

Aggregates supply options

Discussion paper

June 2013

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Background discussion paper for aggregates industry informal options consultation - June 2013

Introduction

This discussion paper is intended to provide background information to support early consultation with the aggregates industry on the development of options for aggregates supply, to feed into work on the production of a Minerals and Waste Joint Plan for the North Yorkshire County Council (NYCC), City of York Council (CYC) and the North York Moors National Park Authority (NYMNP) authority areas.

In particular, this paper identifies some key strategic questions relevant to planning for aggregates as well as, in summary, some possible policy options or approaches that could be followed in the Joint Plan. It also asks a number of initial questions for consultees, on which your input would be appreciated. It is emphasised that any potential options or approaches referred to in this Paper are indicative at this stage to help inform discussion at an early stage of preparation of the Joint Plan. They do not necessarily represent the views of the three Authorities as to those potential options which should go forward for more formal consultation and they have not yet been subject to any form of sustainability appraisal.

A substantial amount of detailed background evidence and information about aggregates in the North Yorkshire Sub-region is contained in the North Yorkshire Sub-region Local Aggregates Assessment (LAA) (Jan 2013), which is available at northyorks.gov.uk/CHttpHandler.ashx?id=21448&p=0

The key conclusions identified in the LAA are:

1. Currently all aggregates produced in the sub-region are from the North Yorkshire County Council and Yorkshire Dales National Park areas, with no production from the City of York and North York Moors National Park areas
2. Aggregates supplied from the sub-region are of significance at a regional level and beyond
3. Although there has been a decline in production over the past few years, in response to economic conditions, the strategic significance of aggregate supply from the sub-region is likely to remain high and may increase
4. The sub-region has high overall reserves of crushed rock but reserves of sand and gravel are more limited and there is likely to be a need to identify further resources suitable for working
5. Identification of potential future requirements for aggregate based on historic sales over the past 10 years would be appropriate as a starting point for local minerals plans outside the National Park areas
6. There is potential for shortfall in supply of sand and gravel and Magnesian Limestone in the mid term in the absence of release of further reserves
7. Unless new permissions are granted, and if recent levels of sales are maintained, there is potential for reserves of high PSV aggregate to be significantly reduced in the mid term

8. There is no expectation of a substantial near term shift in the overall balance of supply from the main sources of aggregate produced in the sub-region (ie crushed rock, land won sand and gravel and secondary and recycled aggregate) although a number of factors, discussed further in Part C of the LAA, have been identified which could impact on this in the mid to long term
9. A range of factors including matters relating to resource distribution and the presence of substantial areas of National Park and other important designations are likely to place increasing constraints on the supply of aggregates in the longer term
10. A number of significant cross-boundary movements of aggregate to/from other areas have been identified which should be considered further through preparation of local minerals plans
11. A number of matters relating to aggregate supply and demand have been identified which should be kept under review through future updates to this LAA

In addition to the LAA, the content of this paper on aggregates planning issues builds on a number of existing sources of information including;

- Work on the development of evidence to support minerals planning, undertaken by NYCC over the period 2010 to 2012 (including relevant evidence papers) northyorks.gov.uk/mwevidence
- North Yorkshire (NYCC) Sand and Gravel resource re-assessment (BGS 2011) northyorks.gov.uk/index.aspx?articleid=20124
- North Yorkshire (NYCC) Minerals safeguarding report (BGS 2011)
- The output of an aggregates industry workshop held by NYCC in 2012 northyorks.gov.uk/CHttpHandler.ashx?id=18074&p=0

Context to aggregates minerals in the Joint Plan area

Aggregate minerals such as sand and gravel and crushed limestone are vital raw materials for the construction industry and are used in the manufacture of concrete, road building and repair and a wide range of other construction related uses. As with other types of minerals, they can only be quarried where they are found. The Joint Plan area (primarily the NYCC area) is rich in aggregate resources of a variety of types and there is a long history of their exploitation. At present, quarrying of aggregate only takes place within the NYCC area, although small amounts of recycled aggregate are likely to be generated within the City of York and, to a lesser extent in the North York Moors National Park area. National planning policy prioritises the maintenance of a steady and adequate supply of aggregate minerals and indicates that this is an important issue to be addressed in minerals local plans.

Evidence about availability of aggregate resources across the Joint Plan area is variable. Relatively good information is available for sand and gravel (in the NYCC area) following a re-assessment conducted by BGS on behalf of NYCC in 2011. There is less information about crushed rock, and variable information about secondary and recycled aggregate resources. The evidence we do have suggests that there are substantial potential resources of both sand and gravel and crushed rock, as well as significant sources of arisings of materials with potential for use as secondary and recycled aggregate. Resource availability constraints themselves are therefore unlikely to be a fundamental obstacle to maintenance of future supply. However, there are a wide range of matters which may impact on the potential for resources to be actually developed, including matters such as environmental

constraints, accessibility to markets and transport infrastructure, fragmentation of the resource (eg by surface infrastructure) and more detailed economic viability and resource quality considerations. These factors are likely to pose challenges to the maintenance of future aggregates supply, notwithstanding the scale of theoretical resources which may exist.

Evidence, including that presented in the LAA for the NY Sub-region indicates that aggregates resources, reserves and infrastructure in the Joint Plan area are likely to be of significance at a geographical level wider than that of the Joint Plan area or the NY Sub-region. For sand and gravel this is a result of the quality and potential scale of the resource and the established role that sand and gravel quarries in the Joint Plan area have played in supplying markets not just within North Yorkshire but into nearby areas such as the NE region and South and West Yorkshire, where in some cases resources of appropriate quality are not readily available. For crushed rock, although smaller volumes are exported to neighbouring areas than is the case for sand and gravel, reserves, resources and infrastructure in the Joint Plan area are still expected to be of significance in maintaining supplies to key markets, as well as the internal North Yorkshire market, over the foreseeable future.

This is important because national planning policy on minerals requires planning authorities to consider and plan for significant cross-boundary movements of minerals to ensure that adequate overall supply can be maintained. The evidence suggests that the significance of the aggregate resources in the Joint Plan area is likely to remain high, and perhaps increase, over time. This further emphasises the importance of developing a long term planning strategy for the supply of aggregate minerals and addressing this issue is considered to be one of the most important matters we need to deal with in the Minerals and Waste Joint Plan.

National planning policy gives preference to the use of alternatives (such as secondary and recycled materials) to primary aggregate. The LAA for the North Yorkshire Sub-region provides much of the context and evidence underpinning the expected future supply requirements for the range of aggregate minerals available across the Joint Plan area.

The LAA concludes that there is likely to be some potential for an increase in the level of supply met from secondary aggregates (although the LAA also identifies potential factors which could impact adversely on supply). With regard to recycled aggregate, the LAA concludes that the proportion of overall supply from such sources is likely to remain broadly the same as for recent years. These conclusions are reflected in the range of aggregates supply options presented later in this Paper.

For primary land-won aggregates, the LAA concludes that an approach to future provision based on projection forwards of average sales over a ten year period, as referred to in para. 145 of the NPPF, would be appropriate, although the LAA also recognises that an element of flexibility, particularly with regard to sand and gravel provision, may be necessary to take into account a range of uncertainties about the actual scale of future provision that may be needed.

The LAA also provides information on aggregate landbanks in the area. This information indicates that there are currently substantial reserves of crushed rock, so that the overall crushed rock landbank is well in excess of the 10 year minimum required by the NPPF. With regard to concreting sand and gravel, data in the LAA suggests that the landbank is near to the 7 year minimum. This suggests that particular consideration needs to be given in the Joint Plan to the identification of further provision for sand and gravel.

The following sections identify what we currently consider to be the key aggregate planning questions we need to address, together with some potential policy options or approaches for helping to deal with those issues. They are presented here only for the purposes of facilitating discussion at an early stage of the plan making process.

In the following sections the term “option” is used to indicate distinct choices as to the direction the Joint Plan could take in response to a particular issue. They are therefore mutually exclusive. The term “approach” is used to indicate the general direction that the plan could take in response to an issue and where there may be more than one approach which may be able to be followed in conjunction with other, related, approaches dealing with broadly similar issues.

Broad spatial approaches, which include further consideration of the overall approach to be followed in those parts of the Joint Plan area designated as National park or Area of Outstanding Natural Beauty (AONB), are addressed towards the end of the Paper, but would also be of relevance to implementation of many of the more specific potential options set out in the earlier parts of the Paper.

Strategic Planning Question 1 - what could the overall strategy for aggregates supply be?

Taking into account available information on the current and likely future significance of the aggregates resources in the Joint Plan area, together with the requirements of national policy which seeks the sustainable use of resources and maintenance of an adequate and steady supply of aggregate, it is appropriate to consider the intended overall role and approach of the Joint Plan with respect to aggregate supply.

Key elements of the overall strategy for supply of aggregate could be to:

1. Support the safeguarding of aggregate resources and aggregates supply infrastructure to ensure their future availability
2. Support the efficient and sustainable use of aggregate including through the design and construction of built development
3. Support the maintenance and where practicable increased supply of secondary and recycled aggregate from sources within the Joint Plan area as alternatives to primary aggregate
4. Support the continued supply of primary aggregate available in the Joint Plan area, in order to maintain the role of the area as an important supplier of aggregate within the North Yorkshire Sub-region and within adjoining established market areas
5. Meet the likely future supply requirements for aggregate, as identified in the Local Aggregates Assessment for the North Yorkshire sub-region, over the period to 2030 and to maintain a landbank of at least 7 years for sand and gravel and 10 years for crushed rock
6. To provide for the supply of aggregate in a way which protects communities and important environmental, landscape, heritage and other assets, and in particular in accordance with the principles of a spatial approach which provides for the

maintenance of landbanks of aggregates outside those parts of the Joint Plan area designated as National park and Areas of Outstanding Natural Beauty.

Key questions for consultees:

Do you agree with these broad principles?

What other/alternative priorities for aggregates supply should we consider?

Strategic Planning Question 2: What broad approach could we follow to ensure the adequate safeguarding of primary aggregates resources?

