

Annex F: SA/SEA incorporating SFRA and HRA

**Appendix 3d: Assessment of Sites in Hambleton and Richmondshire District
(Split)**

Minerals and Waste Joint Plan

DRAFT

Sustainability Appraisal Update Report

Appendix 3: Assessment of Sites

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Sustainability Appraisal Score

Score	Description
++	The Site option is predicted to have higher positive effects on the achievement of the SA objective. For example, this may include a highly significant contribution to issues or receptor of regional or wider significance, or to several issues or receptors of local significance.
m+	The Site option is predicted to have moderate positive effects on the achievement of the SA objective. For example, this may include a positive, but not highly positive contribution to issues or receptor of more than local significance, or to several issues or receptors of local significance.
+	The Site option is predicted to have minor positive effects on achievement of the SA objective. For example, this may include a significant contribution to an issue or receptor of more local significance.
0	The Site option will have no effect on the achievement of the SA objective ¹ .
-	The Site option is predicted to have minor negative effects on the achievement of the SA objective. For example, this may include a negative contribution to an issue or receptor of local significance.
m-	The Site option is predicted to have moderate negative effects on the achievement of the SA objective. For example, this may include a negative, but not highly negative contribution to an issue or receptor of more than local significance.
--	The Site option is predicted to have higher negative effects on the achievement of the SA objective. For example, this may include a significant negative contribution to an issue or receptor of more than local significance.
?	The impact of the Site option on the SA objective is uncertain.

¹ This includes where there is no clear link between the site SA objective and the site

MJP21 – Land at Killerby – ALLOCATED SITE

Site Name	MJP21 Land at Killerby, Richmondshire and Hambleton (XY 426259 495822)
Current Use	Agriculture and woodland
Nature of Planning Proposal	Extraction of sand and gravel from a new extraction site
Size	213ha, of which 122ha proposed for extraction
Proposed life of site	16 years. Extraction would occur for an initial period of 2 years, after which the remaining permitted reserves at Ellerton Quarry would be extracted (5 to 6 years), then the remainder of the Killerby reserves would be extracted during a period of 14 years. Estimate date of commencement – anticipated to be 2020 to 21, as submitter is promoting MJP21 as a replacement for the existing Scorton and Ellerton quarry sites
Notes	Proposed new quarry and subject to a current application (NY/2010/0356/ENV) that is awaiting determination. Possible restoration: agriculture, marshland, lakes, woodland (details submitted in connection with planning application NY/2010/0356/ENV include latest version of restoration scheme)

SA FINDINGS SUMMARISE SIGNIFICANT EFFECTS ONLY. A WIDER RANGE OF CONSTRAINTS AND OPPORTUNITIES WERE INITIALLY ANALYSED AND DISTILLED DOWN TO ONLY THOSE WITH THE POTENTIAL TO BE SIGNIFICANT (SEE ALSO SITE ASSESSMENT METHODOLOGY SUMMARY REPORT FOR A FULL LIST OF CONSTRAINTS AND OPPORTUNITIES).

Sustainability Objective	Key Observations on Significance	Score						
		P	T	D	I	S	M	L
1. To protect and enhance biodiversity and geo-diversity and improve habitat connectivity	<p>Proximity of international / national and local designations and key features. Natura 2000: 14km west - North Pennine Moors Special Protection Area (SPA) / Special Areas of Conservation (SAC); Site of Special Scientific Interest (SSSI): 1.7km from nearest SSSI (Swale Lakes); Site of Importance for Nature Conservation (SINC): lies partly within northern boundary of site (SE29-04 River Swale, Great Langston to Kiplin). Park Plantation SINC is 1.2km. Great Langton Pond 1.6km. Kirkby Wood 1.3km.</p> <p>UK Priority Habitats: Deciduous woodland overlaps site in several places, particularly in the north. Smaller patches adjacent to or overlapping the perimeter of the southern part of the site. Site around 200m from traditional orchard in south-east. Ancient woodland: A strip of ancient woodland lies approx. 170m east of</p>	✓	✓	✓	✓	-	-	+ ?

Sustainability Objective	Key Observations on Significance					Score		
		P	T	D	I	S	M	L
	<p>the site at the closest point.</p> <p>Ecological Networks: approximately 8% of the site (northern area) covered by England Habitat Network (woodland). An additional area lies adjacent to the site to the east; circa 60% of the site lies within the Swale regional Green Infrastructure (GI) corridor; circa 20% of the site lies within NY08 Swale Washlands Living Landscape. Key habitats: River Swale, wetlands. Management issues- Aggregate extraction site restoration.</p> <p>The site supports a mosaic of arable farmland, pastoral grasslands, mature hedgerow, mixed plantation, scattered mature trees, wet woodland, small watercourses, wet grassland and tall ruderal habitats. Surveys to support the current planning application (NY/2010/0356/ENV) at the site have identified bats, nesting birds, brown hare, badger, otter and water vole.</p> <p>In terms of invasive species, both Japanese knotweed <i>Fallopia japonica</i> and Himalayan balsam <i>Impatiens glandulifera</i> are present within the site. The survey work for the current application shows that the extent of both species has increased between the initial 2009 survey and the 2014 update surveys. The proposed development has the potential to increase the spread of these species.</p> <p>Local effects. No significant effect expected on Natura 2000 sites. It is considered that there may be some minor temporary disturbance to the nearby SSSI however the surrounding area has a history of quarrying so disturbance from noise etc. is not expected to be significant. There are potential direct and indirect adverse impacts upon SE29-04 River Swale, Great Langston to Kiplin SINC which lies partly within and adjacent to the site (biodiversity may be affected by the two proposed river crossing points). Up to date ecological surveys will be required in order to identify key features of ecological importance. The SINC boundary for riverine SINC includes the river corridor for completeness but it does not necessarily mean that all habitats within the boundary are of SINC quality. The quarry could then be designed to avoid features of interest, provide mitigation for habitats and species that are affected and ultimately strengthen the SINC through high quality restoration. These impacts and possible mitigation are currently being looked at in the current planning application.</p>							

Sustainability Objective	Key Observations on Significance					Score		
		P	T	D	I	S	M	L
	<p>This area represents further quarrying in the Swale corridor in addition to existing and past quarries at Ellerton, Kiplin Hall and Scorton. Negative cumulative impacts are considered unlikely to be significant if appropriate mitigation is implemented. Potential cumulative benefits for biodiversity exist provided that restoration schemes are designed appropriately and any measures for biodiversity can be secured as part of the planning process. It is however noted that not all of the site is within the control of the operator so there is some uncertainty as to whether ecological benefits can be realised as part of the restoration scheme (biodiversity restoration is limited to a lake with no surrounding land and Ministry of Defence restrictions also limit the type of scheme that could be put in place).</p> <p>In summary, in the short term negative impacts are anticipated associated with the loss of habitats and disturbance to a range of species. This disturbance continues into the medium term. Impacts in the long term depend on the ability to secure a high quality restoration and management. Opportunities exist to improve the habitat networks through the creation of high quality priority habitats.</p> <p>Plan level / regional / wider effects. Considering the source of any impacts, as well as potential pathways and receptors, it is considered that there would be no significant impact on the integrity of Natura 2000 sites.</p>							
2. To enhance or maintain water quality and improve efficiency of water use	<p>Proximity of water quality / quantity receptors. The site is not in a Nitrate Vulnerable Zone. The site does not lie in a groundwater SPZ however SPZ 3 lies circa 40m east of the site. In the Humber River Basin Management Plan (RBMP) SUNO catchment. The nearest RBMP water body is Swale from Muker Beck to Bedale Beck which passes through the northern area of the site. Current ecological status is moderate, with overall potential moderate. Objective is good by 2027. No RBMP lakes. RBMP Groundwater: Site falls between SUNO Millstone Grit and Carboniferous Limestone (quantitative quality good / chemical quality poor) and the SUNO Sherwood Sandstone (quantitative quality good, chemical quality poor - current overall status poor / good by 2027) and the SUNO Magnesian Limestone (quantitative quality good / chemical quality good - overall status: good / objective: good by 2015) groundwater bodies.</p> <p>Catchment Abstraction Management Strategy (CAMS) surface water resources available at least 50% of time. At low flows new extraction licenses may be more restricted.</p>		✓	✓	✓	-	-	?

