King’s Lynn and West Norfolk sites

MIN 6 - land off East Winch Road, Mill Drove, Middleton

Site Characteristics

- The 10.25 hectare site is within the parish of Middleton
- The estimated carstone resource at the site is 1,416,000 tonnes
- The proposer of the site has given a potential start date of 2025 and estimated the extraction rate to be 80,000 tonnes per annum. Based on this information the full mineral resource at the site could be extracted within eighteen years, therefore, approximately 960,000 tonnes of carstone could be extracted within the plan period.
- The site is proposed by Middleton Aggregates Ltd as an extension to an existing site.
- The site is currently in agricultural use and the Agricultural Land Classification scheme classifies the land as being Grade 4.
- The site is 4.8km from King’s Lynn, which is the nearest town.

Carstone is the only hard rock which occurs in Norfolk and the deposits are limited to a narrow band which runs north-south just to the east of King’s Lynn. The quality of the deposit varies with the highest quality being used as a building stone in the vernacular architecture of the northwest part of Norfolk. However, the majority of the carstone deposit, including this site, is unsuitable for use as a building stone and is used in construction for engineering fill.

M6.1 Amenity: The nearest residential property is 480m from the site boundary. The settlement of Blackborough End is 481m away. Even without mitigation, adverse dust impacts from carstone sites are uncommon beyond 250m from the nearest dust generating activities. The greatest impacts will be within 100 metres of a source, if uncontrolled. A planning application for mineral extraction at this site would need to include noise and dust assessments and mitigation measures to deal appropriately with any amenity impacts.

M6.2 Highway access: The site would use the existing internal haul route to the existing quarry entrance on the East Winch Road (C57A) and then travel east of access the A47 Lynn Road at the existing junction, which are both designated lorry routes. The site is not within an AQMA. As a proposed extension to an existing site, the number of vehicle movements is expected to remain the same but continue for a longer period. The estimated number of HGV movements is 30 (in and out) per day. Limited traffic may travel along the East Winch Road and Mill Drove as this is where workshop and storage facilities are located. The proposed highway access is considered to be suitable by the Highway Authority.

M6.3 Historic environment: The historic landscape character of the site is Twentieth Century agriculture with enclosure. The site is within a wider historic landscape character of Twentieth century agriculture with enclosure and boundary loss, and agriculture with 18th to 19th century piecemeal enclosure. The wider historic landscape character also includes Pre-18th century drained fen enclosure, mineral extraction and 18th to 20th century woodland plantation.

M6.4 The nearest Listed Building is Grade II ‘Mitre Farm Cottage and attached Oak Cottage’, which are 910m away. There are 20 Listed Buildings within 2km of the site. The nearest Scheduled Monument is the Remains of Blackborough End Priory, which is 1.01km away. There are four Scheduled Monuments within 2km of the site. There are no Conservation Areas or Registered Historic Parks and Gardens within 2km of the site. No adverse effects on the historic environment are expected from the proposed mineral extraction.

M6.5 Archaeology: The site is located within an area of interest, and there are Historic Environment records of isolated multi period finds, within the site boundary. The site is in a wider landscape with a significant number of finds and features from multiple periods. Therefore, there is the potential that unknown archaeology exists on the site and an assessment of the significance of archaeological remains will be required at the planning application stage, in order to protect and
mitigate the impact of mineral extraction in this site. The archaeology assessment may initially be
desk-based but may need to be followed up with field surveys and trial-trenching.

**M6.6 Landscape:** The site is not located within the AONB, a Core River Valley or any other
designated landscape feature. The site is within the landscape character area described as ‘Gayton
and East Winch Farmland with woodland and wetland’ in the King’s Lynn and West Norfolk
Landscape Character Assessment.

**M6.7** The site is located on plateau land above the River Nar and is a fairly flat agricultural field with
a tree belt along its northern edge and some hedgerow trees along its southern edge, and any
workings would be screened from public view. The site is bounded by mineral workings to the east
and a landfill site to the south. Further mineral workings lie across Mill Drove to the west and
farmland lies north of East Winch Road.

**M6.8** There is a Public Right of Way adjacent to the western boundary of the site (Middleton RB4).

**M6.9 Ecology:** The site is more than 5km from any SPA, SAC or Ramsar site. Therefore, there
would be no likely significant effects on these sites.

**M6.10** East Winch Common SSSI is 2.23km from the site boundary. The SSSI citation states that it
is an area of predominantly wet acid heathland on shallow peat. Many wet hollows are present
containing diverse fen and mire communities. One rare plant species occurs and also several
uncommon species. The site is surrounded by young woodland. Due to the distance from
proposed mineral extraction site, no adverse impacts are expected to the SSSI.

**M6.11** River Nar SSSI is 1.57km from the site boundary. The SSSI citation states that the River
combines the characteristics of a southern chalk stream and an East Anglian fen river. Together
with the adjacent terrestrial habitats, the Nar is an outstanding river system of its type. Due to the
distance from proposed mineral extraction site, no adverse impacts are expected to the SSSI.

**M6.12** The nearest County Wildlife Site is CWS 434 ‘Disused Pit’ which is 860m from the site. It is
an area of open water, scrub, wet and dry woodland and acid grassland located on the site of
former gravel workings. Much of the site is occupied by steep-sided, flooded gravel pits, with
frequent trees and scrub around the edge of the lakes. Due to the distance from proposed mineral
extraction site, no adverse impacts are expected to the CWS.

**M6.13** There are no ancient woodland sites within 3km of the site.

**M6.14 Geodiversity:** The site consists of Lowestoft Formation - diamicton, overlying Carstone
formation-sandstone and Gault Formation mudstone. The site is unlikely to contain geodiversity
priority features. Potential impacts to geodiversity would need to be assessed and appropriate
mitigation identified as part of any future application.

**M6.15 Flood Risk:** The site is in Flood Zone 1 (lowest risk) of flooding from rivers. The site has a
low risk of surface water flooding with three locations of surface water pooling in a 1 in 30 and 1 in
100 year rainfall event. Carstone extraction is considered to be a ‘less vulnerable’ land use which is
suitable in all flood zones, except zone 3b (the functional flood plain). The site is not in an Internal
Drainage Board area.

**M6.16 Hydrogeology:** The site is partially located over a principal aquifer (bedrock) and partially
over a Secondary (undifferentiated) aquifer (superficial deposits). However, there are no
groundwater Source Protection Zones within the proposed site. The proposed extraction site would
be worked dry (above the water table) and therefore no effect on water resources is expected. In
order to ensure that extraction only takes place above the water table, a planning application for
mineral extraction at this site would need to include a Hydrogeological Risk Assessment to identify
any potential impacts to groundwater and appropriate mitigation measures.

**M6.17 Water Framework Directive:** The site is approximately 1.1km from the County Drain which
is the nearest Water Framework Directive waterbody. The groundwater level in this area is several
metres below ground level and therefore overland flows are not expected from the site towards the
County Drain. MIN 06 and the existing adjacent processing plant, which the carstone would be
transported to by internal haul route, are both located north of the County Drain. Therefore, the carstone to be processed would not be transported across this waterbody. Due to the distance of the site from the County Drain, it is not expected that there would be a pathway for silt ingress into this waterbody from any future carstone extraction within site MIN 06.

M6.18 Utilities infrastructure: There are no Anglian Water sewerage assets within the site. A public water main runs along part of the site boundary. Anglian Water would require the standard protected easement widths for the water main and for any requests for alteration or removal to be conducted in accordance with the Water Industry Act 1991. There is no electricity transmission infrastructure within the site. There are no high-pressure gas pipelines within the site.

M6.19 Safeguarding aerodromes: The site is within the zone for RAF Marham where the Defence Infrastructure Organisation must be consulted on developments with the potential to increase the number of birds and the ‘bird strike’ risk to aircraft. Therefore, a Bird Hazard Assessment would be required at the planning application stage.

M6.20 Restoration: The site is proposed to be restored to a lower level to a heathland habitat.

M6.21 Conclusion: Site MIN 06 is considered suitable to allocate for carstone extraction. Development will be subject to compliance with the relevant Minerals and Waste Local Plan Policies and Specific Site Allocation Policy MIN 06.