National planning policy requires Mineral Planning Authorities (MPAs) to define Minerals Safeguarding Areas (MSAs) and adopt appropriate policies in order that known locations of specific minerals resources of local and national importance are not needlessly sterilised by non-mineral development; and to define Minerals Consultation Areas based on these MSAs. The NPPF also requires MPAs to safeguard a range of existing, planned and potential minerals supply related infrastructure such as railheads and wharfs used for the bulk transport of minerals, as well as existing, planned and potential sites for concrete batching, manufacture of coated materials, other concrete products and the handling, processing and distribution of substitute, secondary and recycled aggregate material. MPAs need to set out policies to encourage the prior extraction of minerals, where practicable and environmentally feasible, if it is necessary for non-mineral development to take place.

In order to help determine an approach to Safeguarding minerals, NYCC commissioned the British Geological Survey (BGS) to identify an approach to safeguarding of minerals resources in the NYCC area, based on best practice guidance. The report of the study is available to view at northyorks.gov.uk/index.aspx?articleid=20124. Consultation with the minerals industry took place during the project and views received were incorporated into the output. This work is being supplemented by comparable studies by BGS for the CYC and NYMNPA areas. The three authorities have also undertaken an audit of minerals supply infrastructure in the Joint Plan area in order to provide a basis for aggregates infrastructure safeguarding.

The key recommendations of the BGS work for the NYCC area, in respect of the safeguarding of aggregates, are to safeguard the overall resource of Jurassic, Permian and Carboniferous limestones, Carboniferous sandstone and chalk. The report also recommends, following consultation with industry, provision of a 500m buffer consultation zone around crushed rock resources to enable consideration of potential sterilisation through development taking place close to the resource boundary. For sand and gravel BGS recommend a similar approach but with provision of a 250m buffer consultation zone.

Potential primary aggregates safeguarding options

Option 1)

Aggregates resources safeguarding option 1 could safeguard all identified crushed rock and sand and gravel aggregate resources in line with the approach identified in the BGS Safeguarding report (2011), including use of a 500m buffer zone for crushed rock and a 250m buffer zone for sand and gravel.

Option 2)

This option could safeguard all identified crushed rock and sand and gravel aggregate resources in line with the approach identified in the BGS Safeguarding report (2011), but utilise a smaller 200m buffer zone for crushed rock and a 100m buffer zone for sand and gravel following the generic advice in the national *Mineral safeguarding in England: good practice advice* (2011).

Option 3)

This option could follow an approach of only safeguarding aggregates resources (together with an appropriate buffer zone) for those parts of the Joint Plan area outside urban areas and the North York Moors National Park and AoNBs, as these are either highly constrained by surface development or are areas of national policy restraint towards working of aggregate.

Sub-option a)

This sub-option could operate in parallel with other options and would only safeguard sand and gravel resource areas with an identified tonnage (based on the 2011 BGS sand and gravel assessment) of 0.75mt or more, as resources with a lesser tonnage would be less likely to be viable for development. An equivalent approach could not be followed for crushed rock as resource data is less robust.

Sub-option b)

This sub-option could, in addition to safeguarding aggregates resources identified in the BGS safeguarding report 2011, safeguard resources identified in any proposed sand and gravel and crushed rock site allocations or preferred areas which fall outside resource areas identified in the BGS safeguarding report 2011, provided there is other adequate evidence for the existence of a potentially viable resource of aggregate

Option summary: Primary aggregates resources safeguarding	
Option 1	This option could safeguard all known crushed rock and sand and gravel resources, with 500m and 250m buffer zones respectively
Option 2	This option could safeguard all known crushed rock and sand and gravel resources, with 200m and 100m buffer zones respectively
Option 3	This option would only safeguard crushed rock and sand and gravel resources outside urban areas and National Park and AoNB designations
Sub-option a)	This sub-option could operate in parallel with other options and would only safeguard sand and gravel resource areas with an identified tonnage of 0.75mt or more
Sub-option b)	This sub-option could operate in parallel with other options and would safeguard any additional resources proposed in site allocations and preferred areas where supported by adequate resource information

Key questions for consultees:

Are there any alternative options for aggregates resource safeguarding you think the Authorities should consider?

Do you have any initial preferences for any of the options presented above?

Strategic Planning Question 3: What could our approach to safeguarding of aggregates supply Infrastructure be?

Supply of aggregate may involve use of a range of infrastructure. This includes:

- Aggregates extraction sites and related infrastructure such as primary processing plant
- Associated ancillary infrastructure (which may be at extraction sites or located independently eg. on industrial estates) such as concreting plants, coating plants, aggregates bagging facilities, facilities processing and blending recycled aggregate materials
- Aggregates transport facilities such as rail heads and wharfs
- Secondary and recycled aggregate supply facilities

This range of infrastructure all contributes to the overall capability of the Joint Plan area to produce and deliver aggregate in the forms needed to serve the market and therefore plays an essential role in maintaining supply. In order to help ensure on-going availability of relevant infrastructure, and to ensure consistency with national planning policy on safeguarding, it will be necessary to establish an approach to minerals infrastructure safeguarding in the Joint Plan. This will complement the intended safeguarding of the minerals resource itself, referred to above. The Authorities have identified the known infrastructure in the Joint Plan area which it is considered could be subject of safeguarding and further details of these are available on the Joint Plan web pages.

Potential aggregates supply infrastructure safeguarding options

Option 1)

Aggregates supply infrastructure safeguarding option 1 could safeguard all known aggregates supply and transport infrastructure, including infrastructure located at active mineral extraction sites for the duration of mineral extraction activity at the associated site. This approach would help ensure the safeguarding of all relevant infrastructure regardless of whether or not it is also protected under the terms of an associated permission for mineral working, but could lead to a need for consultation on safeguarding matters at sites where the infrastructure already has a degree of protection via an existing permission for mineral development.

Option 2)

Aggregates supply infrastructure safeguarding option 2 could safeguard aggregates supply and transport infrastructure where located at a “freestanding” site (ie not within the boundary of an associated permission for mineral working). This approach would minimise the need for consultation on safeguarding matters where infrastructure already has the benefit of protection from encroaching development, or other safeguarding issues, due to its location within an area permitted for mineral development.

Option 3)

Aggregates supply infrastructure safeguarding option 3 would only seek to safeguard strategically important aggregates supply and transport infrastructure, for example infrastructure expected to supply or transfer over a certain annual output or transfer threshold to be determined eg 100,000tpa.

Option summary: Aggregates supply infrastructure safeguarding	
Option 1	This option could safeguard all known aggregates supply and transport infrastructure, including infrastructure located at active mineral extraction sites for the duration of mineral extraction activity at the associated site
Option 2	This option could safeguard aggregates supply and transport infrastructure where located at a “freestanding” site (ie not within the boundary of a permission for mineral development)
Option 3	This option would only seek to safeguard strategically important aggregates supply and transport infrastructure

Key questions for consultees:

Are there any alternative options for aggregates supply infrastructure safeguarding the Authorities should consider?

Do you have any views on what scale/type of infrastructure could be considered to be of strategic significance?

Do you have any initial preferences for any of the options presented above?

Strategic Planning Question 4: What could our approach be to delivery of supply of alternatives to landwon primary aggregate?

The National Planning Policy Framework requires MPAs, so far as practicable, to take account of the contribution that substitute or secondary and recycled materials and minerals waste would make to the supply of materials, before considering extraction of primary materials, whilst aiming to source supplies of minerals indigenously.

The NY Sub-region LAA identifies available data on secondary and recycled aggregates and also acknowledges deficiencies in the availability of data, particularly in respect of recycled aggregates. It identifies a number of matters relevant to considering the potential future contribution that secondary and recycled materials may make toward future supply from the Joint Plan area.

Overall the LAA concludes that, with regard to secondary aggregates (principally colliery spoil and combustion ash), it would be reasonable to assume capability to maintain supply at levels similar to those prevailing in recent years, at least in the near term (the LAA defines near term as 0-5 years). The LAA also notes that it is likely that levels of supply of some secondary aggregates, particularly Pulverised Fuel Ash (PFA) and colliery spoil) could be increased if suitable markets could be identified and that there are potential sources of secondary aggregates contained in existing disposal facilities such as at Barlow and Gale Common ash disposal sites and the Womersley colliery spoil disposal facility. During consultation on preparation of the LAA, the operator of the Gale Common ash disposal site commented that upward revision of the current limit on export of ash from the site could help increase supply from this source.

On the other hand, the LAA notes that availability of supply of secondary aggregate in the Sub-region is also directly linked to the future success of those industries which give rise to them. This means that the unforeseen closure of a major producer could impact significantly on the ongoing availability of secondary aggregate, and that changes in the structure of industry (such as the conversion of power generation capacity from coal to biomass firing)

could impact on the quality of secondary aggregate. Overall therefore, it is considered that it would be reasonable to assume that the scale of contribution from secondary aggregate sources is likely to remain broadly the same or perhaps increase slightly in response to policy pressures and increased marketing activity by producers. The LAA acknowledges that this is a matter which will need to be kept under review. The potential for a small increase in the proportion of supply from secondary sources is reflected later in this Paper in Strategic Planning Question 10 *Crushed rock - Level of overall provision to be made in the plan* (Option 2a), which identifies a corresponding small decrease (0.1mtpa) to be made in the amount of supply from land won crushed rock sources.

Notwithstanding the above issues, it is considered important that the Joint Plan should support the principal of maximising provision of supply of alternative aggregates, in order to help safeguard primary resources and to ensure consistency with national planning policy.