Sustainability Objective	Key Observations on Significance					Score		
		P	T	D	I	S	M	L
	<p>Local effects. The Swale could be a receptor for pollutants (such as fuel or soil / silt particles) during flood events though this is a large watercourse so, given the sorts of pollutants that could be generated and the ability of the river to flush and dilute, risk is seen as relatively minor and mitigatable by good site management and plant maintenance. The Planning Application and Environmental Statement² states that dewatering would be undertaken at the site to allow dry working of the mineral. It concludes that following mitigation, such as the pumping of dewatering discharge water to onsite lagoons where settlement will occur prior to discharge and the regulated discharge of water from the settlement lagoon to compensate for reduction in the groundwater base flow; dewatering would not result in significant adverse impacts and long-term alterations to groundwater flow would not be anticipated following restoration. Impacts are considered to be minor negative in the short and medium term (although it is considered that successful implementation of mitigation and application of good practice measures could offset this). In the long term it is considered that opportunities exist for the improvement of water quality for example through the creation of habitats such as reed bed. Impacts in relation to restoration are however uncertain until a specific restoration plan is agreed.</p> <p>Plan level / regional / wider effects. There is the potential pollution from the site could pass into the wider water environment via surface and groundwater pathways, however it is assumed these risks would be adequately controlled by good site management and plant maintenance.</p>							
3. To reduce transport miles and associated emissions from transport and encourage the use of	<p>Proximity of transport receptors. The site is adjacent to the A1 giving reasonably good access to York, Leeds and Teesside. Access: Confirmed as being the access as per latest details for application NY/2010/0356/ENV, i.e. at bend at north end of Low Street west on Low Street onto the new local access road which will run adjacent to the upgraded A1 once constructed.</p> <p>Light Vehicles: 42 two-way movements (as sourced from application details NY/2010/0356/ENV); Heavy Goods Vehicles (HGVs): 336 two-way movements (as sourced from application details NY/2010/0356/ENV);</p> <p>Net change in daily two-way trip generations: Light vehicles 28; HGV: 86. Traffic assessment rating: Yellow</p>		✓	✓		m-	m-	0

² Killerby Sand and Gravel Quarry, Planning Application and Environmental Statement, Chapter 9- Water Resources: Hafren Water.

Sustainability Objective	Key Observations on Significance					Score		
		P	T	D	I	S	M	L
sustainable modes of transportation	<p>– ‘Submission MJP21 would be a new site but would replace workings at the nearby Scorton and Ellerton quarry sites. The site would be accessed by an upgraded section of Low Lane and the Local Access Road which is presently being constructed as part of the A1 Leeming to Barton improvements. The local access road and junctions onto the A1 have been designed taking into account Local Plan development sites such as submission MJP21 and avoid any sensitive receptors and are thus expected to result in no significant traffic impacts. It is however recommended that a routing agreement is put in place to prevent HGV traffic to Teesside passing along the A684 through Northallerton.’³</p> <p>PRoW: This site is affected by a registered PRoW which must be kept clear of any obstruction until such time as an alternate route has been provided and confirmed by order.</p> <p>Rail: Nearest national rail network 7.7km east; Strategic Road: A1 lies adjacent to the site; Canal / Freight waterway: Tees Navigation 17km north-east.</p> <p>Local effects. HGV movement would be acceptable on to Low Street however works will be required to improve this road to access the local access road (the scope of these works would need to be determined in the traffic assessment / travel plan).</p> <p>As the majority of trips generated by this site would replace trips from the existing Scorton and Ellerton Quarry sites most journeys can be thought of as a continuation of existing impacts (though these impacts will endure for longer than if there were no plan in place).</p> <p>Traffic modelling carried out through the Joint Plan traffic assessment estimates that 75% of demand from this area comes from Teesside and Durham. The route towards Teesside takes a similar amount of time whether by the A1 and A66 or the A684 through Northallerton and then the A19. Without any mitigation the site would generate a high number of traffic movements per day through a significant settlement (and sustainable transport is not likely to contribute to access to the site). A moderate negative impact is therefore anticipated in relation to this objective. However, the traffic assessment does suggest mitigation in the form of a routing agreement to route vehicles via a Local Access Road to the A1 or the A684, which</p>							

³ Jacobs (2015); Minerals and Waste Joint Traffic Assessment – Final Traffic Assessment.

Sustainability Objective	Key Observations on Significance					Score		
		P	T	D	I	S	M	L
	<p>would reduce effects in relation to impacts to receptors in Northallerton.</p> <p>Plan level / regional / wider effects. Allocated sites MJP17, MJP21, MJP33 and MP43 are situated in the area between Catterick to Leeming Bar, all of which have been given a yellow rating within the Traffic Assessment. All four sites are around the area where the A1 Leeming Bar to Barton upgrade is taking place. The cumulative traffic impact of the submission sites would utilise the A1 and Local Access Roads which are currently under construction and have been designed to provide future highway capacity for these sites. On completion of the A1, the cumulative traffic impact of these sites is therefore not expected to be significant.</p>							
4. To protect and improve air quality	<p>Proximity of air quality receptors. Site is not within a Hazardous Substances Consent Zone or within 2km of an AQMA.</p> <p>Local effects. The current planning application has assessed all residential properties within 500m of the site for dust impacts. It concludes that following the implementation of mitigation measures which will include damping of haul roads, wheel washing, sheeting of vehicles, vehicle speed restrictions etc., there would be insignificant dust impacts on nearby properties⁴. Restoration could ultimately improve air quality by habitats absorbing pollutants such as from the A1, though this is not expected to be at a significant level. Air quality impacts from vehicle emissions are not considered as part of the existing planning application however, without mitigation the site could generate significant amounts of traffic which could route through Northallerton (and pass other settlements en route), which could have moderate effects on air quality in the short and medium term.</p> <p>Plan level / regional / wider effects. None noted.</p>	✓	✓	✓	✓	m-	m-	0

⁴ Killerby Sand and Gravel Quarry, Planning Application and Environmental Statement, Chapter 10- Air Quality: Wardell Armstrong.

Sustainability Objective	Key Observations on Significance					Score		
		P	T	D	I	S	M	L
5. To use soil and land efficiently and safeguard or enhance their quality	<p>Proximity of soil and land receptors. Agricultural Land Classification: land at the site is classed as Grade 2 (very good quality), Grade 3 (good to moderate quality) and Grade 4 (poor quality). Greenfield site - no known risk factors for contaminated land. No known mining subsidence risks.</p> <p>Local effects. The Environmental Statement⁵ for the existing Planning Application reports that the proposal would result in the temporary disturbance of approximately 88.9ha of Grade 2 and 3a agricultural land and 48ha of Grade 3b agricultural land as a consequence of soil handling prior to site operations. However, the restoration masterplan identifies 64.5ha of agricultural land within the areas of extraction, resulting in an overall loss of 57.4ha of agricultural land, of which 29.5ha is best and most versatile.</p> <p>Plan level / regional / wider effects. The loss of best and most versatile agricultural land cumulatively could have an effect on national food production capacity. The contribution of this site to the cumulative loss is considered to be a small in relation to the overall agricultural land lost in England per annum to development⁶ but could have a small scale effect on national food production capacity.</p>	✓	✓	✓		m-	m-	- ?
6. Reduce the causes of climate change	<p>Proximity of factors relevant to exacerbating climate change. Small patches of deciduous woodland lie onsite and areas lie adjacent to / overlapping the site boundary. Site visit noted the following features on site: grassland / pasture, woodland / copse, hedgerows, standalone trees.</p> <p>Local effects. As climate change is a global issue, effects are reported in wider effects below.</p> <p>Plan level / regional / wider effects. Although there is the potential for the loss of some small amounts of habitats with carbon storage potential this impact is considered insignificant. However, the traffic from this site would be significant and would therefore lead to significant climate change impacts, albeit lessened by this site's proximity to the A1 and northern markets in particular. Restoration is likely to have some potential as a carbon sink. Overall during the operational phase of the proposed site is expected to have minor</p>	✓			✓	-	-	- ?

⁵ Wardell Armstrong,2010. Killerby Sand and Gravel Quarry, Planning Application and Environmental Statement, Chapter 8- Soils and Agriculture.

⁶ 29.5ha annualised across the 16 year life of the site would be an annual 1.8ha loss. There was 2365ha of agricultural land was lost to development in 2014/15 across England. A 1.8ha loss would represent a 0.08% contribution to this category of soil loss across England for each year of the site.