### Specific Site Allocation Policy MIN 06 (land off East Winch Road, Mill Drove, Middleton):

The site is allocated as a specific site for carstone extraction. Development will be subject to compliance with the Minerals and Waste Local Plan policies and all the following requirements:

- Phasing of the site with other carstone quarries nearby, so that extraction only commences on this site once extraction is completed on other workings;
- Submission of noise and dust assessments and a programme of mitigation measures to deal appropriately with any amenity impacts;
- A scheme of working, which mitigates landscape impacts, to include progressive restoration to a lower level with some inert fill, with final restoration to heathland habitat to provide biodiversity gains;
- An appropriate archaeological assessment must be prepared in consultation with Norfolk County Council; this may initially be desk-based but may need to be followed up with field surveys and trial-trenching. The archaeological assessment will be used by Norfolk County Council/Historic Environment Service to agree appropriate mitigation measures;
- Submission of a Bird Hazard Assessment report to identify the risk of bird hazard to the safe operation of aerodromes and aircraft, identify proposed mitigation of any identified risk, and include a Bird Hazard Management Plan if necessary;
- A sufficient stand-off distance around the water main which runs along part of the site boundary or diversion of the water main at the developer's cost and to the satisfaction of Anglian Water;
- Highway access to be via an internal haul route to the adjacent existing quarry entrance on the East Winch Road, and traffic routing via East Winch Road to the A47;
- Contributions to any highway improvements which would be required by the Highway Authority to ensure highway safety;
- A Transport Assessment or Statement to identify any capacity/safety issues at the East Winch Road/A47 junction and contributions towards any junction improvements required as a result; and
- The depth of the extraction must be limited, to ensure that the extraction is worked dry, above the maximum level of the groundwater. A Hydrogeological Risk Assessment would be required to establish the maximum depth of working.
MIN 45 - land north of Coxford Abbey Quarry (south of Fakenham Road), East Rudham

Site Characteristics

- The 22.7 hectare site is within the parish of East Rudham
- The estimated sand and gravel resource at the site is 700,000 tonnes
- The proposer of the site has given a potential start date of 2023 and estimated the extraction rate to be 100,000 tonnes per annum. Based on this information the full mineral resource at the site could be extracted within seven years which would be within the plan period.
- The site is proposed by Longwater Gravel Co Ltd as an extension to an existing site.
- Approximately 17.4 hectares of site is currently a Plantation on Ancient Woodland Site (PAWS), with the remainder an agricultural field. The Agricultural Land Classification scheme classifies the land as being partly Grade 3 and partly non-agricultural.
- The site is 8.4km from Fakenham which is the nearest town.

M45.1 Amenity: The nearest residential property is 822m from the site boundary. The settlement of Syderstone is 848m away. Even without mitigation, adverse dust impacts from sand and gravel sites are uncommon beyond 250m from the nearest dust generating activities. Therefore, no adverse amenity impacts are expected from the proposed mineral extraction.

M45.2 Highway access: The site would use the existing site access route on to the B1454 (Fakenham Road), which is a designated lorry route, and then onto the A148. The site is not within an AQMA. As a proposed extension to an existing site, the number of vehicle movements is expected to remain the same but continue for a longer period. The estimated number of HGV movements is 14 per day. The proposed highway access is considered to be suitable by the Highway Authority.

M45.3 Historic environment: The historic landscape character of the site is heathland and ancient woodland. The site is within a wider historic landscape character of Twentieth century agriculture with enclosure and boundary loss with a relict element, and agriculture with 18th to 19th century piecemeal enclosure. The wider historic landscape character also includes common, heath, mineral extraction and 18th to 20th century woodland plantation.

M45.4 The nearest Listed Building is Grade II Thornby House, which is 940m away. There are 6 Listed Buildings within 2km of the site. The nearest Scheduled Monument is the ‘Saucer Barrow at Coxford Heath’ which is 820m away. There are 3 Scheduled Monuments within 2km of the site boundary. Tattersett Conservation Area is 1.34km from the site. There are no Registered Historic Parks and Gardens within 2km of the site. A planning application for mineral extraction at this site would need to include a Heritage Statement to identify heritage assets and their settings, assess the potential for impacts and identify appropriate mitigation measures if required.

M45.5 Archaeology: There are no Historic Environment records within the site boundary, however the lack of HE records may just be due to a lack of investigations. There have been isolated multi-period finds in the wider landscape, a probable Roman trackway running parallel to the boundary, and a WW2 bombing decoy site immediately south of the site. Therefore, there is the potential that unknown archaeology exists on the site and an assessment of the significance of archaeological remains will be required at the planning application stage, in order to protect and mitigate the impact of mineral extraction in this site. The archaeology assessment may initially be desk-based but may need to be followed up with field surveys and trial-trenching.

M45.6 Landscape: The site is not located within the AONB, a Core River Valley or any other designated landscape feature. The site consists of an arable field in the north-west, whilst the rest of the site is primarily coniferous woodland. The site falls within two landscape character areas; ‘Bagthorpe Rolling Open Farmland’ and ‘Bircham Plateau Farmland’ in the King’s Lynn and West Norfolk Landscape Character Assessment. The western boundary of the site is adjacent to Bagthorpe Road. The northern and eastern boundaries are set back from the B1454 and are
screened by a treebelt. There is an active mineral working to the south. The site is remote from settlement.

**M45.7** There is a Public Right of Way adjacent to the southern boundary of the site (East Rudham RB11). There is a PRoW adjacent to part of the site boundary with the Fakenham Road (Syderstone RB9).

**M45.8 Ecology:** The site is 3.14km from the River Wensum SAC and is outside the Impact Risk Zone for the River Wensum SSSI. Therefore there would be no likely significant effects on the integrity of the SSSI or SAC from the proposed mineral extraction site.

**M45.9** Syderstone Common SSSI is 0.15km from the site boundary. The SSSI citation states that the site consists of a series of heath and grassland communities occupying a shallow valley. These communities grade from dry heath and acid grassland to marshy acid grassland. In the lowest areas there are a series of seasonally wet pools. Syderstone Common supports a breeding colonies of five species of amphibian including nationally rare natterjack toads. The potential exists for impacts from mineral extraction at MIN 45, if uncontrolled. An assessment of potential impacts, including from dust deposition and hydrogeology, together with appropriate mitigation would be required as part of any planning application.

**M45.10** The nearest County Wildlife Site is CWS 589 ‘Coxford Meadows’ which is 500m from the site. The CWS consists of a mosaic of many different habitat types and crossed by the River Tat. It includes several artificial lakes surrounded by scrub, several dry heathland areas, areas of damp neutral grassland, scrub, oak and birch woodland. Due to the distance from the CWS there would be no impacts from dust deposition. The proposed extraction site would be worked dry (above the water table) and therefore the County Wildlife Site would not be adversely affected.

**M45.11** The site is on an ancient woodland site, Coxford Wood, which is a Plantation on Ancient Woodland Site (PAWS). The National Planning Policy Framework states that ‘development resulting in the loss or deterioration of irreplaceable habitats (such as ancient woodland and ancient or veteran trees) should be refused, unless there are wholly exceptional reasons and a suitable compensation strategy exists”. National guidance states that PAWS should be afforded the same protection as ancient semi-natural woodland. This site is the only remaining part of the previous allocation MIN 45 which is unworked; however, sand and gravel resources are only of local or regional significance. Therefore, it is considered unlikely that the proposed development would be in accordance with national policy because the public benefit of sand and gravel extraction on this site would not clearly outweigh the loss of the ancient woodland site.

**M45.12 Geodiversity:** The site consists of the Britons Lane Sand and Gravel member, overlying chalk formations. The Britons Lane sands and gravels are known to contain priority features such as palaesols and erratics in other locations, and therefore they may occur on this site. Potential impacts to geodiversity would need to be assessed and appropriate mitigation identified as part of any future application. It would be useful to retain some open faces for scientific study during operational stages, and ideally after restoration, and have a ‘watching brief’ during the extraction phase in case features of potential geodiversity interest are uncovered.

**M45.13 Flood Risk:** The site is in Flood Zone 1 (lowest risk) of flooding from rivers. The site has a low probability of surface water flooding, with a minor surface water flow path along the southern boundary of the site in a 1 in 1000 year rainfall event. Sand and gravel extraction is considered to be a ‘water compatible’ land use which is suitable in all flood zones. The site is not in an Internal Drainage Board area.

**M45.14 Hydrogeology:** The site is located over a principal aquifer (bedrock) and a secondary A aquifer (superficial deposits). A small part of the site is within groundwater Source Protection Zone 2. The site would be worked dry (above the water table) and therefore no effect on water resources is expected.

**M45.15 Water Framework Directive:** The site is approximately 2.5km from the River Tat which is the nearest Water Framework Directive waterbody. The groundwater level in this area is several
metres below ground level and therefore overland flows are not expected from the site towards the River Tat. MIN 45 and the existing adjacent processing plant, which the sand and gravel would be transported to by internal haul route, are both located a considerable distance north of the River Tat. Therefore, the sand and gravel to be processed would not be transported across the River Tat. Due to the distance of the site from the River Tat, it is not expected that there would be a pathway for silt ingress into this waterbody from any future sand and gravel extraction within site MIN 45.

**M45.16 Utilities infrastructure:** There are no Anglian Water sewerage assets or water assets within the site. There is no electricity transmission infrastructure within the site. There are no high-pressure gas pipelines within the site.

**M45.17 Safeguarding aerodromes:** The site is not within an aerodrome safeguarding zone.

**M45.18 Restoration:** Longwater Gravel have stated that the ancient woodland soils would be removed and relocated on to the areas to be restored following extraction, and the restoration concept is for ‘Trees with parkland’. It has not been proved at this stage that soil translocation would have no detrimental effects to the quality of the PAWS. Natural England and Forestry Commission standing advice on ancient woodland states that “you cannot move an ancient woodland ecosystem” and that ancient woodland is irreplaceable and “consequently you should not consider proposed compensation measures as part of your assessment of the merits of the development proposed”.