Potential approaches to supply of alternatives to land won primary aggregate

Approach 1)

In order to support provision of supply from secondary aggregate sources, *Alternatives to supply of primary landwon aggregate - Approach 1* could seek to encourage the maximum use of such materials through one or more supporting measures which could include;

- Supporting the principle of development of new infrastructure, such as downstream manufacturing facilities utilising secondary aggregate as the primary raw material, at sites where secondary aggregates are produced
- Supporting the principal of limited re-working secondary aggregate materials already deposited in current or former disposal facilities, where consistent with environmental and amenity objectives of the Joint Plan. These would principally include ash disposal sites and current and former colliery spoil disposal facilities. This could also include supporting the principle of an upward revision to the current annual tonnage export limit for secondary aggregate from the Gale Common ash disposal facility
- Supporting the use of secondary aggregate materials as part of a broader policy approach to the sustainable use of materials in the design and construction of development

Recycled aggregates mainly comprise materials such as concrete, brick and other construction materials which can be processed (usually through relatively simple processes such as crushing and screening) and re-used as aggregate. They are often produced and re-used at construction sites and therefore it can be more difficult to capture reliable data about the actual extent to which such materials contribute to overall supply of aggregate. In some cases recycled aggregate may be produced at waste management facilities such as waste transfer and recycling sites, for onward sale as recycled aggregate. Sometimes this activity may occur at sites exempt from environmental permitting so that again there is a lack of data about the quantities involved. In other instances, materials with potential for use as recycled aggregate may be imported to locations (such as existing aggregates quarries or depots) for sale alongside, or blending with, primary aggregate.

Although there is limited data, it is generally understood that a large proportion of the material capable of being used as recycled aggregate is already being put to beneficial use, and the LAA indicates that this is the position likely to prevail in the Joint Plan area. The LAA therefore concludes that it is likely that the proportionate contribution to overall supply from recycled aggregate is likely to remain broadly the same over the foreseeable future. However, in view of the national policy requirement to encourage the provision of such materials before considering extraction of primary aggregates, it is considered appropriate to

provide support in the Joint Plan for the continued, and where practicable increased, utilisation of recycled aggregate. This could be delivered through a number of measures.

Approach 2)

This approach could promote the use (including the potential for increased use) of recycled aggregate through a range of measures including;

- Encouraging the use of recycled aggregate in the design and specification of construction projects
- Encouraging the maximum recovery of recycled aggregate during demolition activity
- Encouraging the separation of materials with potential for use as recycled aggregate during waste management processes
- Encouraging the use of existing minerals extraction sites as locations for the reception, processing and onward sale of recycled aggregate during their period of operation
- Making adequate provision for any new facilities needed for the management of construction and demolition waste identified through any waste needs assessment undertaken during preparation of the Joint Plan.

It should be noted that Approaches 1 and 2 are not mutually exclusive. It should also be noted that the NYCC part of the Joint Plan area comprises part of a two tier system of planning authorities, with some planning functions being administered by the relevant District and Borough Councils. This is in contrast to the areas covered by the City of York and North York Moors National Park Authority areas, which are unitary authorities responsible for the full range of planning functions. Some of the initiatives referred to above would need to be implemented by lower tier authorities in the NYCC area.

No alternatives are presented for *Alternatives to supply of primary landwon aggregate - Approaches 1 and 2* owing to the requirements of national policy. However, views are invited on the specific range of measures which could be utilised to support the use of secondary and recycled aggregate, including whether the measures proposed above are suitable and whether there are any alternative or additional measures the Authorities should consider. Marine aggregates may also play a role in providing an alternative to primary landwon aggregate. The potential role of marine aggregate is addressed in Strategic Question 6 *Sand and Gravel - level of overall provision to be made in the Plan* (option 3).

Option summary: Alternatives to supply of landwon primary aggregate	
Approach 1	This approach could support the maximum use of secondary aggregate through a range of measures as set out above
Approach 2	This approach could support the maximum use of recycled aggregate through a range of measures as set out above

Key questions for consultees:

Do you have any views on the range of measures that should be supported in the Joint Plan in order to help increase supply of secondary and recycled aggregate?

Do you have any views on the potential scale of change in the supply of secondary and recycled aggregate that may be expected over the period to 2030?

Do you have any initial preferences for any of the approaches presented above?

Strategic Planning Question 5: What could our approach to delivery of sites for secondary and recycled aggregates supply be?

Delivery of secondary and recycled aggregate supply is important to help reduce the requirement for primary aggregate. Secondary aggregate production in the Joint Plan area is concentrated at a relatively small number of locations, principally comprising power stations and their associated ash disposal sites, together with Kellingley Colliery. It is not expected that large scale new sources of secondary aggregate will be developed during the Plan period.

Potential options for delivery of secondary aggregates supply

Option 1)

This option could identify current known main supply sites for secondary aggregate as strategic sites for the supply of secondary aggregate and as locations where further development and infrastructure for the supply of secondary aggregate would be supported in principle, in addition to any policy support provided under Strategic Planning Question 4 *Alternatives to the supply of landwon primary aggregate* (Approach 1)

Option 2)

This option would not identify known sources of supply of secondary aggregate as strategic sites. General support for the further development of secondary aggregate would be provided under *Alternatives to the supply of landwon primary aggregate Approach 1*

Options summary: Secondary aggregate delivery	
Option 1	This option could seek to deliver supply of secondary aggregate through the identification of strategic sites, based on current main supply locations, where further development would be supported in principle
Option 2	This option would not identify strategic sites for the supply of secondary aggregate but would provide general policy support for supply and supply infrastructure from appropriate locations

Recycled aggregates may be produced at a wide range of sometimes transitory sites and facilities. The scale of production at any individual site is often relatively small, and there are no known large scale producers of recycled aggregate in the Joint Plan area. It is not therefore considered that there is likely to be justification to identify any particular supply locations as strategic sites. Support for supply of recycled materials could continue to be provided under the approaches dealing with Strategic Question 4 on *Supply of alternatives to landwon primary aggregate*.

Key questions for consultees:

Are there any alternative options for secondary aggregate delivery you think the Authorities should consider?

Do you have any initial preferences for any of the options presented above?

Do you have any views on the potential to identify strategic sites for supply of recycled aggregate?

Strategic Planning Question 6: What level of overall provision for sand and gravel should be made in the Joint Plan?

The options below relate to figures for past sand and gravel production from the NYCC area only. As there has been no recent history of sand and gravel extraction in the NYMNP or CYC areas these figures are equally relevant when considering supply from the Joint Plan area as a whole.

The options also reflect the conclusions in the LAA that the overall significance of sand and gravel supply from the North Yorkshire area is likely to remain high and therefore no option is presented at this stage to reflect a scenario of a substantial reduction in overall supply of sand and gravel from the Joint Plan area. However, further work and consultation during the development and consideration of options for the Joint Plan may lead to the development of such options as the work progresses. For example, it may be that in the longer term significant increases in indigenous supply from the adjacent North East Region, particularly the Tees Valley, (one of the principle export markets for NYCC sand and gravel) may be able to offset the exports that currently take place from within NYCC, enabling a reduction in overall provision from the Joint Plan area. Options relating to the distribution of overall sand and gravel supplied from the Joint Plan area are considered under Strategic Planning Question 7 later in this Paper.

Potential options for the overall level of sand and gravel provision

Option 1)

This option could follow the approach identified in the LAA and make future provision for sand and gravel utilising the most recent 10 year average sales figure available at the time of production of the Joint Plan. This would involve projecting forward 10 year annual average sales over the period to 2030 to provide an indication of the overall scale of provision required, after allowing for the level of reserves already with planning permission. Based on data published in the LAA this would mean making future provision for a total of 43.7mt of sand and gravel over the period 2012 to 2030. Taking into account estimated reserves (at end 2011) of 16.2mt, **this would lead to a need to make provision for a further 27.5mt of sand and gravel in the Joint Plan.** These figures may need to be adjusted slightly as further annual sales data becomes available during production of the Joint Plan.

Option 2)

Consultation with the minerals industry during preparation of the LAA led to the view being expressed that, prior to the recent economic downturn, sales of aggregate were relatively stable over a significant period of time and that this background level of sales is likely to be more representative of future sales, as the industry expects a relatively quick 'bounce back' due to repressed demand in the system. Industry would therefore like to see some flexibility incorporated in future provision. This point was acknowledged in the LAA, which recognised that there may need to be some flexibility in sand and gravel provision, taking into account the current and likely future strategic significance of concreting sand and gravel resources in North Yorkshire. Option 2 would therefore seek to introduce an element of flexibility, which could be provided in a number of ways via the following sub-options;

- a) By basing future requirements on an assumed annual average requirement higher than that generated by taking an annual average of 10 years sales at the time of plan preparation (ie 2.3mtpa), for example by carrying forward the annual average requirement incorporated in the sub-regional apportionment contained in the RSS for Yorkshire and Humber (now revoked) of 2.63mt pa. The Mineral Products

Association, during consultation on preparation of the LAA, indicated that provision should be based on the level of (pre-recession) sales in 2007 of 2.7mt. Use of these approaches would result in a need to make provision for an additional (ie above the 43.7mt referred to in option 1 above) 6.3mt or 7.6mt respectively over the 19 year period 2012-2030. For the purposes of this sub-option it is assumed that this approach would involve making an additional 7.0mt of provision (ie an approximate mid-point between the two values) resulting in a total provision of 50.7mt. Taking into account estimated reserves (at end 2011) of 16.2mt, **this would lead to a need to make provision for a further 34.5mt of sand and gravel in the Joint Plan.**

- b) By making an additional assumed allowance over the amount of provision required on the basis of projecting forward 10 year historic sales, for example by adding a “contingency” allowance of 10%. This would lead to a need to make provision for an additional 4.4mt over the period 2012-2030, resulting in a total provision of 48.1mt. Taking into account estimated reserves (at end 2011) of 16.2mt, **this would lead to a need to make provision for a further 31.9mt of sand and gravel in the Plan.**
- c) By identifying an additional assumed allowance which would be provided in the latter part of the Joint Plan period (eg beyond 2020) in the event that sales of sand and gravel recover to a level such that short term average sales (as measured over a three year averaging period for the years 2017, 2018 and 2019) exceed the 10 year average sales figure used to define provision at the time of plan preparation by an amount exceeding 10%. The level of additional provision to be made could be equivalent to that needed to bring the total amount of provision made over the whole Joint Plan period in line with that referred to in sub-option b) above, ie provision of a further 4.4mt leading to **a need to make provision for a further 31.9mt of sand and gravel in the Joint Plan.**

Option 3)

This option assumes that, in the latter part of the Joint Plan period, increased importation of marine aggregate into markets currently served by concreting sand and gravel quarries in North Yorkshire will reduce the need for supply from land won sand and gravel sources in North Yorkshire. This option reflects current interest (for example as acknowledged in the adopted Leeds Waste and Natural Resources DPD) in increasing supply of marine aggregate into the West and South Yorkshire areas, where significant constraints in land-won supply exist. Research into the potential deliverability of this has been commissioned by MPAs in the Region, in conjunction with the Crown Estate and with involvement of the minerals industry and it is not yet clear what, if any, assumed contribution from marine sources may be realistic. For present purposes it is considered that the proportion of supply from marine sources would be likely to see only a modest increase and therefore would be only likely to offset supply from North Yorkshire to a small extent. This option is therefore based on an assumption that the total required provision of 43.7mt (based on the 10 year average sales method – option 1 above) would be reduced by 1mt (ie an assumed offsetting of 0.1mtpa of NY sales over the last 10 years of the Plan period (2020-2030) due to increased supply from marine sources, leading to a total requirement of 42.7mt. Taking into account estimated reserves (at end 2011) of 16.2mt, **this would lead to a need to make provision for a further 26.5mt in the Joint Plan.** These figures may need to be adjusted slightly as further annual sales data becomes available during production of the Plan.