Sustainability Objective	Key Observations on Significance					Score		
		P	T	D	I	S	M	L
	negative effects on the SA Objective. An assessment showing how the design for the proposal has taken into account the need for resilience to climate change factors must be undertaken ⁷ .							
7. To respond and adapt to the effects of climate change	<p>Proximity of factors relevant to the adaptive capacity⁸ of a site. About 35% of this site is in Flood Zones 2 and 3. Flood defences are also evident in the north-east corner, though the area is not shown as an area benefiting from flood defences and the standard of protection is not clear. More detailed modelling is available through the 2010 Flood Risk Assessment for this site that showed that some protection is afforded by flood defences⁹.</p> <p>Surface water flooding low risk (1:1000 (0.1%)) to high risk (1:30 (3.33%)) affects about 5% of the site. However, as extraction is likely to change the topography of the site where flooding occurs across this site is likely to change as extraction progresses). Ouse CFMP / Unit: Swale Washlands / Policy 6. Circa 20% of site is in the Swale Washlands Living Landscape.</p>	✓		✓	✓	-	-	-?

⁷ Proposals for new mineral extraction at a rate in excess of 75,000 tonnes per annum should be accompanied by an assessment showing how the design for the proposal has taken into account the need for resilience to climate change factors. These thresholds are based on the 75,000 tonnes per annum threshold for strategically significant waste facilities used in the Yorkshire and Humber Waste Position Statement, which has been applied also to minerals output for the purposes of Development Management, Policy D11.

⁸ Adaptive capacity is defined as the ability of a system to adjust to climate change to moderate potential; damage or take advantage of opportunities (adapted from CARE International, 2015. Adaptive Capacity [URL: http://www.careclimatechange.org/tk/integration/en/key_concepts/adaptive_capacity.html]

⁹ Hafren Water, 2010. Flood Risk Assessment for Killerby Quarry, Catterick [URL: <https://onlineplanningregister.northyorks.gov.uk/register/PlanAppDisp.aspx?recno=7585>]

Sustainability Objective	Key Observations on Significance					Score		
		P	T	D	I	S	M	L
	<p>ALC: circa 30% of site is Grade 2, 65% is Grade 3 and 5% is Grade 4.</p> <p>Local effects. Although the site is water compatible, the high risk of flooding to this site mandates the need for emergency planning. In the longer term there is the potential for this site offer flood storage to the wider catchment. The element of standoff from the river corridor at this site means it is not likely to hinder species movements / form a barrier to the formation of an ecological network. As this site would be active beyond 2025, river flooding may increase in significance beyond 2025. This would increase the area of Flood Zone 3 into areas that are shown as Flood Zone 2 and would also increase the extent of Flood Zone 2. Climate change effects on surface water flooding noted in a Strategic Flood Risk Assessment are likely to increase the extents of the areas at risk and also the depth of flooding for each event respectively.</p> <p>Overall, the effects on this SA objective are likely to be minor negative although there is some uncertainty as to any long term effects post restoration of the site.</p> <p>Plan level / regional / wider effects. Agricultural land is increasingly recognised as being vulnerable to climate change, loss of this land will have a combined effect with wider losses elsewhere due to climate change – the effect is considered a minor negative.</p>							
8. To minimise the use of resources and encourage their re-use and safeguarding	<p>Proximity of factors relevant to the resource usage of a site. No spatial factors identified.</p> <p>Local effects. This site will contribute to the need for sand and gravel. However, it may to a degree offset recycled materials that could potentially replace sand and gravel. This site will extract virgin sand and gravel which will be unavailable for future use (unless recycled). This is considered to have a high negative effect on the SA objective.</p> <p>Plan level / regional / wider effects. Considered to be the same as local effects.</p>	✓		✓		--	--	--
9. To minimise waste generation and prioritise	<p>Proximity of factors relevant to managing waste higher up the waste hierarchy. No spatial factors identified.</p>		✓		✓	-	-	-

Sustainability Objective	Key Observations on Significance					Score		
		P	T	D	I	S	M	L
management of waste as high up the waste hierarchy as practicable	<p>Local effects. None noted.</p> <p>Plan level / regional / wider effects. The site may have an indirect negative impact on the prioritising the management of waste down the waste hierarchy as a result of providing virgin sand and gravel and reducing the need to recycle sand and gravel from other locations.</p>							
10. To conserve or enhance the historic environment and its setting, cultural heritage and character	<p>Proximity of historic environment receptors. Conservation Areas: Kirkby Fleetham 1km south-east; Registered Parks and Gardens: 3.4km south-west – Hornby Castle Park (ID 1001075); Registered Battlefields: None within 5km; World Heritage Sites: None within 5km.</p> <p>Scheduled Monuments: 120m north-west – World War 2 fighter pens and defences at former RAF Catterick (ID 1020990); 840m north-west – Bainesse Roman roadside settlement and Anglian cemetery (ID 1021209); 490m north – Castle Hills medieval motte and bailey castle and 20th century airfield defences (ID 1020991); 1.3km south-east – Motte and bailey castle and medieval settlement earthworks within Hall Garth (ID 1021103).</p> <p>Listed buildings: 20 listed buildings within 1km (1 grade 1, 2 grade 2* and 17 grade 2). Closest is Stable Block to Killerby Hall (60m south, Grade 2- NHLE No. 1295757) which is surrounded by site on 3 sides. Other listed buildings include those associated with Oran House (approximately 530m north) and those associated with Kiplin Hall (approximately 800m north-east).</p> <p>Site visit confirmed the site forms an important part of the agricultural landscape context of the overall farm / hall complex (Stable Block to Killerby Hall), which is the primary setting of the building. Other heritage assets listed above are screened by topography and vegetation, so are not visible. No other contribution to asset significance was observed,</p> <p>Designed landscapes: Site overlaps with Killerby Hall, Oran House lies adjacent to the site to the north, Kiplin Hall (unidentified parkland) 140m north-east, Kirkby Hall 300m east, Hornby Park (unidentified parkland- designer Lancelot 'Capability' Brown) 1.7km south-west.</p>	✓		✓	✓	-	-	-

Sustainability Objective	Key Observations on Significance					Score		
		P	T	D	I	S	M	L
	<p>HLC Broad type - Enclosed land; HLC Type – Modern improved fields and piecemeal enclosure; Undesignated archaeology in this area includes evidence for early prehistoric human activity including being a focus of early hunter-gatherer activity. There is also evidence of Roman, medieval and post-medieval activity across the allocation site.</p> <p>Local effects. An assessment of potential impacts to the historic environment, including site visit, reported that the allocation would have a minor negative effect on the significance of the Grade II Listed Building “Stable Block to Killerby Hall” 60m south of the site, during the operation of the site. The removal of a significant amount of landscape context for an industrial landscape may detract from the designation significance. This may be reduced to negligible effect over time with appropriate landscaping. The assessment found there would no effect on the significance of any other built heritage assets within the vicinity of the site.</p> <p>The site allocation has two HLC types, ‘modern improved fields’ and ‘piecemeal enclosure’. The second HLC type is significant, of which the legibility is significant. The majority of this area would be lost through mineral extraction. It is acknowledged that within the site the HLC will become invisible as development will replace an earlier field system. The proposed extraction is unlikely to have a major impact upon the HLC of the immediately surrounding area as 17% of the whole HLC project area has been identified as planned enclosure, this effect is not considered to be significant.</p> <p>There is high archaeological potential for the survival of archaeological remains within the site from the early prehistoric period onwards. The site has been subject to an archaeological field evaluation, and allocating this site would be likely to cause the loss of these archaeological remains if the site is extracted without mitigation. It is assumed that the archaeological impact will occur throughout the duration of extraction and will result in the total destruction of the undesignated archaeological remains. As archaeology is a finite, irreplaceable resource, the impact would therefore be significant. However, it is assumed that investigation works required by the Joint Plan Policy D08 (Historic Environment) ‘<i>mitigation of damage will be ensured through preservation of the remains in situ as a preferred solution. When in situ preservation is not justified, adequate provision should be made for excavation and recording before or during development.</i>’ Would</p>							