**M45.19 Conclusion:** The site is considered to be unsuitable for allocation because:

- There are not wholly exceptional reasons for the development. It is considered unlikely that the proposed development would be in accordance with national policy because the public benefit of sand and gravel extraction on this site would not clearly outweigh the loss of the ancient woodland site.
- It has not been proved that soil translocation would have no detrimental effects to the quality of the PAWS. The Joint Nature Conservation Committee states that the uncertainty of habitat translocation means that it should be viewed only as a measure of last resort in partial compensation for damaging developments. Ancient woodland is irreplaceable and the Natural England and Forestry Commission standing advice on ancient woodland states that the proposed compensation measures should not be considered as part of the assessment of the merits of the development proposal, therefore the proposed soil translocation and woodland restoration scheme cannot be taken into account when assessing any potential public benefits of the proposed development.
MIN 204 - land north of Lodge Road, Feltwell

Site Characteristics

- The 13.86 hectare site is within the parish of Feltwell.
- The estimated sand and gravel resource at the site is 720,000 tonnes for all three parcels of land.
- The proposer of the site has given a potential start date of 2023 and estimated the extraction rate to be 50,000 tonnes per annum. Based on this information, the full mineral resource at the site could be extracted within fifteen years. Therefore, 650,000 tonnes could be extracted within the planning period.
- The site is proposed by LP Pallet Quarry (Feltwell) Ltd as an extension to an existing site.
- The site is made up of three separate parcels of land which are currently in agricultural use and the Agricultural Land Classification scheme classifies the land as being mainly non-agricultural land, with a small area of Grade 4 agricultural land.
- The site is 13.8km from Thetford, which is the nearest town.

M204.1 Amenity: The nearest residential property is 21m from the site boundary. There are five sensitive receptors within 250m of the site boundary and two of these are within 100m of the site boundary. The settlement of Feltwell is 1.3km away. Even without mitigation, adverse dust impacts from sand and gravel sites are uncommon beyond 250m from the nearest dust-generating activities. The greatest impacts will be within 100 metres of a source, if uncontrolled. A planning application for mineral extraction at this site would need to include noise and dust assessments and mitigation measures to deal appropriately with any amenity impacts.

M204.2 Highway access: The site would use the new access onto the B1112 (Lodge Road), which is a designated lorry route (approx. 150m west of the Sawmill access). The site is not within an AQMA. The estimated number of HGV movements is 20 per day. The proposed highway access is considered to be suitable by the Highway Authority.

M204.3 Historic environment: The historic landscape character of the site is agriculture with 18th to 19th Century piecemeal enclosure. The site is within a wider historic landscape character of Twentieth Century agriculture with enclosure and boundary loss, agriculture with 18th to 19th Century piecemeal enclosure, 18th to 20th century woodland plantation, and mineral extraction.

M204.4 There is one Listed Building within 2km of the boundary; Grade II Denton Lodge which is 640m away. The nearest Scheduled Monument is the Bowl Barrow in Lynnroad Covert, which is 1.59km away. There are 2 Scheduled Monuments within 2km of the site boundary. There are no Conservation Areas or Registered Historic Parks and Gardens within 2km of the site. A planning application for mineral extraction at this site would need to include a Heritage Statement to identify heritage assets and their settings, assess the potential for impacts and identify appropriate mitigation measures if required.

M204.5 Archaeology: The site is located within a Historic Environment feature for Methwold Rabbit Warren. There are no HE records indicating finds but this may be as a result of lack of investigations. The site is in a wider landscape with a significant number of finds and features from the multiple periods, but especially the Neolithic and Bronze Ages, and a Palaeolithic handaxe was found on adjacent land. The Norfolk Historic Environment Service has stated that “The old Lodge Pit located c.500m north of MIN 204 has yielded significant assemblages of quartzite as well as flint palaeoliths and has been subject to recent study for evidence of a Middle Pleistocene Stage 6 glaciation. Interpretation of the lithic assemblages and geology at Feltwell are relevant to current archaeological debate relating to Pre-Anglican human occupation of Britain”. It is highly likely that similar archaeological remains will be present at site MIN 204 and an assessment of the impact of mineral extraction on archaeological remains (particularly Palaeolithic/Pleistocene exposures) will be required at the planning application stage, in order to protect and mitigate the impact of mineral extraction in this site. The archaeology assessment will need to include field surveys and trial-trenching.
M204.6 Landscape: The site is not located within the AONB, a Core River Valley or any other designated landscape feature. The site is within the landscape character area described as ‘Northwold Settled Farmland with Plantations’ in the King’s Lynn and West Norfolk Landscape Character Assessment. The site consists of three separate parcels of land which are surrounded by mainly coniferous woodland except for the southern boundaries of the two parcels along Lodge Road, which are bordered by hedgerows. Therefore, all parcels of land are screened from views from the north, east and west, by existing trees. However, there are views into the site from Lodge Road and therefore additional screen planting and bunding will be required to ensure that site is also sufficiently screened from the south. Due to the surrounding woodland and hedgerows an Arboricultural Impact Assessment would be required at the planning application stage to ensure sufficient standoff from adjacent trees to ensure their roots are protected for their safe long-term retention.

M204.7 There are no Public Rights of Way within or adjacent to the site.

M204.8 Ecology: Breckland Forest SSSI, part of the Breckland SPA, is adjacent to the site boundary. The SSSI citation states that the clear fell areas and young plantations within Breckland Forest SSSI provide suitable breeding habitat for woodlark and nightjar which occur in internationally important numbers. The forest also supports an important assemblage of protected plant species, internationally rare and nationally scarce plant species. The forest also supports an exceptionally rich invertebrate fauna. All three parcels of land are within the Protection Zone for Stone Curlews, an internationally protected ground nesting bird.

M204.9 The potential exists for impacts from mineral extraction at site MIN 204. An assessment of potential impacts, including from dust deposition, noise and disturbance to protected species, together with appropriate mitigation, would be required at the planning application stage as part of a Habitats Regulations Assessment (HRA). Due to the precautionary principle in relation to the Habitats Regulations, if effects to the SPA are judged as uncertain then development should not take place. Due to the proximity of the proposed site to the Breckland SPA, mitigation measures would be required to the proposed mineral extraction operation and impacts are uncertain. It is therefore not possible, at the screening stage of the HRA of the M&WLPR, to conclude that there would be no likely significant effects from mineral extraction at site MIN 204.

M204.10 Weeting Heath SSSI, part of the Breckland SAC, is 2.03km from the site boundary. The SSSI citation states that the site is a classic example of open, rabbit-grazed, Breckland grass-heath. Most of the site is covered by calcareous grassland and lichen-dominated heath, and a number of rate plants characteristic of Breckland are present. A small arable weed reserve is included within the site and many of the rare Breckland annuals have been introduced to it. The site is of considerable ornithological importance supporting a high breeding density and variety of heathland birds, including the Stone Curlew. Whilst the site is within the Impact Risk Zone for the SSSI, due to the distance no impacts on this SSSI are expected.

M204.11 Breckland Farmland SSSI is 0.90km from the site boundary. The SSSI citation states that the predominantly arable site has an internationally important population of Stone Curlew. All three parcels of land are within the Protection Zone for Stone Curlews. The potential exists for impacts from mineral extraction at MIN 204, if uncontrolled. An assessment of potential impacts, together with appropriate mitigation would be required as part of any planning application.

M204.12 There are no County Wildlife Sites within 1km of the site.

M204.13 There are no ancient woodland sites within 3km of the site.

M204.14 Geodiversity: The site consists of the Croxton sand and gravel member, Ingham sand and gravel formation in NW of site, overlying Chalk Formations. There is a significant potential that glacial and peri-glacial geodiversity priority features may exist within the Croxton sands and gravels. The Ingham sands and gravels may also contain geodiversity priority features due to the method of formation. The Norfolk Geodiversity Partnership has stated that “The Old Lodge Pit located c.500m north of site MIN 204 has yielded significant assemblages of quartzite as well as flint palaeoliths and has been subject to recent study for evidence of Middle Pleistocene Stage 6 glaciation.
Interpretation of the lithic assemblages and geology at Feltwell are relevant to current archaeological debate relating to pre-Anglian human occupation of Britain." Potential impacts to geodiversity would need to be assessed and appropriate mitigation identified as part of any future application. Due to the site’s importance, some open faces should be retained for scientific study during operational stages, and ideally after restoration. A ‘watching brief’ would be required during the extraction phase in case features of potential geodiversity interest are uncovered.

M204.15 Flood Zone: The site is in Flood Zone 1 (lowest risk) of flooding from rivers. The site has a low risk of surface water flooding with two locations of surface water pooling in a 1 in 30 year rainfall event and a five locations of surface water pooling in a 1 in 100 year rainfall event. In the 1:1000 year rainfall event approximately 40% of the western field is covered by surface water pooling. Sand and gravel extraction is considered to be a ‘water compatible’ land use which is suitable in all flood zones. The site is not in an Internal Drainage Board area.

M204.16 Hydrogeology: The site is located over a principal aquifer (bedrock) and partially located over a secondary A aquifer (superficial deposits). Part of the site is within groundwater Source Protection Zone 2. The rest of the site is not within a groundwater SPZ. The site would be worked dry (above the water table) and therefore dewatering would not be required. A planning application for mineral extraction at this site would need to include a Hydrogeological Risk Assessment to identify any potential impacts to groundwater and appropriate mitigation measures.

