Assessment (FRA) would normally be to a similar depth and so such site surveys could therefore be linked or undertaken at the same time. Investigations on Particle Size Distribution (PSD) of any recovered sand and gravel are also often carried out as part of an FRA. Similarly, there may be synergies with heritage asset investigations and potential cost reductions, i.e., one contractor digging trial trenches for both purposes.

Figure 6 – Example Borehole Rig

5.24 The spacing of trial pits and/or boreholes is important to ensure that a thorough assessment of the mineral resource thought to be present can be made. An initial spacing of approximately 150m centre-to-centre appears to be the generally accepted approach to be initially considered, although additional densities may also be required to determine the extent of the deposit as appropriate.

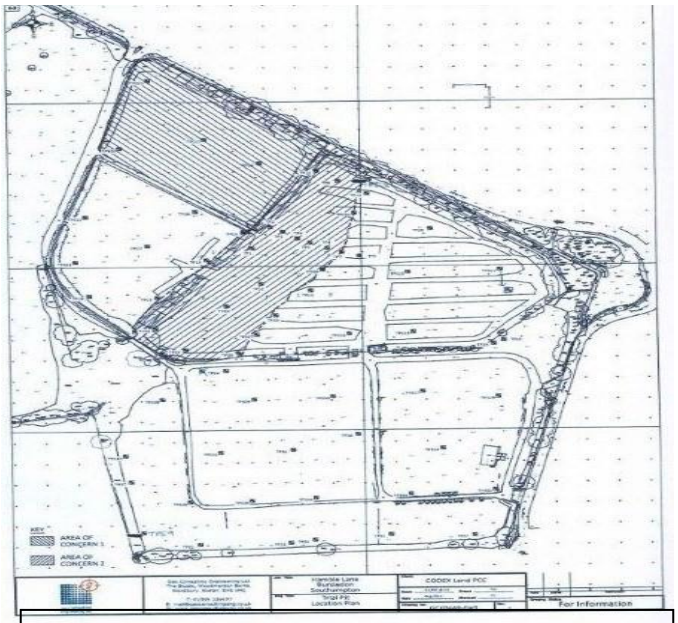


Figure 7 – Offset Grid

5.25 Table 2 describes the general parameters of site investigation required for different types of mineral.

Table 2: Site investigation methodologies for economic minerals in Kent

Type of Economic Geology Kent[14]	Site Specific Investigation/Methodology
Superficial deposits such as **Brickearth**, **River Terrace Sands and Gravels**, and **Alluvial Sands and Gravels**	**Trial Trenching Surveys**: Would normally require trial trenching to a depth of 2-3m. When there is evidence of greater thickness of potentially viable deposits, continuous flight auger bore hole drilling may be required to investigate the full extent of the superficial deposit depth across site.
Non-hard crustal geologies such as the **Folkestone Beds** (building sands)	**Drilling Surveys**: To determine deposit depth a continuous flight auger borehole drilling should normally be used to investigate the full extent of the viable deposit across the site.
Hard crustal geologies such as the **Hythe Formation** (Kentish Ragstone)	**Drilling Surveys**: Drilling techniques employing diamond and/or tungsten drill bit coring technologies should normally be employed to investigate the full extent of the viable deposit depth across the site. Regard for practical working (quarrying) depths and standing water table levels would have to be had in determining overall depth of drilling investigations.
Reserve/ Overburden Ratio Analysis Recording the specific site overburden depth above mineral resource. This is useful to inform the Minerals Assessment for the site in terms of economic viability and practicality.	

5.26 The economic viability of mineral resources and the viability of prior extracting these may change over time as resources become scarcer, technology improves, and markets change.

5.27 The recommended key aspects to consider in a Minerals Assessment of a proposed development in a Minerals Safeguarding Area (MSA) are set out in Table 3 overleaf, reflecting the requirements of Kent Minerals and Waste Local Plan safeguarding policies. Other factors may be relevant on a case-by-case basis.

[14] The current British Geological Survey data specifically supplied to the County Council excludes the Upper, Middle and Lower Chalk and the London Clay as economically important minerals

Table 3. Factors to consider in Minerals Assessments Site Information	**Likely requirements**
Proposal Site	• Area – red line and buildings footprint • Description of proposed development • Consideration of alternative location for the development outside the Mineral Safeguarding Area • Timetable for the development
Mineral Reserve	• Type & extent of the mineral • Depth of the deposit and variability across the site • Depth of overburden and variability across the site • Ratio of overburden to mineral resource • Mineral quality (e.g., BSI) standard or equivalent with or without processing) • Estimated gross mineral resource affected
Mineral Extraction Constraints	• Site infrastructure/ utilities • Site constraints / designations • Proximity of other development
Prior Extraction:	
Commercial Market and Practical Considerations	• Effect on deliverability and viability of proposed non-minerals development • Interested operator/local market for the minerals • Distance from the site to market destination • Method of transport / route to be taken • Does the market destination have permission to accept imported materials / is permission required? • Mineral processing infrastructure requirements, on or off-site • Space for storage of materials and effect on phasing or design • Costs or savings
Practicability and acceptability of extraction in terms of impacts on the environment or communities	• Site setting and constraints • Accessibility and transport • Land stability • Hydrology – groundwater and flood risk • Site restoration scheme in the event that the development does not proceed following prior extraction of the mineral deposit

The County Council will expect transparent economic analysis in Minerals Assessments if it is argued that criteria 1 or 2 of Policy DM 7 can be invoked to gain an exemption from the presumption to safeguard land-won mineral resources.

Mineral Assessment Conclusions

5.28 In order for the planning application to proceed without an objection from the County Council, the conclusions of the Mineral Assessment would have to satisfactorily demonstrate that Policy DM 7 criteria 1 – 3 or 5 apply to the proposed development.

5.29 The 'or' after each of the criteria in Policy DM 7 means that only one criterion needs to be satisfied. However, sequentially it will make sense for consideration of the economic value (criteria 1) and viability and practicability of extraction being considered first before considering practicability of prior extraction (criteria 2) and whether the need for the development outweighs the safeguarding of the mineral (criteria 5).

5.30 The assessment may conclude that the site may be partially viable for extraction. In such circumstances the County Council will encourage prior extraction of as much material as is practicable.

5.31 If the County Council is satisfied that the Mineral Assessment information adequately demonstrates the prior extraction would not be viable, the applicant is encouraged to utilise any mineral resources excavated through incidental extraction during the construction of any permitted application, in the interests of sustainable development. This should be addressed through an appropriately worded planning informative.

5.32 It is important to note that any objection made by the County Council on safeguarding grounds will be a statutory objection and a material consideration for the determination of the proposal.

5.33 Safeguarding issues and the conclusion of a Minerals Assessment should be addressed in the Planning Statement, or where appropriate, in the Environmental Statement if the proposal is to be subject to Environmental Impact Assessment (EIA), that accompanies a planning application.

Prior Extraction

5.34 Where prior extraction is proposed, Kent Minerals and Waste Local Plan (KMWLP) Policy CSM 4 *Non-Identified land-won Mineral Sites* and Policy DM 9 *Prior Extraction of Minerals in Advance of Surface Development* will apply. The avoidance of sterilising reserves is one of the 'over-riding benefit' criteria that could justify an exception to the Plan's mineral strategy (and so enabling minerals extraction to proceed on a site not allocated in the Minerals Sites Plan under Kent Minerals and Waste Local Plan Policy CSM 4).

5.35 Where prior extraction has been proven to be unviable, any mineral resources extracted during construction works and re-used on site are likely to be considered as an ancillary operation of construction works of the proposal under Kent Minerals and Waste Local Plan Policy DM 21: *Incidental Mineral Extraction*.

5.36 The economics of prior extraction depend on the mineral quantity and quality, and if not used on-site, the proximity to processing plant and access to market. It will also depend on the changes to the topography of a site and associated issues of

developability, and overall costs of extraction and effects on the timescale for the planned development.

5.37 The prior extraction operations are normally anticipated to be done by a mineral operator, who would have the requisite experience, knowledge, specialist equipment and market access, to undertake the operation with co-management of the non-mineral developer to co-ordinate the extraction.

5.38 The County Council will expect transparent economic analysis in Minerals Assessments if criteria 1 and 2 of Policy DM 7 are being invoked to gain an exemption from the presumption to safeguard land-won mineral resources.

6. Planning Applications - Information Requirements for Development Affecting Safeguarded Mineral and Waste Management Infrastructure

6.1 The section below relates to development proposals that affect safeguarded minerals and waste management infrastructure either directly or within 250 metres of a safeguarded facility.

6.2 Kent Minerals and Waste Local Plan Policy CSM 6: *Safeguarded Wharves and Rail Depots* safeguards a number of minerals transportation facilities in Kent. The policy applies to all existing, planned or potential sites for minerals transportation. The safeguarding applies to the facility itself, as well as a 250m buffer zone surrounding the site.

6.3 Kent Minerals and Waste Local Plan Policy CSM 7: *Safeguarding Other Mineral Plant Infrastructure* safeguards facilities associated with minerals operations, such as those related to concrete batching or secondary aggregate production. The safeguarding also applies to a 250m buffer zone surrounding the site.

6.4 Kent Minerals and Waste Local Plan Policy CSW 16: *Safeguarding of Existing Waste Management Facilities,* safeguards sites which have permanent planning permission for waste management. The safeguarding also applies to a 250m buffer zone surrounding the site.

Developments Exempt from Safeguarding of Infrastructure

6.5 Kent Minerals and Waste Local Plan Policy DM 8: Safeguarding Minerals Management, Transportation & Waste Management facilities sets out the only circumstances where non-minerals and waste development proposed within a safeguarded site that would involve total or partial loss of the safeguarded facility, or in proximity to (within 250m), safeguarded minerals management, transportation or waste management facilities, would be considered acceptable.

6.6 Development proposals considered acceptable or exempt from safeguarding are specified in Policy DM 8 criteria 1 & 2 namely:

1. *it constitutes development of the following nature: advertisement applications; reserved matters applications; minor extensions and changes of use and buildings; minor works; and non-material amendments to current planning permissions; or*

2. *it constitutes development on the site that has been allocated in the adopted development plan where consideration of the other criteria (1, 3-7) can be demonstrated to have taken place in formulation of the plan and allocation of the site which concluded that the safeguarding of minerals management, transportation production and waste management facilities has been fully considered and it was concluded that certain types of non-mineral and waste development in those locations would be acceptable;*

It should be noted that only one of the policy's exemption criteria need to be successfully invoked to gain an exemption

6.7 Proposals for exempt developments should be accompanied by a statement with relevant details demonstrating that they are exempt. The County Council will not normally be consulted on these types of developments, but advice may be sought if any queries arise regarding safeguarding and mitigation, for example where proposals are made in relation to sites allocated in a Local Plan and it is unclear whether safeguarding was addressed at the plan making stage.

6.8 Proposals that come forward on allocated sites in an adopted local plan can only apply an exemption if it can be demonstrated that safeguarding assessment(s) had been undertaken when the local plan was being formulated and subsequently adopted and criterion 2, as above, can be demonstrated.

Development Proposals in the Vicinity of Safeguarded Sites

6.9 A summary of the process for considering proposals for non-minerals or non-waste development within 250m of safeguarded waste and minerals infrastructure is as follows:

- Assess whether the proposal is exempt from safeguarding considerations due to the application of criteria 1 to 7 in Kent Minerals and Waste Local Plan Policy DM 8.
- If it is then the development cannot be said to threaten the capacity of existing infrastructure and so further safeguarding considerations are not required.
- If criteria 1 to 7 do not apply, then it must be shown how the development will not hinder the operation of the existing infrastructure in line with the 'Agent of Change' principle.
- If it cannot be demonstrated that the development will not impact on the operation of the infrastructure, then permission for the proposed development should be refused as contrary to Policy DM 8.

Input from the operator of the site would further establish the nature of the lawful operation to be taken into account in the above matters. The above process is explained further below.

Assessment against Policy DM 8 criteria

6.10 As with Policy DM 7 the 'or' after each criterion in Policy DM 8 indicates that only one criterion needs to be satisfied. It should be noted that when applying these exemption criteria, the main consideration is that the justification to invoke an exemption is based on whether the potentially non-compatible development will not result in the loss or impairment of the operation of the safeguarded facility or, alternatively loss of the safeguarded facility is justified according to the relevant criteria test.

6.11 **Criterion (1):** *"it constitutes development of the following nature: advertisement*

applications; reserved matters applications; minor extensions and changes of use and buildings; minor works; and non-material amendments to current planning permissions;"

This criterion is intended to cover planning applications for relatively minor development, such as Section 73 minor material amendment applications, that will not hinder the operations of mineral and waste infrastructure. Essentially proposals for such development can be permitted without the need to consider such operations.

6.12 **Criterion (2):** *"it constitutes development on the site that has been allocated in the adopted development plan where consideration of the other criteria (1, 3-7) can be demonstrated to have taken place in formulation of the plan and allocation of the site which concluded that the safeguarding of minerals management, transportation production and waste management facilities has been fully considered and it was concluded that certain types of non-mineral and waste development in those locations would be acceptable;"*

This criterion covers proposals which come forward on land allocated in the Local Plan where an assessment of the need to safeguard the nearby infrastructure has already been assessed. In these cases, the policy in Local Plan that allows development in this location will have been developed in a way which means that it already includes clauses to protect the safeguarded infrastructure or an assessment has shown that the capacity provided for by that infrastructure can reduce or is not needed. Section 7.0 below shows how local plans should be prepared in a manner which ensures any allocations within them take account of existing waste and minerals infrastructure.

Need for a Minerals and Waste Infrastructure Assessment

6.13 When a potentially incompatible development, or developments, could result in adversely affecting safeguarded sites (those outside of Policy DM 8 criteria 1 & 2), assessments are required to have regard to whether proposals would impair the operation of safeguarded facilities according to criteria 3 to 7 which are considered below. Any one of these criteria may apply but it may make sense for proposals for non-exempt development types to consider criteria 4, 5 and 7 before criteria 3 and 6. Proposals applicable under either criterion 4, 5 or 7 need to provide assessment information, as appropriate to the nature and scale of the proposed development, in a Minerals and Waste Infrastructure Assessment:

6.14 **Criterion (3):** *"replacement capacity, of the similar type, is available at a suitable alternative site, which is at least equivalent or better than to that offered by the facility that it is replacing;"*

This criterion allows for proposals to come forward where it is demonstrated that the nearby infrastructure is to be replaced. It is possible that where this criterion is invoked as a reason to allow the development to be permitted, a condition will be placed on the planning permission which does not allow the development to proceed until the replacement capacity has been secured and the existing infrastructure has reduced or ceased its operations.

The following must be demonstrated to justify the exemption:

- Replacement capacity must be at least equivalent in terms of tonnage, accessibility, location in relation to the market, suitability, availability of land for processing and stockpiling of waste and minerals;
- in the case of wharves, the size of the berth for dredgers, barges or ships, ensuring the depth and tidal flows (including any potential for 24-hour operation according to tidal movements) meet the requirements; and,
- in the case of waste facilities, replacement capacity must be at least at an equivalent level of the waste hierarchy (to meet the 'better' requirement) and capacity may be less if the development is at a higher level of the hierarchy.

6.15 **Criterion (4):** *"it is for a temporary period and will not compromise its potential in the future for minerals transportation;"*

This criterion allows for development which is temporary to the extent that any transportation of minerals supported by the existing infrastructure (e.g., a minerals wharf) will not be compromised on a permanent basis. The extent to which this criterion can be invoked will depend on the length of time that the development is in place and the extent to which it hinders (or might hinder) the existing infrastructure's operations. This criteria links to Policy CSM6 that concerns the safeguarding on potential minerals transportation sites. 'Potential' minerals transportation sites include wharves and railheads which are not currently used to transport minerals but could in future. Such sites are of great strategic importance and their capacity should not be lost without careful consideration of whether it might be needed in future.

6.16 **Criterion (5):** "*the facility is not viable or capable of being made viable."*

This criterion allows for development in the vicinity of infrastructure which has ceased operating and will not be brought back into operations because current and future market conditions mean that it is no longer economic for waste or mineral infrastructure (of the type permitted) to operate in that location. To invoke this criterion, it will be necessary for applicants to demonstrate that it would not be possible to make operations economic by reconfiguring the operations which might for example result in an increase in throughput. Examples of this might be where a mineral wharf has been closed for some time and its cranes have fallen into disrepair and are now too expensive to bring back into use. The assessment demonstrating this should include evidence of the historic use of the site and the factors affecting its current lack of viability or possible refurbishment or adaptation for it to be made viable. Moreover, vacant and/or underutilised safeguarded sites should undergo the same degree of assessment rigour to ensure that reactivation and future maximisation of use of the safeguarded facility is not compromised.

Factors to be considered in assessing the viability of a safeguarded wharf should include:

- Its size, shape, navigational access, road access, rail access (where possible), planning history, environmental impact and surrounding land use context;
- its geographical location, in terms of proximity and connections to existing and potential market areas;

- the existing and potential contribution it can make towards reducing road-based freight movements;
- existing and potential relationships between the wharf and other freight-handling sites or land uses; and,
- the location and availability of capacity at comparable alternative wharves, having regard to current and projected wharf capacity and market demands.

6.17 **Criterion (6):** *"material considerations indicate that the need for development overrides the presumption for safeguarding"*

This criterion allows for development where it can be shown that the development is of such importance that the need for it to take place outweighs any impact that might result on the operation of the adjacent minerals and waste facility. In the determination of such proposals, the need for the development will need to be weighed against the need to retain the safeguarded facility, the scale of potential impact and the objectives and policies of the development plan as a whole.

6.18 **Criterion (7):** *"it has been demonstrated that the capacity of the facility to be lost is not required"*

This criterion allows for development where the capacity of existing infrastructure is not required to meet current and future mineral supply and/or waste management requirements in the area.

The Assessment demonstrating this should evidence how the capacity, if lost, is insignificant in both terms of quantities and geographical positioning in the area, such that no negative impacts would ensue in minerals supply, mineral product production, waste management and transportation.