Sustainability Objective	Key Observations on Significance					Score		
		P	T	D	I	S	M	L
	<p>reduce this to a minor negative effect.</p> <p>Plan level / regional / wider effects. None noted.</p>							
11. To protect and enhance the quality and character of landscapes and townscapes	<p>Proximity of landscape / townscape receptors and summary of character. National Parks: None within 10km; AONBs: none within 10km; Heritage Coast: None within 10km; ITE land: None within 5km; Local Landscape Designation: None.</p> <p>NCA: The site lies within the Vale of Mowbray; NY&Y LCA: The site is partly within Landscape Character Type 24: River Floodplain (northern 50% of site) and partly within LCT 25 Settled Vale Farmland (southern 50% of site); Hambleton LCA: Most of site is in Hambleton and lies in a landscape character type called 'intensively farmed lowland (simple topography) - Intermediate enclosure 5b'.</p> <p>Intrusion: Around 25% of the site is classed as undisturbed and the remaining 75% is classed as disturbed. Light pollution: the site ranges from 0.5 to 1NanoWatts/ cm²/ sr¹⁰.</p> <p>The site is largely screened by topography, and by vegetation and flood banks along the River Swale. Areas to the west are locally visible from the A1(M) and rising ground to the west of the A1(M).</p> <p>Local effects. No impacts on nationally or locally designated landscapes. Marne Barracks at Catterick, and the village of Kirkby Fleetham are within around 1km of the site, however their settings are considered unlikely to be adversely affected.</p> <p>This extensive site would be the first, in a potentially large cluster including the existing Scorton, Ellerton and Kiplin Hall Quarries, to be located to the south of the River Swale. The site would affect two locally designed landscapes at Killerby Hall and Oran House. It would affect an area of small scale topographical variation resulting from glacial and fluvial processes.</p>	✓	✓	✓	✓	m-	m-	-

¹⁰ Light pollution and dark skies are measured on a scale <0.25 (darkest) to >32(brightest) NanoWatts/ cm²/ sr. CPRE, 2015; England's Light Pollution and Dark Skies – Interactive Map. Available at <http://www.cpre.org.uk/>. Accessed September 2016.

Sustainability Objective	Key Observations on Significance					Score		
		P	T	D	I	S	M	L
	<p>In terms of visual intrusion, the site is largely screened, however part of site will be visible from the A1(M), and from higher land to the west of the A1(M). The site lies within the A1(M) corridor and within the Leeming Airfield and Catterick 'military zone', however the immediate locality between Killerby Hall and the nearby Kirkby Fleetham Hall is private and relatively undisturbed.</p> <p>Overall, it is considered that moderate negative impacts would occur in the short and medium term as there would be a significant local change in character, with the establishment of the processing plant site to the south of the River Swale, temporary bridges connecting the site with Ellerton Quarry, and phased sand and gravel extraction. In the long term, a minor negative impact is anticipated as the natural character of the landscape would be irreversibly changed (the restoration scheme would result in the creation of a water body between Oran House and Killerby Hall which is considered would look out of place), although the Killerby Hall parkland and some of its surrounding ridges would remain.</p> <p>Plan level / regional / wider effects. None noted.</p>							
12. Achieve sustainable economic growth and create and support jobs	<p>Proximity of factors relevant to sustainable economic growth. The site is adjacent to the A1 giving reasonably good access to York, Leeds and Teesside.</p> <p>Local effects. The estimated mineral reserve at the site is 11,370,000 tonnes of sand and gravel, with this potentially being made available to the market over the lifetime of the site. This would make a significant contribution to the building sector by helping to boost supply of a key building material (as well as supporting freight jobs). However, the extraction of minerals is not considered a long term industry as the economic boost and jobs provided at the site is limited to the lifetime of mineral extraction. Overall the allocation is considered to have a minor positive effect in the short term and medium term (the 16 years the site would be operational), with a neutral effect in the long term following closure of the site.</p> <p>Plan level / regional / wider effects. None noted.</p>	✓	✓	✓	✓	+	+	0
13. Maintain and enhance the viability	<p>Proximity of factors relevant to community vitality / viability. IMD Area: Leeming Bar, Brompton-on-Swale and Scorton. Not in the most deprived 20%. Kirkby Fleetham is the nearest Settlement 900m south-</p>	✓	✓		✓	+	+	+

Sustainability Objective	Key Observations on Significance					Score		
		P	T	D	I	S	M	L
and vitality of local communities	<p>east. Ellerton-on-Swale lies 900m north, Kiplin lies 900m east and Catterick lies 1.2km north-west.</p> <p>Local effects. The site would support a number of jobs leading to minor positive impacts in the short and medium term. Whilst the site would provide a source of sand and gravel which could aid future development, it is considered that the immediate settlements are unlikely to directly benefit. In the long term it is considered that the restoration scheme has the potential to boost tourism in the area through the creation of new bridleways / rights of way (8.8km of new routes are included in current planning application) and through the recreational use of the restored site area.</p> <p>Plan level / regional / wider effects. Not applicable to this site.</p>							?
14. To provide opportunities to enable recreation, leisure and learning	<p>Proximity to recreation, leisure and learning receptors. Footpath 10.78/1/1 runs through the middle of the site to Killerby Hall. Footpath 10.84/14/1 runs along the southern boundary of the site and joins 10.78/1/1. Footpath 10.84/15/2 also meets 10.78/1/1 at the southern site boundary. Bridleway 20.2/11/1 begins approximately 50m from the site boundary on the other side of the A1. No common land or village greens within 500m.</p> <p>Local effects. Footpath 10.78/1/1 would be diverted. Users of this right of way would experience a direct impact as a result of the diversion. Visual amenity and noise impacts would also be anticipated, however the location of the site adjacent to the A1 means that background noise levels are already elevated. Dust has the potential to impact upon users of nearby rights of way however a number of mitigation measures (as set out under SA objective 4) are expected to be implemented. Overall, impacts are considered to be a moderate negative in the short term as a result of the diversion of a right of way, minor negative during the operation of the site and minor positive in the long term, due to the potential increase in recreational land and public access¹¹.</p> <p>Plan level / regional / wider effects. None noted.</p>	✓	✓	✓		m-	-	+ ?

¹¹ Killerby Sand and Gravel Quarry, Planning Application and Environmental Statement, Chapter 14- Access and Recreation: Wardell Armstrong.

Sustainability Objective	Key Observations on Significance					Score		
		P	T	D	I	S	M	L
15. To protect and improve the wellbeing, health and safety of local communities	<p>Proximity to population / community receptors / factors relevant to health and wellbeing. Nearest settlements: Kirkby Fleetham lies 900m south-east, Ellerton-on-Swale lies 900m north, Kiplin lies 900m east, Catterick lies 1.2km north-west. No Hospitals, clinics or health centres within 1km. Several individual properties including Killerby Hall 30m from boundary, Killerby Farm partly within site boundary, Oran House 250m north, Kiplin Hall 700m north-east, property at Hookcar Hill 200m east, Hook House Farm 120m south, and Glebe Farm, Glebe Cottage and Killerby Cottages adjacent to the site.</p> <p>Local effects. A noise survey has been carried out as part of the existing planning application. The survey found that noise levels are acceptable (traffic noise from the A1 means that noise levels in the area are already elevated). Noise control measures would also be put in place including the use of soil storage mounds as acoustic barriers, stand-off distances between receptors and plant. There would also be noise monitoring. Following the implementation of dust control measures, dust impacts are considered to be insignificant. The site is relatively well screened however some visual amenity impacts are anticipated and an increase in traffic to the site may lead to a negative impact in terms of health and safety of other road users and (if traffic from the site head east, exposure of a number of population receptors (including parts of Northallerton) to slightly increases air pollution. Overall impacts are considered to be minor negative before mitigation during the operation of the site. As the site restoration would involve the creation of water bodies, nearby airfields (Catterick Airfield, Croft Airfield and Leeming MOD) would need to be consulted due to the increased risk of bird strike.</p> <p>Plan level / regional / wider effects. None noted.</p>		✓	✓	✓	-	-	0
16. To minimise flood risk and reduce the impact of	<p>Proximity to flood zones. About 35% of this site is in Flood Zones 2 and 3. Flood defences are also evident in the north-east corner, though the area is not shown as an area benefiting from flood defences and the standard of protection is not clear. More detailed modelling is available through the 2010 Flood Risk Assessment for this site that showed that some protection is afforded by flood defences¹².</p>	✓		✓		-	-	+ ?