With regard to the various options for overall sand and gravel provision presented above it should be noted that, at the time of preparation of this document, a number of planning applications for sand and gravel working are under consideration by NYCC and which, in

combination, contain an estimated 25.3mt of reserves¹. The outcome of these applications will have a significant bearing on the actual level of additional provision that may need to be made in the Joint Plan and will need to be kept under review during preparation of the Plan.

Options summary: Sand and gravel - Level of overall provision to be made in the Joint Plan		
	Total provision 2012-2030	Additional provision required to be made in the Plan (ie total provision minus permitted reserves at end 2011)
Option 1	43.7mt	27.5mt
Option 2a	50.7mt	34.5mt
Option 2b	48.1mt	31.9mt
Option 2c	48.1mt*	31.9mt*
Option 3	42.7mt	26.5mt

* If trigger threshold reached - see text above

Key questions for consultees:

Are there any alternative options we should consider in order to determine the level of sand and gravel provision to be made in the Joint Plan?

Do you have any initial preference for any of the options presented above?

Strategic Planning Question 7 - How could sand and gravel provision be distributed across the Joint Plan area?

Strategic Planning Question 15 later in this Paper, dealing with the *Overall spatial approach to aggregates supply*, considers how provision could be distributed spatially across the 3 planning authority areas represented in the Joint Plan. The options below consider more detailed matters relating to sand and gravel supply from established supply sources in the NYCC area, which is the only part of the Joint Plan area with a recent history of active production of sand and gravel.

The LAA and other evidence available suggests that supply of concreting sand and gravel from North Yorkshire serves two main market areas; northwards into the adjacent North East Region, expected to include exports mainly to the Tees Valley area and County Durham, and; an internal and southwards distribution market area, which includes exports primarily to the West and South Yorkshire Sub-regions as well as markets internal to the North Yorkshire Sub-region. This subdivision has been recognised for a substantial period of time and has formed the basis for reporting of some sand and gravel data in previous reports of the Yorkshire and Humber Regional Aggregates Working Party, as well as the approach to provision of sand and gravel supply in the North Yorkshire Minerals Local Plan 1997. The Minerals Products Association, during consultation on preparation of the LAA, indicated that they support the subdivision of the landbank in this way and that the market is likely to operate in this way for years to come.

¹ Since preparation of this paper permission has been granted for an extension to Wykeham Quarry containing an estimated 4.5mt of concreting sand and gravel

Building sand supply and provision has, for previous reporting and forward planning purposes, been addressed separately as it is a different product serving differing end uses from concreting sand and gravel. There is no general substitutability of building sand and concreting sand and gravel and it is considered that maintaining this distinction is likely to remain appropriate.

Some data is available on the proportion of overall sales of sand and gravel that each subdivision represents, based on NYCC survey data for 2009, 2010 and 2011. This indicates that average sales took place at a ratio of 50:45:5 southwards : northwards : building sand. There is no specific data available on the extent to which any shift in the balance of supply from the northwards and southwards distribution areas may change over time. Given known limitations on resources and availability of indigenous supply in both the Tees valley and South and West Yorkshire areas, it is considered likely that there will be an on-going call on concreting sand and gravel resources in both the northwards and southwards distribution areas for the foreseeable future, a point also made by the Mineral Products Association during preparation of the LAA. It may therefore be reasonable to assume that future provision should be made on the basis of carrying forward the proportionate share of total sand and gravel sales for the three year period 2009-2011 that each subdivision represents.

Potential options for the overall distribution of sand and gravel provision

Option 1)

This option could make future provision for sand and gravel on the basis of separate provision for the southwards and northwards distribution areas (concreting sand and gravel) and for building sand, at a ratio of 50:45:5 (ie retaining the proportionate split based on three year sales data for the period 2009-2011). This would result in a need to make total provision, based on the overall requirement generated through use of the 10 year average sales method (see Level of overall provision - option 1 above), of 21.9mt, 19.6mt and 2.3mt respectively. Utilisation of one of the alternative options to determine the overall level of sand and gravel provision to be made would lead to a need to adjust the subdivided figures accordingly (see Appendix 1).

Option 2)

This option could make future provision for sand and gravel on the basis of separate provision for the southwards and northwards distribution areas (concreting sand and gravel) and for building sand, with an increased emphasis on provision for the southwards distribution area. This could assume provision based on a ratio of 55:40:5 southwards : northwards : building sand and would reflect an assumption that on-going supply constraints in West and South Yorkshire, combined with growth pressures in the Leeds City Region area and potential longer term infrastructure projects such as HS2 could lead to a relative increase in demand in the southwards distribution market area. It could also assume that there may be some potential for a limited increase in indigenous supply in the NE region (eg from the Durham and Tees Valley areas) in the medium to longer term, thus reducing reliance on imports from northern North Yorkshire. Following this approach would result in a need to make total provision, based on the overall requirement generated through use of the 10 year average sales method (see Level of overall provision – option 1 above) of 24.0mt (southwards), 17.5 (northwards) and 2.3mt (building sand). Utilisation of one of the alternative options to determine the overall level of sand and gravel provision to be made would lead to a need to adjust the subdivided figures accordingly (see Appendix 1).

Option 3)

This option could make future provision for sand and gravel on the basis of separate provision for the northwards and southwards distribution areas (concreting sand and gravel)

and for building sand, with an increased emphasis on provision from the northwards distribution area. This could assume provision on the basis of a ratio of 45:50:5 southwards : northwards : building sand and would reflect an assumption that demand in the Tees Valley area and other adjacent parts of the NE region is likely to be sustained and the fact that a greater proportion of North Yorkshire sand and gravel sales were exported to the NE region in 2009 than in 2005. It could also reflect an assumed greater potential for supply of aggregate to West and South Yorkshire from crushed rock sources in Derbyshire, resulting in reduced demand on North Yorkshire southwards distribution sources relative to northwards. Following this approach would result in a need to make total provision, based on the overall requirement generated through use of the 10 year average sales method (see Level of overall provision – option 1 above) of 19.7mt (southwards), 21.9mt (northwards) and 2.3mt (building sand). Utilisation of one of the alternative options to determine the overall level of sand and gravel provision to be made would lead to a need to adjust the subdivided figures accordingly (see Appendix 1).

Option 4)

This option could make provision for sand and gravel on the basis of a single subdivision into concreting sand and gravel and building sand, in effect combining concreting sand and gravel provision across the northwards and southwards distribution areas. This approach could reflect an assumed increased variability in supply patterns in the longer term in response to emerging or unforeseen constraints in supply or demand elsewhere leading to significant changes in the overall pattern of supply of concreting sand and gravel worked in North Yorkshire. Following this approach would result in a need to make total provision, based on the overall requirement generated through use of the 10 year average sales method (see Level of overall provision – option 1 above) of 41.5mt (concreting sand and gravel) and 2.3mt (building sand). Utilisation of one of the alternative options to determine the overall level of sand and gravel provision to be made would lead to a need to adjust the subdivided figures accordingly (see Appendix 1).

Options summary: Sand and gravel Distribution of provision							
	Total provision ²	Sand and gravel southwards		Sand and gravel northwards		Building sand	
		Total provision	Additional provision required to be made in the Plan	Total provision	Additional provision required to be made in the Plan	Total provision	Additional provision required to be made in the Plan
Option 1	43.7mt	21.9mt	14.9mt	19.6mt	11.8mt	2.3mt	0.8mt
Option 2	43.7mt	24.0mt	17.0mt	17.5mt	9.7mt	2.3mt	0.8mt
Option 3	43.7mt	19.7mt	12.7mt	21.9mt	14.1mt	2.3mt	0.8mt
Option 4	43.7mt	41.5 (total plan area) 26.7(additional provision)				2.3mt	0.8mt

² For the purposes of this set of options it is assumed that total provision would be in line with sand and gravel level of overall provision option 1. Use of an alternative overall level of provision would lead to proportionate changes in the figures presented in this set of options. Tables showing the implications of this are contained in Appendix 1

Key questions for consultees:

Are there any alternative options we should consider relevant to the distribution of sand and gravel provision to be made in the Joint Plan?

Do you have any initial preference for any of the options presented above?

Strategic Planning Question 8: What could our approach be to maintenance of landbanks for sand and gravel?

a) Landbanks during the Plan period

Option 1)

Taking into account the distribution of sand and gravel resources within the Joint Plan area and the existence of a significant number of production sites at a range of scales, as well as their relatively wide geographical distribution, it is not considered that there is likely to be a case for setting a minimum landbank period for sand and gravel of more than 7 years. Subdividing provision into northwards and southwards distribution areas for concreting sand and gravel, with separate provision for building sand, alongside calculating separate landbanks for these subdivisions, would help address the NPPF requirement to calculate and maintain separate landbanks for any aggregate materials of a specific type or quality which have a distinct and separate market. Maintenance of Landbanks Option 1 would therefore operate in association with Strategic Planning Question 7 *Sand and Gravel Distribution of Provision* (options 1, 2 or 3) to provide for the calculation of separate landbanks for the northward and southwards distribution areas and for building sand and would seek to maintain a minimum landbank of 7 years for each of these subdivisions over the Joint Plan period.