Assessing Impacts on Existing Infrastructure (proposals within 250m)

6.19 Following on from the above, proposals which do not fall under criteria 1 and 2 of Policy DM 8 or where it cannot be shown that the capacity of existing infrastructure is less important, as covered by criteria 3 to 7, will need to be accompanied by information, including incorporation of appropriate mitigation measures, to demonstrate that the proposed development is not incompatible with the safeguarded site. The applicant should demonstrate, with any necessary clarifying input from the site operator, that:

- impacts that may legitimately arise from the activities taking place at the safeguarded facilities (e.g., noise, dust, light air emissions and odour) would not be experienced to an unacceptable level by occupants of the proposed development (and potentially also lead to constraints being imposed on the safeguarded facility in the future); and

- Mitigation measures have been considered where necessary, for example through the design (e.g., noise insulation) and orientation of the proposed buildings, to minimise disruption to the users of the development;

- and vehicle access to and from the safeguarded facility would not be

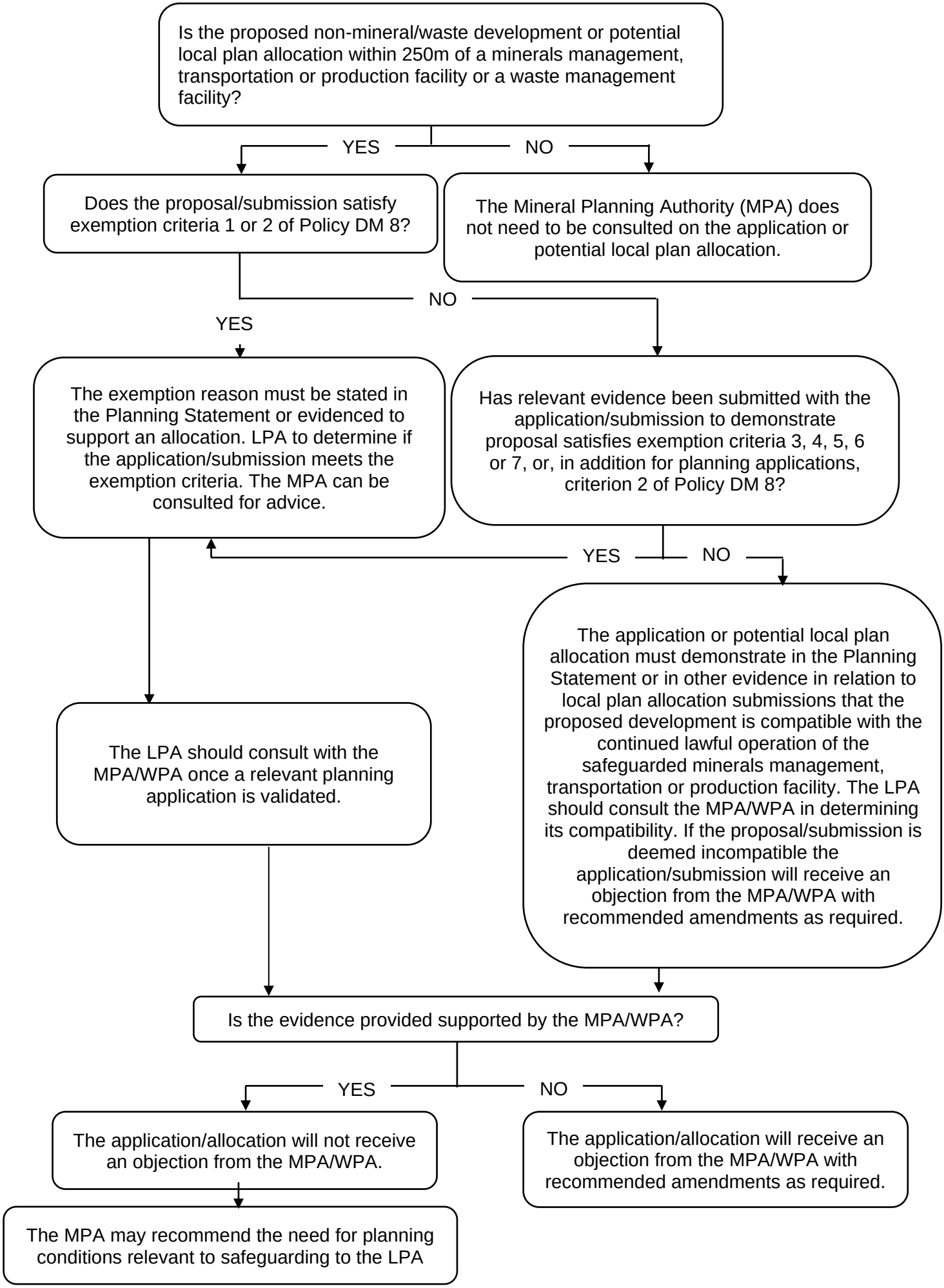
constrained by the development proposed.

6.20 Planning applications that do not satisfactorily demonstrate the above will attract an objection from the County Council on safeguarding grounds of incompatibility and/or causing unacceptable encroachment.

6.21 An example of the consequences of not considering the compatibility of the development is the case between the Port of London Authority (PLA) and a collection of mineral wharf operators in Greenwich vs. London Borough of Greenwich and the Greenwich Millennium village[15]. The PLA and interested parties commenced Judicial Review of the London Borough of Greenwich decision to permit residential development in the proximity of safeguarded wharves. The LPA recognised that they had not considered the incompatibility issue in their decision making appropriately. This has resulted in the development having to be retrofitted with noise abatement measures to mitigate the impact that was not recognised and assessed when the application was first submitted.

6.22 Each 'standalone' element of Policy DM 8 (as discussed above) can be applied independently, nevertheless the flowchart overleaf suggests a logical decision-making process that developers and the Local Planning Authority (LPA) should follow when addressing applications which have implications for safeguarded minerals and waste facilities and infrastructure.

15 THE QUEEN On the application of PORT OF LONDON AUTHORITY LIMITED (1) AGGREGATE INDUSTRIES UK LIMITED (2) CEMEX UK OPERATIONS LIMITED (3) DAY GROUP LIMITED (4) TARMAC LIMITED (5) Claimants v. LONDON BOROUGH OF GREENWICH Defendant and GREENWICH MILLENIUM VILLAGE LIMITED Interested Party


Is the proposed non-mineral/waste development or potential local plan allocation within 250m of a minerals management, transportation or production facility or a waste management facility?
YES
NO
Does the proposal/submission satisfy exemption criteria 1 or 2 of Policy DM 8?
The Mineral Planning Authority (MPA) does not need to be consulted on the application or potential local plan allocation.
NO
YES
The exemption reason must be stated in the Planning Statement or evidenced to support an allocation. LPA to determine if the application/submission meets the exemption criteria. The MPA can be consulted for advice.
Has relevant evidence been submitted with the application/submission to demonstrate proposal satisfies exemption criteria 3, 4, 5, 6 or 7, or, in addition for planning applications, criterion 2 of Policy DM 8?
YES
NO
The LPA should consult with the MPA/WPA once a relevant planning application is validated.
The application or potential local plan allocation must demonstrate in the Planning Statement or in other evidence in relation to local plan allocation submissions that the proposed development is compatible with the continued lawful operation of the safeguarded minerals management, transportation or production facility. The LPA should consult the MPA/WPA in determining its compatibility. If the proposal/submission is deemed incompatible the application/submission will receive an objection from the MPA/WPA with recommended amendments as required.
Is the evidence provided supported by the MPA/WPA?
YES
NO
The application/allocation will not receive an objection from the MPA/WPA.
The application/allocation will receive an objection from the MPA/WPA with recommended amendments as required.
The MPA may recommend the need for planning conditions relevant to safeguarding to the LPA

7. Information Requirements for Safeguarding: Plan Making

7.1 This section sets out the Information Requirements to accompany submissions for local plan allocations for Non-Minerals Proposals in Minerals Safeguarding Areas (MSA).

7.2 The process of local plan formulation and minerals and waste safeguarding is no different to a consideration of any other planning constraint. The purpose of this section is to illustrate how this can be achieved without unduly compromising the timely formulation of local plans in Kent as produced by the County's borough and district planning authorities. It covers both safeguarded land-won minerals and mineral and waste management infrastructure.

7.3 In the first instance, when a local plan is being considered by a planning authority and there is a need to consider constraints to development, mineral and waste safeguarding matters must be considered. It is recommended by the County Council that the adopted Policies Map for the relevant area in the Kent Minerals and Waste Local Plan (KMWLP) is used in this process.

7.4 The following system of assessment will essentially apply.

- Are any of the sites in a Mineral Safeguarding Area/Mineral Consultation Area or on or within 250m of minerals and waste infrastructure?
- If No - further assessment is not required
- If Yes - scope of a Minerals Assessment should be discussed and agreed with the Mineral Planning Authority.

7.5 As the Mineral Planning Authority, the County Council is available to provide guidance at the earliest stages of the plan making process e.g., evidence gathering, to support the Borough and District Councils in formulating their local plans.

Minerals Assessment-Land-won Minerals

7.6 The Detailed Minerals Assessment at the plan making stage essentially follows the same process as set out in see section 5 above and must address the requirements of Policy DM 7, namely.

- *the mineral is not of economic value or does not exist (criterion 1); or*

- *that extraction of the mineral would not be viable or practicable (criterion 2); or*

- *the mineral can be extracted satisfactorily, having regard to Policy DM 9, prior to the non-minerals development taking place without adversely affecting the viability or deliverability of the non-minerals development (criterion 3); or*

- *material considerations indicate that the need for the development overrides the presumption for mineral safeguarding such that sterilisation of the mineral can be permitted following the exploration of opportunities for prior extraction (criterion 5);*

7.7 If any of the above criteria can be met, and with consultation with the Minerals and Waste Planning Authority, an exemption from the presumption to safeguard can be justified, a proposed local plan allocation(s) can be determined as having satisfied the policy requirements of the Kent Minerals and Waste Local Plan. A planning application on the allocation would then be in compliance with the Kent Minerals and Waste Local Plan policy – DM 7 criterion 7 which states:

- *It constitutes development on a site allocated in the adopted development plan where consideration of the above factors (1-6) concluded that mineral resources will not be needlessly sterilised*

7.8 The assessment process can be undertaken by either the promoter of a site, as part of the Detailed Technical Assessment of the site following a 'Call for Sites' exercise, or by the local planning authority for sites that are not being actively promoted but are considered as potential sites that the local authority wishes to explore. The County Council should be consulted at an early stage to agree the scope of the assessment and consider the safeguarding issues.

7.9 Undeveloped allocations in adopted local plans affecting land won mineral resources that are proposed to be carried forward into a new local plan would need to satisfy the same requirements - being allocated previously and not subject to the safeguarding process would not be exempting in itself.

7.10 At the conclusion of the Regulation 18 public consultation the local authority may consider entering into Statements of Common Ground (SoCG) with the Minerals and Waste Planning Authority to attempt to address safeguarding issues. If agreement is not possible the County Council, as the Minerals and Waste Planning Authority may make representation(s) that may then form part of the Matters for the Inspector(s) to consider as part of the local Plan's Independent Examination.

Assessment - Minerals and Waste Management Infrastructure

7.11 The process and steps in considering the safeguarding of minerals and waste management infrastructure is broadly similar to that described above for dealing with development affecting infrastructure the at planning application stage. Guidance on the detail and form of the information to include in the Mineral and Waste Infrastructure Assessment is as set out in section 6.0 above. Assessments are required for:

- Allocations for development that potentially have a direct impact on a safeguarded facility, in terms of incurring the partial or total loss of the facility and its operational area, and.
- Allocations for development that are within 250m of safeguarded facility

7.12 The operational areas and 250m consultation areas, required in conducting any assessment, can be sourced from the County Council as digital map information.

7.13 Again, the assessment process can be undertaken by either the promoter of a site, as part of the Detailed Technical Assessment of the site following a 'Call for Sites' exercise, or by the local planning authority for sites that are not being actively promoted but are considered as potential sites that the local authority wishes to explore. The County Council should be consulted at an early stage to agree the scope of the assessment and consider the safeguarding issues.

Infrastructure Assessments for Local Plan Allocations that directly or partially involve the loss of the Safeguarded Minerals and Waste Infrastructure

7.14 Policy DM 8: Safeguarding Minerals Management, Transportation & Waste Management facilities sets out the only circumstances where non-minerals and waste development proposed on or within safeguarded minerals management, transportation or waste management facilities would be considered acceptable.

7.15 For an allocation to be considered acceptable for exemption from safeguarding, Policy DM 8 criteria should be addressed. It should be noted that only one of the policy's exemption criteria need to be successfully invoked to gain an exemption[16]:

1.it constitutes development of the following nature: advertisement applications; reserved matters applications; minor extensions and changes of use and buildings; minor works; and non-material amendments to current planning permissions; or

3. replacement capacity, of the similar type, is available at a suitable alternative site, which is at least equivalent or better than to that offered by the facility that it is replacing; or

4. it is for a temporary period and will not compromise its potential in the future for minerals transportation; or

5. the facility is not viable or capable of being made viable; or

6. material considerations indicate that the need for development overrides the presumption for safeguarding; or

7. It has been demonstrated that the capacity of the facility to be lost is not required.

7.16 The policy outlines the need to demonstrate how any safeguarded site's capacity that is lost will be replaced in relation to criterion 3. It states:

Replacement capacity must be at least equivalent in terms of tonnage, accessibility, location in relation to the market, suitability, availability of land for processing and stockpiling of waste (and materials/residues resulting from waste management processes) and minerals, and:

in the case of wharves, the size of the berth for dredgers, barges or ships; and

in the case of waste facilities, replacement capacity must be at least at an equivalent level of the waste hierarchy and capacity may be less if the development is at a higher level of the hierarchy. There must also be no existing, planned or proposed developments that could constrain the operation of the replacement site at the required capacity.

7.17 The local authority may consider entering into Statements of Common Ground (SoCG) with the minerals and waste planning authority to attempt to address any safeguarding issues. If agreement is not possible the minerals and waste planning authority may make representation(s) that may then form part of the Matters for the Inspector(s) to

[16] Please note that criterion 2 is addressed in paragraph 7.18 of the revised Supplementary Planning Document

consider as part of the local Plan's Independent Examination.

7.18 Ultimately where an allocated site is carried forward into a new local plan that and has not been previously subject to the safeguarding process, this does not afford an exemption at the planning application stage (under criteria 2 of Policy DM8).

Infrastructure Assessments for Local Plan Allocations that are within 250m of Safeguarded Infrastructure

7.19 An assessment is also required for sites identified as potential allocations within 250m of a safeguarded minerals or waste management facility. This would be essentially similar to that which would be applicable for an application for development within 250m, as is detailed above in section 6.0.

7.20 An allocation may come forward on the understanding that Policy DM8 will apply at the planning application stage, however there is a risk that if safeguarding considerations are not applied at the plan making stage then the development envisaged within the allocation won't be possible and so the Plan may not be deliverable.

7.21 If it can be shown that application of the DM8 criteria at the application stage would not make the development unviable then the allocation can be made with the caveat that the DM8 criteria must be taken into account at that stage. In particular the following considerations set out in Policy DM 8 may need to be taken into account when suitable land for allocation is identified:

Planning applications for development within 250m of safeguarded facilities need to demonstrate that impacts, e.g., noise, dust, light and air emissions, that may legitimately arise from the activities taking place at the safeguarded sites would not be experienced to an unacceptable level by occupants of the proposed development and that vehicle access to and from the facility would not be constrained by the development proposed.

7.22 An example of where tensions between development and minerals and waste safeguarding occurs is in areas of regeneration in the lower reaches of the River Thames in North Kent. Here, previously industrially used land has been identified for residential and commercial development without necessarily detailed assessment of the potential effects on the operation of safeguarded mineral wharf activities. Applications have come forward on land allocated for the development that then have to satisfy Policy DM 8 and have experienced difficulties in doing so. It is the County Council's intention to reduce the risk of similar occurrences across the county in the future. This will be achieved via early communication with local authorities to ensure any required assessments are carried out form the early stages of local plan preparation.

7.23 Once the relevant assessment(s) have been carried out it is anticipated that the local planning authority will be able to demonstrate to the County Council's satisfaction that safeguarding is maintained consistent with the Kent Minerals and Waste Local Plan policies and ultimately there would be no objection. If there are still safeguarding issues that are not fully resolved a Statement of Common Ground (SoCG) may be a vehicle to address outstanding matters.

7.24 In the event that substantive safeguarding issues remain the County Council would

make representation(s) that may then form part of the Matters for the Inspector(s) to consider as part of the Local Plan's Independent Examination.

8. Monitoring and Review

8.1 The monitoring and implementation framework in Chapter 8 of the Kent Minerals and Waste Local Plan 2013-30 includes a schedule on how the Plan's safeguarding policies and related strategic objectives will be achieved through the monitoring of data indicators. Each indicator has a target against which the performance of the policy can be monitored with a 'trigger point' to indicate when corrective action may be required.

8.2 The monitoring of Policy CSM 5: Land-won Mineral Safeguarding includes an indicator on the annual review of the Minerals Safeguarding Area (MSA) designations.

8.3 Monitoring of the implementation of the Kent Minerals and Waste Local Plan safeguarding policies will be carried out as part of the production of the Kent Annual Monitoring Report. Policies may be subject to review if annual monitoring indicates that any significant, adverse trends are likely to continue.

8.4 The Annual Monitoring Report (AMR) will provide specific examples of how safeguarding has been applied and may therefore provide a reference for examples of previous practice.

9. Appendices

Appendix 1 - Kent Minerals and Waste Local Plan Safeguarding Policies
Appendix 2 - Kent Minerals and Waste Local Plan Safeguarding Policies – summary of key provisions
Appendix 3 - Economic Geology Information Notes

Appendix 1: Kent Minerals and Waste Local Plan 2013-30 Safeguarding Policies

Policy CSM 4

Non-identified Land-won Mineral Sites

With the exception of proposals for the extraction of silica sand provided for under Policy CSM 2, proposals for mineral extraction other than the Strategic Site for Minerals and sites identified in the Minerals Sites Plan will be considered having regard to the policies of the development plan as a whole and in the context of the Vision and Objectives of this Plan, in particular the objective to plan for a steady and adequate supply of aggregates and industrial minerals. Where harm to the strategy of the development plan is shown, permission will be granted only where it has been demonstrated that there are overriding benefits that justify extraction at the exception site.

(While not entirely related to safeguarding, Policy CSM4 applies where prior extraction is proposed)

Policy CSM 5

Land-won Mineral Safeguarding

Economic mineral resources are safeguarded from being unnecessarily sterilised by other development by the identification of:

1. Mineral Safeguarding Areas for the areas of brickearth, sharp sand and gravel, soft sand (including silica sand), ragstone and building stone as defined on the Mineral Safeguarding Area Policies Maps in Chapter 9

2. Mineral Consultation Areas which cover the same area as the Minerals Safeguarding Areas and a separate area adjacent to the Strategic Site for Minerals at Medway Works, Holborough as shown in Figure 17

3. Sites for mineral working within the plan period identified in Appendix C and in the Mineral Sites Plan.

Policy CSM 6

Safeguarded Wharves and Rail Depots

Planning permission will not be granted for non-minerals development that may unacceptably adversely affect the operation of existing, planned or potential sites, such that their capacity or viability for minerals transportation purposes may be compromised.

The following sites, and the allocated sites included in the Minerals Sites Plan, are safeguarded:

1. Allington Rail Sidings
2. Sevington Rail Depot
3. Hothfield Works
4. East Peckham
5. Ridham Dock (both operational sites)
6. Johnson's Wharf, Greenhithe
7. Robins Wharf, Northfleet (both operational sites)
8. Clubbs Marine Terminal, Gravesend
9. East Quay, Whitstable
10. Red Lion Wharf, Gravesend
11. Ramsgate Port
12. Wharf 42, Northfleet (including Northfleet Cement Wharf)
13. Dunkirk Jetty (Dover Western Docks)
14. Sheerness
15. Northfleet Wharf
16. Old Sun Wharf, Gravesend

Their locations are shown in Figure 13: Minerals Key Diagram in Chapter 2 and their site boundaries are shown in Chapter 9: Adopted Policies Maps.

The Local Planning Authorities will consult the Minerals Planning Authority and take account of its views before making a planning decision (in terms of both a planning application and an allocation in a local plan) for non-mineral related development (other than that of the type listed in policy DM 8 (clause 1) on all development proposed at, or within 250m of, safeguarded minerals transportation facilities.

Policy CSM 7

Safeguarding Other Mineral Plant Infrastructure

Facilities for concrete batching, the manufacture of coated materials, other concrete products and the handling, processing and distribution of substitute, recycled and secondary aggregate material in Kent are safeguarded for their on-going use. Where these facilities are situated within a host quarry, wharf or rail depot facility, they are safeguarded for the life of the host site.

Where other development is proposed at, or within 250m of, safeguarded minerals plant infrastructure, Local Planning Authorities will consult the Minerals planning Authority and take account of its views before making a planning decision (in terms of both a planning application and an allocation in a local plan).