M204.17 Water Framework Directive: The site is approximately 3.9km from the Cut-off Channel; the River Wissey and Cut-off Channel are the nearest Water Framework Directive waterbodies. The groundwater level in this area is several metres below ground level and therefore overland flows are not expected from the site towards the River Wissey and Cut-off Channel. MIN 204 and the existing adjacent processing plant, which the sand and gravel would be transported to by internal haul route, are both located a considerable distance north of the River Wissey and Cut-off Channel. Therefore, the sand and gravel to be processed would not be transported across these waterbodies. Due to the distance of the site from the River Wissey and Cut-off Channel, it is not expected that there would be a pathway for silt ingress into these waterbodies from any future sand and gravel extraction within site MIN 204.

M204.18 Utilities infrastructure: There are no Anglian Water sewerage assets or water assets within the site. There is no electricity transmission infrastructure within the site. There are no high-pressure gas pipelines within the site.

M204.19 Safeguarding aerodromes: The site is within the zone for RAF Lakenheath where the Defence Infrastructure Organisation must be consulted on developments with the potential to increase the number of birds and the ‘bird strike’ risk to aircraft. Therefore, a Bird Hazard Assessment would be required at the planning application stage.

M204.20 Restoration: The site is proposed to be restored to grass heathland with some areas of bare ground and short vegetation in each to create habitat for stone curlew, nightjar and woodlark.

M204.21 Conclusion: The site is considered to be unsuitable for allocation because:

- Due to the proximity of the site to the Breckland Forest SSSI (part of the Breckland SPA), and the location of the site within the Protection Zone for Stone Curlews, there is the potential for unacceptable adverse effects on the SSSI from the proposed mineral extraction.
- Whilst it may be possible to design and operate a site where there would not be any adverse effects on the SSSI or SAC, this uncertainty is a significant constraint to the development of the site and therefore the site is considered to be less deliverable than other sites that have been proposed for extraction.
MIN 19 & MIN 205 - land north of the River Nar, Pentney

Site Characteristics

- The 14.95 hectare site is within the parish of Pentney
- The estimated sand and gravel resource at the site is 850,000 tonnes
- The proposer of the site has given a potential start date of 2025 and estimated the extraction rate to be 80,000 tonnes per annum. Based on this information the full mineral resource at the site could be extracted within eleven years, which would be within the plan period.
- The site is proposed by Middleton Aggregates Ltd as an extension to an existing site.
- MIN 19 currently contains an asphalt plant and related storage, MIN 205 is in agricultural use and the Agricultural Land Classification scheme classifies the land as being mainly Grade 3, with a small area of non-agricultural land.
- The site is 7.9km from King's Lynn, 11km from Downham Market and 12.1km from Swaffham which are the nearest towns.

M19.1 Amenity: The nearest residential property is 570m from the site. The settlement of Blackborough End is 2.7km away. Even without mitigation, adverse dust impacts from sand and gravel sites are uncommon beyond 250m from the nearest dust generating activities. Therefore, no adverse amenity impacts are expected from the proposed mineral extraction.

M19.2 Highway access: The site would use the existing access route along Common Road (which is a designated HGV access route in the route hierarchy) up to its junction with the A47. The site is not within an AQMA. As a proposed extension to an existing site, the number of vehicle movements is expected to remain the same but continue for a longer period. The estimated number of HGV movements is 30 (in and out) per day. The proposed highway access is considered to be suitable by the Highway Authority, subject to highway improvements along Common Road.

M19.3 Historic environment: The historic landscape character of the site is Twentieth Century agriculture with enclosure, and mineral extraction. The site is within a wider historic landscape character of Twentieth century agriculture with enclosure and boundary loss, agriculture with 18th to 19th century piecemeal enclosure, and drained Parliamentary fen enclosure. The wider historic landscape character also includes leisure/recreation, a water reservoir, mineral extraction, and woodland (carr woodland and 18th to 20th century plantation woodland).

M19.4 The nearest Listed Building is the Grade I 'Remains of Augustinian Priory' which is 690m away. There are 4 Listed Buildings within 2km of the site. The nearest Scheduled Monument is the Remains of Pentney Priory at Abbey Farm which is 460m away. There are 2 Scheduled Monuments within 2km of the site. There are no Conservation Areas or Registered Historic Parks and Gardens within 2km of the site. A planning application for mineral extraction at this site would need to include a Heritage Statement to identify heritage assets and their settings, assess the potential for impacts and identify appropriate mitigation measures if required.

M19.5 Archaeology: There are no Historic Environment records within the site boundary, however the lack of HE records may just be due to a lack of investigations. The site is in a wider landscape with a significant number of finds and features from multiple periods, especially to the east in the direction of the remains of Pentney Abbey. Therefore, there is the potential that unknown archaeology exists on the site and an assessment of the significance of archaeological remains will be required at the planning application stage, in order to protect and mitigate the impact of mineral extraction in this site. The archaeology assessment may initially be desk-based but may need to be followed up with field surveys and trial-trenching.

M19.6 Landscape: The site is located within a Core River Valley. The site is not located within the AONB or any other designated landscape feature. Until early 2019 site MIN 19 contained an asphalt plant and associated storage; the western part of the site still contains sand and gravel processing plant and stockpiles. Current planning permissions require the majority of the site to be restored to woodland by the end of 2019, with the remaining western part of the site to be restored by the end of 2024. MIN 205 is arable agricultural fields. The site is within the landscape character
area described as ‘The Fens – Open Inland Marshes – Saddlebow and Wormegay’ in the King’s Lynn and West Norfolk Landscape Character Assessment.

M19.7 The site is within the River Nar floodplain and is bounded by farmland to the east and an extensive area of sand and gravel extraction to the west. Woodland lies to the north of the site and the River Nar is immediately south. The site is not easily accessible from public viewpoints apart from the public footpath which runs alongside the River Nar.

M19.8 For mineral extractions to be acceptable within a Core River Valley, proposals need to demonstrate that they will result in landscape enhancement on restoration. When MIN 19 was allocated in 2013, the resulting removal of the existing asphalt plant was considered to be a landscape gain resulting from the mineral extraction. However, as the feedstock for the asphalt plant was no longer being provided by the adjacent mineral extraction site, the asphalt plant has now been removed and current planning permission requires the plant site to be restored by the end of December 2019 (restoration in accordance with C/2/1994/2015). Therefore, the removal of the asphalt plant is not now a landscape gain which could be associated with the proposed mineral extraction on MIN 19. As the use of the asphalt plant site was always subject to a time limited planning permission, it was incorrect for the restoration of the plant site to have been considered a landscape gain when site MIN 19 was originally allocated in 2013.

M19.9 Site MIN 19 is currently in use for mineral processing and storage and is required to be restored mainly to woodland (partly by 2019 and partly by 2024). The approved restoration to woodland is considered to be in keeping with the existing woodland in areas to the north and south of the site and the revised restoration proposals to areas of open water surrounded by reed fringes, wet grassland and wet woodland would not result in enhancement of the landscape sufficient to justify mineral extraction.

M19.10 MIN 205 is currently arable agricultural fields. A Heritage Assessment submitted by the proposer of the site suggests that restoration including areas of water would result in a landscape gain, as it would return it to a condition similar to that prior to the fen being drained. However, it is considered that previous mineral workings in the area have already resulted in areas of water/reedbeds nearby and given that the River Nar is embanked as a result of the drainage of the area, additional areas of open water (with the addition of reed fringes, wet grassland and wet woodland) closer to the Scheduled Monuments at Pentney Priory would not result in enhancement of the landscape to justify mineral extraction.

M19.11 There is a PROW (Pentney FP20) adjacent to the southern boundary of the site.

M19.12 Ecology: The site is more than 5km from any SPA, SAC or Ramsar site. Therefore, there would be no likely significant effects on these sites.

M19.13 River Nar SSSI is adjacent to the site boundary. The SSSI citation states that the River combines the characteristics of a southern chalk stream and an East Anglian fen river. Together with the adjacent terrestrial habitats, the Nar is an outstanding river system of its type. The section of the river near MIN 19 & MIN 205 is embanked. The potential exists for impacts from mineral extraction at this site, if uncontrolled. An assessment of potential impacts, including from dust deposition and hydrogeology, together with appropriate mitigation would be required as part of any planning application.

M19.14 East Winch Common SSSI is 2.85km from the site boundary. The SSSI citation states that it is an area of predominantly wet acid heathland on shallow peat. Many wet hollows are present containing diverse fen and mire communities. One rare plant species occurs and also several uncommon species. The site is surrounded by young woodland. The site is within the Impact Risk Zone for this SSSI, however, due to this distance, no impacts on the SSSI are expected.

M19.15 The nearest County Wildlife Sites are: CWS 429 ‘South West Bilney Warren’, an area of coppice woodland with a grassy ground flora which is 190m from the site, and CWS 431 ‘Valetta Meadow’ which is an area of damp to well-drained neutral grassland which is 520m from the site. The potential exists for impacts from mineral extraction at this site, if uncontrolled. An assessment
of potential impacts, including from dust deposition and hydrogeology, together with appropriate mitigation would be required as part of any planning application.

**M19.16** There are no ancient woodland sites within 3km of the site.

**M19.17 Geodiversity:** The site consists of peat and valley fill deposits, overlying Leziate Member bedrock. It is listed as K LW64 in the Norfolk Geodiversity Audit. It is highly likely that complex sequences of valley fill sediments (glacial and interglacial) containing fossil material and evidence of Middle Pleistocene sea-level changes are present, as recorded at other sites nearby. These sites are therefore likely to contain geodiversity priority features. Potential impacts to geodiversity would need to be assessed and appropriate mitigation identified as part of any future application.