Available evidence (presented in the LAA) indicates that there are a number of sand and gravel sites in the Joint Plan area, subject of time limited permissions, where current permissions are likely to become time-expired during the Plan period and prior to the exhaustion of current permitted reserves. This option could also provide support in principle for the extension of the time period for completion of working at such sites in order to help maintain landbanks and productive capacity for sand and gravel.

Option 2)

This option could operate in association with Strategic Planning Question 7 *Sand and Gravel Distribution of Provision* (Option 4) and would provide for the calculation of a concreting sand and gravel landbank for the whole of the Joint Plan area, with calculation of a separate landbank for building sand and would seek to maintain a minimum landbank of 7 years for each of these subdivisions over the Plan period.

As with Option 1, available evidence indicates that there are a number of sand and gravel sites in the Joint Plan area, subject of time limited permissions, where current permissions are likely to become time-expired during the Plan period and prior to the exhaustion of current permitted reserves. This option could also provide support in principle for the extension of the time period for completion of working at such sites in order to help maintain landbanks and productive capacity for sand and gravel

An option of not seeking to maintain a landbank is not presented as this would be contrary to national policy.

Option summary: Sand and gravel - maintenance of landbanks over the plan period	
Option 1	Provide for separate 7 year landbanks for concreting sand and gravel for southwards and northwards distribution areas and for building sand (would operate in conjunction with <i>Distribution of provision options 1, 2 or 3</i>) and support the principle of time extensions where necessary to allow full extraction of permitted reserves
Option 2	Provide for a separate 7 year landbank for concreting sand and gravel over the whole Plan area and a separate 7 year landbank for building sand (would operate in conjunction with <i>Distribution of provision option 4</i>) and support the principle of time extensions where necessary to allow full extraction of permitted reserves

b) Landbanks at the end of the Plan period

National policy in the NPPF requires that mineral planning authorities should seek to maintain throughout the plan period (ie to 2030 in this case) a minimum landbank of at least 7 years for sand and gravel. Government guidance on the Managed Aggregates Supply System indicates that this should be based on the level of provision, expressed on an annual basis, incorporated in the minerals local plan, or where there is no up to date plan, on the basis of the past 10 years average sales.

The supply options presented above indicate that a total level of provision over the Joint Plan period of 43.7mt would be required (based on *Strategic Planning Question 6 Level of overall provision of sand and gravel* (Option 1) above) in order to maintain supply up to 2030. However, in order to maintain a landbank of 7 years at 2030 a further 16.1mt of sand and gravel reserves would be required (2.3mt annual average sales multiplied by 7). In practice it is likely that “windfall” permissions for extensions to existing sites will contribute to overall reserves, in addition to any specific further provision made in the Joint Plan, so that the actual scale of additional provision needed to maintain a 7 year landbank at 2030 may be less than 16mt.

Option 1)

However, in order to demonstrate how further reserves could be made available if necessary to maintain the sand and gravel landbank towards the end of the Plan period, it may be appropriate to identify one or more Areas of Search for sand and gravel, within which the principle of development of further sites would be supported if needed to maintain the landbank at the end of the Plan period (ie to meet expected requirements over the period 2030 to 2037) and to demonstrate that further resources could be brought forward if necessary.

Option 2)

An alternative approach could be to seek to make specific provision, in the form of preferred areas or specific allocations, to meet additional expected requirements over the period 2030 to 2037, in order to demonstrate that a landbank can be maintained. This would be dependent on an ability to identify sufficient specific allocations.

Option summary: Sand and gravel - maintenance of landbank at end of plan period	
Option 1	Demonstrate how a 7 year landbank could be maintained at 2030 through the identification of one or more Areas of Search to meet longer term sand and gravel requirements
Option 2	Demonstrate how a 7 year landbank could be maintained at 2030 through the identification of preferred areas or specific allocations to meet longer term sand and gravel requirements

Key questions for consultees:

Are there any other options that the Authorities should consider relating to maintenance of landbanks for sand and gravel?

Do you have any initial preference for any of the options presented above?

Strategic Planning Question 9: Should phasing of sand and gravel provision be considered?

Given the relatively low level of concreting sand and gravel landbanks there may be a need for further reserves to be brought forward early in the Joint Plan period in order to ensure that the landbank level can be maintained above the 7 year minimum period required by the NPPF. The outcome of current planning applications (which fall within both the sand and gravel northwards and southwards distribution areas) will be likely to have an important bearing on the landbank level for concreting sand and gravel reserves in the relatively near term. In the event that significant new reserves are not permitted via planning applications under consideration at the time of preparation of this Paper, such that the landbanks for concreting sand and gravel remain relatively low (for the purposes of this consultation this is assumed to be a landbank of 12 years or less - this would include the level in any sub-divided landbank in the event that this is the approach followed in the Joint Plan) then it may be appropriate to encourage the release of further reserves early in the Plan period.

Potential options for phasing of sand and gravel provision

Option 1)

This option could therefore, in the event that sand and gravel landbanks are below a level of 12 years at the end of 2015, support the early release of new resources in the relevant landbank area in order to help maintain the relevant landbank. For the purposes of this option “early release” is considered to refer to the period 2016 to 2018. Under this option provision would otherwise be expected to come forward during the period 2019 to 2030.

Option 2)

Under this option, release of reserves would not be subject to any phasing provision, although any policy seeking the maintenance of a minimum landbank of 7 years would continue to apply and would act as an indicator that new reserves were needed. The timing of the bringing forward of proposals for the release of new reserves would be determined wholly by industry.

Option summary: Sand and gravel - phasing of provision	
Option 1	Include phasing for sand and gravel provision to help support early release of reserves where needed to maintain landbank
Option 2	No specific provision for phasing

Key questions for consultees:

Do you have any views on the need for phasing of future sand and gravel provision?

Do you have any initial preference for any of the options presented above?

Are there any other options the Authorities should consider relevant to phasing of sand and gravel provision?

Strategic Planning Question 10: What level of overall provision for crushed rock could be made in the Joint Plan?

The options below relate to figures for past crushed rock production from the NYCC area only. As there has been no recent history of crushed rock extraction in the NYMNP or CYC areas, with extraction in the NYMNP ceasing on 2007 and no future assumed extraction requirement for the NYMNP in the LAA, these figures are equally relevant when considering supply from the Joint Plan area as a whole.

Potential options for the overall level of provision of crushed rock

Option 1)

This option could identify future provision for crushed rock utilising the most recent 10 year average sales figure available at the time of production of the Joint Plan. This would involve projecting forward 10 year annual average sales over the period to 2030 to provide an indication of the overall scale of provision required, after allowing for the level of reserves already with planning permission. Based on data published in the LAA this would mean making future provision for a total of 66.5mt of crushed rock over the period 2012 to 2030. Taking into account estimated reserves (at end 2011) of 97.7mt, this would not lead to a need to make any further provision in the Joint Plan. These figures may need to be adjusted slightly as further annual sales data becomes available during production of the Plan. Unlike sand and gravel, at the time of preparation of this paper there are only relatively limited reserves of crushed rock in undetermined planning applications (0.5mt of Magnesian Limestone), although there are also potentially significant resources of Carboniferous Limestone in dormant sites which could potentially make a contribution to supply during the Plan period.

Consultation with the minerals industry during preparation of the LAA led to the view being expressed by the Mineral Products Association that, in the case of crushed rock and with the local exceptions of high specification aggregate in the Yorkshire Dales National Park and Magnesian Limestone in NYCC, there are large reserves and changing the apportionment methodology is not going to make a great deal of difference to landbanks. Options based on utilisation of alternative approaches to overall future provision, such as carrying forward the previous apportionment, or applying an additional allowance for flexibility, are not presented here taking into account the scale of permitted reserves of crushed rock relative to likely future overall requirements. The situation in relation to Magnesian Limestone is addressed in Option 2 below. The Joint Plan area does not contain resources of high specification aggregate and therefore cannot help address potential shortfalls in this material.

Option 2)

The LAA acknowledges that, when the specific types of crushed rock worked in the Joint Plan area are considered and taking into account the differing end use capabilities of the differing types of rock, there is the potential for a shortfall in availability of Magnesian Limestone and that this is an issue which should be considered in the preparation of local plans. The data also indicates that, if a separate landbank were to be calculated for Magnesian Limestone, the landbank at the end of 2011 would be around 9 years (based on three year average sales over the period 2009-2011). The geographical distribution of Magnesian Limestone resources, which are present in the southern part of the Joint Plan area, relatively remote from other sources of crushed rock, may also be a factor which increases the significance of Magnesian Limestone as a resource, as the availability of

supply from this part of the Joint Plan area could help to reduce the need to transport aggregate from other, more distant, sources in order to serve local markets.

This option could therefore identify separate provision for Magnesial Limestone in order to help address any potential shortfall. The LAA indicates that, based on applying the average percentage share of total crushed rock sales taken up by sales of Magnesial Limestone over the period 2009-2011 to the total crushed rock requirement, total provision of Magnesial Limestone over the Plan period of 23.9mt would be required. Taking into account permitted reserves at the end of 2011 of 7.9mt, this would lead to a need to make provision in the Joint Plan for a further 16.0mt of Magnesial Limestone (this figure may be reduced slightly depending on the outcome of a current planning application). However, it is likely that there is some substitutability of the different types of crushed rock for some end uses and, taking into account the overall scale of permitted reserves of crushed rock, it may not be necessary or appropriate to make full provision for this hypothetical shortfall in this particular element of crushed rock provision. **This option therefore would make provision for a further 8.0mt of Magnesial Limestone** (ie 50% of the theoretical shortfall). The relatively low hypothetical landbank of Magnesial Limestone suggests that it would be appropriate for any further provision of Magnesial Limestone to come forward during the early part of the Plan period (ie by 2020).