Policy CSW 16

Safeguarding of Existing Waste Management Facilities

Sites that have permanent planning permission for waste management or are allocated in the Waste Sites Plan are safeguarded from being developed for non-waste management uses.

Where other development is proposed at, or within 250m of, safeguarded waste management facilities Local Planning Authorities will consult the Waste planning Authority and take account of its views before making a planning decision (in terms of both a planning application and an allocation in a local plan)

Policy DM 7

Safeguarding Mineral Resources

Planning permission will only be granted for non-mineral development that is incompatible with minerals safeguarding[17] where it is demonstrated that either:

1. the mineral is not of economic value or does not exist; or

2. that extraction of the mineral would not be viable or practicable; or

3. the mineral can be extracted satisfactorily, having regard to Policy DM9, prior to the non-minerals development taking place without adversely affecting the viability or deliverability of the non-minerals development; or

4. the incompatible development is of a temporary nature that can be completed and the site returned to a condition that does not prevent mineral extraction within the timescale that the mineral is likely to be needed; or

5. material considerations indicate that the need for the development overrides the presumption for mineral safeguarding such that sterilisation of the mineral can be permitted following the exploration of opportunities for prior extraction; or

6. it constitutes development that is exempt from mineral safeguarding policy, namely householder applications, infill development of a minor nature in existing built-up areas, advertisement applications, reserved matters applications, minor extensions and changes of use of buildings, minor works, non-material amendments to current planning permissions; or

[17] In this context 'mineral safeguarding' should be taken to mean safeguarding certain minerals identified within a Mineral Safeguarding Area shown in the policies maps in Chapter 9 and allocations in the Minerals Sites Plan.

7. it constitutes development on a site allocated in the adopted development plan where consideration of the above factors (1-6) concluded that mineral resources will not be needlessly sterilised.

   Further guidance on the application of this policy is included in a Supplementary Planning Document.

   N.B. Text highlighted above is that which was adopted as part of the Early Partial Review of the Kent Minerals and Waste Local Plan in September 2020

Policy DM 8

Safeguarding Minerals Management, Transportation Production & Waste Management Facilities

Planning permission will only be granted for development that is incompatible with safeguarded minerals management, transportation or waste management facilities, where it is demonstrated that either:

1. it constitutes development of the following nature: advertisement applications; reserved matters applications; minor extensions and changes of use and buildings; minor works; and non-material amendments to current planning permissions; or

2. it constitutes development on the site that has been allocated in the adopted development plan where consideration of the other criteria (1, 3-7) can be demonstrated to have taken place in formulation of the plan and allocation of the site which concluded that the safeguarding of minerals management, transportation, production and waste management facilities has been fully considered and it was concluded that certain types of non-mineral and waste development in those locations would be acceptable; or

3. replacement capacity, of the similar type, is available at a suitable alternative site, which is at least equivalent or better than to that offered by the facility that it is replacing; or

4. it is for a temporary period and will not compromise its potential in the future for minerals transportation; or

5. the facility is not viable or capable of being made viable. or

6. material considerations indicate that the need for the development overrides the presumption for safeguarding

7. it has been demonstrated that the capacity of the facility to be lost is not required

   Replacement capacity must be at least equivalent in terms of tonnage, accessibility, location in relation to the market, suitability, availability of land for processing and

stockpiling of waste and minerals, and:

- in the case of wharves, the size of the berth for dredgers, barges or ships
- in the case of waste facilities, replacement capacity must be at least at an equivalent level of the waste hierarchy and capacity may be less if the development is at a higher level of the hierarchy

There must also be no existing, planned or proposed developments that could constrain the operation of the replacement site at the required capacity.

Planning applications for development within 250m of safeguarded facilities need to demonstrate that impacts, e.g., noise, dust, light and air emissions, that may legitimately arise from the activities taking place at the safeguarded sites would not be experienced to an unacceptable level by occupants of the proposed development and that vehicle access to and from the facility would not be constrained by the development proposed.

Further guidance on the application of this policy will be included in a Supplementary Planning Document

N.B. Text highlighted above is that which was adopted as part of the Early Partial Review of the Kent Minerals and Waste Local Plan in September 2020

Policy DM 9

Prior Extraction of Minerals in Advance of Surface Development

Planning permission for, or incorporating, mineral extraction in advance of development will be granted where the resources would otherwise be permanently sterilised provided that:

1. the mineral extraction operations are only for a temporary period; and,

2. the proposal will not cause unacceptable adverse impacts to the environment or communities

Where planning permission is granted for the prior extraction of minerals, conditions will be imposed to ensure that the site can be adequately restored to a satisfactory after-use should the main development be delayed or not implemented

Policy DM 21

Incidental Mineral Extraction

Planning permission for mineral extraction that forms a subordinate and ancillary element of other development will be granted provided that operations are only for a temporary period. Where planning permission is granted, conditions will be imposed to ensure that the site can be restored to an alternative after-use in accordance with Policy DM 19 should the main development be delayed or not implemented.

(While not entirely related to safeguarding, Policy DM21 applies where prior extraction is not viable but there may be incidental extraction associated with development.)

Appendix 2: Kent Minerals and Waste Local Plan 2013-30 Safeguarding Policies – summary of key provisions

The Kent Minerals and Waste Local Plan 2013-30 safeguarding policies are outlined below and explained in more detail in the following sections (Section 3.7 – 3.17)

Minerals and Waste Safeguarding in Kent	MWLP Policy
What is safeguarded and where are the areas located?	
Economic land-won mineral resources: • Mineral Safeguarding Areas (MSAs) Adopted Policies Maps • Mineral Consultation Areas (same coverage as MSAs) plus the area surrounding the mineral reserves of the Strategic Site for Minerals • Existing mineral working sites (a list of sites updated and published each year in the Kent Annual Monitoring Report) • Adopted Kent Mineral Site Plan Allocations for mineral working	CSM 5
Existing, planned or potential mineral infrastructure At and within 250m of: • Safeguarded Wharves and Rail Transportation Adopted Policies Maps: Sites A - Q • Other mineral plant infrastructure sites (a list of sites updated and published each year in the Kent Annual Monitoring Report) • Adopted Kent Mineral Site Plan Allocations for mineral infrastructure	CSM6; CSM7; DM8
Permanent waste management facilities At and within 250m of: • Existing waste management facility sites (a list of sites updated and published each year in the Kent Annual Monitoring Report) • Adopted Kent Waste Site Plan Allocations	CSW16
What are the relevant safeguarding policies for non-minerals and waste development proposals in safeguarded areas?	
Circumstances when non minerals and waste uses may be acceptable within Mineral Safeguarding Areas	DM 7
Incorporating viable mineral extraction in advance of development of safeguarded mineral resources (prior extraction), that would otherwise be sterilised by non-minerals development	CSM 4; DM 9
Incidental mineral extraction at development sites during construction	DM 21
Circumstances when non minerals and waste uses may be acceptable at or within 250m of safeguarded minerals management and transportation and waste management facilities	DM 8

Appendix 3: Economic Geology Information Notes

Appendix 3 is intended to set out the geological descriptive information for each Borough and District Council area. These notes are based upon British Geological Survey (BGS) data and generally available information on each of the main economic geologies of the Kent boroughs and districts. They should be read alongside the Mineral Safeguarding Areas (MASs) Policies Maps for the following authority's areas in Kent as shown in the adopted Kent Minerals and Waste Local Plan:

- Ashford Borough Council
- Canterbury City Council
- Dartford Borough Council
- Dover District Council
- Folkestone and Hythe District Council
- Gravesham Borough Council
- Maidstone Borough Council
- Sevenoaks District Council
- Swale Borough Council
- Thanet District Council
- Tonbridge & Malling Borough Council
- Tunbridge Wells Borough Council

Minerals Supply and Safeguarding – Relevant Economic Geologies

Information note prepared by Kent County Council for the Ashford Borough Council Area

This note provides information regarding the geology of the mineral located within the Ashford Borough Council area. The information provided is intended to support the preparation of Mineral Assessments (MA) which may be needed to accompany planning applications for development proposed within the Mineral Safeguarding Areas (MSAs).

The adopted Kent Minerals and Waste Local Plan 2013-30 (the Plan) defines the Mineral Safeguarding Areas in the Ashford Borough Council area. The safeguarded land-won mineral bearing area is shown on the Ashford Mineral Safeguarding Areas map in the Plan. The relevant safeguarded geologies in the area are highlighted with various colours representing both the superficial deposits as well as crustal units that make up the economic geological stratigraphy of the area.

Main Crustal Geological Units of Economic Importance

Limestone Hythe Formation (Kentish Ragstone)

Ragstone occurs in a geological formation known as the Hythe Beds of the Lower Greensand, a layer of limestones running from Kent into Surrey which was laid down in the Cretaceous period. It outcrops in various places in Kent, notably at the cliffs of Hythe, and along the Greensand Ridge above the Weald of Kent. In the Ashford Borough area, the ragstone occurs as a belt trending in an east west orientation across the borough, which extends from the foot of the North Downs Scarp in the Egerton area to the Stonestreet Green/Aldington area close to the boundary with the Folkestone and Hythe District .

In succession, ragstone occurs in bands between 15 cm and 60 cm thick, alternating with bands of a loose material called hassock (a soft calcareous sandstone deposit). These bands are of similar thickness and the difference in colour between them gives quarry faces a striped appearance. Overall thickness of the unit ranges between 18-100 metres. When the stone is extracted, it appears to be of a grey green or blue grey colour but later weathers (through oxidation of iron bearing constituent minerals) to an autumnal hue which, together with its hard-wearing properties, traditionally made it an attractive material. This can be seen in local construction of houses, public works (e.g. Sessions House, Kent County Council and HMP Maidstone and the Archbishop's Palace, Maidstone) and infrastructure in and around the area of Kent and further away e.g. the Tower of London.

Modern demand for this material is intensive and diverse, with different products being required for use as an aggregate in the ready-mix concrete, road building and civil engineering applications for the maintenance of infrastructure. Larger blocks of ragstone are also used in the construction of sea barriers against coastal erosion. The need for aggregates, in terms of the required land-bank to meet an objectively assessed quantity over a plan period is assessed each year by the County Council in the Local Aggregate Assessment (LAA) monitoring document. The current permitted landbank for hard rock to form aggregate is discussed in the LAA document. Ragstone remains important for repairing historic buildings. Currently the Hermitage Quarry at the end of Maidstone, is the only supplier of building stone in Kent. While Blaise Farm (in the Tonbridge and Malling Borough) is excavated mainly for aggregate and is not regarded as being a realistic source of building stone. The Ashford area does not have any active workings for the extraction of this material at this time.

Sandgate Formation

The Sandgate Formation is part of the Lower Greensand Group. A geological unit forming part of the underlying structure of southeast England (laid down 100 million years ago, during the Upper Cretaceous epoch). Distributed to the south of London in the counties of West Sussex, East Sussex and Kent, which together form the wider Weald, the Lower Greensand Group can usually be subdivided to what can be referred to as the units or formational levels. These formations have varying properties and are composed of the following defined units according to their differing characteristics:

•**Atherfield Clay Formation** *[not an important economic mineral]*

•**Hythe Formation** *[this includes the important Ragstone described above]*

•**Sandgate Formation** *[this material has certain industrial applications]*

•**Bargate Formation** *[not an important economic geology]*

•**Folkestone Formation** *[this an important aggregate forming unit]*

In the Ashford area the formation outcrops just north of the Ragstone belt and has the same north-west to south-east trend. Overall the Sandgate Formation is characterised as a rarely fossiliferous and loosely consolidated mixture of silts, sands and silty clays and some sandstones. The British Geological Survey describes the formation as follows: "*The formation has no single stratotype. Readers should refer to entries for the component members in the western Weald, namely: Bargate Sandstone Member, Rogate Member, Easebourne Member (where present), Selham Ironshot Sands Member, Fittleworth Member, Pulborough Sandrock Member (where present) and Marehill Clay Member (at top). Elsewhere the Formation is undivided. The formation takes its name from Sandgate on the coast near Folkestone, both here, around the town itself, and in the West Cliff at Folkestone the formation is extensively affected by landslides. The base of the formation was seen in the Goldwell Quarry south of Hothfield in the Maidstone district but this was not designated as a type site."*

The material (where represented as a friable sandstone) is of a reasonably consistent nature such that it is potentially important for industrial applications. It was formerly dug near Marehill (West Sussex where the unit is between 50-100 metres in thickness, in Kent the thicknesses have not been recorded) for use as moulding sand in iron casting, thus being analogous in use terms to a foundry type silica sand. The County Council has no records of the quarrying of this material in the Ashford Borough area in recent times; the Goldwell Quarry (worked in the 1940s) was categorised as a ragstone quarry. There may have been some Sandgate Formation sands extracted in association with this activity, but this is not recorded.

In addition to the responsibility to safeguard finite economically important minerals the National Planning Policy Framework 2019 requires mineral planning authorities (MPAs) to plan for a steady and adequate supply of industrial minerals (Section 17, para. 208). With regard to industrial foundry sand, that *may* be applicable to the uses the Sandgate Formation Sandstone can be put to. The Mineral Planning Authority should provide a stock of permitted reserves to support the level of actual and proposed investment required for new or existing plant and equipment for at least 10 years for individual silica (or industrial) sand sites. Though there is a lack of any current specific extraction of this mineral for industrial purposes in Kent, the adopted Kent Minerals and Waste Local Plan 2013-30 (KMWLP) has policy provision to address need for this mineral if demand were to change. Policy CSM 2: Supply of Land-won Minerals in Kent identifies industrial silica sands as a mineral for which supply should be planned for to meet a specific technical specification at a level of permitted reserves to maintain production for 10 years at individual sites and 15 years at sites requiring significant investment.

Folkestone Formation (Folkestone Beds-Building Sands/Soft sands)

The Folkestone Beds are a significant component of the Lower Greensand Group. They were laid down in a shallow marine environment during the early Cretaceous age (140 to 100 million years ago). It consists mostly of poorly lithified (cemented) sands, the material is at the classification transitional boundary of a loose sand to a sandstone; in that it has properties neither consistent with the concept of an engineering medium or being of sufficient tensile strength to be considered a rock.

In Sussex, Kent and Surrey the formation comprises medium and coarse-grained, well-sorted cross-bedded sands and weakly cemented sandstones. The thickness of the unit has a wide range from as little as 0.5 metres up to 80 metres. In Kent, thickness tends towards the higher order of several metres (at about 46 metres near Maidstone and even thicker towards the Surrey border) and has given rise to significant quarrying operations in Maidstone, Tonbridge and Malling and Sevenoaks and into Ashford in the area of Charing. The formation forms a significant component of the North Kent Downs Scarp landscape feature that trends east-west as an undulating ridge that runs through the Folkestone and Hythe District and wider Kent countryside.

Occasionally the sand matrix is cemented and has a binding clay fraction, though usually occurs as the characteristic clean loose sands that typify the formation. The economic quality of the deposit is variable both vertically and horizontally. The important loose sand beds are characterised as poorly consolidated, fine, quartzose (a nomenclature used for a sand low in impurities and high in silica) sands and are capable of providing sands suitable for a wide range of building uses including, notably, mortar production and are often called ‘soft sand’ due to the flowing characteristics of the highly spherical grains. This characteristic makes these sands favoured for mortar mixes that greatly aid in their application in construction; silica tile and brick manufacture has also occurred in the past. Parts of the formation yield deposits suited to industrial use as silica sand, for such uses as foundry sand and thus are industrial rather than aggregate application materials. However, the material is generally recognised as economically important as a source of building (mortar) and asphalt (coated stone) sands in its application as an aggregate and is widely used across the South East. The need for aggregates, in terms of the required land-bank to meet an objectively assessed quantity over a plan period is assessed each year by the County Council in the LAA. The current permitted landbank for soft sand to form aggregate is discussed in this monitoring document. It is generally accepted that this mineral cannot be substituted by any artificial aggregate materials.

Wealden Group Sandstones and Limestone (Building Stone)

The National Planning Policy Framework 2019 does not require MPAs to plan for the maintenance of landbanks of building stone. Though paragraph 142 makes it clear that mineral resources are essential to support economic growth and our quality of life; and that a sufficient supply of material should be available to provide for the infrastructure, buildings, energy and goods that the country needs. It is emphasised that these materials are finite in nature and their long-term conservation is required, necessitating that this geology is a safeguarded geology. The Kent Minerals and Waste Local Plan has policy provision to allow small-scale extraction of materials to enable the important vernacular of historic restoration projects to be recognised and for new build projects in conservation areas. Policy CSM 9: Building Stone in Kent sets out the parameters to be met to allow this type of mineral extraction to be permitted. In the Ashford Borough area, the building stone geologies are comprised of the following:

Wealden Group (sandstones)

- **Sandstone - Wadhurst Clay Formation**
- **Sandstone - Ashdown Formation**
- **Sandstone - Upper Tunbridge Wells Sand Formation and Tunbridge Wells Sand Formation**

The Wealden Group is a complex group of geological units that make up the core of the Weald predominantly stretching across East Sussex and Kent, and are colloquially referred to as forming the Hastings Beds, as they can be viewed as outcrop at the cliffs along the coastal area just east of Hastings town.

They include, in the Ashford area, the Ashdown Formation, Wadhurst Clay Formation and the Tunbridge Wells Sand Formation (that also is split into the Upper Tunbridge Wells Sand Formation as well as the Tunbridge Wells Sand Formation). The Hastings Beds in turn forms part of the Wealden Supergroup which underlies much of southeast England. The sediments of the Weald of East Sussex were deposited during the Early Cretaceous period.

Wadhurst Clay Formation-The Ashdown Formation is overlain by a predominantly argillaceous (clay/mudstone) sequence the Wadhurst Clay. This unit also contains beds of siltstone/sandstone, limestone and ironstone, which have provided building stone in the past. A number of thin calcareous sandstone beds were used as local building stone in the Tenterden area. The ironstone beds which formed the basis of the famed Wealden iron industry were largely worked from the basal part of this formation, but there is no evidence that they were used to any great extent as building stones. In the Tunbridge Wells Borough this material is found at Sandhurst. It is a safeguarded geology given that it has been quarried in the past to provide building materials, though not widely used.

The Ashdown Formation-The Ashdown Formation, which takes its name from the Ashdown Forest in the High Weald of Sussex, typically comprises sandstones, siltstones and mudstones. In the east of the county, the formation tends to be more argillaceous (clay mineral bearing) in its lowermost part and fines up to arenaceous (silica or sand bearing) division in the uppermost 30 to 50m. The clays are identified by their characteristic purple and brick-red mottled nature. In early references, these variations give rise to the division of the formation into the ‘Fairlight Clays’ and the ‘Ashdown Sands’. However, it is now considered as a single overall sandstone formation due to the impersistence of the clays across the Weald, thus the clays are considered as extensive ‘lenses’ within the formation. Despite this, the variations of clays and sands in the formation are usually marked separately on the maps and records of the British Geological Survey. In its entirety the formation is usually found to be between 180 and 215m thick. In the Ashford area the deposit can be found in the south of the borough around the Isle of Oxney as far north as the outskirts of Tenterden, in the west almost at Rolvenden Layne. The economic material is in the sandstone fraction of the formation that can be used as a quarried building stone.