¹² Hafren Water, 2010. Flood Risk Assessment for Killerby Quarry, Catterick [URL: <https://onlineplanningregister.northyorks.gov.uk/register/PlanAppDisp.aspx?recno=7585>]

Sustainability Objective	Key Observations on Significance					Score		
		P	T	D	I	S	M	L
flooding	<p>Surface water flooding low risk (1:1000 (0.1%)) to high risk (1:30 (3.33%)) affects about 5% of the site. However, as extraction is likely to change the topography of the site where flooding occurs across this site is likely to change as extraction progresses. In terms of groundwater flooding site lies across six 1km squares on the 'Areas Susceptible to Groundwater Flooding Map' all of which are areas that support superficial deposits flooding (at varying rates from <25% of a km square to >50% to <75% of a km square), apart from the south west corner which supports Clearwater and superficial deposits flooding (across <25% of the km square).</p> <p>A planning application at this site was accompanied by a Flood Risk Assessment that reported that "groundwater levels across all 3 areas are in the range of 37 to 43m AOD and range 1m to 9m below ground level" with Killerby East being at high risk of groundwater flooding due to good hydraulic connectivity with the river and Killerby West and South being at low to moderate risk..</p> <p>Much of the area in Flood Zone 3 is also considered to be at a 1:20 (5%) flood risk. However, the presence of a flood defence would mean that although the area could still flood in a 1:20 (5%) event, more frequent events may benefit from the flood defences, so the area behind the defence would not be functional. This has been investigated through a Flood Risk Assessment at the site which states that they are in the form of an earth bank 1 to 2m high which reduces the risk of fluvial flooding. This assessment also refers to a steep bank above the mean stage level for the River Swale which helps protect Killerby West.</p> <p>Site is in Ouse CFMP / Unit: Swale Washlands / Policy 6.</p> <p>Local effects. A Strategic Flood Risk Assessment (SFRA) Sequential Test undertaken for the site concluded that this site would 'Pass'. A flood risk assessment has already been carried out for this site. Although the site is water compatible, the high risk of flooding to this site mandates the need for emergency planning. In the longer term there is the potential for this site to offer flood storage to the wider catchment, although there is some uncertainty over the capacity of storage that would be provided as the quarry void may simply fill with groundwater following dewatering.</p> <p>Plan level / regional / wider effects. None noted.</p>							

Sustainability Objective	Key Observations on Significance					Score		
		P	T	D	I	S	M	L
17. To address the needs of a changing population in a sustainable and inclusive manner	<p><u>Proximity to factors relevant to the needs of a changing population.</u> The site does not conflict with any known allocations in other plans.</p> <p><u>Local effects.</u> The site would make a significant contribution to self-sufficiency in the supply of sand and gravel and provide a number of new jobs.</p> <p><u>Plan level / regional / wider effects.</u> The site may also support markets outside of the plan area.</p>		✓	✓		+	+	0
Cumulative / Synergistic effects¹³								
Planning context	Kirkby Fleetham (Hambleton) is the nearest Settlement 900m south-east. Ellerton-on-Swale lies 900m north (Richmondshire), Kiplin (Hambleton) lies 900m east and Catterick lies 1.2km north-west in Richmondshire. Catterick is a Primary Service Village in Richmondshire (13% of the housing – 240 houses across this category of settlement). Site allocations not yet finalised in Richmondshire. In Hambleton, no allocations lie within 200m of this site.							
Other Minerals and Waste Joint Plan Sites	MWJP sites within 5km: MJP33 Home Farm is adjacent to the east of the site, MJP17 Land South of Catterick is 300m west, MJP43 Land west of Scruton is 3.2km south and WJP18 Tancred is 3.5km north.							
Historic minerals and waste sites	The site lies within an area that has undergone extensive quarrying including at the Ellerton, Kiplin Hall, Scorton and Manor House Farm quarries along with extraction at the River Swale in the 1950s, and slightly further away, but within 2km, there are 2 historic landfill sites. Other major development in the area includes the A1 upgrade which is currently under construction.							
Landscape Impacts	In combination with other MWJP sites, large areas of the landscape are being irreversibly changed from their natural character, a negative cumulative impact.							
Biodiversity Impacts	Cumulative impacts may occur due to loss of habitats and disturbance to species. Overall this may equate to the loss of an ecological network. In the longer term there are significant opportunities to provide benefits for biodiversity through the creation of priority habitats and							

¹³ Cumulative effects have been factored into the scoring of each SA objective in the assessment framework.

	the integration of sites in the area as a coherent ecological network.
Historic Environment	The area has high archaeological potential and the cumulative loss of this resource in this area constitutes a negative cumulative impact. There are also a number of historic buildings / areas of parkland in this area and cumulative visual/setting impacts are likely to occur.
Water Environment Impacts	Several sites are located along the River Swale and it is considered that pollution/sedimentation may have a cumulative impact on this water body. Following restoration there is the potential for a major positive impact in relation to the provision of additional flood storage which could have beneficial impacts further down the catchment.
Economic Impacts	Should this allocation/other proposed sites in the area go ahead, there is the potential for positive synergistic effects including the use of quarry plant at other sites (it is proposed that the rest of the reserves at the Ellerton site would be worked via the proposed Killerby site).
Limitations / data gaps	
No significant data gaps. More detailed assessment would be required to fully evaluate a number of effects however. This should be addressed at any subsequent planning application stage.	
Mitigation requirements identified through Site Assessment process	
<ul style="list-style-type: none"> • Design to mitigate impact on ecological issues, in particular with regard to avoiding impacts on Swale Lakes SSSI, the river Swale and its tributaries and protected species including measures to address and control invasive species. • Design to minimise the loss of best and most versatile agricultural land and to protect high quality soil resources • Design of development and landscaping of site to mitigate impact on: heritage assets (including the Grade II Listed Building “Stable Block to Killerby Hall”), archaeological remains, local landscape features and their respective settings. • Design to include suitable flood risk assessment; for an FRA to be satisfactory, it will need to include necessary mitigation, such as compensatory storage, attenuation and SuDS as appropriate. • Design to include suitable arrangements for public rights of way (diversion or retention, and associated mitigation, as appropriate). • Design to include suitable arrangements for access and use of local roads. • Appropriate arrangements for control of and mitigation of the effects of noise, dust, vibration and lighting. • Appropriate restoration scheme using opportunities for habitat creation, but which is also appropriate to location within a birdstrike safeguarding zone. 	

MJP17 – Land to the South of Catterick – ALLOCATED SITE

Site Name	MJP17 Land to south of Catterick (XY 424718 495031)
Current Use	Agriculture
Nature of Planning Proposal	Extraction of Sand and Gravel from a new extraction site
Size	81.52ha
Proposed life of site	Unknown at present
Notes	The submitter is promoting the site as a replacement for the existing Scorton Quarry and the Killerby (MJP21) site once those reserves have been exhausted. Possible restoration: no detailed design yet, but may include lake(s), fen, conservation grassland agriculture and woodland.

SA FINDINGS SUMMARISE SIGNIFICANT EFFECTS ONLY. A WIDER RANGE OF CONSTRAINTS AND OPPORTUNITIES WERE INITIALLY ANALYSED AND DISTILLED DOWN TO ONLY THOSE WITH THE POTENTIAL TO BE SIGNIFICANT (SEE ALSO SITE ASSESSMENT METHODOLOGY SUMMARY REPORT FOR A FULL LIST OF CONSTRAINTS AND OPPORTUNITIES).

Proposed Sustainability Objective	Key Observations on Significance					Score		
		P	T	D	I	S	M	L
1. To protect and enhance biodiversity and geo-diversity and improve habitat connectivity	<p>Proximity of international / national and local designations and key features. 13km to west of site is North Pennine Moors SPA / SAC. SSSI: 2.3km from nearest SSSI (Swale Lakes). SINC: River Swale, Great Langton to Kiplin SINC 1km.</p> <p>Priority Habitat: Deciduous woodland adjacent (slight overlap) to south-east of site. Deciduous woodland also 170m away from south-west of site. Site visit found pond, grassland, arable, woodland / copse, hedgerows and standalone trees on site. Networks: EHN (woodland) adjacent to south-east corner of site with slight overlap with site boundary. GI: Site not within GI corridor, though the Swale Regional GI corridor lies in close proximity to the site (within 25m of north-east corner) in Richmondshire.</p> <p>Local effects. Considering the source of any impacts, as well as potential pathways and receptors, it is considered that it is unlikely there would be any significant impact on the integrity of Natura 2000 or other designated nature conservation sites.</p> <p>Protected species that could be affected include: bats, badgers, nesting birds and amphibians (e.g. great</p>	✓	✓	✓	✓	-	-	m + ?