**M19.18 Flood Risk:** The majority of the site (96%) is in Flood Zone 2 (medium risk), and 4% of the site is within Flood Zone 3 (high risk) for flooding from rivers in the Borough Council SFRA. The site has a low probability of surface water flooding, with a few small locations of surface water pooling in a 1 in 100-year rainfall event. In a 1 in 1000-year rainfall event there are additional small areas of surface water pooling. Sand and gravel extraction is considered to be a ‘water compatible’ land use which is suitable in all flood zones. The site is within the East of Ouse, Polver and Nar Internal Drainage Board area.

**M19.19 Hydrogeology:** The site is not located over any superficial deposit aquifers. The site is located over a principal aquifer (bedrock). However, there are no groundwater Source Protection Zones within the proposed site.

**M19.20 Water Framework Directive:** The site is adjacent to the River Nar and approximately 0.2km from the County Drain, which are the nearest Water Framework Directive waterbodies. The groundwater level in this area is several metres below ground level and therefore overland flows are not expected from the site towards the River Nar and County Drain. MIN 19 & MIN 205 and the existing adjacent processing plant, which the sand and gravel would be transported to by internal haul route, are both located north of the River Nar and County Drain. Therefore, the sand and gravel to be processed would not be transported across these waterbodies. Due to the distance of the site from the River Nar and County Drain, it is not expected that there would be a pathway for silt ingress into these waterbodies from any future sand and gravel extraction within site MIN 19 & MIN 205.

**M19.21 Utilities infrastructure:** There are no Anglian Water sewerage assets or water assets within the site. There is no electricity transmission infrastructure within the site. There are no high-pressure gas pipelines within the site.

**M19.22 Safeguarding aerodromes:** The site is within the zone for RAF Marham where the Defence Infrastructure Organisation must be consulted on developments with the potential to increase the number of birds and the ‘bird strike’ risk to aircraft. Therefore, a Bird Hazard Assessment would be required at the planning application stage.

**M19.23 Restoration:** The scheme proposed by the mineral operator is for restoration to several areas of open water with reed fringes, wet grassland and wet woodland.

**M19.24 Conclusion:** The site is considered to be unsuitable for allocation because:

- The site is within a Core River Valley and the restoration would not result in enhancement to the landscape sufficient to justify mineral extraction.
Map of proposed sites at Tottenhill (MIN 74, MIN 77, MIN 206)
MIN 74 - land at Turf Field, Watlington Road

Site Characteristics

- The 3.21 hectare site is within the parish of Tottenhill
- The estimated sand and gravel resource at the site is 160,000 tonnes
- The proposer of the site has given a potential start date of 2024 and estimated the extraction rate to be 100,000 tonnes per annum. Based on this information the full mineral resource at the site could be extracted within two years, which would be within the plan period.
- The site is proposed by Frimstone Ltd as an extension to an existing site. The Tottenhill sites would be worked sequentially to mitigate any cumulative impacts.
- The site is currently in agricultural use and the Agricultural Land Classification scheme classifies the land as being Grade 3
- The site is 5.8km from King’s Lynn and 8.1km from Downham Market which are the nearest towns.

M74.1 Amenity: The nearest residential property is 77m from the site boundary. There are four sensitive receptors within 250m of the site boundary and two of these are within 100m of the site boundary. Tottenhill Row is 77m away. Even without mitigation, adverse dust impacts from sand and gravel sites are uncommon beyond 250m from the nearest dust generating activities. The greatest impacts will be within 100 metres of a source, if uncontrolled. A planning application for mineral extraction at this site would need to include noise and dust assessments and mitigation measures to deal appropriately with any amenity impacts.

M74.2 Highway access: The site would use the existing quarry access along Watlington Road (C51) for about 150 metres before reaching the roundabout for the A10/A134), which is a designated lorry route. The site is not within an AQMA. As a proposed extension to an existing site, the number of vehicle movements is expected to remain the same but continue for a longer period. The estimated number of HGV movements is 40 per day. The proposed highway access is considered to be suitable by the Highway Authority.

M74.3 Historic environment: The historic landscape character of the site is Twentieth Century agriculture with boundary loss. The site is within a wider historic landscape character of Twentieth Century agriculture with enclosure and boundary loss, agriculture with 18th to 19th Century enclosure, Pre-18th century drained fen enclosure and a common. The wider historic landscape character also includes informal parkland, 18th to 20th Century woodland, a water reservoir and mineral extraction.

M74.4 The nearest Listed Building is Grade II ‘The Grange’ which is 980m away. There are 9 Listed Buildings within 2km of the site. The only Scheduled Monument within 2km of the site is the ‘Moated site of Wormegay Priory’ which is 1.51km away. Tottenhill Row Conservation Area is adjacent to the site. There are no Registered Historic Parks and Gardens within 2km of the site. A planning application for mineral extraction at this site would need to include a Heritage Statement to identify heritage assets and their settings, assess the potential for impacts and identify appropriate mitigation measures if required.

M74.5 Archaeology: The site is located within an area of interest, and there are Historic Environment records of isolated multi-period finds, within the site boundary. The site is set in a wider landscape with a very significant number of finds and features from multiple periods associated with Fen edge settlement. Therefore, there is the potential that unknown archaeology exists on the site and an assessment of the significance of archaeological remains will be required at the planning application stage, in order to protect and mitigate the impact of mineral extraction in this site. The archaeology assessment may initially be desk-based but may need to be followed up with field surveys and trial-trenching.

M74.6 Landscape: The site is not located within the AONB, a Core River Valley or any other designated landscape feature. The site is an arable field. The site is within the landscape character area described as ‘Stow Bardolph settled farmland with plantations’ in the King’s Lynn and West
Norfolk Landscape Character Assessment. The site is in an elevated position on the fen edge, sloping towards Setchey to the north. There are a number of properties along the north end of Lynn Road and the A10 which may have views of the land from their upstairs windows. Open views of the site would be seen from the Nar Valley Way to the south and the sloping nature of the site would make these views hard to screen. It is considered that it would be difficult to screen any working from this direction and that any screening or bunding would be intrusive in its own right. The site is adjacent to the eastern extent of the Tottenhill Row Conservation Area, which includes a number of residential properties, and it is again considered that it would be difficult to screen any working from this direction and that any screening or bunding would be intrusive in its own right.

M74.7 There are no Public Rights of Way within or adjacent to the site.

M74.8 Ecology: The site is more than 5km from any SPA, SAC or Ramsar site. Therefore, there would be no likely significant effects on these sites.

M74.9 Setchey SSSI is 0.54km from the site boundary. The SSSI citation details the geological importance of the site for scientific study. The proposed extraction site is within the hydrological catchment for Setchey SSSI but it does not drain towards the SSSI. Therefore there would be no adverse impacts to the SSSI.

M74.10 River Nar SSSI is 1.10km from the site boundary. The SSSI citation states that the River combines the characteristics of a southern chalk stream and an East Anglian fen river. Together with the adjacent terrestrial habitats, the Nar is an outstanding river system of its type. The proposed extraction site is in a different hydrological catchment to the River Nar SSSI and therefore there would be no adverse impacts to the SSSI.

M74.11 The nearest County Wildlife Site is CWS 387 'Tottenhill Row Common' which is 30m away. The CWS contains different habitat types, the majority of the site is neutral semi-improved grassland, but contains two large ponds and to the southeast is extensive continuous bracken. The potential exists for impacts from mineral extraction at MIN 74, if uncontrolled. An assessment of potential impacts, including from dust deposition and hydrogeology, together with appropriate mitigation would be required as part of any planning application.

M74.12 There are no ancient woodland sites within 3km of the site.

M74.13 Geodiversity: This site consists of the Tottenhill gravel member-gravel, overlying Kimmeridge Clay formation-mudstone. There is a significant potential that geodiversity priority features may exist within the Tottenhill gravels due to the method of formation. Potential impacts to geodiversity would need to be assessed and appropriate mitigation identified as part of any future application. It would be useful to retain some open faces for scientific study during operational stages, and ideally after restoration, and have a ‘watching brief’ during the extraction phase in case features of potential geodiversity interest are uncovered.

M74.14 Flood Risk: The site is in Flood Zone 1 (lowest risk) of flooding from rivers. No areas of the site are at risk of flooding from surface water. The site is within the East of Ouse, Polver and Nar Internal Drainage Board area.

M74.15 Hydrogeology: The site is located over a Secondary A aquifer (superficial deposit). The site is not located over any bedrock aquifers. There are no groundwater Source Protection Zones within the proposed site.

M74.16 Water Framework Directive: The site is approximately 500 metres from Hobb’s Drain, which flows into the Polver Drain, which in turn flows into the Relief Channel, which is the nearest Water Framework Directive waterbody. The groundwater level in this area is several metres below ground level and therefore overland flows are not expected from the site towards Hobb’s Drain. MIN 74 and the existing processing plant, which the sand and gravel would be transported to by conveyor, are both located on the same side of Hobb’s Drain and Polver Drain. Therefore the sand and gravel to be processed would not be transported across the drains. Due to the distance of the site from the drains it is not expected that there would be a pathway for silt ingress into the Relief Channel from any future sand and gravel extraction within site MIN 74.
M74.17 **Utilities infrastructure:** There are no Anglian Water Sewerage assets or water assets within the site. There is no electricity transmission infrastructure within the site. There are no high-pressure gas pipelines within the site.