The Tunbridge Wells Sand Formations-The Tunbridge Wells Sand Formation comprises complex cyclic sequences of siltstones with sandstones and clays, typically fining upwards, and is lithologically similar to the older Ashdown Formation. It has a total thickness typically in the region of about 75m. However, near Haywards Heath borehole data has proven the formation to be up to 150m thick. In the western parts of the High Weald the Tunbridge Wells Sands can be divided into three separate members; the Lower Tunbridge Wells Sand Member (a non-economic geology that is not safeguarded), the Grinstead Clay Member (not an economic geology that is safeguarded), and the Upper Tunbridge Wells Sand Member (that has within it the Tunbridge Wells Sand Formation).

The Upper Tunbridge Wells Sand is similar to the Lower Tunbridge Wells Sand. It comprises soft red and grey mottled silts and clays in its lower part, and alternating silts and silty clays with thin beds of sandstones. In the Ashford Borough area, the material is to be found in the south, and exists as a substantial belt stretching from the border with Tunbridge Wells Borough Council in the west to south of Woodchurch in the east. The formation lacks the degree of outcrop that is attractive to climbers further to the west in Tunbridge Wells. The sandstone faction of the formation is the economic element of the unit, as it can provide a quarried building stone. The Wadhurst Clay comprises predominantly medium to dark bluish grey over-consolidated clays, silts, mudstones, and shales. These lithologies often occur with subordinate amounts of pale grey silty mudstones,

laminated siltstones, sandstones, conglomerate, shelly limestones and clay-ironstones. When they become exposed to the elements at the surface, the mudstones often degrade over a short period of time and weather to yellowish brown and greenish grey clays. In Kent, the Wadhurst Clay has been proven to over 70m thick near Tunbridge Wells. In the Ashford Borough area, it is found in discrete areas south of Tenterden and at the Isle of Oxney where it is often in close association with the Ashdown Formation. The sandstone faction of the formation is the economic element of the unit, as it can provide a quarried building stone.

The Ashford Borough area may have been historically important as a source of sandstone for local construction purposes, the County Council has no records of quarrying of these Wealden Formation sandstones in the Ashford Borough Council area. However, British Geological Survey consider this material an important deposit for its application as a hard rock building stone. This probably relates more to the 18th and 19th centuries, today there are historic buildings and structures in this area (and in Borough of Tunbridge Wells close by) that require restoration materials. Limited supplies of sandstones for this purpose come from a select quarry operating in East Sussex. Kent apparently no longer has any active quarries that can supply this material. Though given the extensive nature of the outcrop in the Borough, this may occur again at some point in the future. As it is a very specific sandstone type potentially required for historic building restoration purposes. However, volume housebuilding and other development appear not to want to source this material in any substantial quantities.

Limestone-Paludina Limestone, Weald Clay Formation

The uppermost formation within the Wealden Group succession of Kent, the Weald Clay Formation, contains several discontinuous beds of fossiliferous freshwater limestone. These are collectively referred to as the Wealden Limestones and are characterised with the presence of numerous fossils of a large freshwater gastropod, ‘Paludina’ – *Viviparus flaviorum*. These limestones have been given a variety of local names including the ‘Large and Small Paludina limestones’ and occur in beds up to 30cm thick. In Kent, one of these fossiliferous limestones is widely known as the ‘Bethersden Marble’ (the term ‘marble’ being used as the stone is capable of taking a polish), and has been used extensively for decorative work, paving and building stone in Kent. Although this building stone is named after the village of Bethersden, the limestone has been dug from various locations across the county. Some Wealden limestones have also been called ‘Winkle Stone’ because the small gastropods present are similar in character to the modern ‘periwinkle’ shell.

Wealden limestones have been used as external paving, kerbstones and channel blocks in the village of Biddenden, but their texture can best be seen in the flooring and internal decorative work in Canterbury Cathedral, and in churches such as St Margaret’s in Bethersden.

Other examples of the external use of Wealden Limestone, showing it to be a durable building stone, are provided by the 15th Century church towers at Tenterden and Biddenden, where it has been successfully used for quoins as well as for coursed walling stone. The Norman Herring Bone stonework at Staplehurst church was constructed using slabs of Small Paludina limestone. Extraction has no doubt been historically highly localised and directly related to specific, now historically important, developments generally of an ecclesiastical nature.

Superficial Geological Units of Economic Importance

Sharp Sand and Gravel Aggregates-Sub-Alluvial River Terrace Deposits and River Terrace Deposits

These superficial sands and gravels have been deposited by river action essentially since the end of the last glaciation (the Pleistocene glaciation that ended some 10,000 years ago). This generally means that they are clean (free of clays and silts) and well sorted (meaning a reasonably consistent

particle size distribution) and have a sand content that is important in concrete manufacture. They have, therefore, been highly valued by the industry. The deposits quarried at Leybourne in the Medway river valley were among the best in the County and are now entirely worked out. Those on the Great Stour gave a lower yield of quality and have also been extensively worked. However, it should be recognised that the deposits within each river valley are highly variable from place to place and isolated deposits with high quality sand and gravel deposits may yet remain. Although it is generally recognised that overall, the superficial sands and gravel land-won resource in the County is becoming exhausted.

The need for aggregates, in terms of the required land-bank to meet an objectively assessed quantity over a plan period is assessed each year by the County Council in the Local Aggregate Assessment (LAA). The current permitted landbank for sharp sands and gravel to form aggregate supply is discussed in this monitoring document. It details what degree of shortfall in the landbank that may exist, and other aggregate types are available to compensate for this.

Brickearth (Superficial Deposits)
Brickearth (Other Areas) - Ashford, Canterbury, Dover, Shepway

Brickearth is a superficial deposit of homogeneous loam or silt deposited during the Pleistocene geological period (up to 10,000 years ago at the end of that glacial event) as a windblown material. Brickearth typically occurs in discontinuous spreads, across southern England and South Wales, south of a line from Pembroke in the west to Essex in the east in depths of up to a metre. Commercially useful deposits of about 2m to 4m thick are recorded as being present in Kent, Hertfordshire and Hampshire; they overly the chalk deposits, Thanet Beds or London Clay geological units. The original deposition of the sediments occurred under cold climates (peri-glacial) where fluvial out-wash sediments from glaciers (at the end of the Pleistocene epoch) were subject to dry and windy periods. The exposed finer-grained sediments were picked up and transported by the wind and were laid down wherever the wind decreased in strength to allow deposition.

In the Ashford Borough area deposits of the material are essentially limited to the area north of Ashford in the Stour Valley, both as isolated deposits and as ‘spreads’ closely associated with the Sub-Alluvial River Terrace deposits in this area. There are no records of recent extraction of this mineral for modern brick making. It may have occurred in the past as isolated and temporary localised extraction and kilning for use in close proximity to the point of production. It would appear that the material is currently economically marginal or that any economic status is now historic and unrelated to present day industrial minerals requirements. However, this does not mean that their use in historic restoration will not be needed at some juncture, or that the brickearth using brick manufacturing industry will not consider their use with the depletion of ‘Stock Brick’ brickearth supplies in other areas of Kent, and for that reason are considered important to be safeguarded at this time. The mandatory 5th year review of the Kent Minerals and Waste Local Plan will include a review of the economic status of this land-won mineral to establish if safeguarding remains justified.

Information note prepared by Kent County Council for the Canterbury City Council Area

This note provides information regarding the geology of the mineral located within the Canterbury area. The information provided is intended to support the preparation of Mineral Assessments which may be needed to accompany planning applications for development proposed within the Mineral Safeguarding Areas Mineral Safeguarding Areas.

The adopted Kent Minerals and Waste Local Plan 2013-30 (the Plan) defines the Mineral Safeguarding Areas (MSAs) in Kent in the Canterbury City Council area. The safeguarded land-won mineral bearing area is shown on the Canterbury Mineral Safeguarding Areas proposals map in the Plan. The relevant safeguarded geologies in the Canterbury City Council area are highlighted with various colours representing the superficial deposits that make up the economic geological stratigraphy of the area.

Main Crustal Geological Units of Economic Importance

The Canterbury City Council area has no economically important main crustal geological units.

Superficial Geological Units of Economic Importance

Sharp Sand and Gravel Aggregates-Sub-Alluvial River Terrace Deposits and River Terrace Deposits

These superficial sands and gravels have been deposited by river action essentially since the end of the last glaciation (the Pleistocene glaciation that ended some 10,000 years ago). This generally means that they are clean (free of clays and silts) and well sorted (meaning a reasonably consistent particle size distribution) and have a sand content that is important in concrete manufacture. They have, therefore, been highly valued by the industry. The deposits quarried at Laybourne in the Medway valley were among the best in the County and are now entirely worked out.

Those deposits on the Great Stour through the Canterbury City Council area gave a lower yield of quality and have also been extensively worked. However, it should be recognised that the deposits within each river valley can be highly variable from place to place and isolated deposits with high quality sand and gravel deposits may yet remain. Although it is generally recognised that overall, the superficial sands and gravel land-won resource in the County is becoming exhausted. The need for aggregates, in terms of the required land-bank to meet an objectively assessed quantity over a plan period is assessed each year by the County Council in the Local Aggregate Assessment (LAA). The current permitted landbank for sharp sands and gravel to form aggregate supply is discussed in this monitoring document. It details what degree of shortfall in the landbank that may exist, and other aggregate types are available to compensate for this.

Brickearth (Superficial Deposits)
Brickearth (Other Areas) - Ashford, Canterbury, Dover, Shepway

Brickearth is a superficial deposit of homogeneous loam or silt deposited during the Pleistocene geological period (up to 10,000 years ago at the end of that glacial event) as a windblown material. Brickearth typically occurs in discontinuous spreads, across southern England and South Wales, south of a line from Pembroke in the west to Essex in the east in depths of up to a metre. Commercially useful deposits of about 2m to 4m thick are recorded as being present in Kent, Hertfordshire and Hampshire; they overly the chalk deposits, Thanet Beds or London Clay geological units. The original deposition of the sediments occurred under cold climates (peri-glacial) where fluvial out-wash sediments from glaciers (at the end of the Pleistocene epoch) were subject to dry and windy periods. The exposed finer-grained sediments were picked up and transported by the

wind and were laid down wherever the wind decreased in strength to allow deposition.

In the Canterbury City Council area deposits of the material are essentially limited to the area north of Ashford in the Stour Valley, both as isolated deposits and as extensive ‘spreads’ closely associated with the Sub-Alluvial River Terrace deposits in this area. There are no records of recent extraction of this mineral for modern brick making. It may have occurred in the past as isolated and temporary localised extraction and kilning for use in close proximity to the point of production. It would appear that the material is currently economically marginal or that any economic status is now historic and unrelated to present day industrial minerals requirements. However, this does not mean that their use in historic restoration will not be needed at some juncture, or that the brickearth using brick manufacturing industry will not consider their use with the depletion of ‘Stock Brick’ brickearth supplies in other areas of Kent, and for that reason are considered important to be safeguarded at this time. The mandatory 5th year review of the Kent Minerals and Waste Local Plan will include a review of the economic status of this land-won mineral to establish if safeguarding remains justified.

Information note prepared by Kent County Council for the Dartford Borough Council Area

This note provides information regarding the geology of the mineral located within the Dartford area. The information provided is intended to support the preparation of Mineral Assessments which may be needed to accompany planning applications for development proposed within the Mineral Safeguarding Areas.

The adopted Kent Minerals and Waste Local Plan 2013-30 (the Plan) defines the Mineral Safeguarding Areas (MSAs) in Kent in the Dartford Borough Council area. The safeguarded land-won mineral bearing area is shown on the Dartford Mineral Safeguarding Areas proposals map in the Plan. The relevant safeguarded geologies in the Dartford Borough area are highlighted with various colours representing the superficial deposits that make up the economic geological stratigraphy of the area.

Main Crustal Geological Units of Economic Importance

The Dartford Borough Council area has no economically important main crustal geological units.

Superficial Geological Units of Economic Importance

Sharp Sand and Gravel Aggregates-Sub-Alluvial River Terrace Deposits and River Terrace Deposits

These superficial sands and gravels have been deposited by river action essentially since the end of the last glaciation (the Pleistocene glaciation that ended some 10,000 years ago). This generally means that they are clean (free of clays and silts) and well sorted (meaning a reasonably consistent particle size distribution) and have a sand content that is important in concrete manufacture. They have, therefore, been highly valued by the industry. The deposits quarried at Laybourne were among the best in the County and are now entirely worked out.

The deposits that form those occurring in the Dartford Borough area are of some note. The British Geological Survey states that the geology of the site is as follows:

"River terrace deposits of the middle and lower Thames contain gravel clasts mainly composed of flint, vein quartz and local bedrock lithologies including chert. Modern British Geological Survey maps also show the terrace deposits as named units which are here interpreted as members of the Maidenhead Formation. The main terrace deposit members are the Black Park Gravel, Boyn Hill Gravel, Lynch Hill Gravel, Hackney Gravel, Taplow Gravel, Kempton Park Gravel, Shepperton Gravel and Staines Alluvium. Brickearth silt beds include the Enfield Silt, Roding Silt, Langley Silt, Dartford Silt, Crayford Silt and Ilford Silt."

The deposits that are part of the of the lower Thames Taplow Formation are a main terrace of flint gravel that represents a relatively thick layer of predominantly 'flint' sands and gravels. These are considered as being of high quality for such applications as structural concrete manufacture. However, it should be appreciated that the deposits of sand and gravel within each river valley can be highly variable from place to place. High quality deposits may well yet remain in the Dartford area. However, it is generally recognised that overall, the superficial sands and gravel land-won resource in the County are becoming exhausted. The need for aggregates, in terms of the required land-bank to meet an objectively assessed quantity over a plan period is assessed each year by the County Council in the Local Aggregate Assessment (LAA). The current permitted landbank for sharp sands and gravel to form aggregate supply is discussed in this monitoring document. It details what degree of shortfall in the landbank that may exist, and other aggregate types are available to compensate for this.

Information note prepared by Kent County Council for the Dover District Council Area

This note provides information regarding the geology of the mineral located within the Dover area. The information provided is intended to support the preparation of Mineral Assessments which may be needed to accompany planning applications for development proposed within the Mineral Safeguarding Areas.

The adopted Kent Minerals and Waste Local Plan 2013-30 (the Plan) defines the Mineral Safeguarding Areas (MSAs) in Kent in the Dover District Council area. The safeguarded land-won mineral bearing area is shown on the Dover Mineral Safeguarding Areas proposals map in the Plan. The relevant safeguarded geologies in the Dover Borough area are highlighted with various colours representing the superficial deposits that make up the economic geological stratigraphy of the area.

Main Crustal Geological Units of Economic Importance

The Dover District Council area has no economically important main crustal geological units.

Superficial Geological Units of Economic Importance

Sharp Sand and Gravel Aggregates-Sub-Alluvial River Terrace Deposits and River Terrace Deposits

These superficial sands and gravels have been deposited by river action essentially since the end of the last glaciation (the Pleistocene glaciation that ended some 10,000 years ago). This generally means that they are clean (free of clays and silts) and well sorted (meaning a reasonably consistent particle size distribution) and have a sand content that is important in concrete manufacture. They have, therefore, been highly valued by the industry. The deposits quarried at Laybourne were among the best in the County and are now entirely worked out.

Those deposits in the Dover District Council area appear to be associated with minor river valleys. However, it should be recognised that the deposits within each river valley can be highly variable from place to place and isolated deposits with high quality sand and gravel deposits may yet remain. Although it is generally recognised that overall, the superficial sands and gravel land-won resource in the County is becoming exhausted. The need for aggregates, in terms of the required land-bank to meet an objectively assessed quantity over a plan period is assessed each year by the County Council in the Local Aggregate Assessment (LAA). The current permitted landbank for sharp sands and gravel to form aggregate supply is discussed in this monitoring document. It details what degree of shortfall in the landbank that may exist, and other aggregate types are available to compensate for this.

Brickearth (Other Areas) - Ashford, Canterbury, Dover, Folkestone and Hythe Brickearth (Superficial Deposits)

Brickearth is a superficial deposit of homogeneous loam or silt deposited during the Pleistocene geological period (up to 10,000 years ago at the end of that glacial event) as a windblown material. Brickearth typically occurs in discontinuous spreads, across southern England and South Wales, south of a line from Pembroke in the west to Essex in the east in depths of up to a metre. Commercially useful deposits of about 2m to 4m thick are present in Kent, Hertfordshire and Hampshire, they overly chalk, Thanet Beds or London Clay geological units. The original deposition of the sediments occurred under cold climates (peri-glacial) where fluvial out-wash sediments from glaciers were subject to dry and windy periods. The exposed finer-grained sediments were picked

up and transported by the wind and were laid down wherever the wind velocity decreased to allow deposition.

In the Dover District Council area deposits of the material are found on Chalk dip slopes both as isolated deposits and as 'spreads' often closely associated with the Sub-Alluvial River Terrace deposits in this area. Many show down slop slumping by the process of solifluction that occurred when the underlying chalk was still frozen, as a permafrost at the end of the last glaciation (Pleistocene epoch), forming a the low friction plain for the windblown brickearth deposits to move under gravity down slope. There are no records of recent extraction of this mineral for modern brick making. It may have occurred in the past as isolated and temporary localised extraction and kilning for use in close proximity to the point of production. It would appear that the material is currently economically marginal or that any economic status is now historic and unrelated to present day industrial minerals requirements. However, this does not mean that their use in historic restoration will not be needed at some juncture, or that the brickearth using brick manufacturing industry may not consider their use with the depletion of 'Stock Brick' brickearth supplies in other areas of Kent, and for that reason are considered important to be safeguarded at this time. The mandatory 5th year review of the Kent Minerals and Waste Local Plan will include a review of the economic status of this land-won mineral to establish if safeguarding remains justified.

Information note prepared by Kent County Council for the Folkestone and Hythe District Council Area

This note provides information regarding the geology of the mineral located within the Folkestone and Hythe area. The information provided is intended to support the preparation of Mineral Assessments which may be needed to accompany planning applications for development proposed within the Mineral Safeguarding Areas.

The adopted Kent Minerals and Waste Local Plan 2013-30 (the Plan) defines the Mineral Safeguarding Areas (MSAs) in Kent in the Folkestone and Hythe District Council area. The safeguarded land-won mineral bearing area is shown on the Folkestone and Hythe Mineral Safeguarding Areas proposals map in the Plan. The relevant safeguarded geologies in the Folkestone and Hythe area are highlighted with various colours representing both the superficial deposits as well as main crustal units that make up the economic geological stratigraphy of the area.

Main Crustal Geological Units of Economic Importance

Limestone Hythe Formation (Kentish Ragstone)

Ragstone occurs in a geological formation known in the Hythe Beds of the Lower Greensand, a layer of limestones running from Kent into Surrey which was laid down in the Cretaceous period. It outcrops in various places in Kent, notably at the cliffs of Hythe, and along the Greensand Ridge above the Weald of Kent. In the Folkestone and Hythe District area, the Kentish Ragstone occurs as a widening belt trending in an east west orientation across the district from Folkestone to the Sellindge and Court-at-Street areas and then into the Ashford District area. This geology is part of the foot of the North Downs Scarp feature.

In succession, Kentish Ragstone occurs in bands between 15 cm and 60 cm thick, alternating with bands of a loose material called hassock (a soft calcareous sandstone deposit). These bands are of similar thickness and the difference in colour between them gives quarry faces a striped appearance. Overall thickness of the unit ranges between 18-100 metres. When the stone fraction is extracted from the quarry, it appears to be of a grey green or blue grey colour but later weathers (oxidation of iron bearing constituent minerals) to an ‘autumnal’ hue which, together with its hard-wearing properties, traditionally made it an attractive material. This can be seen in local construction of houses, public works (e.g. Sessions House, Kent County Council and HMP Maidstone and the Archbishop’s Palace) and infrastructure in and around the area of Kent and further away e.g. the construction of the Tower of London.