Option 2a)

This option assumes that an increase in the proportion of supply from secondary and recycled sources, as a result of the effect of national and local policy drivers to support increased use of such materials, will offset demand for crushed rock to a limited degree over the latter part of the Plan period. The LAA recognises that there is likely to be some potential for increased use of secondary and recycled materials, although this is difficult to quantify. It is therefore assumed that the effect of any such increase would be to reduce the requirement for crushed rock over the Plan period by an amount equivalent to 0.1mt per annum over the period 2015-2030 so that the overall total requirement is reduced from 66.5mt to 65mt. As further crushed rock provision would only be made under Option 2 above, **this option could be implemented as an alternative to crushed rock option 2 by reducing any additional provision of Magnesial Limestone from 8.0mt to 6.5mt.**

Option summary: Crushed rock - total provision to be made in the Plan		
	Crushed rock total provision	Additional provision required to be made in the Plan
Option 1	66.5mt	nil
Option 2	66.5mt	8.0mt Magnesial Limestone
Option 2a	65.0mt	6.5mt Magnesial Limestone

Key questions for consultees:

Are there any alternative options we should consider in order to determine the level of crushed rock provision to be made in the Joint Plan?

Do you have any initial preference for any of the options presented above?

Strategic Planning Question 11: What could our approach be to maintenance of landbanks for crushed rock?

Option 1)

Taking into account the distribution of crushed rock resources within the Joint Plan area and the existence of a significant number of production sites at a range of scales, as well as their relatively broad geographical distribution, it is not considered that there is likely to be a case for setting a minimum landbank period for crushed rock of more than 10 years. On the other hand, it is also not considered that the current size of the crushed rock landbank is such that specific steps should be taken to reduce it. Unlike sand and gravel, there has not been any previous history (eg in work undertaken by the YHRAWP or in the North Yorkshire Minerals Local Plan 1997) of subdividing crushed rock provision or the landbank either by distribution area or material type/end use. Evidence gathered during preparation of the LAA does not provide any strong indication that such an approach would be beneficial (with the potential exception of Magnesian Limestone taking into account the current position with reserves of this material relative to sales). Option 1 could therefore operate in conjunction with Strategic Planning Question 10 *Crushed rock – Level of overall provision* (Option 1) to provide for the maintenance of a single landbank of at least 10 years for crushed rock over the Joint Plan period.

Available evidence indicates that there are a number of crushed rock sites in the Joint Plan area, subject of time limited permissions, where current permissions are likely to become time-expired during the Plan period and prior to the exhaustion of current permitted reserves. This option could also provide support in principle for the continuation of working at such sites in order to help maintain landbanks and productive capacity for crushed rock.

Option 2)

This option could operate in conjunction with Strategic Planning Question 10 *Crushed rock – Level of overall provision* (Option 2) and identify separate landbanks for Magnesian Limestone and the remainder of crushed rock resources, in order to maintain a landbank of at least 10 years for each of these subdivisions over the Joint Plan period

As with Option 1, available evidence indicates that there are a number of crushed rock sites in the Joint Plan area, subject of time limited permissions, where current permissions are likely to become time-expired during the Plan period and prior to the exhaustion of current permitted reserves. This option could also provide support in principle for the continuation of working at such sites in order to help maintain landbanks and productive capacity for crushed rock.

Option summary: Crushed rock - maintenance of landbanks	
Option 1	Provide for maintenance of a single 10 year landbank of crushed rock over the Plan period and support the principle of time extensions where necessary to allow full extraction of permitted reserves
Option 2	Provide for the maintenance of separate 10 year landbanks for Magnesian Limestone and other crushed rock reserves over the Plan period and support the principle of time extensions where necessary to allow full extraction of permitted reserves

The supply options presented above indicate a total level of provision over the Plan period of between 65 and 66.5mt would be required. However, in order to maintain a landbank of 10 years at 2030 a further 35mt of crushed rock reserves would be required (3.5mt annual

average sales multiplied by 10). As baseline permitted reserves are 97.7mt this suggests that any requirement for further reserves in order to maintain a 10 year landbank at 2030 is likely to be very small. In practice it is likely that “windfall” permissions for extensions to existing sites, together with the coming forward of schemes to work reserves in dormant sites (which do not currently contribute to the landbank) would ensure that any additional requirements needed to maintain the landbank is met. In addition, if either of options 2 or 2a above relating to overall crushed rock provision are followed, this would help ensure the release of further crushed rock reserves (Magnesian Limestone) which would help maintain the overall landbank at 2030 above the necessary level.

Key questions for consultees:

Are there any other options that the Authorities should consider relating to maintenance of landbanks for crushed rock?

Do you have any initial preference for any of the options presented above?

Crushed rock – Phasing of Provision

Only Option 2 under Strategic Planning Question 10 *Crushed rock – Level of overall provision* would result in the making of further specific provision for crushed rock. That option includes reference to the need for any such provision to be brought forward early in the Plan period (ie by 2020). Further potential options relating to phasing of crushed rock provision are therefore not included in this paper.

Strategic Planning Question 12: What could our approach to delivery of primary aggregates supply locations be?

Delivery of identified needs for aggregate may require the identification of one or more sites or locations for future development, which are of sufficient significance (in terms of the contribution they would make to overall delivery of the Joint Plan), that they should be considered to be “strategic” sites or locations, with the delivery of development at such sites or locations being given a degree of priority in the Joint Plan. It will therefore be necessary to consider in more detail the criteria which could be used to define “strategic” sites or locations. Possible options for this are set out below.

a) Concreting sand and gravel

Option 1)

In view of the wider strategic significance of concreting sand and gravel resources in the Joint Plan area in particular (eg in terms of the role they play in meeting wider demand for sand and gravel), it could be argued that all sites needed for the purposes of delivering the overall scale of concreting sand and gravel provision identified in the Joint Plan are of strategic importance.

This option could therefore seek to deliver all requirements for concreting sand and gravel over the plan period in the form of specific site allocations, subject to the ability to identify sufficient suitable sites. Any remaining requirements for concreting sand and gravel which cannot be met through specific site allocations would be met through Areas of Search. This option may also involve the identification of Areas of Search in order to demonstrate how a 7 year landbank could be maintained at the end of the Plan period.

Option 2)

An alternative approach would be to only consider concreting sand and gravel sites over a certain scale threshold to be of sufficient strategic significance to justify identification as specific site allocations, because of the greater significance that such sites would have in delivering overall plan requirements for concreting sand and gravel.

This option could therefore seek to deliver requirements for concreting sand and gravel, in the form of specific site allocations, only for those sites which would deliver an expected reserve of 4mt or more at an expected output of 0.25mtpa (ie an amount representing approximately 10% of total Joint Plan requirements for sand and gravel and 10% of the 10 year average annual sales figure respectively). Any remaining requirements would be delivered through the identification of Areas of Search. This option may also involve the identification of Areas of Search in order to demonstrate how a 7 year landbank could be maintained at the end of the Plan period.

Option 3)

Greater flexibility for industry to come forward with a range of sites for delivery of sand and gravel requirements could potentially be provided through the identification only of Areas of Search. This option would therefore not result in the identification of specific site allocations for concreting sand and gravel but would rely on the identification of broader Areas of Search, based on sand and gravel resource blocks identified in the BGS sand and gravel assessment report 2011, within which industry would be expected to bring forward suitable sites in order to meet Joint Plan requirements and to maintain a 7 year landbank at 2030.

Options summary: Concreting sand and gravel delivery	
Option 1	This option could seek to deliver Joint Plan requirements for concreting sand and gravel through the identification of specific site allocations, with Areas of Search identified as an alternative if necessary
Option 2	This option could seek to deliver Joint Plan requirements for concreting sand and gravel through the identification of specific site allocations only for large scale sites (sites with greater than 4mt total reserve and output 0.25mtpa or greater), with remaining provision through Areas of Search
Option 3	This option could rely on identification of Areas of Search to meet Joint Plan requirements

Key questions for consultees:

Are there any other options that the Authorities should consider relating to delivery of concreting sand and gravel requirements?

Do you have any initial preference for any of the options presented above?

b) Building sand

Evidence suggests that the scale of additional provision for building sand required over the Joint Plan period is small (amounting to 0.8mt over the period to 2030). The strategic significance of building sand in the context of the Joint plan is not considered to be such that identification of specific site allocations should be a priority for the Joint Plan. There is only very limited evidence available on the distribution of potentially suitable building sand resources and this may limit the potential to identify viable areas of search for building sand.

It is therefore considered that requirements could be met through the identification of specific allocations if suitable such allocations are put forward, and/or through a criteria-based policy supporting the principle of the development of new sites and extensions to existing sites, where these are needed to meet Plan requirements for building sand.

Option 1)

Provision of building sand could be met through a combination of one or more of; the identification of specific allocations if suitable such allocations are put forward and, through policy support for the principle of new sites and extensions to existing sites where necessary to meet plan requirements and where consistent with environmental and amenity objectives of the Joint Plan.

Option 2)

This option could seek to provide greater flexibility in the provision of building sand through the identification of one or more Areas of Search, subject to industry being able to identify potential resource areas with sufficient clarity.

Options summary: Building sand delivery	
Option 1	This option could seek to deliver Joint Plan requirements for building sand through the identification of specific site allocations, and via criteria supporting new sites and extensions to existing sites where necessary, in line with environmental and amenity objectives of the Plan
Option 2	This option could seek to deliver Joint Plan requirements for building sand through the identification of Areas of Search

Key questions for consultees:

Are there any other options that the Authorities should consider relating to delivery of building sand requirements?

Do you have any initial preference for any of the options presented above?

c) Magnesian Limestone

One option for future provision of crushed rock (see Strategic Planning Question 10 *Crushed rock – Level of overall provision* (Option 2)) could involve making additional provision for Magnesian Limestone in order to help maintain supply of this particular type of crushed rock. In view of the scale of overall reserves of crushed rock, it is not considered that there is a need to identify site specific allocations for crushed rock as a matter of priority in the Joint Plan. However, potential allocations of Magnesian Limestone have been submitted during previous calls for sites for aggregate working, suggesting that there may be potential to identify specific sites.

Option 1)

This option could meet requirements for Magnesian Limestone (if required via the minerals supply policies in the Joint Plan) through a combination of one or more of; the identification of specific allocations if suitable such allocations are put forward and, through policy support for the principle of new sites and extensions to existing sites where necessary and where consistent with environmental and amenity objectives of the Joint Plan

Option 2)

This option could seek to provide greater flexibility in the provision of Magnesian Limestone (if required via the minerals supply policies in the Joint Plan) through the identification of one or more Areas of Search, subject to industry being able to identify potential resource areas with sufficient clarity.