Proposed Sustainability Objective	Key Observations on Significance					Score		
		P	T	D	I	S	M	L
	<p>crested newt). Ecological surveys will be required in order to identify key features of ecological importance.</p> <p>There is no detailed design yet, but possible restoration may include lake(s), fen, conservation grassland, agriculture and woodland. Potentially this could deliver important biodiversity benefits, including the creation of priority habitats, provided it is implemented sympathetically with expert advice and with long term management. If wetland habitat were to be proposed, there would be a need for such proposals to consider whether the appropriateness and genuineness of the potential benefits of such habitats whilst considering, for example, the nearby surrounding ecology, biodiversity action plan objectives and aerodrome safeguarding zones.</p> <p>In summary, in the short term negative impacts are anticipated associated with the loss of habitats and disturbance to a range of species. This disturbance continues into the medium term. Impacts in the long term depend on the ability to secure a high quality restoration and management. Opportunities exist to improve the habitat networks through the creation of high quality priority habitats.</p> <p>Plan level / regional / wider effects. Considering the source of any impacts, as well as potential pathways and receptors, it is considered that there would be no significant impact on the integrity of Natura 2000 sites in the wider area.</p>							
2. To enhance or maintain water quality and improve efficiency of water use	<p>Proximity of water quality / quantity receptors. The site is not in a NVZ or SPZ. Site is in Humber (SUNO) RBMP. Nearest RBMP water body is 'Scurf Beck from Source to Bedale Beck' 575m to the south of the site (current ecological status is moderate, with overall potential moderate and the objective is good by 2027) while 'Swale from Muker Beck to Bedale Beck' passes to the north east of the site (current ecological status is moderate, with an overall potential of moderate – objective is good by 2027). No RBMP lakes. Groundwater: SUNO Magnesian Limestone (overall status: good / objective: good by 2015).</p> <p>CAMS: surface water resources available at least 50% of time. At low flows new extraction licenses may be more restricted.</p> <p>Local effects. The site is separated by fields from the nearest water bodies, however, to the south it drains to the 'Scurf Beck / Bedale Beck' unit. Construction work could lead to possible run off from the site or it</p>	✓	✓	✓		-	-	+ ?

Proposed Sustainability Objective	Key Observations on Significance					Score		
		P	T	D	I	S	M	L
	<p>could change the drainage regime and thus the flow rate of this water body. The site is relatively large and if wet-worked could provide a pathway for pollution to groundwater, either from removing the protection to the underlying groundwater (e.g. if fuel spilled) or could alter groundwater flow, which would have unknown effects on nearby water bodies.</p> <p>Impacts are considered to be minor negative in the short and medium term (although it is considered that successful implementation of mitigation and application of good practice measures could offset this). In the long term it is considered that opportunities exist for the improvement of water quality for based on the indicative restoration proposal, however this remains uncertain until a detailed restoration design is available.</p> <p>Plan level / regional / wider effects. There is the potential pollution from the site could pass into the wider water environment via surface and groundwater pathways, however it is assumed these risks would be adequately controlled by good site management and plant maintenance.</p>							
3. To reduce transport miles and associated emissions from transport and encourage the use of sustainable modes of	<p>Proximity of transport receptors. The site is adjacent to the A1 giving reasonably good access to York, Leeds and Teesside. Proposed access not yet known, but will take account of the new Catterick A1(M) roundabout in order to access the strategic road network. Light Vehicles: not yet known but NYCC have estimated 10 to 18 two-way daily movements (based on estimate of annual output); HGV Vehicles: not yet known but NYCC have estimated 72 to 121 two-way daily movements (based on estimate of annual output).</p> <p>Net change in daily two-way trip generation: light vehicles; 0 HGVs: 0. Traffic assessment rating: Yellow <i>'The access to the site is unknown and it is also unknown if traffic from the site would utilise the Local Access Roads which will run parallel to the A1. If traffic from the site does utilise the Local Access Roads then the impacts of the site are likely to be minor with the local highway network avoiding passing sensitive receptors and designed to cater for future traffic levels. However If traffic from the site does route to the west</i></p>		✓		✓	m- ?	m- ?	m- ?

Proposed Sustainability Objective	Key Observations on Significance					Score		
		P	T	D	I	S	M	L
transportation	<p>via Catterick Lane then it is likely that the site would result in significant impacts with HGVs passing through communities and potentially requiring highway upgrades.¹⁴</p> <p>PRoW: a registered PRoW crosses the site and must be kept clear of any obstruction until such time as an alternate route has been provided and confirmed by order.</p> <p>Rail: 4.7km south (nearest station Leeming Bar 5.4km south-east); Strategic Road: A1 lies adjacent to the site; Canal / Freight waterway: Tees Navigation 20km north-east.</p> <p>Local effects. Access to the existing highway is currently unknown and will need to be determined by a traffic assessment. Preferred access for the site would be from the local access road which will run to the south west of the site. Works will be required to improve the existing road and extend existing footway / street lighting to improve safety at the site access.</p> <p>The traffic assessment has highlighted that 75% of demand from this area is drawn towards Teesside and the North East. According to that assessment “<i>The access to the site is unknown and it is also unknown if traffic from the site would utilise the Local Access Roads which will run parallel to the A1. If traffic from the site does utilise the Local Access Roads then the impacts of the site are likely to be minor with the local highway network avoiding passing sensitive receptors and designed to cater for future traffic levels. However, if traffic from the site does route to the west via Catterick Lane then it is likely that the site would result in significant impacts with HGVs passing through communities and potentially requiring highway upgrades</i>”.</p> <p>The site would extend traffic impacts following the closure of Site MJP21, with a relatively large amount of vehicles required for the site this is expected to have a moderate negative effect with uncertainty until a site specific traffic assessment has been completed and the site access route has been determined.</p> <p>Plan level / regional / wider effects. Submissions MJP17, MJP21 and MJP33 are situated in the area between Catterick to Leeming Bar, all of which have been given a yellow rating. All four sites are around the</p>							

¹⁴ Jacobs (2015); Minerals and Waste Joint Traffic Assessment – Final Traffic Assessment.

Proposed Sustainability Objective	Key Observations on Significance					Score		
		P	T	D	I	S	M	L
	area where the A1 Leeming Bar to Barton upgrade is taking place. The cumulative traffic impact of the submission sites would potentially utilise the A1 and Local Access Roads which are currently under construction and have been designed to provide future highway capacity for these sites. On completion of the A1, the cumulative traffic impact of these sites is therefore not expected to be significant.							
4. To protect and improve air quality	<p>Proximity of air quality receptors. Site is not within a Hazardous Substances Consent Zone or within 2km of an AQMA.</p> <p>Local effects. There are farms, Rudd Hall (90m) and Ghyll Hall (90m), located close to the site that could be at risk of dust impacts (particularly during construction and restoration phases, though less so during the operational phase if this site were to be wet worked. Settlements such as Hackforth (280m south) and East Appleton (650m west) are also relatively close and may be at a lesser risk of occasional dust.</p> <p>Pollution from vehicles using the site (estimated 10 to 18 two-way daily light vehicle movements and 72 to 121 HGV two-way daily movements) would have a negative impact on air quality. If traffic from the site does route to the west via Catterick Lane then it is likely that the site would result in air quality impacts to receptors in communities.</p> <p>Plan level / regional / wider effects. None noted</p>		✓	✓		m- ?	m- ?	m- ?
5. To use soil and land efficiently and safeguard or enhance their quality	<p>Proximity of soil and land receptors. Approximately 80% of land is in ALC Grade 3 (Good to Moderate quality), 20% (in southern part) in Grade 4 (Poor quality). No known land instability. Greenfield site. No known risk factors for contaminated land.</p> <p>Local effects. There could be approximately 65ha of Grade 3 agricultural land (best and most versatile)¹⁵ lost. Restoration to lakes may permanently remove the productive potential of some of this land. Impacts are therefore considered to be moderate negative in the short and medium term as agricultural land is</p>	✓	✓	✓		m-	m-	- ?

¹⁵ The best and most versatile agricultural land is ALC Grade 1 to 3a. Based on available mapping the site is located within ALC Grade 3 land, without further investigation it is not known whether it is Grade 3a or 3b. For the purposes of this SA the precautionary principle has been adopted and it is assumed that Grade 3 land is Grade 3a and the best and most versatile agricultural land.