Modern demand for this material is intensive and diverse, with different products being required for use as an aggregate in the ready-mix concrete, road building and civil engineering applications for the maintenance of the area’s infrastructure. Larger blocks of Kentish Ragstone are also used in the construction of sea barriers against coastal erosion. The need for aggregates, in terms of the required land-bank to meet an objectively assessed quantity over a plan period is assessed each year by the County Council in the Local Aggregate Assessment (LAA). The current permitted landbank for hard rock to form aggregate is discussed in this document. Kentish Ragstone remains important for repairing historic buildings. Currently the Hermitage Quarry in Maidstone is the only supplier of building stone in Kent. Blaise Farm, in the Tonbridge and Malling area is excavated mainly for aggregate and is not regarded as being a realistic source of building stone. The Folkestone and Hythe area does not have any active workings for the extraction of this material, though it was extracted at Otterpool in the past.

Sandgate Formation

The Sandgate Formation is part of the Lower Greensand Group. A geological unit forming part of the underlying structure of southeast England (laid down 100 million years ago, during the Upper Cretaceous epoch). Distributed to the south of London in the counties of West Sussex, East Sussex and Kent, which together form the wider Weald, the Lower Greensand Group can usually be subdivided to what can be referred to as the units or formational levels. These formations have varying properties and are composed of the following defined units according to their differing characteristics:

•**Atherfield Clay Formation** *[not an important economic mineral]*

•**Hythe Formation** *[this includes the important Ragstone described above]*

•**Sandgate Formation** *[this material has certain industrial applications]*

•**Bargate Formation** *[not an important economic geology]*

•**Folkestone Formation** *[this an important aggregate forming unit]*

In the Folkestone and Hythe District area the formation outcrops just north of the Kentish Ragstone belt and has the same north-west to south-east trend. Overall, the Sandgate Formation is characterised as a rarely fossiliferous and loosely consolidated mixture of silts, sands and silty clays and some sandstones. The British Geological Survey describes the formation as follows: "*The formation has no single stratotype. Readers should refer to entries for the component members in the western Weald, namely: Bargate Sandstone Member, Rogate Member, Easebourne Member (where present), Selham Ironshot Sands Member, Fittleworth Member, Pulborough Sandrock Member (where present) and Marehill Clay Member (at top). Elsewhere the Formation is undivided. The formation takes its name from Sandgate on the coast near Folkestone, both here, around the town itself, and in the West Cliff at Folkestone the formation is extensively affected by landslides. The base of the formation was seen in the Goldwell Quarry south of Hothfield in the Maidstone district but this was not designated as a type site."*

The material (where represented as a friable sandstone) is of a reasonably consistent nature such that it is potentially important for industrial applications. It was formerly dug near Marehill (West Sussex where the unit is between 50-100 metres in thickness, in Kent the thicknesses have not been recorded) for use as moulding sand in iron casting, thus being analogous in use terms to a foundry type silica sand. The County Council has no records of the quarrying of this material in the Ashford Borough area in recent times; the Goldwell Quarry (worked in the 1940s) was categorised as a Kentish Ragstone quarry. There may have been some Sandgate Formation sands extracted in association with this activity, but this is not recorded.

In addition to the responsibility to safeguard finite economically important minerals the National Planning Policy Framework (2019) requires mineral planning authorities (MPAs) to plan for a steady and adequate supply of industrial minerals (Section 17, para. 208). With regard to industrial foundry sand, that *may* be applicable to the uses the Sandgate Formation Sandstone can be put to. The Mineral Planning Authority should provide a stock of permitted reserves to support the level of actual and proposed investment required for new or existing plant and equipment for at least 10 years for individual silica (or industrial) sand sites. Though there is a lack of any current specific extraction of this mineral for industrial purposes in Kent the adopted Kent Minerals and waste Local Plan 2013-30 (KMWLP) has policy provision to address need for this mineral if demand were to change. Policy CSM 2: Supply of Land-won Minerals in Kent identifies industrial silica sands as a mineral for which supply should be planned for to meet a specific technical specification at a level of permitted reserves to maintain production for 10 years at individual sites and 15 years at sites requiring significant investment.

Folkestone Formation (Folkestone Beds-Building Sands/Soft sands)

The Folkestone Beds are a significant component of the Lower Greensand Group. They were laid down in a shallow marine environment during the early Cretaceous age (140 to 100 million years ago). It consists mostly of poorly lithified (cemented) sands, the material is at the classification transitional boundary of a loose sand to a sandstone; in that it has properties neither consistent with the concept of an engineering medium or being of sufficient tensile strength to be considered a rock.

In Sussex, Kent and Surrey the formation comprises medium and coarse-grained, well-sorted cross-bedded sands and weakly cemented sandstones. The thickness of the unit has a wide range from as little as 0.5 metres up to 80 metres. In Kent, thickness tends towards the higher order of several metres (at about 46 metres near Maidstone and even thicker towards the Surrey border) and has given rise to significant quarrying operations in Maidstone, Tonbridge and Malling and Sevenoaks and into Ashford in the area of Charing. The formation forms a significant component of the North Kent Downs Scarp landscape feature that trends east-west as an undulating ridge that runs through the Folkestone and Hythe District and wider Kent countryside.

Occasionally the sand matrix is cemented and has a binding clay fraction, though usually occurs as the characteristic clean loose sands that typify the formation. The economic quality of the deposit is variable both vertically and horizontally. The important loose sand beds are characterised as poorly consolidated, fine, quartzose (a nomenclature used for a sand low in impurities and high in silica) sands and are capable of providing sands suitable for a wide range of building uses including, notably, mortar production and are often called ‘soft sand’ due to the flowing characteristics of the highly spherical grains. This characteristic makes these sands favoured for motor mixes that greatly aid in their application in construction ; silica tile and brick manufacture has also occurred in the past. Parts of the formation yield deposits suited to industrial use as silica sand, for such uses as foundry sand and thus are industrial rather than aggregate application materials. However, the material is generally recognised as economically important as a source of building (mortar) and asphalt (coated stone) sands in its application as an aggregate and is widely used across the South East. The need for aggregates, in terms of the required land-bank to meet an objectively assessed quantity over a plan period is assessed each year by the County Council in the Local Aggregate Assessment (LAA). The current permitted landbank for soft sand to form aggregate is discussed in this monitoring document. The material is generally considered as not substitutable with any artificial aggregate material.

Superficial Geological Units of Economic Importance

Sharp Sand and Gravel Aggregates-Sub-Alluvial River Terrace Deposits and River Terrace Deposits

These superficial sands and gravels have been deposited by river action essentially since the end of the last glaciation (the Pleistocene glaciation that ended some 10,000 years ago). This generally means that they are clean (free of clays and silts) and well sorted (meaning a reasonably consistent particle size distribution) and have a sand content that is important in concrete manufacture. They have, therefore, been highly valued by the industry. The deposits quarried at Leybourne in the Medway valley were among the best in the County and are now entirely worked out. Those on the Great Stour gave a lower yield of quality and have also been extensively worked.

However, it should be recognised that the deposits within each river valley can be highly variable from place to place and isolated deposits with high quality sand and gravel deposits may yet remain. Although it is generally recognised that overall, the superficial sands and gravel land-won resource in the County is becoming exhausted. In the Folkestone and Hythe District areas there are some deposits of this material following the general routes of the drainage systems that were once active,

forming both lenses of isolated deposits and ‘ribbons’ of material in the drainage systems of the district. There are no recent records available to County Council of any extraction of these sands and gravels in recent times. The need for aggregates, in terms of the required land-bank to meet an objectively assessed quantity over a plan period is assessed each year by the County Council in the LAA. The current permitted landbank for sharp sands and gravel to form aggregate supply is discussed in this monitoring document. It details what degree of shortfall in the landbank that may exist, and other aggregate types are available to compensate for this.

Storm Beach Gravel (regarded as a form of ‘flint’ sand and gravel)

Storm beach deposits comprise a low rounded ridge of coarse (as opposed to being of a higher proportion of smaller particulates, such as sand) materials (gravels, cobbles and boulders) piled up by very powerful storm waves at the inland margin of a beach, above the level reached by normal spring tides. The material is considered by the industry to be a source of high quality ‘flint’ sand and gravel suitable for structural concrete applications. There are deposits of this material on the coast at West Hythe (Hythe Ranges) and then along the beach to Folkestone Harbour. However, the most significant deposit in the area is at Lydd and Dungeness. Lydd being built on what is thought to be an original barrier beach type formation (possibly analogous to Chesil Beach at Weymouth) potentially represents the first phase of the shingle ridge accretional process that formed the cuspate foreland that is Dungeness. The beach and Hythe Ranges deposits are thought to be of unlikely economic importance given their apparent limited occurrence. It is the case that the area around Lydd and Dungeness has had an extensive history of sand and gravel extraction.

However, increased coverage of significant environmental constraint designations (Special Protection Area designation) the future probability for any significant expansion appears unlikely. Moreover, the need for aggregates, in terms of the required land-bank to meet an objectively assessed quantity over a plan period is assessed each year by the County Council in the Local Aggregate Assessment (LAA). The current permitted landbank for sharp sands and gravel to form aggregate supply is discussed in this monitoring document. It details what degree of shortfall in the landbank that may exist, and other aggregate types are available to compensate for this.

Brickearth (Superficial Deposits)
Brickearth (Other Areas) - Ashford, Canterbury, Dover, Folkestone and Hythe

Brickearth is a superficial deposit of homogeneous loam or silt deposited during the Pleistocene geological period (up to 10,000 years ago at the end of that glacial event) as a windblown material. Brickearth typically occurs in discontinuous spreads, across southern England and South Wales, south of a line from Pembroke in the west to Essex in the east in depths of up to a metre. Commercially useful deposits of about 2m to 4m thick are present in Kent, Hertfordshire and Hampshire, overlying chalk, Thanet Beds or London Clay geological units. The original deposition of the sediments occurred under cold climates (peri-glacial) where fluvial out-wash sediments from glaciers were subject to dry and windy periods. The exposed finer-grained sediments were picked up and transported by the wind and were deposited wherever the wind velocity decreased sufficiently to allow deposition.

In the Folkestone and Hythe District Council area deposits of the material are significantly found on Chalk dip slopes to the north of Folkestone, both as isolated deposits and as ‘spreads’. Some show down slop slumping by the process of solifluction that occurred when the Chalk was still frozen, as a permafrost at the end of the last glaciation (Pleistocene epoch), forming a low friction plain for the windblown brickearth deposits to move under gravity down slope. There are no records of recent extraction of this mineral for modern brick making. It may have occurred in the past as isolated and temporary localised extraction and kilning for use in close proximity to the point of production. It would appear that the material is currently economically marginal or that any economic status is now historic and unrelated to present day industrial minerals requirements. However, this does not mean

that their use in historic restoration will not be needed at some juncture, or that the brickearth using brick manufacturing industry will not consider their use with the depletion of ‘Stock Brick’ brickearth supplies in other areas of Kent, and for that reason are considered important to be safeguarded at this time. The mandatory 5th year review of the Kent Minerals and Waste Local Plan will include a review of the economic status of this land-won mineral to establish if safeguarding remains justified.

Information note prepared by Kent County Council for the Gravesham Borough Council Area

This note provides information regarding the geology of the mineral located within the Gravesham area. The information provided is intended to support the preparation of Mineral Assessments which may be needed to accompany planning applications for development proposed within the Mineral Safeguarding Areas.

The adopted Kent Minerals and Waste Local Plan 2013-30 (the Plan) defines the Mineral Safeguarding Areas (MSAs) in Kent in the Gravesham Borough Council area. The safeguarded land-won mineral bearing area is shown on the Gravesham Mineral Safeguarding Areas proposals map in the Plan. The relevant safeguarded geologies in the Dartford Borough area are highlighted with various colours representing the superficial deposits that make up the economic geological stratigraphy of the area.

Main Crustal Geological Units of Economic Importance

The Gravesham Borough Council area has no economically important main crustal geological units.

Superficial Geological Units of Economic Importance

Sharp Sand and Gravel Aggregates-Sub-Alluvial River Terrace Deposits and River Terrace Deposits

These superficial sands and gravels have been deposited by river action essentially since the end of the last glaciation (the Pleistocene glaciation that ended some 10,000 years ago). This generally means that they are clean (free of clays and silts) and well sorted (meaning a reasonably consistent particle size distribution) and have a sand content that is important in concrete manufacture. They have, therefore, been highly valued by the industry. The deposits quarried at Leybourne were among the best in the County and are now entirely worked out.

The terrace deposits occurring in the Gravesham Borough area are of some note. The British Geological Survey states that the geology of the site is as follows:

"River terrace deposits of the middle and lower Thames contain gravel clasts mainly composed of flint, vein quartz and local bedrock lithologies including chert. Modern British Geological Survey maps also show the terrace deposits as named units which are here interpreted as members of the Maidenhead Formation. The main terrace deposit members are the Black Park Gravel, Boyn Hill Gravel, Lynch Hill Gravel, Hackney Gravel, Taplow Gravel, Kempton Park Gravel, Shepperton Gravel and Staines Alluvium. Brickearth silt beds include the Enfield Silt, Roding Silt, Langley Silt, Dartford Silt, Crayford Silt and Ilford Silt."

The deposits in Gravesham are part of the of the lower Thames Taplow Formation, and are a main terrace of flint gravel that represents a relatively thick layer of predominantly 'flint' sands and gravels. These are considered as being of high quality for such applications as structural concrete manufacture. However, it should be recognised that the deposits within each river valley are highly variable from place to place. However, it should be appreciated that the deposits of sand and gravel within each river valley can be highly variable from place to place. The need for aggregates, in terms of the required land-bank to meet an objectively assessed quantity over a plan period is assessed each year by the County Council in the Local Aggregate Assessment (LAA). The current permitted landbank for sharp sands and gravel to form aggregate supply is discussed in this monitoring document. It details what degree of shortfall in the landbank that may exist, and other aggregate types are available to compensate for this.

Information note prepared by Kent County Council for the Maidstone Borough Council Area

This note provides information regarding the geology of the mineral located within the Maidstone area. The information provided is intended to support the preparation of Mineral Assessments which may be needed to accompany planning applications for development proposed within the Mineral Safeguarding Areas.

The adopted Kent Minerals and Waste Local Plan 2013-30 (the Plan) defines the Mineral Safeguarding Areas (MSAs) in Kent in the Maidstone Borough Council area. The safeguarded land-won mineral bearing area is shown on the Maidstone Mineral Safeguarding Areas proposals map in the Plan. The relevant safeguarded geologies in the Maidstone Borough area are highlighted with various colours representing both superficial deposits as well as crustal units that make up the economic geological stratigraphy of the area.

Main Crustal Geological Units of Economic Importance

Limestone Hythe Formation (Kentish Ragstone)

Kentish Ragstone occurs in a geological formation known in the Hythe Beds of the Lower Greensand, a layer of limestones running from Kent into Surrey which was laid down in the Cretaceous period. It outcrops in various places in Kent, notably at the cliffs of Hythe, and along the Greensand Ridge above the Weald of Kent. In the Maidstone Borough area, the ragstone occurs as a belt trending in an east west orientation across the borough and is coincident with the main urban area of Maidstone. The Kentish Ragstone belt is wide where it meets the administrative area of Tonbridge and Malling in the west and winnows down as to approaches the Ashford Borough administrative boundary in the east. The active quarrying of this important material has historically mainly occurred in the Maidstone area of the borough.

In succession, Kentish Ragstone occurs in bands between 15 cm and 60 cm thick, alternating with bands of a loose material called hassock (a soft calcareous sandstone deposit). These bands are of similar thickness and the difference in colour between them gives quarry faces a striped appearance. Overall thickness of the unit ranges between 18-100 metres. When the stone is extracted from the quarry, it appears to be of a grey green or blue grey colour but later weathers (oxidation of iron bearing constituent minerals) to an ‘autumnal’ hue which, together with its hard-wearing properties, traditionally made it an attractive material. This can be seen in local construction of houses, public works (e.g. Sessions House, Kent County Council and HMP Maidstone and the Archbishop’s Palace) and infrastructure in and around the area of Kent and further away e.g. the construction of the Tower of London.

Modern demand for this material is intensive and diverse, with different products being required for use as an aggregate in the ready-mix concrete, road building and civil engineering applications for the maintenance of the area’s infrastructure. Larger blocks of Kentish Ragstone are also used in the construction of sea barriers against coastal erosion. The need for aggregates, in terms of the required land-bank to meet an objectively assessed quantity over a plan period is assessed each year by the County Council in the Local Aggregate Assessment (LAA) monitoring document. The current permitted landbank for hard rock to form aggregate is discussed in this document. Ragstone remains important for repairing historic buildings. Currently the Hermitage Quarry in the Maidstone area is the only supplier of building stone in Kent. Blaise Farm (in Tonbridge and Malling) is excavated mainly for aggregate and is not regarded as being a realistic source of building stone.

Sandgate Formation

The Sandgate Formation is part of the Lower Greensand Group. A geological unit forming part of the underlying structure of southeast England (laid down 100 million years ago, during the Upper Cretaceous epoch). Distributed to the south of London in the counties of West Sussex, East Sussex and Kent, which together form the wider Weald, the Lower Greensand Group can usually be subdivided to what can be referred to as the units or formational levels. These formations have varying properties and are composed of the following defined units according to their differing characteristics:

•**Atherfield Clay Formation** *[not an important economic mineral]*

•**Hythe Formation** *[this includes the important Ragstone described above]*

•**Sandgate Formation** *[this material has certain industrial applications]*

•**Bargate Formation** *[not an important economic geology]*

•**Folkestone Formation** *[this an important aggregate forming unit]*

In the Maidstone area the formation outcrops just north of the Ragstone belt and has the same north-west to south-east trend. Overall, the Sandgate Formation is characterised as a rarely fossiliferous and loosely consolidated mixture of silts, sands and silty clays and some sandstones. The British Geological Survey describes the formation as follows:

"*The formation has no single stratotype. Readers should refer to entries for the component members in the western Weald, namely: Bargate Sandstone Member, Rogate Member, Easebourne Member (where present), Selham Ironshot Sands Member, Fittleworth Member, Pulborough Sandrock Member (where present) and Marehill Clay Member (at top). Elsewhere the Formation is undivided. The formation takes its name from Sandgate on the coast near Folkestone, both here, around the town itself, and in the West Cliff at Folkestone the formation is extensively affected by landslides. The base of the formation was seen in the Goldwell Quarry south of Hothfield in the Maidstone district but this was not designated as a type site.*"

The material (where represented as a friable sandstone) is of a reasonably consistent nature such that it is potentially important for industrial applications. It was formerly dug near Marehill (West Sussex where the unit is between 50-100 metres in thickness, in Kent the thicknesses have not been recorded) for use as moulding sand in iron casting, thus being analogous in use terms to a foundry type silica sand. The County Council has no records of the quarrying of this material in the Maidstone Borough area in recent times.