Options summary: Magnesian Limestone delivery	
Option 1	This option could seek to deliver Joint Plan requirements for Magnesian Limestone through the identification of specific site allocations, and via criteria supporting new sites and extensions to existing sites where necessary, in line with environmental and amenity objectives of the Plan
Option 2	This option could seek to deliver Joint Plan requirements for Magnesian Limestone through the identification of Areas of Search

Key questions for consultees:

Are there any other options that the Authorities should consider relating to delivery of Magnesian Limestone requirements?

Do you have any initial preference for any of the options presented above?

d) Extensions to existing aggregates quarries on unallocated sites

The policy approach in the North Yorkshire Minerals Local Plan (1997) has been to support the principle of small scale extensions to aggregate quarries on sites not allocated in the Plan, subject to a number of criteria being met, which generally seek to ensure that the scale and duration of working remain in context with the existing site. Any reserves coming forward in such sites have been treated as “windfalls” adding to the overall landbank of the relevant mineral.

It is recognised that proposals for extensions to existing aggregate quarries are likely to continue to come forward as planning applications during the life of the new Joint Plan and that, in some cases, such applications may not be on land allocated specifically in the Plan as being suitable in principle for further working. Such applications are most likely to come forward in order to maintain continuity of production at an established site where current permitted reserves are near to exhaustion but further suitable resources have been identified on immediately adjacent land. It may therefore be appropriate to consider the development of a suitable policy against which to consider any such proposals that come forward over the period to 2030.

Option 1)

This option could support the principle of limited unallocated extensions to working at existing aggregates quarries subject to it being demonstrated that the development would be consistent with the overall aggregates supply strategy in the Joint Plan, or meet another demonstrable need for aggregate consistent with Joint Plan objectives and would not significantly undermine the potential for a greater total proportion of supply to come from alternatives to primary aggregate

Option 2)

This option would only support the principle of unallocated extensions to working at existing aggregates quarries where the additional reserve would be needed to maintain the landbank

above the minimum 7 year period (sand and gravel) and 10 year period (crushed rock), for example as a result of unforeseen demand or development not coming forward or being permitted on allocated sites

Option 3)

This option would not support the principle of unallocated extensions to working at existing aggregates quarries

In all cases any reserves granted on unallocated sites would be counted as contributing towards the landbank of the relevant mineral.

Options summary: Extensions on unallocated sites	
Option 1	This option could support the principle of extensions on unallocated sites subject to criteria identified above
Option 2	This option would only support the principle of extensions on unallocated sites where the reserves are necessary in order to maintain the landbank
Option 3	This option would not support the principle of development on unallocated sites

Key questions for consultees:

Do you consider that there is a need for the Joint Plan to contain a policy relating to applications for aggregates working on unallocated sites?

Are there any other options that the Authorities should consider relating to consideration of applications on unallocated sites?

Do you have any initial preference for any of the options presented above?

Strategic Planning Question 13: What could our approach to delivery of new ancillary aggregates supply infrastructure be?

A further consideration relevant to aggregates supply is how support may be provided for the delivery of any new ancillary aggregates supply and transport infrastructure that may be needed.

With regard to ancillary aggregates supply infrastructure (such as concrete and coating plants) it is considered that these could be acceptable in a range of sites and locations outside the North York Moors National Park area. Siting of facilities at existing aggregates extraction sites can be beneficial in terms of minimising the need for road transport, as more aggregate will leave the site in a “value added” form such as concrete or coated roadstone. However, other suitable locations may include industrial estates, employment sites and previously developed land, particularly where these are well located to the main highway network and major market areas, in order to help minimise the overall impact from movement of aggregates from production sites to the point of final use.

[Potential options for the delivery of new ancillary aggregates supply infrastructure](#)

Option 1)

Aggregates supply infrastructure option 1 could therefore support the development of ancillary aggregates supply infrastructure by giving preference to locations within extant

quarry permission areas (for the duration of the minerals permission), as well as industrial estates, employment land and previously developed land, where it can be demonstrated that the site is well located to the main highway network (if the facility is to be reliant on road transport), and well located in relation to likely markets for the product and sources of the main raw materials used at the facility. Development of aggregates supply infrastructure within the North York Moors National Park would not be supported under this option.

Option 2)

Aggregates supply infrastructure option 2 could give priority to the development of aggregates supply infrastructure at extant minerals sites where they would mainly utilise raw materials worked in the associated quarry area, with support being given to the development of aggregates supply infrastructure in other locations such as industrial estates, employment land and previously developed land, only where it can be demonstrated that the facility cannot be located at, and utilise materials from, an extant mineral site. Development of aggregates supply infrastructure within the North York Moors National park would not be supported under this option.

Option summary: Other aggregates supply infrastructure	
Option 1	This option could prioritise the development of new aggregates supply infrastructure at a range of locations based on the criteria set out above
Option 2	This option could prioritise the development of aggregates supply infrastructure at extant minerals sites

Key questions for consultees:

Do you have any views on the criteria that could be used to identify suitable locations for ancillary aggregates supply infrastructure?

Are there any other options that the Authorities should consider relating to aggregates supply infrastructure?

Do you have any initial preference for any of the options presented above?

Strategic Planning Question 14: What should our approach to delivery of aggregates transport infrastructure be?

Evidence gathering during preparation of the Joint Plan has not suggested there is likely to be potential for the delivery of significant new aggregates transport infrastructure locations in the Plan area, taking into account the dispersed nature of minerals resources and markets and the relatively limited distribution of rail and waterway networks in the Plan area. It is therefore considered that any shift towards increased transport of aggregate by rail or water in the Plan area is most likely to arise through the bringing in to use of existing infrastructure which is currently inactive, or through the increased development or more intensive use of facilities which are currently operational. Delivery of this may involve the need for the development of additional or enhanced facilities at existing aggregates transport infrastructure locations.

[Potential approaches to delivery of aggregates transport infrastructure](#)

Approach 1)

Aggregates transport infrastructure Approach 1 could therefore support the development of additional or enhanced aggregates transport infrastructure at existing wharfs and rail heads,

where these are needed to support an increased volume of aggregates freight movements and where consistent with environmental and amenity objectives of the Joint Plan.

Approach 2)

Notwithstanding the expectation that proposals for new rail or wharf capacity (away from established sites) is unlikely, and in order to ensure that there is a policy basis for consideration of any proposed new aggregates transport infrastructure sites that may come forward, Aggregates transport infrastructure Approach 2 could extend the support provided in Approach 1 by setting out generic locational criteria which would be used to assess proposals for new transport infrastructure sites. Development of new aggregates transport infrastructure within the North York Moors National Park would not be supported under this approach.

Approaches 1 and 2 are not mutually exclusive.

Option summary: Delivery of aggregates transport infrastructure	
Approach 1	This approach could prioritise the development of new or enhanced aggregates transport infrastructure at existing wharfs and railheads
Approach 2	This approach could extend that identified in approach 1 by setting out locational criteria for the development of aggregates transport infrastructure at new sites (ie sites where aggregates transport infrastructure is not currently located)

Key questions for consultees:

Do you have any views on the criteria that could be used to identify suitable locations for aggregates transport infrastructure?

Are there any other approaches that the Authorities should consider relating to aggregates transport infrastructure?

Do you have any initial preference for any of the approaches presented above?

Strategic Planning Question 15: What could the overall spatial approach to the supply of aggregate be?

Strategic Planning Question 7 relating to distribution of sand and gravel provision has already made reference to one issue of relevance to determining the overall spatial approach to the supply of aggregate minerals. This is the choice of whether to subdivide concreting sand and gravel provision into northwards and southwards distribution areas or a single supply area. However, there are a number of other potential policy considerations that may lead to a need to make choices on spatial matters. These are considered below;

a) The role of the North York Moors National Park Authority area and North Yorkshire AONBs in the supply of aggregate

As mentioned earlier in this Paper, resources of crushed rock (Jurassic Limestone) are present in the NYMNPA area, although extraction of these ceased in 2007. Resources and permitted reserves of both Jurassic and Carboniferous Limestone also exist within areas designated as Area of Outstanding Natural Beauty in the Joint Plan area (Howardian Hills and Nidderdale AONBs respectively). However, national policy seeks to prevent major new

development (which would be likely to include any significant aggregate mineral workings) in National Parks unless there are exceptional circumstances. National policy also encourages the maintenance of aggregate landbanks from outside National Parks and AONBs, as far as practicable. As there is no evidence to suggest that there is significant constraint on overall availability of crushed rock resources outside the National Park and AONB areas, it is considered unlikely that there would be policy justification for new aggregate mineral working in the NYMNP or within the Howardian Hills and Nidderdale AONBs during the plan period.

Aggregates Spatial approach 1)

This approach could therefore seek to deliver the Joint plan area’s additional requirement for aggregate from those parts of the Joint Plan area outside the North York Moors National Park and Howardian Hills and Nidderdale AONBs. The constraints of national policy suggest that an alternative approach of providing for a proportion of supply to be sourced from these areas would not be realistic or appropriate. However, it is recognised that permitted reserves of aggregate remain in AONBs in the Joint Plan area and that these reserves will play an on-going role in maintaining supply during the Plan period.

b) The role of the City of York area in the supply of sand and gravel

Available information suggests that there are some sand and gravel resources within the City of York area. However, until further evidence is available through work to be undertaken by BGS on behalf of City of York Council to update the sand and gravel resource mapping, it is not yet known if, and to what extent, the City of York area may be able to make a contribution to the overall supply of sand and gravel from the Sub-region. As the major population centre in the Joint Plan area, with expected further growth, it is likely that the York area will represent a significant source of demand for aggregate minerals over the Plan period. In principle therefore, and in the interests of seeking to ensure that sources of minerals supply are well located to likely areas of demand, it may be reasonable to assume that the City of York area should make some contribution to supply of sand and gravel provided resources of adequate quality can be identified in suitable locations, given the relatively highly constrained nature of the City of York Authority area (in terms of environmental, policy and surface infrastructure constraints). Such an approach would be consistent with Government guidance on the Managed Aggregates Supply System, which indicates that every mineral planning authority with mineral resources has a role to play in meeting national and local demand. It is recognised that the likely scale of any supply from the York area would be small and therefore only contribute a relatively small proportion of total supply from the Sub-region.