Proposed Sustainability Objective	Key Observations on Significance					Score		
		P	T	D	I	S	M	L
	temporarily lost and minor negative in the long term as a result of the permanent loss of agricultural land. Plan level / regional / wider effects. If 65ha of the best and most versatile agricultural land is lost at the site, it would add cumulatively to the loss of agricultural land to development land in England ¹⁶ .							
6. Reduce the causes of climate change	Proximity of factors relevant to exacerbating climate change. Deciduous woodland adjacent (slight overlap) to south east of site. Deciduous woodland also 170m away from south-west of site. Site visit found woodland / copse, hedgerows and standalone trees on site. Local effects. As climate change is a global issue, effects are reported in wider effects below. Plan level / regional / wider effects. Although there is the potential for the loss of some small amounts of habitats with carbon storage potential this impact is considered insignificant. However, the traffic from this site would be significant and including vehicle emissions that contribute to climate change, albeit lessened by this site's proximity to the A1 and northern markets in particular. A significant amount of energy will be required for machinery to extract the minerals from the site, with associated emissions and use of natural resources. Overall the site is expected to have minor negative effects on the SA Objective. An assessment showing how the design for the proposal has taken into account the need for resilience to climate change factors must be undertaken ¹⁷ .	✓			✓	-	-	- ?
7. To respond and adapt to	Proximity of factors relevant to the adaptive capacity¹⁸ of a site. Less than 5% of the site is within Flood Zones 2 and 3. Surface water flooding low risk (1:1000 (0.1%)) to high risk (1:30 (3.33%)) affects about 10%	✓			✓	-	-	-

¹⁶ There was 2365ha of agricultural land was lost to development in 2014/15 across England.

¹⁷ Proposals for new mineral extraction at a rate in excess of 75,000 tonnes per annum should be accompanied by an assessment showing how the design for the proposal has taken into account the need for resilience to climate change factors. These thresholds are based on the 75,000 tonnes per annum threshold for strategically significant waste facilities used in the Yorkshire and Humber Waste Position Statement, which has been applied also to minerals output for the purposes of Development Management, Policy D11.

Proposed Sustainability Objective	Key Observations on Significance	Score						
		P	T	D	I	S	M	L
the effects of climate change	<p>of the site. Ditches and small streams on the site are the focal point for much of the surface water flooding. However, as extraction is likely to change the topography of the site where flooding occurs across this site is likely to change as extraction progresses. The EHN (woodland) is adjacent to the south-east corner of site with a slight overlap with site boundary. CFMP: Ouse CFMP / Unit: Swale Washlands / Policy 6.</p> <p>80% of land is in ALC Grade 3. 20% (in southern part) in Grade 4.</p> <p>Local effects. EHN is patchy in this area, so the site will not make much difference to the capacity of the landscape for species movement under climate change (notwithstanding the large impact that a site such as this could have on the movement patterns of individual animals and plants). The site is also water compatible so flood risk is considered to be insignificant. In the long term this site could create quite a large patch of habitat which could contribute to the adaptive capacity of local biodiversity. The site is largely outside of the floodplain, so little potential for significant future flood storage exists. The extent of Flood Zone 3 is likely to increase to that of Flood Zone 2, while Flood Zone 2 may encroach onto the site further, however, as extent of extraction is currently unknown there is a high degree of uncertainty with the long term score. Climate change effects on surface water flooding noted in the SFRA are likely to increase the extents of the areas at risk and also the depth of flooding for each event respectively.</p> <p>Overall, the effects on this SA objective are likely to be minor negative although there is some uncertainty as to any long term effects post restoration of the site.</p> <p>Plan level / regional / wider effects. Agricultural land is increasingly recognised as being vulnerable to climate change, loss of this land will have a combined effect with wider losses elsewhere due to climate change – the effect is considered a minor negative.</p>							?
8. To minimise the use of resources and	<p>Proximity of factors relevant to the resource usage of a site. No spatial factors identified.</p> <p>Local effects. This site will extract virgin sand and gravel which will be unavailable for future use (unless</p>	✓		✓		--	--	--

¹⁸ Adaptive capacity is defined as the ability of a system to adjust to climate change to moderate potential; damage or take advantage of opportunities (adapted from CARE International, 2015. Adaptive Capacity [URL: http://www.careclimatechange.org/tk/integration/en/key_concepts/adaptive_capacity.html]

Proposed Sustainability Objective	Key Observations on Significance					Score		
		P	T	D	I	S	M	L
encourage their re-use and safeguarding	recycled). This is considered to have a high negative effect on the SA objective. Plan level / regional / wider effects. Considered to be the same as local effects.							
9. To minimise waste generation and prioritise management of waste as high up the waste hierarchy as practicable	Proximity of factors relevant to factors relevant to managing waste higher up the waste hierarchy. No spatial factors identified. Local effects. None noted. Plan level / regional / wider effects. The site may have an indirect negative impact on the prioritising the management of waste down the waste hierarchy as a result of providing virgin sand and gravel and reducing the need to recycle sand and gravel from other locations.		✓		✓	-	-	?
10. To conserve or enhance the historic environment and its setting, cultural heritage and character	Proximity of historic environment receptors. Conservation areas: none within 1km; Registered Parks and Gardens: Hornby Castle Park (Grade 2) 3.4km north-west of site; Registered battlefields: None within 5km; World Heritage Sites: None within 5km; Scheduled monuments: 450m north-east - World War 2 fighter pens and defences at former RAF Catterick (ID 1020990), 630m north – Bainesse Roman roadside settlement and Anglian cemetery (ID 1021209), 1.2km north-east – Castle Hills medieval motte and bailey castle and 20th century airfield defences (ID 1,020,991), 1.5km west – Round Barrow 570m north of Winterfield House (ID 1021213), 2km west – Round barrow 650m north-west of Winterfield House (ID 1021212). Listed buildings within 1km: the closest is 140m west “Ghyll Hall” ID 1295789), 250m west “Rudd Hall” ID 1318276), Listed Buildings associated with Oran House 530m north. “Oran House, Barn With Stables And Oran Cottages Numbers One, Two and Four, Former Laundry Approximately Ten Metres North West of Oran House, Pair of Outbuildings Approximately Five Metres to North of Oran House” (ID 1301661, 1318267, 1180057, 1131497), 830m north. “Stable Block to Killerby Hall” (ID1295757), Grade II Listed	✓		✓	✓	m-	m-	- ?

Proposed Sustainability Objective	Key Observations on Significance					Score		
		P	T	D	I	S	M	L
	<p>Building 590m south. "Manor House Farmhouse" (ID1150926), Grade II Listed Building 870m south-east. "Bowbridge" (ID1315116), Grade II Listed Building 950m south-west. "The Greyhound Inn" (ID1315105), Grade II Listed Building 830m north-west. "the Manor House" (1315105).</p> <p>Site visit confirmed the rear elevation of Rudd Hall looks out over the landscape of the site, placement of the structure takes advantage of a natural ridge, giving panoramic views across the site. Site forms an important part of the agricultural landscape context of the building. Rear elevation of Ghyll Hall looks out over part of the site. While its place as part of the farming complex is its principal setting, the wider agricultural landscape is also important to its significance. Other heritage assets are screened by topography, vegetation and A1 so are not visible. No other contribution to other asset significance was observed.</p> <p>Named designed landscapes (from pre validated dataset derived from HLC): two within 2km: immediately adjacent to west is Hornby Park (HNY4249) designed landscape / unidentified parkland (Capability Brown). Killerby Hall (no recorded information) is 200m east.</p> <p>HLC Broad type – Enclosed land; HLC Type – Modern improved fields / Unknown planned enclosure. Undesignated archaeology surrounding this allocation site includes prehistoric activity including significant Mesolithic activity including flint scatters, later prehistoric pits and ditches, Romano-British activity and settlement associated with Dere Street Roman Road and medieval settlements and associated field systems. Post medieval settlement and field systems are also present within this landscape.</p> <p>Local effects. An assessment of potential impacts to the historic environment, including site visit, reported that the allocation would have a moderate negative effect on the significance of the Grade II Listed Buildings "Rudd Hall" and "Ghyll Hall" due to removal of a large amount of landscape context for a temporary industrial landscape and permanent replacement of agricultural land with wetland landscape in views from the building may detract from designation significance. Operation at the site is likely to increase intrusive noise. This may be reduced to a minor negative effect on significance following landscaping of the restored site, however without a detailed design this is uncertain.</p> <p>The site allocation has two HLC types, modern improved fields and unknown planned enclosure. Part of the</p>							