In addition to the responsibility to safeguard finite economically important minerals the National Planning Policy Framework (2019) requires mineral planning authorities (MPAs) to plan for a steady and adequate supply of industrial minerals (Section 17, para. 208). With regard to industrial foundry sand, that *may* be applicable to the uses the Sandgate Formation Sandstone can be put to. The Mineral Planning Authority should provide a stock of permitted reserves to support the level of actual and proposed investment required for new or existing plant and equipment for at least 10 years for individual silica (or industrial) sand sites. Though there is a lack of any current specific extraction of this mineral for industrial purposes in Kent, the adopted Kent Minerals and waste Local Plan 2013-30 (KMWLP) has policy provision to address need for this mineral if demand were to change. Policy CSM 2: Supply of Land-won Minerals in Kent identifies industrial silica sands as a mineral for which supply should be planned for to meet a specific technical specification at a level of permitted reserves to maintain production for 10 years at individual sites and 15 years at sites requiring significant investment.

Folkestone Formation (Folkestone Beds-Building Sands/Soft sands)

The Folkestone Beds are a significant component of the Lower Greensand Group. They were laid down in a shallow marine environment during the early Cretaceous age (140 to 100 million years ago). It consists mostly of poorly lithified (cemented) sands, the material is at the classification transitional boundary of a loose sand to a sandstone; in that it has properties neither consistent with the concept of an engineering medium or being of sufficient tensile strength to be considered a rock.

In Sussex, Kent and Surrey the formation comprises medium and coarse-grained, well-sorted cross-bedded sands and weakly cemented sandstones. The thickness of the unit has a wide range from as little as 0.5 metres up to 80 metres. In Kent, thickness tends towards the higher order of several metres (at about 46 metres near Maidstone and even thicker towards the Surrey border) and has given rise to significant quarrying operations in Maidstone, Tonbridge and Malling and Sevenoaks and into Ashford in the area of Charing. The formation forms a significant component of the North Kent Downs Scarp landscape feature that trends east-west as an undulating ridge that runs through the Folkestone and Hythe District and wider Kent countryside.

Occasionally the sand matrix is cemented and has a binding clay fraction, though usually occurs as the characteristic clean loose sands that typify the formation. The economic quality of the deposit is variable both vertically and horizontally. The important loose sand beds are characterised as poorly consolidated, fine, quartzose (a nomenclature used for a sand low in impurities and high in silica) sands and are capable of providing sands suitable for a wide range of building uses including, notably, mortar production and are often called ‘soft sand’ due to the flowing characteristics of the highly spherical grains. This characteristic makes these sands favoured for motor mixes that greatly aid in their application in construction; silica tile and brick manufacture has also occurred in the past. Parts of the formation yield deposits suited to industrial use as silica sand, for such uses as foundry sand and thus are industrial rather than aggregate application materials. However, the material is generally recognised as economically important as a source of building (mortar) and asphalt (coated stone) sands in its application as an aggregate and is widely used across the South East. The need for aggregates, in terms of the required land-bank to meet an objectively assessed quantity over a plan period is assessed each year by the County Council in the LAA. The current permitted landbank for soft sand to form aggregate is discussed in this monitoring document. It is generally accepted that this mineral is not substitutable with any artificial aggregates.

Limestone-Paulina Limestone, Weald Clay Formation (Building Stone)

The uppermost formation within the Wealden Group succession of Kent, the Weald Clay Formation, contains several discontinuous beds of fossiliferous freshwater limestone. These are collectively referred to as the Wealden Limestones and are characterised with the presence of numerous fossils of a large freshwater gastropod, ‘Paludina’ – *Viviparus flaviorum*. These limestones have been given a variety of local names including the ‘Large and Small Paludina limestones’ and occur in beds up to 30cm thick. In Kent, one of these fossiliferous limestones is widely known as the ‘Bethersden Marble’ (the term ‘marble’ being used as the stone is capable of taking a polish), and has been used extensively for decorative work, paving and building stone in Kent. Although this building stone is named after the village of Bethersden, the limestone has been dug from various locations across the county. Some Wealden limestones have also been called ‘Winkle Stone’ because the small gastropods present are similar in character to the modern ‘periwinkle’ shell.

Wealden limestones have been used as external paving, kerbstones and channel blocks in the village of Biddenden, but their texture can best be seen in the flooring and internal decorative work in Canterbury Cathedral, and in churches such as St Margaret’s in Bethersden.

Other examples of the external use of Wealden Limestone, showing it to be a durable building stone, are provided by the 15th Century church towers at Tenterden and Biddenden, where it has

been successfully used for quoins as well as for coursed walling stone. The Norman Herring Bone stonework at Staplehurst church was constructed using slabs of Small Paludina limestone. Extraction has no doubt been historically highly localised and directly related to specific, now historically important, developments generally of an ecclesiastical nature.

Superficial Geological Units of Economic Importance

Sharp Sand and Gravel Aggregates-Sub-Alluvial River Terrace Deposits and River Terrace Deposits

These superficial sands and gravels have been deposited by river action essentially since the end of the last glaciation (the Pleistocene glaciation that ended some 10,000 years ago). This generally means that they are clean (free of clays and silts) and well sorted (meaning a reasonably consistent particle size distribution) and have a sand content that is important in concrete manufacture. They have, therefore, been highly valued by the industry.

The deposits quarried at Leybourne in the Medway valley were among the best in the County and are now entirely worked out. Those on the Great Stour gave a lower yield of quality and have also been extensively worked. In the Maidstone area these deposits can be mainly found in the southern part of the Borough, along the Rivers Beult and Teise valleys. Though there are some minor deposits following the river valleys of the River Medway.

However, it should be recognised that the deposits within each river valley are highly variable from place to place and isolated deposits with high quality sand and gravel deposits may yet remain. Although it is generally recognised that overall, the superficial sands and gravel land-won resource in the County is becoming exhausted. The need for aggregates, in terms of the required land-bank to meet an objectively assessed quantity over a plan period is assessed each year by the County Council in the Local Aggregate Assessment (LAA). The current permitted landbank for sharp sands and gravel to form aggregate is discussed in this monitoring document. It details what degree of shortfall in the landbank that may exist, and other aggregate types are available to compensate for this.

Information note prepared by Kent County Council for the Sevenoaks District Council Area

This note provides information regarding the geology of the mineral located within the Sevenoaks area. The information provided is intended to support the preparation of Mineral Assessments which may be needed to accompany planning applications for development proposed within the Mineral Safeguarding Areas.

The adopted Kent Minerals and Waste Local Plan 2013-30 (the Plan) defines the Mineral Safeguarding Areas (MSAs) in Kent in the Sevenoaks Borough Council area. The safeguarded land-won mineral bearing area is shown on the Sevenoaks Mineral Safeguarding Areas proposals map in the Plan. The relevant safeguarded geologies in the Sevenoaks Borough area are highlighted with various colours representing both the superficial deposits as well as crustal units that make up the economic geological stratigraphy of the area.

Main Crustal Geological Units of Economic Importance

Limestone Hythe Formation (Kentish Ragstone)

Kentish Ragstone occurs in a geological formation known in the Hythe Beds of the Lower Greensand, a layer of limestones running from Kent into Surrey which was laid down in the Cretaceous period. It outcrops in various places in Kent, notably at the cliffs of Hythe, and along the Greensand Ridge above the Weald of Kent. In the Sevenoaks Borough area, the Kentish Ragstone occurs as a belt trending in an east west orientation approximately midway across the borough and is coincident with the main urban area of Sevenoaks.

In succession, Kentish Ragstone occurs in bands between 15 cm and 60 cm thick, alternating with bands of a loose material called hassock (a soft calcareous sandstone deposit). These bands are of similar thickness and the difference in colour between them gives quarry faces a striped appearance. Overall thickness of the unit ranges between 18-100 metres. When the stone is extracted from the quarry, it appears to be of a grey green or blue grey colour but later weathers (oxidation of iron bearing constituent minerals) to an ‘autumnal’ hue which, together with its hard-wearing properties, traditionally made it an attractive material. This can be seen in local construction of houses, public works (e.g. Sessions House, Kent County Council and HMP Maidstone and the Archbishop’s Palace) and infrastructure in and around the area of Kent and further away e.g. the construction of the Tower of London.

Modern demand for this material is intensive and diverse, with different products being required for use as an aggregate in the ready-mix concrete, road building and civil engineering applications for the maintenance of the area’s infrastructure. Larger blocks of ragstone are also used in the construction of sea barriers against coastal erosion. The need for aggregates, in terms of the required land-bank to meet an objectively assessed quantity over a plan period is assessed each year by the County Council in the Local Aggregate Assessment (LAA). The current permitted landbank for hard rock to form aggregate is discussed in this document. Ragstone remains important for repairing historic buildings. Currently the Hermitage Quarry to the south west of Maidstone is the only supplier of building stone in Kent. Blaise Farm, (in Tonbridge and Malling) is excavated mainly for aggregate and is not regarded as being a realistic source of building stone. The Sevenoaks area does not have any active workings for the extraction of this material.

Sandgate Formation

The Sandgate Formation is part of the Lower Greensand Group. A geological unit forming part of the underlying structure of southeast England (laid down 100 million years ago, during the Upper Cretaceous epoch). Distributed to the south of London in the counties of West Sussex, East Sussex

and Kent, which together form the wider Weald, the Lower Greensand Group can usually be subdivided to what can be referred to as the units or formational levels. These formations have varying properties and are composed of the following defined units according to their differing characteristics:

•**Atherfield Clay Formation** *[not an important economic mineral]*

•**Hythe Formation** *[this includes the important Ragstone described above]*

•**Sandgate Formation** *[this material has certain industrial applications]*

•**Bargate Formation** *[not an important economic geology]*

•**Folkestone Formation** *[this an important aggregate forming unit]*

In the Sevenoaks area the formation outcrops north of the Ragstone belt in isolated pockets and has the same north-west to south-east trend, though its occurrence is more limited in the borough than in other Ragstone bearing areas. Overall the Sandgate Formation is characterised as a rarely fossiliferous and loosely consolidated mixture of silts, sands and silty clays and some sandstones. The British Geological Survey describes the formation as follows: "*The formation has no single stratotype. Readers should refer to entries for the component members in the western Weald, namely: Bargate Sandstone Member, Rogate Member, Easebourne Member (where present), Selham Ironshot Sands Member, Fittleworth Member, Pulborough Sandrock Member (where present) and Marehill Clay Member (at top). Elsewhere the Formation is undivided. The formation takes its name from Sandgate on the coast near Folkestone, both here, around the town itself, and in the West Cliff at Folkestone the formation is extensively affected by landslides. The base of the formation was seen in the Goldwell Quarry south of Hothfield in the Maidstone district but this was not designated as a type site."*

The material (where represented as a friable sandstone) is of a reasonably consistent nature such that it is potentially important for industrial applications. It was formerly dug near Marehill (West Sussex where the unit is between 50-100 metres in thickness, in Kent the thicknesses have not been recorded) for use as moulding sand in iron casting, thus being analogous in use terms to a foundry type silica sand. The County Council has no records of the quarrying of this material in the Sevenoaks Borough area in recent times.

In addition to the responsibility to safeguard finite economically important minerals the National Planning Policy Framework (2019) requires mineral planning authorities (MPAs) to plan for a steady and adequate supply of industrial minerals (Section 17, para. 208). With regard to industrial foundry sand, that *may* be applicable to the uses the Sandgate Formation Sandstone can be put to. The Mineral Planning Authority should provide a stock of permitted reserves to support the level of actual and proposed investment required for new or existing plant and equipment for at least 10 years for individual silica (or industrial) sand sites. Though there is a lack of any current specific extraction of this mineral for industrial purposes in Kent the adopted Kent Minerals and waste Local Plan 2013-30 (KMWLP) has policy provision to address need for this mineral if demand were to change. Policy CSM 2: Supply of Land-won Minerals in Kent identifies industrial silica sands as a mineral for which supply should be planned for to meet a specific technical specification at a level of permitted reserves to maintain production for 10 years at individual sites and 15 years at sites requiring significant investment.

Folkestone Formation (Folkestone Beds-Building Sands/Soft sands)

The Folkestone Beds are a significant component of the Lower Greensand Group. They were laid down in a shallow marine environment during the early Cretaceous age (140 to 100 million years ago). It consists mostly of poorly lithified (cemented) sands, the material is at the classification

transitional boundary of a loose sand to a sandstone; in that it has properties neither consistent with the concept of an engineering medium or being of sufficient tensile strength to be considered a rock. In Sussex, Kent and Surrey the formation comprises medium and coarse-grained, well-sorted cross-bedded sands and weakly cemented sandstones. The thickness of the unit has a wide range from as little as 0.5 metres up to 80 metres. In Kent, thickness tends towards the higher order of several metres (at about 46 metres near Maidstone and even thicker towards the Surrey border) and has given rise to significant quarrying operations in Maidstone, Tonbridge and Malling and Sevenoaks and into Ashford in the area of Charing. The formation forms a significant component of the North Kent Downs Scarp landscape feature that trends east-west as an undulating ridge that runs through the Folkestone and Hythe District and wider Kent countryside.

Occasionally the sand matrix is cemented and has a binding clay fraction, though usually occurs as the characteristic clean loose sands that typify the formation. The economic quality of the deposit is variable both vertically and horizontally. The important loose sand beds are characterised as poorly consolidated, fine, quartzose (a nomenclature used for a sand low in impurities and high in silica) sands and are capable of providing sands suitable for a wide range of building uses including, notably, mortar production and are often called ‘soft sand’ due to the flowing characteristics of the highly spherical grains. This characteristic makes these sands favoured for motor mixes that greatly aid in their application in construction ; silica tile and brick manufacture has also occurred in the past. Parts of the formation yield deposits suited to industrial use as silica sand, for such uses as foundry sand and thus are industrial rather than aggregate application materials. However, the material is generally recognised as economically important as a source of building (mortar) and asphalt (coated stone) sands in its application as an aggregate and is widely used across the South East. The need for aggregates, in terms of the required land-bank to meet an objectively assessed quantity over a plan period is assessed each year by the County Council in the LAA. The current permitted landbank for soft sand to form aggregate is discussed in this monitoring document. It is generally accepted that this mineral cannot be substituted by any artificial aggregate materials.

Wealden Group Sandstones and Limestone (Building Stone)

The National Planning Policy Framework (2019) does not require the Mineral Planning Authority to plan for the maintenance of landbanks of building stone. Though paragraph 142 makes it clear that mineral resources are essential to support economic growth and our quality of life; and that a sufficient supply of material should be available to provide for the infrastructure, buildings, energy and goods that the country needs. It is emphasised that these materials are finite in nature and their long-term conservation is required, necessitating that this geology is a safeguarded geology. The Kent Minerals and Waste Local Plan has policy provision to allow small-scale extraction of materials to enable the important vernacular of historic restoration projects to be recognised and for new build projects in conservation areas. Policy CSM 9: Building Stone in Kent sets out the parameters to be met to allow this type of mineral extraction to be permitted. In the Ashford Borough the building stone geologies are comprised of the following:

Wealden Group (sandstones)

- **Sandstone - Ashdown Formation**

- **Sandstone - Upper Tunbridge Wells Sand Formation**

- **Sandstone - Ardingly Sandstone**

The Wealden Group is a complex group of geological units that make up the core of the Weald predominantly stretching across East Sussex and Kent, and are colloquially referred to as forming the Hastings Beds, as they can be viewed as outcrop at the cliffs along the coastal area just east of Hastings town.

They include the Ashdown Formation, Wadhurst Clay Formation and the Tunbridge Wells Sand Formation. The Hastings Beds in turn forms part of the Wealden Supergroup which underlies much of southeast England. The sediments of the Weald of East Sussex were deposited during the Early Cretaceous period.

The Ashdown Formation-The Ashdown Formation, that can be found to south of Leigh, takes its name from the Ashdown Forest in the High Weald of Sussex, typically comprises sandstones, siltstones and mudstones. In the east of the county, the formation tends to be more argillaceous (clay mineral bearing) in its lowermost part and fines up to arenaceous (silica or sand bearing) division in the uppermost 30 to 50m. The clays are identified by their characteristic purple and brick-red mottled nature. In early references, these variations give rise to the division of the formation into the 'Fairlight Clays' and the 'Ashdown Sands'. However, it is now considered as a single overall sandstone formation due to the impersistence of the clays across the Weald, thus the clays are considered as extensive 'lenses' within the formation. Despite this, the variations of clays and sands in the formation are usually marked separately on the maps and records of the British Geological Survey. In its entirety the formation is usually found to be between 180 and 215m thick. In the Ashford area the deposit can be found in the south of the borough around the Isle of Oxney as far north as the outskirts of Tenterden, in the west almost at Rolvenden Layne. The economic material is in the sandstone fraction of the formation that can be used as a quarried building stone.

The Tunbridge Wells Sand Formations-The Tunbridge Wells Sand Formation comprises complex cyclic sequences of siltstones with sandstones and clays, typically fining upwards, and is lithologically similar to the older Ashdown Formation. It has a total thickness typically in the region of about 75m. However, near Haywards Heath borehole data has proven the formation to be up to 150m thick. In the western parts of the High Weald the Tunbridge Wells Sands can be divided into three main members; the Lower Tunbridge Wells Sand Member (a non-economic geology that is not safeguarded), the Grinstead Clay Member (not an economic geology that is safeguarded), and the Upper Tunbridge Wells Sand Member (that has within it the Tunbridge Wells Sand Formation).

The Upper Tunbridge Wells Sand is similar to the Lower Tunbridge Wells Sand. It comprises soft red and grey mottled silts and clays in its lower part, and alternating silts and silty clays with thin beds of sandstones. In the Tunbridge Wells Borough area, the material is to be found strongly associated with the *Ardingly Sandstones* in Tunbridge Wells. The formation lacks the degree of outcrop that is attractive to climbers further to the west in Tunbridge Wells. The sandstone faction of the formation is the economic element of the unit, as it can provide a quarried building stone. In the Sevenoaks district it can be found as a series of outcrops stretching from Leigh in the west across the district to south of Edenbridge. Deposits of the *Ardingly Sandstone* in the Sevenoaks district are to be found around Leigh, though more dominantly to the south east of the district, around Chiddingstone, Smart's Hill and towards Fordcombe.

Extraction of sandstone in the Weald, however, is of an historic nature and wide-ranging in the Wealden area. Thus, the British Geological Survey consider this material an important deposit for its application as a hard rock building stone. Today there are historic buildings and structures in this borough that may require restoration materials. Limited supplies of sandstones for this purpose come from a select quarry operating in East Sussex. Kent no longer has any active quarries that can supply this material. Though due to the extensive nature of the outcrop in the Borough, this may occur again at some point in the future and given that it is a very specific sandstone type potentially required for historic building restoration purposes. However, volume housebuilding and other development appear not to want to source this material in any substantial quantities.

Limestone-Paludina Limestone, Weald Clay Formation

The uppermost formation within the Wealden Group succession of Kent, the Weald Clay Formation, contains several discontinuous beds of fossiliferous freshwater limestone. These are collectively referred to as the Wealden Limestones and are characterised with the presence of numerous fossils

of a large freshwater gastropod, ‘Paludina’ – *Viviparus flaviorum*. These limestones have been given a variety of local names including the ‘Large and Small Paludina limestones’ and occur in beds up to 30cm thick. In Kent, one of these fossiliferous limestones is widely known as the ‘Bethersden Marble’ (the term ‘marble’ being used as the stone is capable of taking a polish), and has been used extensively for decorative work, paving and building stone in Kent. Although this building stone is named after the village of Bethersden, the limestone has been dug from various locations across the county. Some Wealden limestones have also been called ‘Winkle Stone’ because the small gastropods present are similar in character to the modern ‘periwinkle’ shell.