M74.18 **Safeguarding aerodromes:** The site is within the zone for RAF Marham where the Defence Infrastructure Organisation must be consulted on developments with the potential to increase the number of birds and the ‘bird strike’ risk to aircraft. Therefore a Bird Hazard Assessment would be required at the planning application stage.

M74.19 **Restoration:** The site is proposed to be restored to an agricultural afteruse at original ground levels.

M74.20 **Conclusion:** The site is considered to be unsuitable for allocation because:

- Any mineral working on this site would have unacceptable impacts on the landscape. It is not considered that screening/bunding would be able to appropriately mitigate such impacts, and would be intrusive in its own right.
- Any mineral working on this site would have unacceptable impacts on the historic environment, due to its location adjacent to the Tottenhill Row Conservation Area. It is not considered that screening/bunding would be able to appropriately mitigate such impacts, and would be intrusive in its own right.
MIN 76 - land at West Field, Watlington Road

Planning permission was granted for 285,000 tonnes of sand and gravel extraction at this site on 18/04/2019. Therefore, the site will no longer be considered through the Local Plan process.

MIN 77 - land at Runs Wood, south of Whin Common Road, Tottenhill

Site Characteristics

- The 8.83 hectare site is within the parish of Tottenhill
- The estimated sand and gravel resource at the site is 630,000 tonnes
- The proposer of the site has given a potential start date of 2026 and estimated the extraction rate to be 100,000 tonnes per annum. Based on this information the full mineral resource at the site could be extracted within seven years, which would be within the plan period.
- The site is proposed by Frimstone Ltd as an extension to an existing site.
- The majority of the site is currently an area of woodland, and the Agricultural Land Classification scheme classifies the land as being Grade 3
- The site is 6.8km from King’s Lynn and 6.9km from Downham Market which are the nearest towns.

**M77.1 Amenity:** There is only one sensitive receptor within 250m of the site boundary, which is located 79m away. The settlement of Watlington is 368m away and Tottenhill is 414m away. Even without mitigation, adverse dust impacts from sand and gravel sites are uncommon beyond 250m from the nearest dust generating activities. The greatest impacts will be within 100 metres of a source, if uncontrolled. A planning application for mineral extraction at this site would need to include noise and dust assessments and mitigation measures to deal appropriately with any amenity impacts.

**M77.2 Highway access:** The site would access the existing plant site via conveyor. The site would use the existing quarry access along Watlington Road (C51) for about 150 metres before reaching the roundabout for the A10/A134), which is a designated lorry route. The site is not within an AQMA. As a proposed extension to an existing site, the number of vehicle movements is expected to remain the same but continue for a longer period. The estimated number of HGV movements is 40 per day. The proposed highway access is considered to be suitable by the Highway Authority.

**M77.3** The Tottenhill sites would be worked sequentially to mitigate any cumulative impacts.

**M77.4 Historic environment:** The historic landscape character of the site is Eighteenth to Twentieth Century plantation woodland. The site is within a wider historic landscape character of Twentieth Century agriculture with enclosure and boundary loss, agriculture with 18th to 19th Century piecemeal enclosure, unimproved rough pasture, enclosed wetland meadow and a common. The wider historic landscape character also includes allotments, informal parkland, 18th to 20th Century woodland plantation, a water reservoir and mineral extraction.

**M77.5** The nearest Listed Building is Grade I Church of St Peter and St Paul, which is 810m away. There are 8 Listed Buildings within 2km of the site. There are no Scheduled Monuments within 2km of the site. Tottenhill Row Conservation Area is 410m from the site. There are no Registered Historic Parks and Gardens within 2km of the site. A planning application for mineral extraction at this site would need to include a Heritage Statement to identify heritage assets and their settings, assess the potential for impacts and identify appropriate mitigation measures if required.

**M77.6 Archaeology:** The site is located within an area of interest, and there are Historic Environment records that features exist within the site boundary. There are no HE records indicating finds but this may be as a result of lack of investigations. The site is set in a wider landscape with a very significant number of finds and features from multiple periods associated with Fen edge settlement, including Iron Age/ Roman settlement immediately to the south. Therefore,
there is the potential that unknown archaeology exists on the site and an assessment of the significance of archaeological remains will be required at the planning application stage, in order to protect and mitigate the impact of mineral extraction in this site. The archaeology assessment may initially be desk-based but may need to be followed up with field surveys and trial-trenching.

**M77.7 Landscape:** The site is not located within the AONB, a Core River Valley or any other designated landscape feature. The site is a mixed woodland that is predominately broadleaf species. The site is within the landscape character area described as ‘Stow Bardolph settled farmland with plantations’ in the King’s Lynn and West Norfolk Landscape Character Assessment. The woodland site is visible from Whin Common Road to the north. There is a restored mineral working to the west and an active extraction site to the south. The nearest dwellings are approximately 300m away. A large hollow has been identified within Runs Wood, which may be indicative of a historic mineral working which is now wooded. Runs Wood constitutes a significant area of woodland within the local landscape which also has a significant biodiversity value.

**M77.8** There are no Public Rights of Way within or adjacent to the site.

**M77.9 Ecology:** The site is more than 5km from any SPA, SAC or Ramsar site. Therefore, there would be no likely significant effects on these sites.

**M77.9 Setchey SSSI** is 1.59km from the site boundary. The SSSI citation details the geological importance of the site for scientific study. The proposed extraction site is within the hydrological catchment for Setchey SSSI but it does not drain towards the SSSI. Therefore there would be no adverse impacts to the SSSI.

**M77.10 River Nar SSSI** is 2.21km from the site boundary. The SSSI citation states that the River combines the characteristics of a southern chalk stream and an East Anglian fen river. Together with the adjacent terrestrial habitats, the Nar is an outstanding river system of its type. The proposed extraction site is in a different hydrological catchment to the River Nar SSSI and therefore there would be no adverse impacts to the SSSI.

**M77.11** The nearest County Wildlife Sites are: CWS 378 ‘Runs Wood Meadow’ an area of semi-improved neutral grassland which is wet in places, which is 260m away. CWS 381 ‘Thieves’ Bridge Meadow’ is 280m away and consists of a mixture of habitats situated on both sides of a flowing drain. The majority of the CWS is neutral grassland, with a large pond surrounded by woodland in the northeast. CWS 387 ‘Tottenhill Row Common’ is 450m away and contains different habitat types; the majority of the site is neutral semi-improved grassland, but contains two large ponds and to the southeast is extensive continuous bracken. The potential exists for impacts from mineral extraction at MIN 77, if uncontrolled. An assessment of potential impacts, including from dust deposition and hydrogeology, together with appropriate mitigation would be required as part of any planning application.

**M77.12** There are no ancient woodland sites within 3km of the site.

**M77.13 Geodiversity:** This site consists of the Tottenhill gravel member - gravel; overlying Kimmeridge Clay formation - mudstone. There is a significant potential that geodiversity priority features may exist within the Tottenhill gravels due to the method of formation. Potential impacts to geodiversity would need to be assessed and appropriate mitigation identified as part of any future application. It would be useful to retain some open faces for scientific study during operational stages, and ideally after restoration, and have a ‘watching brief’ during the extraction phase in case features of potential geodiversity interest are uncovered.

**M77.14 Flood Risk:** The site is in Flood Zone 1 (lowest risk) of flooding from rivers. The site has a low risk of surface water flooding. There is a surface water flow path along the southern boundary of the site in a 1 in 30 year rainfall event which increases in size in a 1 in 100 and 1 in 1000 year rainfall event. This is likely to be a proxy for fluvial flooding from the adjacent ordinary water course. Sand and gravel extraction is considered to be a ‘water compatible’ land use which is suitable in all flood zones. The site is within the East of Ouse, Polver and Nar Internal Drainage Board area.
M77.15 **Hydrogeology:** The site is located over a Secondary A aquifer (superficial deposit). The site is not located over any bedrock aquifers. There are no groundwater Source Protection Zones within the proposed site.

M77.16 **Water Framework Directive:** The site is adjacent to Hobb’s Drain, which flows into the Polver Drain, which in turn flows into the Relief Channel which is the nearest Water Framework Directive waterbody. The groundwater level in this area is several metres below ground level and therefore overland flows are not expected from the site towards Hobb’s Drain. MIN 77 and the existing processing plant, which the sand and gravel would be transported to by conveyor, are both located on the same side of Hobb’s Drain and Polver Drain. Therefore, the sand and gravel to be processed would not be transported across the drains. MIN 77 is adjacent to Hobb’s drain and therefore the potential for silt ingress to this waterbody exists during the extraction phase, although screening bunds would form a physical barrier. Therefore, due to the distance of the site from the Relief Channel and the proposed physical barrier during extraction, it is not expected that there would be a pathway for silt ingress into the Relief Channel from any future sand and gravel extraction within site MIN 77.

M77.17 **Utilities infrastructure:** There are no Anglian Water sewerage assets or water assets within the site. There is no electricity transmission infrastructure within the site. There are no high-pressure gas pipelines within the site.