Aggregates spatial approach 2)

This approach could therefore seek to deliver a small contribution to overall sand and gravel supply from within the City of York area, subject to evidence confirming the existence of potentially viable resources in appropriate locations.

Aggregates spatial approaches 1 and 2 are not mutually exclusive.

Options summary: Spatial approach to the supply of aggregate	
Approach 1	This approach could seek to ensure that requirements for aggregate supply from the Joint Plan area would be met from those parts of the area outside the North York Moors National Park
Approach 2	This approach could seek to ensure that, dependent on further evidence on the availability of aggregates resources in the City of York area, an element of total supply of sand and gravel would be sourced from the City of York area

Key questions for consultees:

Do you have any views on the principles contained in Approaches 1 and 2 above?

c) Delivering a good fit between locations of aggregates supply and demand

Essentially all the potential concreting sand and gravel resources in the Joint Plan area lie in those parts of the Plan area located to the North of Selby District, with the very large majority of the resource located in a belt running north-south through the central part of the area, either side of the A1 and mainly to the north of the A59(T). The only significant exceptions to this are a substantial area of potential resource within the Vale of Pickering in the east of the Joint Plan area, together with smaller areas of potential resource in the Stokesley area in the north, in lower Wharfedale adjacent to the boundary with Leeds City Council and in the Aire valley around Skipton and Settle in the west of the Plan area (see North Yorkshire Sand and Gravel Assessment (BGS 2011)). The limited geographical distribution of resources will always be a fundamental controlling factor on the options available for the distribution of locations of aggregates supply. However, within this constraint, it may be appropriate to consider the potential to identify locations for future working which relate well to expected major markets, in order to help reduce overall impacts from transportation of minerals. To some extent this approach is already reflected in Strategic Planning Question 7 *Sand and Gravel Distribution of provision Options 1 and 2*, through the potential subdivision of sand and gravel supply into north and south distribution areas, reflecting key sales destinations in the North East Region and the NYCC internal market and exports to West and South Yorkshire respectively.

Aggregates spatial option 1)

This option could seek to encourage future working as close as practicable to key market areas. For the purposes of this consultation this is assumed to mean giving preference to those supply options (eg as expressed through Areas of Search/Preferred Areas/Site Allocations) which would deliver new locations for sand and gravel working with good links to suitable access routes and which are as close as practicable to the Tees Valley and County Durham areas, the West and South Yorkshire Sub-regional boundaries, the City of York area and Harrogate and Scarborough, as representing the principle population centres in and around the Joint Plan area.

The County Council has recently resolved to grant planning permission for an extension to a sand and gravel site in the Vale of Pickering area, containing an estimated 4.45mt of reserves. This permission would deliver the objective of this option in ensuring availability of supply in proximity to the Scarborough area over the Plan period.

As it is not expected that the Joint Plan will need to make large scale new provision for crushed rock it may not be practicable to apply a directly equivalent option to supply of crushed rock.

Aggregates spatial option 2)

This option could seek to concentrate future sand and gravel supply locations (and any further crushed rock provision if relevant) within those areas of resource with good access to the A1, as representing the main north-south access corridor through the Plan area. This option could help provide greater flexibility in aggregates supply options, including the potential for sites to supply to both northwards and southwards markets for concreting sand and gravel in response to changing market circumstances. In practice this would be likely to mean concentrating future concreting sand and gravel supply in the Swale and Ure valleys and areas of glacio-fluvial resources to the east and west of the A1.

Aggregates spatial option 3)

This option would not seek to direct new areas or sites for future working to specific parts of the Joint Plan area in proximity to key markets, but would consider the whole area of potential resources as being suitable in principle for the identification of new sites or areas, subject to testing against other relevant criteria and constraints.

Options summary: Spatial approach to the supply of aggregate	
Option 1	This option could seek to ensure that sources of supply of sand and gravel are provided as close as practicable to the Tees Valley and County Durham areas, the West and South Yorkshire Sub-regional boundaries, the City of York area and Harrogate and Scarborough as representing the principle population centres in and around the Joint Plan area.
Option 2	This option could seek to ensure that sources of supply of aggregate are provided in proximity to the A1 to help provide flexibility in supply
Option 3	This option would not seek to direct production to specific areas in proximity to markets but would consider the whole area of potential resources as being suitable in principle for the identification of new sites or areas, subject to testing against other relevant criteria and constraints.

Key questions for consultees:

What other spatial options relevant to supply of aggregates should the Authorities consider?

Do you have any initial preference for any of the options or approaches presented above?

Appendix 1

Comparison tables showing the implications of differing options for assumed total sand and gravel provision (based on “sand and gravel level of overall provision” options 1, 2a, 2b, 2c and 3) on options 1 to 4 relating to distribution of provision.

The table reflects the position as at 1 January 2013 and therefore the additional revision figures do not take into account any additional reserves permitted after that date.

Note - totals in the tables may not sum due to rounding

Options summary: Sand and gravel Distribution of provision (with total provision (column 2) based on level of overall provision option 1)							
	Total provision	Sand and gravel southwards		Sand and gravel northwards		Building sand	
		Total provision	Additional provision required to be made in the Plan	Total provision	Additional provision required to be made in the Plan	Total provision	Additional provision required to be made in the Plan
Option 1	43.7mt	21.9mt	14.9mt	19.6mt	11.8mt	2.3mt	0.8mt
Option 2	43.7mt	24.0mt	17.0mt	17.5mt	9.7mt	2.3mt	0.8mt
Option 3	43.7mt	19.7mt	12.7mt	21.9mt	14.1mt	2.3mt	0.8mt
Option 4	43.7mt	41.5mt (total plan area)		26.7mt (additional provision)		2.3mt	0.8mt

Options summary: Sand and gravel Distribution of provision (with total provision (column 2) based on level of overall provision option 2a)							
	Total provision	Sand and gravel southwards		Sand and gravel northwards		Building sand	
		Total provision	Additional provision required to be made in the Plan	Total provision	Additional provision required to be made in the Plan	Total provision	Additional provision required to be made in the Plan
Option 1	50.7mt	25.4mt	18.4mt	22.8mt	15.0mt	2.5mt	1.0mt
Option 2	50.7mt	27.9mt	20.9mt	20.3mt	12.5mt	2.5mt	1.0mt
Option 3	50.7mt	22.8mt	15.8mt	25.4mt	17.6mt	2.5mt	1.0mt
Option 4	50.7mt	48.2mt (total plan area)		33.4mt (additional provision)		2.5mt	1.0mt

Options summary: Sand and gravel Distribution of provision (with total provision (column 2) based on level of overall provision option 2b)

	Total provision	Sand and gravel southwards		Sand and gravel northwards		Building sand	
		Total provision	Additional provision required to be made in the Plan	Total provision	Additional provision required to be made in the Plan	Total provision	Additional provision required to be made in the Plan
Option 1	48.1mt	24.1mt	17.1mt	21.6mt	13.8mt	2.4mt	0.9mt
Option 2	48.1mt	26.4mt	19.4mt	19.2mt	11.6mt	2.4mt	0.9mt
Option 3	48.1mt	21.6mt	14.6mt	24.1mt	16.5mt	2.4mt	0.9mt
Option 4	48.1mt	45.7mt (total plan area)		30.9mt (additional provision)		2.4mt	0.9mt

Options summary: Sand and gravel Distribution of provision (with total provision (column 2) based on level of overall provision option 2c)

	Total provision	Sand and gravel southwards		Sand and gravel northwards		Building sand	
		Total provision	Additional provision required to be made in the Plan	Total provision	Additional provision required to be made in the Plan	Total provision	Additional provision required to be made in the Plan
Option 1	48.1mt*	24.1mt	17.1mt	21.6mt	13.8mt	2.4mt	0.9mt
Option 2	48.1mt*	26.4mt	19.4mt	19.2mt	11.6mt	2.4mt	0.9mt
Option 3	48.1mt*	21.6mt	14.6mt	24.1mt	16.5mt	2.4mt	0.9mt
Option 4	48.1mt*	45.7mt (total plan area)		30.9mt (additional provision)		2.4mt	0.9mt

*if trigger threshold reached - see main paper

Options summary: Sand and gravel Distribution of provision (with total provision (column 2) based on level of overall provision option 3)

	Total provision	Sand and gravel southwards		Sand and gravel northwards		Building sand	
		Total provision	Additional provision required to be made in the Plan	Total provision	Additional provision required to be made in the Plan	Total provision	Additional provision required to be made in the Plan
Option 1	42.7mt	21.4mt	14.4mt	19.2mt	11.4mt	2.2mt	0.7mt
Option 2	42.7mt	23.5mt	16.5mt	17.1mt	9.3mt	2.2mt	0.7mt
Option 3	42.7mt	19.2mt	12.2mt	21.4mt	13.6mt	2.2mt	0.7mt
Option 4	42.7mt	40.6mt (total plan area)		25.8mt (additional provision)		2.2mt	0.7mt

Scenario summary for *concreting sand and gravel* provision

	Minimum additional requirement (shortfall between permitted reserves and anticipated requirement to 2030)	Maximum additional requirement (shortfall between permitted reserves and anticipated requirement to 2030)
Whole plan area	25.8mt (reflects <i>level of overall provision option 3</i>)	33.4mt (reflects <i>level of overall provision options 2a</i>)
Sand and gravel southwards	12.2mt (reflects <i>level of overall provision option 3</i> combined with <i>distribution of provision option 3</i>)	20.9mt (reflects <i>level of overall provision option 2a</i> combined with <i>distribution of provision option 2</i>)
Sand and gravel northwards	9.3mt (reflects <i>level of overall provision option 3</i> combined with <i>distribution of provision option 2</i>)	17.6mt (reflects <i>level of overall provision options 2a</i> combined with <i>distribution of provision option 3</i>)