Wealden limestones have been used as external paving, kerbstones and channel blocks in the village of Biddenden, but their texture can best be seen in the flooring and internal decorative work in Canterbury Cathedral, and in churches such as St Margaret’s in Bethersden. Other examples of the external use of Wealden Limestone, showing it to be a durable building stone, are provided by the 15th Century church towers at Tenterden and Biddenden, where it has been successfully used for quoins as well as for coursed walling stone. The Norman Herring Bone stonework at Staplehurst church was constructed using slabs of Small Paludina limestone. Extraction has no doubt been historically highly localised and directly related to specific, now historically important, developments generally of an ecclesiastical nature. In the Sevenoaks area this material is only present as an intermittent ‘ribbon’ outcrop along an east west trend from west of Sevenoaks Weald into the Tonbridge and Malling Borough Council administrative area. There are no records available to the County Council for any extraction of this material in the Sevenoaks Borough area. It is reasonable to suppose that any extraction would be for very localised restoration projects.

Superficial Geological Units of Economic Importance

Sharp Sand and Gravel Aggregates-Sub-Alluvial River Terrace Deposits and River Terrace Deposits

These superficial sands and gravels have been deposited by river action essentially since the end of the last glaciation (the Pleistocene glaciation that ended some 10,000 years ago). This generally means that they are clean (free of clays and silts) and well sorted (meaning a reasonably consistent particle size distribution) and have a sand content that is important in concrete manufacture. They have, therefore, been highly valued by the industry. The deposits quarried at Leybourne in the Medway valley were among the best in the County and are now entirely worked out. Those deposits on the Great Stour river valley gave a lower yield of quality and have also been extensively worked. In the Sevenoaks Borough they can be found along the river valleys of the River Darent through to Sevenoaks town area where extraction of this material does occur. Also, the River Eden river valley and tributaries in the south of the borough have river terrace deposits.

However, it should be recognised that the deposits within each river valley can be highly variable from place to place and isolated deposits with high quality sand and gravel deposits may yet remain. Although it is generally recognised that overall, the superficial sands and gravel land-won resource in the County is becoming exhausted. The need for aggregates, in terms of the required land-bank to meet an objectively assessed quantity over a plan period is assessed each year by the County Council in the LAA. The current permitted landbank for sharp sands and gravel to form aggregate supply is discussed in this monitoring document. It details what degree of shortfall in the landbank that may exist, and other aggregate types are available to compensate for this.

Calcareous Tufa

Tufa is a freshwater carbonate deposit formed around springs. During the Pleistocene (2.58 million to 11,700BC), the development of these tufa deposits appears to have been extensive. There are a number of locations in Kent, commonly associated with springs at the margin of the Hythe Formation or Chalk Group outcrops, where tufa deposits are still forming. Many older deposits have been

quarried away, however, having served as sources of lime or occasionally building stone. They are characterised by their hard and durable nature when lithified, and their highly porous structure and therefore low density, makes them ideal for use as wallstones and for vaulting in churches. It is believed that supplies of tufa for building were exhausted by late Norman times.

Blocks of pale-coloured, porous tufaceous limestone can be seen forming the quoins and dressings of the walls in the 12C tower of St Leonard's at West Malling. Locally derived tufa blocks were also used extensively in the construction of the Roman Lighthouse (Pharos) at Dover. A number of churches in the Romney Marsh area have some tufa blocks in their fabric (e.g. at Lympne, West Hythe, Appledore and New Romney, some having been reused from the Roman Fort at Lympne), as have several Norman churches in the Maidstone area. In Sevenoaks the tuffa deposits are to be found in the south of the borough, in the Fordcombe, and more extensively, in the White Post areas. The County Council has no records of any extraction of this material in recent periods. Like the Paludina Limestone, it is reasonable to suppose that any potential extraction would be small scale for localised restoration projects.

Information note prepared by Kent County Council for the Swale Borough Council Area

This note provides information regarding the geology of the mineral located within the Swale area. The information provided is intended to support the preparation of Mineral Assessments which may be needed to accompany planning applications for development proposed within the Mineral Safeguarding Areas.

The adopted Kent Minerals and Waste Local Plan 2013-30 (the Plan) defines the Mineral Safeguarding Areas (MSAs) in Kent in the Swale Borough Council area. The safeguarded land-won mineral bearing area is shown on the Swale Mineral Safeguarding Areas proposals map in the Plan. The relevant safeguarded geologies in the Swale Borough area are highlighted with various colours representing the superficial deposits that make up the economic geological stratigraphy of the area.

Main Crustal Geological Units of Economic Importance

The Swale Borough Council area has no economically important main crustal geological units.

Superficial Geological Units of Economic Importance

Sharp Sand and Gravel Aggregates-Sub-Alluvial River Terrace Deposits and River Terrace Deposits

These superficial sands and gravels have been deposited by river action essentially since the end of the last glaciation (the Pleistocene glaciation that ended some 10,000 years ago). This generally means that they are clean (free of clays and silts) and well sorted (meaning a reasonably consistent particle size distribution) and have a sand content that is important in concrete manufacture. They have, therefore, been highly valued by the industry. The deposits quarried at Leybourne were among the best in the County and are now entirely worked out. Those on the Great Stour river valley gave a lower yield of quality and have also been extensively worked. However, it should be understood that deposits within each river valley are highly variable from place to place and isolated deposits with high quality deposits may yet remain though it is generally recognised that this mineral resource in the County is becoming exhausted.

The deposits that form those occurring in the Swale Borough area are of from the lower Thames terrace, and are of some note. The British Geological Survey states that the geology of the site is as follows: *"River terrace deposits of the middle and lower Thames contain gravel clasts mainly composed of flint, vein quartz and local bedrock lithologies including chert. Modern British Geological Survey maps also show the terrace deposits as named units which are here interpreted as members of the Maidenhead Formation. The main terrace deposit members are the Black Park Gravel, Boyn Hill Gravel, Lynch Hill Gravel, Hackney Gravel, Taplow Gravel, Kempton Park Gravel, Shepperton Gravel and Staines Alluvium. Brickearth silt beds include the Enfield Silt, Roding Silt, Langley Silt, Dartford Silt, Crayford Silt and Ilford Silt."*

These deposits are up to 7m in thickness and contain materials suitable for structural concrete manufacture. The Swale Borough extraction has historically occurred in the Faversham area, north of the settlement towards the Swale. Significant areas of the Isle of Sheppey have deposits of this material, though there are no records of recent extraction. It should be recognised that the deposits within each river valley (the lower Thames terrace is a deposit in a major river valley, the Thames) can be highly variable from place to place and isolated deposits with high quality sand and gravel deposits may yet remain. Although it is generally recognised that overall, the superficial sands and gravel land-won resource in the County is becoming exhausted. The need for aggregates, in terms of the required land-bank to meet an objectively assessed quantity over a plan period is assessed each year by the County Council in the Local Aggregate Assessment (LAA). The current permitted

landbank for sharp sands and gravel to form aggregate supply is discussed in this monitoring document. It details what degree of shortfall in the landbank that may exist, and other aggregate types are available to compensate for this.

Storm Beach Gravel (regarded as a form of 'flint' sand and gravel)

Storm beach deposits comprise a low rounded ridge of coarse (as opposed to being composed of a high proportion of smaller particulates, such as a sand fraction) materials (gravels, cobbles and boulders) piled up by very powerful storm waves at the inland margin of a beach, above the level reached by normal spring tides. The material is considered by the industry to be a source of high quality 'flint' sand and gravel suitable for structural concrete applications.

There are isolated deposits of this material in the area between Shell Ness, past Leysdown-on-Sea to warden on the Isle of Sheppey. The possibility that these deposits are of particular economic importance is considered to be of a low order of probability given their apparent limited occurrence and those that are within an area of significant environmental constraint (applicable to the deposits at Shell Ness that are coincident with Special Area of Conservation and Ramsar sites designations). However, the need for aggregates, in terms of the required land-bank to meet an objectively assessed quantity over a plan period is assessed each year by the County Council in the Local Aggregate Assessment (LAA). The current permitted landbank for sand and gravel to form aggregate is discussed in this document.

Brickearth (Superficial Deposits)
Brickearth (Faversham-Sittingbourne Area)

Brickearth is a superficial deposit of homogeneous loam or silt deposited during the Pleistocene geological period (up to 10,000 years ago at the end of that glacial event) as a windblown material. Brickearth typically occurs in discontinuous spreads, across southern England and South Wales, south of a line from Pembroke in the west to Essex in the east in depths of up to a metre. Commercially useful deposits of about 2m to 4m thick are present in Kent, Hertfordshire and Hampshire, found overlying chalk, Thanet Beds or London Clay geologies. The original deposition of the sediments occurred under cold climates (peri-glacial) where fluvial out-wash sediments from glaciers were subject to dray and windy periods. The exposed finer-grained sediments were picked up and transported by the wind and were deposited wherever the wind strength decreased sufficiently to allow deposition.

In the Swale Borough Council area deposits of the material are both found as isolated deposits and as more extensive 'spreads'. The latter being, to some degree, associated with the Sub-Alluvial River Terrace deposits in the north of the main land area towards the Swale.

There is a long history of extraction of this mineral for brick making in the Swale area. The manufacture of 'Stock Bricks' or 'London Stocks' from the brickearth supplies in this area of Kent, is well documented. The characteristic yellow brickearth bricks were extensively used locally and in London hence their name 'London Stocks'. Extraction of brickearth occurs in the borough area and manufacture of this construction brick occurs today at Smeed Deen near Sittingbourne.

In addition to the responsibility to safeguard finite economically important minerals the National Planning Policy Framework (2019) requires mineral planning authorities (MPAs) to plan for a steady and adequate supply of industrial minerals (Section 17, para. 208). With regard to brickearth, the term 'brick clay' as used in para. 208 d) is effectively synonymous with brickearth. Therefore, the County Council has to plan for a supply of this mineral, and potentially from more than one source area to enable appropriate blending to maintain the brick product type(s) into the future. Moreover, the adopted Kent Minerals and Waste Local Plan 2013-30 (KMWLP) has policy provision to address need for this mineral. Policy CSM 2: Supply of Land-won Minerals in Kent identifies brickearth as a mineral for which supply should be planned for to meet a specific technical specification, at a level of

permitted reserves to maintain production for 10 years at individual sites and 15 years at sites requiring significant investment.

Information note prepared by Kent County Council for the Thanet District Council Area

This note provides information regarding the geology of the mineral located within the Thanet area. The information provided is intended to support the preparation of Mineral Resource Assessments which may be needed to accompany planning applications for development proposed within the Mineral Safeguarding Areas.

The adopted Kent Minerals and Waste Local Plan 2013-30 (the Plan) defines the Mineral Safeguarding Areas (MSAs) in Kent in the Thanet District Council area. The safeguarded land-won mineral bearing area is shown on the Thanet Mineral Safeguarding Areas proposals map in the Plan. The relevant safeguarded geologies in the Thanet District area are highlighted with various colours representing the superficial deposits that make up the economic geological stratigraphy of the area.

Main Crustal Geological Units of Economic Importance

The Thanet District Council area has no economically important main crustal geological units.

Superficial Geological Units of Economic Importance

The Thanet District Council area has two insignificant areas of economic land-won mineral occurrence. They are:

- **Sharp Sand and Gravel Aggregates-Sub-Alluvial River Terrace Deposits and River Terrace Deposit** within the built-up urban area of Birchington, and
- **Storm Beach Gravel (regarded as a form of 'flint' sand and gravel)** parallel to the Sandwich Road north of Port Richborough.

These deposits are of little potential significance and for all intents and purposes the Thanet District Council area can be considered as free of economic mineral potential.

Information note prepared by Kent County Council for the Tonbridge and Malling Borough Council Area

This note provides information regarding the geology of the mineral located within the Tonbridge and Malling area. The information provided is intended to support the preparation of Mineral Assessments which may be needed to accompany planning applications for development proposed within the Mineral Safeguarding Areas.

The adopted Kent Minerals and Waste Local Plan 2013-30 (the Plan) defines the Mineral Safeguarding Areas (MSAs) in Kent in the Tonbridge and Malling Borough Council area. The safeguarded land-won mineral bearing area is shown on the Ashford Mineral Safeguarding Areas proposals map in the Plan. The relevant safeguarded geologies in the Tonbridge and Malling Borough area are highlighted with various colours representing both the superficial deposits as well as crustal units that make up the economic geological stratigraphy of the area.

Main Crustal Geological Units of Economic Importance

Limestone Hythe Formation (Kentish Ragstone)

Kentish Ragstone occurs in a geological formation known in the Hythe Beds of the Lower Greensand, a layer of limestones running from Kent into Surrey which was laid down in the Cretaceous period. It outcrops in various places in Kent, notably at the cliffs of Hythe, and along the Greensand Ridge above the Weald of Kent. In the Tonbridge and Malling Borough area, the ragstone occurs as a belt trending in an east west orientation across the borough, which extends from the foot of the North Downs Scarp from the Ditton area in the west, through East Malling, West Malling to the Ightham area in the east.

In succession, Kentish Ragstone occurs in bands between 15 cm and 60 cm thick, alternating with bands of a loose material called hassock (a soft calcareous sandstone deposit). These bands are of similar thickness and the difference in colour between them gives quarry faces a striped appearance. Overall thickness of the unit ranges between 18-100 metres. When the stone is extracted from the quarry, it appears to be of a grey green or blue grey colour but later weathers (oxidation of iron bearing constituent minerals) to an ‘autumnal' hue which, together with its hard-wearing properties, traditionally made it an attractive material. This can be seen in local construction of houses (Ightham Court), public works (e.g. Sessions House, Kent County Council and HMP Maidstone and the Archbishop’s Palace) and infrastructure in and around the area of Kent and further away e.g. the construction of the Tower of London.

Modern demand for this material is intensive and diverse, with different products being required for use as an aggregate in the ready-mix concrete, road building and civil engineering applications for the maintenance of the area’s infrastructure. Larger blocks of ragstone are also used in the construction of sea barriers against coastal erosion. The need for aggregates, in terms of the required land-bank to meet an objectively assessed quantity over a plan period is assessed each year by the County Council in the Local Aggregate Assessment (LAA). The current permitted landbank for hard rock to form aggregate is discussed in this document. Ragstone remains important for repairing historic buildings. Currently the Hermitage Quarry in Maidstone, is the only supplier of building stone in Kent. While Blaise Farm (in the Tonbridge and Malling Borough) is excavated mainly for aggregate and is not regarded as being a realistic source of building stone.

However, the occurrence of this unit in the area is extensive. Forming a wide belt on an east west trend stretching from Barming in the east to Ightham in the west and as far south on a line with Wateringbury, Mereworth, Roughway and Plaxtol. There remains a possibility that sites may come forward in the future if the need arises. The need for aggregates, in terms of the required land-bank to meet any objectively assessed quantity over a plan period is assessed each year by the County

Council in the Local Aggregate Assessment (LAA). The current permitted landbank for soft sand to form aggregate is discussed in this document.

Sandgate Formation

The Sandgate Formation is part of the Lower Greensand Group. A geological unit forming part of the underlying structure of southeast England (laid down 100 million years ago, during the Upper Cretaceous epoch). Distributed to the south of London in the counties of West Sussex, East Sussex and Kent, which together form the wider Weald, the Lower Greensand Group can usually be subdivided to what can be referred to as the units or formational levels. These formations have varying properties and are composed of the following defined units according to their differing characteristics:

•**Atherfield Clay Formation** *[not an important economic mineral]*

•**Hythe Formation** *[this includes the important Ragstone described above]*

•**Sandgate Formation** *[this material has certain industrial applications]*

•**Bargate Formation** *[not an important economic geology]*

•**Folkestone Formation** *[this an important aggregate forming unit]*

In the Ashford area the formation outcrops just north of the Ragstone belt and has the same north-west to south-east trend. Overall, the Sandgate Formation is characterised as a rarely fossiliferous and loosely consolidated mixture of silts, sands and silty clays and some sandstones. The British Geological Survey describes the formation as follows: "*The formation has no single stratotype. Readers should refer to entries for the component members in the western Weald, namely: Bargate Sandstone Member, Rogate Member, Easebourne Member (where present), Selham Ironshot Sands Member, Fittleworth Member, Pulborough Sandrock Member (where present) and Marehill Clay Member (at top). Elsewhere the Formation is undivided. The formation takes its name from Sandgate on the coast near Folkestone, both here, around the town itself, and in the West Cliff at Folkestone the formation is extensively affected by landslides. The base of the formation was seen in the Goldwell Quarry south of Hothfield in the Maidstone district but this was not designated as a type site."*

The material (where represented as a friable sandstone) is of a reasonably consistent nature such that it is potentially important for industrial applications. It was formerly dug near Marehill (West Sussex where the unit is between 50-100 metres in thickness, in Kent the thicknesses have not been recorded) for use as moulding sand in iron casting, thus being analogous in use terms to a foundry type silica sand. The County Council has no records of the quarrying of this material in the Tonbridge and Malling Borough area. It is to be found associated with the Hythe Formation (into which it succeeds) in the easterly area of the borough.

In addition to the responsibility to safeguard finite economically important minerals the National Planning Policy Framework (2019) requires mineral planning authorities (MPAs) to plan for a steady and adequate supply of industrial minerals (Section 17, para. 208). With regard to industrial foundry sand, that *may* be applicable to the uses the Sandgate Formation Sandstone can be put to. The Mineral Planning Authority should provide a stock of permitted reserves to support the level of actual and proposed investment required for new or existing plant and equipment for at least 10 years for individual silica (or industrial) sand sites. Though there is a lack of any current specific extraction of this mineral for industrial purposes in Kent the adopted Kent Minerals and waste Local Plan 2013-30 (KMWLP) has policy provision to address need for this mineral if demand were to change. Policy CSM 2: Supply of Land-won Minerals in Kent identifies industrial silica sands as a mineral for which supply should be planned for to meet a specific technical specification at a level of permitted

reserves to maintain production for 10 years at individual sites and 15 years at sites requiring significant investment.

Folkestone Formation (Folkestone Beds-Building Sands/Soft sands)

The Folkestone Beds are a significant component of the Lower Greensand Group. They were laid down in a shallow marine environment during the early Cretaceous age (140 to 100 million years ago). It consists mostly of poorly lithified (cemented) sands, the material is at the classification transitional boundary of a loose sand to a sandstone; in that it has properties neither consistent with the concept of an engineering medium or being of sufficient tensile strength to be considered a rock.

In Sussex, Kent and Surrey the formation comprises medium and coarse-grained, well-sorted cross-bedded sands and weakly cemented sandstones. The thickness of the unit has a wide range from as little as 0.5 metres up to 80 metres. In Kent, thickness tends towards the higher order of several metres (at about 46 metres near Maidstone and even thicker towards the Surrey border) and has given rise to significant quarrying operations in Maidstone, Tonbridge and Malling (significantly around Ightham) and Sevenoaks and into Ashford in the area of Charing and Lenham. The formation forms a significant component of the North Kent Downs Scarp landscape feature that trends east-west as an undulating ridge that runs through the Tonbridge and Malling Borough and wider Kent countryside.

Occasionally the sand matrix is cemented and has a binding clay fraction, though usually occurs as the characteristic clean loose sands that typify the formation. The economic quality of the deposit is variable both vertically and horizontally. The important loose sand beds are characterised as poorly consolidated, fine, quartzose (a nomenclature used for a sand low in impurities and high in silica) sands and are capable of providing sands suitable for a wide range of building uses including, notably, mortar production and are often called ‘soft sand’ due to the flowing characteristics of the highly spherical grains. This characteristic makes these sands favoured for motor mixes that greatly aid in their application in construction ; silica tile and brick manufacture has also occurred in the past. Parts of the formation yield deposits suited to industrial use as silica sand, for such uses as foundry sand and thus are industrial rather than aggregate application materials. However, the material is generally recognised as economically important as a source of building (mortar) and asphalt (coated stone) sands in its application as an aggregate and is widely used across the South East. The need for aggregates, in terms of the required land-bank to meet an objectively assessed quantity over a plan period is assessed each year by the County Council in the LAA monitoring document. The current permitted landbank for soft sand to form aggregate is discussed in this document. It is generally recognised that this material is not substitutable by artificial aggregates.