M77.18 **Safeguarding aerodromes:** The site is within the zone for RAF Marham where the Defence Infrastructure Organisation must be consulted on developments with the potential to increase the number of birds and the ‘bird strike’ risk to aircraft. Therefore, a Bird Hazard Assessment would be required at the planning application stage.

M77.19 **Restoration:** The site is proposed to be restored to nature conservation after use comprising a mixture of ponds, wet woodland, wet grassland etc. The proposed restoration scheme would not be able to replace the existing established woodland and would not mitigate for the loss of the existing woodland.

M77.20 **Conclusion:** The site is considered to be unsuitable for allocation because:

- Mineral extraction on this site would cause unacceptable landscape and ecological impacts due to the loss of a significant area of mature mixed deciduous woodland.
MIN 206 - land at Oak Field, west of Lynn Road, Tottenhill

Site Characteristics

- The 14.7 hectare site is within the parish of Tottenhill
- The estimated sand and gravel resource at the site is 780,000 tonnes
- The proposer of the site has given a potential start date of 2021 and estimated the extraction rate to be 100,000 tonnes per annum. Based on this information the full mineral resource at the site could be extracted within three years, which would be within the plan period.
- The site is proposed by Frimstone Ltd as an extension to an existing site. The Tottenhill sites would be worked sequentially to mitigate any cumulative impacts.
- The site is currently in agricultural use and the Agricultural Land Classification scheme classifies the land as being Grade 3
- The site is 6.4km from King’s Lynn and 7.2 km from Downham Market which are the nearest towns.

M206.1 Amenity: The nearest residential dwelling is 82m from the site boundary. There are 14 sensitive receptors within 250m of the site boundary and 2 of these are within 100m of the site boundary. The settlement of Tottenhill is 82m away. Even without mitigation, adverse dust impacts from sand and gravel sites are uncommon beyond 250m from the nearest dust generating activities. The greatest impacts will be within 100 metres of a source, if uncontrolled. A planning application for mineral extraction at this site would need to include noise and dust assessments and mitigation measures to deal appropriately with any amenity impacts.

M206.2 Highway access: The site is adjacent to the existing plant site which would be accessed via conveyer. From the plant site the site would use the existing plant access, at Watlington Road (C51) for about 150 metres before reaching the roundabout for the A10/A134), which is a designated lorry route. The site is not within an AQMA. As a proposed extension to an existing site, the number of vehicle movements is expected to remain the same but continue for a longer period. The estimated number of HGV movements is 40 per day. The proposed highway access is considered to be suitable by the Highway Authority.

M206.3 Historic environment: The historic landscape character of the site is Twentieth Century agriculture with enclosure. The site is within a wider historic landscape character of Twentieth Century agriculture with enclosure and boundary loss, agriculture with 18th to 19th Century piecemeal enclosure, unimproved rough pasture, and a common. The wider historic landscape character also includes informal parkland, 18th to 19th Century woodland plantation, a water reservoir and mineral extraction.

M206.4 The nearest Listed Building is the Grade I Church of St Peter and St Paul which is 1.17km away. There are 9 Listed Buildings within 2km of the site. The only Scheduled Monument within 2km of the site is the ‘Moated site of Wormegay Priory’ which is 1.73km away. Tottenhill Row Conservation Area is 260m from the site. There are no Registered Historic Parks and Gardens within 2km of the site. A planning application for mineral extraction at this site would need to include a Heritage Statement to identify heritage assets and their settings, assess the potential for impacts and identify appropriate mitigation measures if required.

M206.5 Archaeology: The site is located within an area of interest, and there are Historic Environment records that features exist within the site boundary. There are no HE records indicating finds but this may be as a result of lack of investigations. The site is set in a wider landscape with a very significant number of finds and features from multiple periods associated with Fen edge settlement, including Iron Age/ Roman settlement to the south. Therefore, there is the potential that unknown archaeology exists on the site and an assessment of the significance of archaeological remains will be required at the planning application stage, in order to protect and mitigate the impact of mineral extraction in this site. The archaeology assessment may initially be desk-based but may need to be followed up with field surveys and trial-trenching.
M206.7 Landscape: The site is not located within the AONB, a Core River Valley or any other designated landscape feature. The site is within the landscape character area described as ‘Stow Bardolph settled farmland with plantations’ in the King’s Lynn and West Norfolk Landscape Character Assessment. The site is an agricultural field immediately to the south of the existing active mineral processing plant. The northern part of the site is bounded to the east and west by woodland belts, with a flooded former mineral working also to the west. The Lynn Road is approximately 125m to the east, for the northern part of the site, with the southern part of the site projecting eastwards up to the A10 (Lynn Road). The southern boundary of the site borders Whin Common Road. A mineral conveyor which goes between an active extraction area to the south and the processing plant runs through the southern part of the site. The site is generally well screened from public viewpoints except at the far south eastern corner where a field entrance provides a view northwards.

M206.8 There are no Public Rights of Way within or adjacent to the site.

M206.9 Ecology: The site is more than 5km from any SPA, SAC or Ramsar site. Therefore, there would be no likely significant effects on these sites.

M206.10 Setchey SSSI is 1.07km from the site boundary. The SSSI citation details the geological importance of the site for scientific study. The proposed extraction site is within the hydrological catchment for Setchey SSSI but it does not drain towards the SSSI. Therefore there would be no adverse impacts to the SSSI.

M206.11 River Nar SSSI is 1.64km from the site boundary. The SSSI citation states that the River combines the characteristics of a southern chalk stream and an East Anglian fen river. Together with the adjacent terrestrial habitats, the Nar is an outstanding river system of its type. The proposed extraction site is in a different hydrological catchment to the River Nar SSSI and therefore there would be no adverse impacts to the SSSI.

M206.12 The nearest County Wildlife Sites are: CWS 385 ‘Tottenhill Village Green’ which is 190m from the site; it is an area of moderately species-rich neutral grassland containing three small ponds which are seasonally dry. CWS 387 ‘Tottenhill Row Common’ which is 273m from the site; it contains different habitat types, the majority of the site is neutral semi-improved grassland, but contains two large ponds and to the southeast is extensive continuous bracken. CWS 384 ‘West of Tottenhill’ is 282m away; it largely comprises ponds resulting from gravel extraction, surrounded by broadleaved woodland. CWS 381 ‘Thieves Bridge Meadow’ is 407m away; it consists of a mixture of habitats situated on both sides of a flowing drain. The majority of the site is neutral grassland although to the northeast there is a large pond surrounded by woodland. The potential exists for hydrogeological impacts from mineral extraction at MIN 206, if uncontrolled. An assessment of potential impacts on hydrogeology, together with appropriate mitigation would be required as part of any planning application.

M206.13 There are no ancient woodland sites within 3km of the site.

M206.14 Geodiversity: The site consists of the Tottenhill gravel member-gravel, overlying Kimmeridge Clay formation-mudstone. There is a significant potential that geodiversity priority features may exist within the Tottenhill gravels due to the method of formation. Potential impacts to geodiversity would need to be assessed and appropriate mitigation identified as part of any future application. It would be useful to retain some open faces for scientific study during operational stages, and ideally after restoration, and have a ‘watching brief’ during the extraction phase in case features of potential geodiversity interest are uncovered.

M206.15 Flood Risk: The site is in Flood Zone 1 (lowest risk) of flooding from rivers. The site has a low probability of surface water flooding, with one small location of surface water pooling in a 1 in 30-year rainfall event and a 1 in 100-year rainfall event. In a 1 in 1000-year rainfall event there are additional small areas of surface water pooling. Sand and gravel extraction is considered to be a ‘water compatible’ land use which is suitable in all flood zones. The site is not in an Internal Drainage Board area.
M206.16 Hydrogeology: The site is located over a Secondary A aquifer (superficial deposit). The site is not located over any bedrock aquifers. There are no groundwater Source Protection Zones within the proposed site.

M206.17 Water Framework Directive: The site is approximately 450 metres from Hobb's Drain, which flows into the Polver Drain, which in turn flows into the Relief Channel which is the nearest Water Framework Directive waterbody. The groundwater level in this area is several metres below ground level and therefore overland flows are not expected from the site towards Hobb's Drain. MIN 206 and the existing processing plant, which the sand and gravel would be transported to by conveyor, are both located on the same side of Hobb's Drain and Polver Drain. Therefore, the sand and gravel to be processed would not be transported across the drains. Due to the distance of the site from the drains it is not expected that there would be a pathway for silt ingress into the Relief Channel from any future sand and gravel extraction within site MIN 206.

M206.18 Utilities infrastructure: There are no Anglian Water sewerage assets or water assets within the site. There is no electricity transmission infrastructure within the site. There are no high-pressure gas pipelines within the site.

M206.19 Safeguarding aerodromes: The site is within the zone for RAF Marham where the Defence Infrastructure Organisation must be consulted on developments with the potential to increase the number of birds and the 'bird strike' risk to aircraft. Therefore, a Bird Hazard Assessment would be required at the planning application stage.

M206.20 Restoration: The site is proposed to be restored to an agricultural afteruse at original ground levels. Due to the expected depth of extraction, it is recognised that restoration to arable is likely to require the use of imported inert material to provide a suitable profile.

M206.21 Conclusion: Site MIN 206 is considered suitable to allocate for sand and gravel extraction. Development will be subject to compliance with the relevant Minerals and Waste Local Plan Policies and Specific Site Allocation Policy MIN 206.

Specific Site Allocation Policy MIN 206 (land at Oak Field, Tottenhill):
The site is allocated as a specific site for sand and gravel extraction. Development will be subject to compliance with the Minerals and Waste Local Plan policies and all the following requirements:

- Submission of noise and dust assessments and a programme of mitigation measures to deal appropriately with any amenity impacts;
- Submission of a Heritage Statement to identify heritage assets and their settings, assess the potential for impacts and identify appropriate mitigation measures if required;
- An appropriate archaeological assessment must be prepared in consultation with Norfolk County Council; this may initially be desk-based but may need to be followed up with field surveys and trial-trenching. The archaeological assessment will be used by Norfolk County Council/Historic Environment Service to agree appropriate mitigation measures;
- Submission of a Bird Hazard Assessment report to identify the risk of bird hazard to the safe operation of aerodromes and aircraft, identify proposed mitigation of any identified risk, and include a Bird Hazard Management Plan if necessary;
- The site must use the existing processing plant site, and existing highway access;
- The site must be phased with other sites in the area so that only one site is worked for extraction at a time;
- Submission of a Landscape and Visual Impact Assessment to include the identification of any areas where enhanced screening would be required to mitigate visual intrusion. Where enhanced planting is required, this should be retained in the restoration scheme wherever possible;
- Provision of opportunities during working for any geodiversity assets to studied, and if compatible with the landscape and ecology objectives an open face to be included within any restoration scheme for future scientific study;
• Submission of a progressive restoration scheme to an agricultural afteruse, with wide field margins and hedgerow planting to provide landscape and biodiversity gains; and
• Restoration of the extraction void to use the importation of inert materials only.
MIN 32 – land west of Lime Kiln Road, West Dereham

Site Characteristics

- The 9.08 hectare site is within the parish of West Dereham
- The estimated sand and gravel resource at the site is 560,000 tonnes
- The proposer of the site has given a potential start date of 2028 and estimated the extraction rate to be 85,000 tonnes per annum. Based on this information the full mineral resource at the site could be extracted within seven years, which would be within the plan period.
- The site is proposed by Frimstone Ltd as an extension to an existing site.
- The site is currently in agricultural use and the Agricultural Land Classification scheme classifies the land as being Grade 3
- The site is 4.4km from Downham Market, 15.2km from King’s Lynn and 15.6km from Swaffham, which are the nearest towns.

A reduced extraction area has been proposed of 3.83 hectares, which only includes the site area within approximately 100 metres of the A134.

M32.1 Amenity: The nearest residential property is 30m from the site boundary. There are 6 sensitive receptors within 250m of the site boundary and four of these are within 100m of the site boundary. However, the southern part of the site is not proposed to be extracted. Therefore the nearest residential property is 60m from the extraction area and there are 6 sensitive receptors within 250m of the proposed extraction area (two of these are within 100m of the extraction area). The settlement of West Dereham is 750m away. Even without mitigation, adverse dust impacts from sand and gravel sites are uncommon beyond 250m from the nearest dust generating activities. The greatest impacts will be within 100 metres of a source, if uncontrolled. A planning application for mineral extraction at this site would need to include noise and dust assessments and mitigation measures to deal appropriately with any amenity impacts.

M32.2 Highway access: The site would use the existing quarry access onto the C543 Main Road, Crimplesham and then join the A134 Lynn Road), which is a designated lorry route, at the existing junction. The site is not within an AQMA. As a proposed extension to an existing site, the number of vehicle movements is expected to remain the same but continue for a longer period. The estimated number of HGV movements is 32 per day. The proposed highway access is considered to be suitable by the Highway Authority.

M32.3 Historic environment: The historic landscape character of the site is Twentieth Century agriculture with boundary loss. The site is within a wider historic landscape character of Twentieth century agriculture with boundary loss and enclosure, agriculture with 18th to 19th century piecemeal enclosure, mineral extraction and 18th to 20th century woodland plantation.

M32.4 The nearest Listed Building is the Grade I Church of St Andrew which is 720m away. There are 26 Listed Buildings within 2km of the site (11 of these are headstones at the Church of St Andrew). A further 8 Listed Buildings are in Wereham Conservation Area which is 1.36km from the site. There is one Scheduled Monument within 2km of the site, the ‘remains of monastic grange with moated site at Grange Farm’, which is 180m away. Stradsett Hall, a Registered Historic Park and Garden is 1.99km from the site. A planning application for mineral extraction at this site would need to include a Heritage Statement to identify heritage assets and their settings, assess the potential for impacts and identify appropriate mitigation measures if required.

M32.5 Archaeology: The site is located within an area of interest, and there are Historic Environment records that features exist within the site boundary, and that finds have been found within the site boundary. However, there has not been any programme of investigations. A number of Anglo-Saxon buildings and remains of burial mounds were found during excavations on adjacent land, and the site is in a wider landscape with a significant number of finds and features from multiple periods. Therefore, there is the potential that unknown archaeology exists on the site and an assessment of the significance of archaeological remains will be required at the planning application stage, in order to protect and mitigate the impact of mineral extraction in this site. The
archaeology assessment may initially be desk-based but may need to be followed up with field surveys and trial-trenching.

**M32.6 Landscape:** The site is not located within the AONB, a Core River Valley or any other designated landscape feature. The site comprises open arable land. The site is within the landscape character area described as ‘Wereham settled farmland with plantations’ in the King’s Lynn and West Norfolk Landscape Character Assessment. The site is adjacent to the A134 to the northeast of the active permitted mineral extraction site at Crimplesham. The site is located on the ‘fen edge’ and slopes relatively steeply towards the south west, and due to the open nature of the surrounding landscape is visible from West Dereham, and a significant number of other viewpoints including the A134, Lime Kiln Lane, and Bath Road. Screening the site from the viewpoints would itself be intrusive in the open landscape.

**M32.7** There are no Public Rights of Way within or adjacent to the site.

**M32.8 Ecology:** The site is more than 5km from any SPA, SAC or Ramsar site. Therefore, there would be no likely significant effects on these sites.

**M32.9** There are no SSSIs within 3km of the site boundary and the site is not within the Impact Risk Zone for any SSSIs.

**M32.10** The nearest County Wildlife Site is CWS 327 ‘Lime Pit’ which is 60m away and is a discussed lime pit which has naturally recolonised. The CWS is dominated by dense scrub with patches of relatively species-rich neutral grassland. The potential exists for impacts from mineral extraction at MIN 32, if uncontrolled. An assessment of potential impacts, including from dust deposition, together with appropriate mitigation would be required as part of any planning application.

**M32.11** The nearest ancient woodland site is Kippers Wood which is a Plantation on Ancient Woodland Site (PAWS); it is 2.38km from the site boundary. Due to this distance, no impacts on this PAWS are expected.

**M32.12 Geodiversity:** The site consists of Lowestoft formation -diamicton, overlying West Melbury Marly Chalk formation – chalk. Potential impacts to geodiversity would need to be assessed and appropriate mitigation identified as part of any future application. It would be useful to retain some open faces for scientific study during operational stages, and ideally after restoration, and have a ‘watching brief’ during the extraction phase in case features of potential geodiversity interest are uncovered.

**M32.13 Flood Risk:** The site is in Flood Zone 1 (lowest risk) of flooding from rivers. The site has a low probability of surface water flooding, with a surface water flow path just encroaching the south of the site in a 1 in 1000-year rainfall event. Sand and gravel extraction is considered to be a ‘water compatible’ land use which is suitable in all flood zones. The site is not in an Internal Drainage Board area.

**M32.14 Hydrogeology:** The site is partially located over a Secondary aquifer (undifferentiated) (superficial deposits) and over a principal aquifer (bedrock). However, there are no groundwater Source Protection Zones within the proposed site.

**M32.15 Water Framework Directive:** The site is approximately 700 metres from a stream within the catchment of the River Wissey and 3.2km from the Cut-off Channel, which are the nearest Water Framework Directive waterbodies. The groundwater level in this area is several metres below ground level and therefore overland flows are not expected from the site towards the River Wissey and cut-off Channel. MIN 32 and the existing adjacent processing plant, which the sand and gravel would be transported to by internal haul route, are both located on the same side of the River Wissey and Cut-off Channel. Therefore, the sand and gravel to be processed would not be transported across these waterbodies. Due to the distance of the site from the River Wissey and Cut-off Channel, it is not expected that there would be a pathway for silt ingress into these waterbodies from any future sand and gravel extraction within site MIN 32.
M32.16 Utilities infrastructure: There are no Anglian Water sewerage assets or water assets within the site. There is no electricity transmission infrastructure within the site. There are no high-pressure gas pipelines within the site.

M32.17 Safeguarding aerodromes: The site is within the zone for RAF Marham where the Defence Infrastructure Organisation must be consulted on developments with the potential to increase the number of birds and the ‘bird strike’ risk to aircraft. Therefore, a Bird Hazard Assessment would be required at the planning application stage.

M32.18 Restoration: The site is proposed to be restored to agriculture with additional native woodland planting (0.7ha) and species-rich hedgerow.

M32.19 Conclusion: The site is considered to be unsuitable for allocation because:

- Any mineral working on this site would have unacceptable impacts on the landscape. It is considered that screening/bunding proposed to mitigate such impacts would be intrusive in its own right.