Limestone-Paludina Limestone, Weald Clay Formation

The uppermost formation within the Wealden Group succession of Kent, the Weald Clay Formation, contains several discontinuous beds of fossiliferous freshwater limestone. These are collectively referred to as the Wealden Limestones and are characterised with the presence of numerous fossils of a large freshwater gastropod, ‘Paludina’ – *Viviparus flaviorum*. These limestones have been given a variety of local names including the ‘Large and Small Paludina limestones’ and occur in beds up to 30cm thick. In Kent, one of these fossiliferous limestones is widely known as the ‘Bethersden Marble’ (the term ‘marble’ being used as the stone is capable of taking a polish), and has been used extensively for decorative work, paving and building stone in Kent. Although this building stone is named after the village of Bethersden, the limestone has been dug from various locations across the county. Some Wealden limestones have also been called ‘Winkle Stone’ because the small gastropods present are similar in character to the modern ‘periwinkle’ shell.

Wealden limestones have been used as external paving, kerbstones and channel blocks in the village of Biddenden, but their texture can best be seen in the flooring and internal decorative work

in Canterbury Cathedral, and in churches such as St Margaret's in Bethersden. Other examples of the external use of Wealden Limestone, showing it to be a durable building stone, are provided by the 15th Century church towers at Tenterden and Biddenden, where it has been successfully used for quoins as well as for coursed walling stone. The Norman Herring Bone stonework at Staplehurst church was constructed using slabs of Small Paludina limestone.

Any extraction has no doubt been historically highly localised and directly related to specific, now historically important, developments generally of an ecclesiastical nature. In the Tonbridge and Malling Borough area there are very minor occurrences of this limestone to the west of Sackville, and further to the north just to the south west of Budds. Here it forms the easterly extremity of a 'ribbon' that goes west into the Sevenoaks District area.

Superficial Geological Units of Economic Importance

Sharp Sand and Gravel Aggregates-Sub-Alluvial River Terrace Deposits and River Terrace Deposits

These superficial sands and gravels have been deposited by river action essentially since the end of the last glaciation (the Pleistocene glaciation that ended some 10,000 years ago). This generally means that they are clean (free of clays and silt deposits) and well sorted (meaning a reasonably consistent particle size distribution) and have a sand content that is important in concrete manufacture. They have, therefore, been highly valued by the industry. The deposits quarried at Leybourne were among the best in the County and are now entirely worked out. Those on the Great Stour river valley gave a lower yield of quality and have also been extensively worked. The deposits in Tonbridge and Malling Borough Council are to be found in two main areas of the River Medway valley.

The first are those deposits in the Snodland and Leybourne area, now essentially worked out, though the deposits do follow the valley to Wouldham in the north and beyond. The second area of interest is the Upper Medway deposits east and west of Tonbridge. Here the mineralogical make up is different than those materials found lower down the river valley. These sands and gravels are often called 'sandstone gravels' of 'siltstone gravels' on account of the brown colouration, rather than the darker 'flint' gravels found elsewhere. The presence of a polymorph of quartz (moganite) forms what is called Chalcedony a cryptocrystalline form of silica. This material is not considered to be a high-quality aggregate source. Though it has been actively extracted and used for buried concrete and construction block making applications in the past. The Mineral Sites Plan identified two allocations for potential future sand and gravel extraction, Stonecastle farm (Site M13) in the Tonbridge and Malling Borough area, and Moat Farm (Site M10) just over the administrative border in the Tunbridge Wells Borough area.

Outside main areas of occurrence, there are both isolated river terrace deposits around Hadlow, Tonbridge and Hildenborough and in the surrounding countryside and those that follow the courses of no longer active tributaries to the River Medway. However, it should be recognised that the deposits within each river valley can be highly variable from place to place and isolated deposits with high quality sand and gravel deposits may yet remain. Although, it is generally recognised that overall, the superficial sands and gravel land-won resource in the County is becoming exhausted. The need for aggregates, in terms of the required land-bank to meet an objectively assessed quantity over a plan period is assessed each year by the County Council in the LAA. The current permitted landbank for sharp sands and gravel to form aggregate is discussed in this document. It details what degree of shortfall in the landbank that may exist, and other aggregate types are available to compensate for this.

Information note prepared by Kent County Council for the Tunbridge Wells Borough Council Area

This note provides information regarding the geology of the mineral located within the Tunbridge Wells Borough Council area. The information provided is intended to support the preparation of Mineral Assessments which may be needed to accompany planning applications for development proposed within the Mineral Safeguarding Areas.

The adopted Kent Minerals and Waste Local Plan 2013-30 (the Plan) defines the Mineral Safeguarding Areas (MSAs) in Kent in the Tunbridge Wells Borough Council area. The safeguarded land-won mineral bearing area is shown on the Tunbridge Wells Borough Council Mineral Safeguarding Areas proposals map in the Plan. The relevant safeguarded geologies in the Tunbridge Wells Borough Council area are highlighted with various colours representing both the superficial deposits as well as crustal units that make up the economic geological stratigraphy of the area.

Main Crustal Geological Units of Economic Importance

Wealden Group Sandstones and Limestone (Building Stone)

The National Planning Policy Framework (2019) does not require the Mineral Planning Authority to plan for the maintenance of landbanks of building stone. Though paragraph 142 makes it clear that mineral resources are essential to support economic growth and our quality of life; and that a sufficient supply of material should be available to provide for the infrastructure, buildings, energy and goods that the country needs. It is emphasised that these materials are finite in nature and their long-term conservation is required, necessitating that this geology is a safeguarded geology. The Kent Minerals and Waste Local Plan has policy provision to allow small-scale extraction of materials to enable the important vernacular of historic restoration projects to be recognised and for new build projects in conservation areas. Policy CSM 9: Building Stone in Kent sets out the parameters to be met to allow this type of mineral extraction to be permitted. In the Tunbridge Wells Borough Council, the building stone geologies are comprised of the following:

Wealden Group (sandstones)

- **Sandstone - Wadhurst Clay Formation**
- **Sandstone - Ashdown Formation**
- **Sandstone - Upper Tunbridge Wells Sand Formation and Tunbridge Wells Sand Formation**

The Wealden Group is a complex group of geological units that make up the core of the Weald predominantly stretching across East Sussex and Kent, and are colloquially referred to as forming the Hastings Beds, as they can be viewed as outcrop at the cliffs along the coastal area just east of Hastings town.

They include the Ardingly Sandstone, Wadhurst Clay Formation, Ashdown Formation and the Tunbridge Wells Sand Formation (that also is split into the Upper Tunbridge Wells Sand Formation as well as the Tunbridge Wells Sand Formation). The Hastings Beds in turn forms part of the Wealden Supergroup which underlies much of southeast England. The sediments of the Weald of East Sussex were deposited during the Early Cretaceous period.

Ardingly Sandstone-This unit is a massive thick cross bedded fine to medium grained quartz (low in impurities and high in silica) sandstone that separates the Tunbridge Wells Sands from the overlying Grinstead Clay. This horizon occurs in thicknesses of up to 18m. It is particularly well exposed throughout the region between East Grinstead, West Sussex, and Tunbridge Wells, Kent,

at localities such as; Stone Farm south of East Grinstead; Chiddinglye Rocks near West Hoathly; Toad Rock, Bull's Hollow and Happy Valley west of Tunbridge Wells; and Harrisons Rocks, Bowles Rocks and High Rocks near Crowborough. At all of these places the Ardingly Sandstone forms a weathering-resistant layer, relative to the rest of the formation, which has become very popular with rock climbers and is known locally as Southern Sandstone. These are the closest rock climbing crags to London and as a result are the most heavily used in the county. Specifically, to the Tunbridge Well Borough area this part of the overall Wealden succession is to be found in the locals of Tunbridge Wells. It is a safeguarded geology given that it has been quarried in the past to provide building materials widely used in the centre of Tunbridge Wells.

Wadhurst Clay Formation-The Ashdown Formation is overlain by a predominantly argillaceous (clay/mudstone) sequence the Wadhurst Clay. This unit also contains beds of siltstone/sandstone, limestone and ironstone, which have provided building stone in the past. A number of thin calcareous sandstone beds were used as local building stone in the Tenterden area. The ironstone beds which formed the basis of the famed Wealden iron industry were largely worked from the basal part of this formation, but there is no evidence that they were used to any great extent as building stones. In the Tunbridge Wells Borough this material is found at Sandhurst. It is a safeguarded geology given that it has been quarried in the past to provide building materials, though not widely used.

The Ashdown Formation-In the borough area this sandstone mainly is found around Tunbridge Wells, as far west as Ashurst, and to Pembury in the west, and Speldhurst to the north west of Tunbridge Wells. It is found succeeding into the Tunbridge Wells Sand Formation. The Ashdown Formation, which takes its name from the Ashdown Forest in the High Weald of Sussex, typically comprises sandstones, siltstones and mudstones. In the east of the county, the formation tends to be more argillaceous (clay mineral bearing) in its lowermost part and fines up to arenaceous (silica or sand bearing) division in the uppermost 30 to 50m. The clays are identified by their characteristic purple and brick-red mottled nature. In early references, these variations give rise to the division of the formation into the ‘Fairlight Clays’ and the ‘Ashdown Sands’. However, it is now considered as a single overall sandstone formation due to the impersistence of the clays across the Weald, thus the clays are considered as extensive ‘lenses’ within the formation. Despite this, the variations of clays and sands in the formation are usually marked separately on the maps and records of the British Geological Survey. In its entirety the formation is usually found to be between 180 and 215m thick. This sandstone has a rhythmic, parallel laminated structure in the stone. Buildings in Tunbridge wells constructed by this material show this feature. In colouration there are variations from off-white to light orange-brown can occur within each ashlar (finely dressed or cut/worked) block. Some of the off-white sandstone is notably fine-grained.

The Tunbridge Wells Sand Formations-The Tunbridge Wells Sand Formation comprises complex cyclic sequences of siltstones with sandstones and clays, typically fining upwards, and is lithologically similar to the older Ashdown Formation. It has a total thickness typically in the region of about 75m. However, near Haywards Heath borehole data has proven the formation to be up to 150m thick. In the western parts of the High Weald the Tunbridge Wells Sands can be divided into three main members; the Lower Tunbridge Wells Sand Member (a non-economic geology that is not safeguarded), the Grinstead Clay Member (not an economic geology that is safeguarded), and the Upper Tunbridge Wells Sand Member (that has within it the Tunbridge Wells Sand Formation).

The Upper Tunbridge Wells Sand is similar to the Lower Tunbridge Wells Sand. It comprises soft red and grey mottled silts and clays in its lower part, and alternating silts and silty clays with thin beds of sandstones. In the Tunbridge Wells Borough area, the material is to be found strongly associated with the Ardingly Sandstones in Tunbridge Wells. The formation lacks the degree of outcrop that is attractive to climbers further to the west in Tunbridge Wells. The sandstone faction of the formation is the economic element of the unit, as it can provide a quarried building stone. The Wadhurst Clay comprises predominantly medium to dark bluish grey over-consolidated clays, silts, mudstones, and shales. These lithologies often occur with subordinate amounts of pale grey silty mudstones,

laminated siltstones, sandstones, conglomerate, shelly limestones and clay-ironstones. When they become exposed to the elements at the surface, the mudstones often degrade over a short period of time and weather to yellowish brown and greenish grey clays. In Kent, the Wadhurst Clay has been proven to over 70m thick near Tunbridge Wells. The sandstone faction of the formation is the economic element of the unit, as it can provide a quarried building stone. The Tunbridge Wells Sand Formation was the primary source of Wealden sandstone in Kent, with many lithological characteristics similar to the sandstones of the Ashdown Formation. The sandstones are generally fine to medium-grained, often cross-bedded and flaggy in places.

To the west of Tunbridge Wells, the formation is divided into two sandstone units separated by a clay layer known as the Grinstead Clay. This clay layer is divided informally into upper and lower parts by the development of a thin cross-bedded, fine-grained sandstone, known as the Cuckfield Stone (named after a village in West Sussex). Numerous small building stone quarries, producing Wealden sandstone for local use, operated near Goudhurst. The variety of colours and textures can be seen in individual buildings from different phases of construction, for example in the medieval St Mary's Church in Goudhurst , where the colour variations and laminations in some of the beds provide distinctive features. The 19th-century construction of Scotney House in the grounds of Scotney Castle used sandstone from quarries within the estate. The colour, texture and weathering patterns within the ashlar blocks are widely evident in the building's fabric. Staplehurst church makes extensive use of Tunbridge Wells Sandstone in parts of its external fabric (St George's Chapel, the Tower). The occurrence of this sandstone is extensive in the Tunbridge Wells Borough Council area. It can be stated that it covers most of the borough area.

Extraction was, however, of a historic nature and wide-ranging in the Wealden area. Thus, the British Geological Survey consider this material an important deposit for its application as a hard rock building stone. Today there are historic buildings and structures in this borough that may require restoration materials. Limited supplies of sandstones for this purpose come from a select quarry operating in East Sussex. Kent no longer has any active quarries that can supply this material. Though due to the extensive nature of the outcrop in the Borough, this may occur again at some point in the future and given that it is a very specific sandstone type potentially required for historic building restoration purposes. However, volume housebuilding and other development appear not to want to source this material in any substantial quantities.

Limestone-Paludina Limestone, Weald Clay Formation

The uppermost formation within the Wealden Group succession of Kent, the Weald Clay Formation, contains several discontinuous beds of fossiliferous freshwater limestone. These are collectively referred to as the Wealden Limestones and are characterised with the presence of numerous fossils of a large freshwater gastropod, 'Paludina' – *Viviparus flaviorum*. These limestones have been given a variety of local names including the 'Large and Small Paludina limestones' and occur in beds up to 30cm thick. In Kent, one of these fossiliferous limestones is widely known as the 'Bethersden Marble' (the term 'marble' being used as the stone is capable of taking a polish), and has been used extensively for decorative work, paving and building stone in Kent. Although this building stone is named after the village of Bethersden, the limestone has been dug from various locations across the county. Some Wealden limestones have also been called 'Winkle Stone' because the small gastropods present are similar in character to the modern 'periwinkle' shell.

Wealden limestones have been used as external paving, kerbstones and channel blocks in the village of Biddenden, but their texture can best be seen in the flooring and internal decorative work in Canterbury Cathedral, and in churches such as St Margaret's in Bethersden. Other examples of the external use of Wealden Limestone, showing it to be a durable building stone, are provided by the 15th Century church towers at Tenterden and Biddenden, where it has been successfully used for quoins as well as for coursed walling stone. The Norman Herring Bone stonework at Staplehurst church was constructed using slabs of Small Paludina limestone. Extraction has no doubt been

historically highly localised and directly related to specific, now historically important, developments generally of an ecclesiastical nature.

In the Tunbridge Wells Borough area this limestone is to be found predominantly in the Frittenden settlement area, with a smaller ‘ribbon’ type outcrop to the south at Whitsunden.

Superficial Geological Units of Economic Importance

Sharp Sand and Gravel Aggregates-Sub-Alluvial River Terrace Deposits and River Terrace Deposits

These superficial sands and gravels have been deposited by river action essentially since the end of the last glaciation (the Pleistocene glaciation that ended some 10,000 years ago). This generally means that they are clean (free of clays and silts) and well sorted (meaning a reasonably consistent particle size distribution) and have a sand content that is important in concrete manufacture. They have, therefore, been highly valued by the industry. The deposits quarried at Leybourne were among the best in the County and are now entirely worked out. Those on the Great Stour gave a lower yield of quality and have also been extensively worked.

In the Tunbridge Wells area these deposits are to be found in both the active river valleys of the upper River Medway and the River Teise. Extraction has centred in the upper Medway valley, and has occurred within the Tunbridge Wells Borough, around the Whetsted and Postern areas. Although the main focus of extraction in the general area historically was over the border in the Tonbridge and Malling Borough area. Other, no longer active, river valleys (to be found in the general areas south of Sandhurst, north of Hawkhurst, north of Cranbrook) in the borough also have these deposits, little is known of their potential to give rise to a viable economic extraction at this time. The Mineral Sites Plan identifies allocations for further sand and gravel extraction in both administrative areas, Moat Farm (Site M10) in Tunbridge Wells Borough and Stonecastle Farm (site M13) in Tonbridge and Malling Borough.

The sand and gravel materials in the upper Medway valley are considered mineralogically less suitable than the ‘flint’ sand and gravels in meeting a wider array of construction applications, given that they are a weaker polymorph of silica called Chalcedony. Colloquially known as ‘Silt Stone’ or ‘sandstone sand and gravels’. The ‘flint’ sand and gravels that occur elsewhere (such as at Lydd and Dungeness and in the Darent river valley and historically around Leybourne in the Medway river valley lower down) are more suited to higher specification concrete products. However, it should be recognised that the deposits within each river valley can be highly variable from place to place and isolated deposits with high quality sand and gravel deposits may yet remain. Although it is generally recognised that overall, the superficial sands and gravel land-won resource in the County is becoming exhausted.

The need for aggregates, in terms of the required land-bank to meet an objectively assessed quantity over a plan period is assessed each year by the County Council in the Local Aggregate Assessment (LAA). The current permitted landbank for sharp sands and gravel to form aggregate is discussed in this document. It details what degree of shortfall in the landbank that may exist, and other aggregate types are available to compensate for this.

Calcareous Tufa

Tufa is a freshwater carbonate deposit formed around springs. During the Pleistocene (2.58million to 11,700BC), the development of these tufa deposits appears to have been extensive. There are a number of locations in Kent, commonly associated with springs at the margin of the Hythe Formation or Chalk Group outcrops, where tufa deposits are still forming. Many older deposits have been quarried away, however, having served as sources of lime or occasionally building stone. They are

characterised by their hard and durable nature when lithified, and their highly porous structure and therefore low density, makes them ideal for use as wallstones and for vaulting in churches. It is believed that supplies of tufa for building were exhausted by late Norman times.

Blocks of pale-coloured, porous tufaceous limestone can be seen forming the quoins and dressings of the walls in the 12th Century tower of St Leonard's at West Malling. Locally derived tufa blocks were also used extensively in the construction of the Roman Lighthouse (Pharos) at Dover. A number of churches in the Romney Marsh area have some tufa blocks in their fabric (e.g., at Lympne, West Hythe, Appledore and New Romney, some having been reused from the Roman Fort at Lympne), as have several Norman churches in the Maidstone area. In the Tunbridge Wells Borough area, the tuffa deposits are to be found in the south of the borough, in the Ashurst area, deposits of this material also outcrop in the close by Sevenoaks area also. The County Council has no records of any extraction of this material in recent periods. Like the Paludina Limestone, it is reasonable to suppose that any potential extraction would be small scale and for localised restoration projects.

and Waste

Local Plan






Minerals and Waste Planning Policy Team
Kent County Council
Invicta House
County Hall
Maidstone
Kent

Tel: 03000 422370
Email: mwlp@kent.gov.uk

Www.kent.gov.uk/mwlp

Kent County Council
kent.gov.uk