Proposed Sustainability Objective	Key Observations on Significance					Score		
		P	T	D	I	S	M	L
	<p>allocation site is modern improved fields and is a smaller part of a larger area of similar character type, of which the legibility is fragmentary. The second HLC type is unknown planned enclosure, of which the legibility is invisible. The majority of this area would be lost through mineral extraction. The proposed extraction is unlikely to have a major impact upon the historic landscape character of the immediately surrounding area, although it is acknowledged that within the site the historic landscape character will become invisible as development will replace an earlier field system. As 17% of the whole HLC project area has been identified as planned enclosure, this effect is not considered to be significant.</p> <p>There is high archaeological potential for the survival of archaeological remains within the site from the later prehistoric period onwards and, although the site has not been archaeologically evaluated, it is assumed that allocating this site would be likely to cause the loss of these archaeological remains if the site is extracted without mitigation. However, it is assumed that investigation works required by the Joint Plan Policy D08 (Historic Environment) '<i>mitigation of damage will be ensured through preservation of the remains in situ as a preferred solution. When in situ preservation is not justified, adequate provision should be made for excavation and recording before or during development.</i>' would reduce this to a minor negative effect.</p> <p>Archaeological potential is deemed uncertain until such time as an archaeological field evaluation is carried out.</p> <p>Plan level / regional / wider effects. None noted.</p>							
11. To protect and enhance the quality and character of landscapes and townscapes	<p>Proximity of landscape / townscape receptors and summary of character. National Parks: Yorkshire Dales 9.8km away; AONBs: None within 10km; Heritage Coast: None within 10km; ITE Land: None within 5km; Locally protected landscape: No.</p> <p>NCA: Vale of Mowbray; NYLCA: 90% of site in landscape character type 25 (Settled Vale Farmland); Local LCA: North half of site is in Richmondshire (no LCA), south is in Hambleton. This is a category called 'intensively farmed lowland (varied topography)'.</p> <p>The land largely consists of large, relatively open fields. The land is undulating, with some minor ridges and</p>	✓	✓	✓	✓	m- ?	m- ?	m- ?

Proposed Sustainability Objective	Key Observations on Significance					Score		
		P	T	D	I	S	M	L
	<p>it is not clear how much of the site would be visible from the A1(M).</p> <p>Light pollution: the site ranges from 0.25 to 1NanoWatts/ cm²/ sr¹⁹.</p> <p>Local effects. The site is not expected to impact designated landscapes it is adjacent to Hornby Castle Park, a historic designed landscape influenced by Capability Brown which was put on the English Heritage Register in 2014 (Grade II). The site is within the setting of both Hornby Park and Lord's Lane, a tree-lined unimproved lane which lies to the south of the proposed mineral site, which formerly linked Hornby Castle with the A1 (the current minor road within the deer park was previously a private drive west of Hackforth Lodge). The site is only 300m from the hamlet of Hackforth. Mineral extraction could potentially affect the setting.</p> <p>It is unlikely that the whole of this long site could be accommodated by the landscape. The area is sensitive because of its proximity to Hornby Castle Park although the degree of inter-visibility is still to be established. Intrusive mineral extraction within the A1(M) corridor could adversely affect perceptions of North Yorkshire by those passing through (some of whom will potentially be tourists). This would be compounded by views of mineral extraction to the east of the A1(M) at Killerby (MJP21).</p> <p>In terms of visual intrusion, the area is not particularly high or prominent, but there could be direct or oblique views by travellers on the upgraded and partly diverted A1(M) as it lies within the road corridor. The area is disturbed, mainly by the A1(M).</p> <p>Uncertainty is noted as this assessment is made without the benefit of appropriate site investigated assessment, and takes into account the effect of introducing mineral extraction into greenfield land which includes the setting of a registered parkland. Phasing of the work, intervening topography and blocks of woodland may reduce impact in practice, but the situation of having quarrying on both sides of the A1(M) within the same timescale should be avoided if possible.</p>							

¹⁹ Light pollution and dark skies are measured on a scale <0.25 (darkest) to >32(brightest) NanoWatts/ cm²/ sr. CPRE, 2015; England's Light Pollution and Dark Skies – Interactive Map. Available at <http://www.cpre.org.uk/>. Accessed September 2016.

Proposed Sustainability Objective	Key Observations on Significance					Score		
		P	T	D	I	S	M	L
	Plan level / regional / wider effects. See above.							
12. Achieve sustainable economic growth and create and support jobs	<p>Proximity of factors relevant to sustainable economic growth. Site is very close to the A1 giving reasonably good access to York, Leeds and Teesside.</p> <p>Local effects. The estimated mineral reserve at the site is 3 million tonnes of sand and gravel, with this potentially being made available to the market. This would make a significant contribution to the building sector by helping to boost supply of a key building material (as well as supporting freight driving jobs). However, the extraction of minerals is not considered a long term industry as the economic boost and jobs provided at the site is limited to the lifetime of mineral extraction. The proposed life of the site is currently unknown, overall the allocation is considered to have a minor positive effect in the short term, with a neutral effect in the medium and long term following closure of the site.</p> <p>Plan level / regional / wider effects. None noted.</p>	✓	✓	✓	✓	+	+	+
13. Maintain and enhance the viability and vitality of local communities	<p>Proximity of factors relevant to community vitality / viability. IMD Area is Hornby Castle – not in most deprived 20%.</p> <p>East Appleton is the nearest settlement at 620m east while Catterick is 1.2km north. Catterick Garrison 4.6km west is expected to accommodate 1,900 additional houses up to 2028, 62% of the Richmondshire total.</p> <p>Local effects. This is a large site that could support a modest amount of jobs in extraction and freight. It would also supply a useful supply of building materials to support the planned growth in housing stock in Catterick Garrison and other nearby settlements. Restoration may provide a useful community resource.</p> <p>Plan level / regional / wider effects. The proposal for sand and gravel extraction at this site is unlikely to affect communities in the wider area.</p>	✓	✓	✓	✓	+	+	+

Proposed Sustainability Objective	Key Observations on Significance					Score		
		P	T	D	I	S	M	L
14. To provide opportunities to enable recreation, leisure and learning	<p>Proximity to recreation, leisure and learning receptors. Bridleway 10.61/3/1 runs across centre of site (although this route is a dead end). Next nearest Bridleway 20.2/9/1 runs 570m west; No draft common land / village greens within 500m.</p> <p>Local effects. A bridleway would need to be diverted (albeit one that is not likely to be used very much), while the site may be visible from the western bridleway. As part of the A1 improvements, a bridleway route is being created and Leases Lane which runs along the northern boundary of the site will act as a link. Should the site be accessed from this lane, negative impacts would also be anticipated upon bridleway users utilising this link road.</p> <p>Plan level / regional / wider effects. None noted</p>	✓		✓		m-	-	- ?
15. To protect and improve the wellbeing, health and safety of local communities	<p>Proximity to population / community receptors / factors relevant to health and wellbeing. No schools or health centres within 1km. Nearest settlements are Hackforth at 250m south, and East Appleton 650m west.</p> <p>Local effects. Several isolated farms and buildings lie within possible range of dust and noise impacts. While traffic from the site may lead to noise, dust, vibration and reduced road safety, affecting a small number of receptors. Restoration may improve wellbeing by creating accessible countryside.</p> <p>If traffic from the site utilises Catterick Lane to the west rather than planned future local access roads then it is likely that the site would result in significant impacts with HGVs passing through communities such as Great Crakehall (creating minor impacts on local air quality for example, as well as increasing the possibility of accidents). This impact would not occur, if traffic utilised the planned local access roads.</p> <p>Plan level / regional / wider effects. None noted.</p>	✓	✓	✓		-	-	+ ?

Proposed Sustainability Objective	Key Observations on Significance					Score		
		P	T	D	I	S	M	L
16. To minimise flood risk and reduce the impact of flooding	<p>Proximity to flood zones. Less than 5% of the site is within Flood Zones 2 and 3. Surface water flooding low risk (1:1000 (0.1%)) to high risk (1:30 (3.33%)) affects about 10% of the site. Ditches and small streams on the site are the focal point for much of the surface water flooding. However, as extraction is likely to change the topography of the site where flooding occurs across this site is likely to change as extraction progresses. The site lies across five 1km squares on the Environment Agency's 'Areas Susceptible to Groundwater Flooding Map', four of which have details of levels susceptibility to groundwater flooding and one of which has no data. The 1km square at the extreme south of this site is susceptible to superficial deposits flooding (>25% to <50% of the 1km square is susceptible), while the other 1km squares are subject to Clearwater and superficial deposits flooding >25 to <50% in the centre and <25% in the north-east), apart from a 1km square along the central eastern edge of the site which is susceptible to Clearwater flooding (<25%). Less than 5% of this site is at risk from the 1:20 (5%) flood event. The site is in the Ouse CFMP / Unit: 'Swale Washlands' / Policy 6.</p> <p>Local effects. A Strategic Flood Risk Assessment (SFRA) Sequential Test undertaken for the site concluded that this site would 'Pass'. A site specific flood risk assessment should further consider climate change impact to the river flood risk, groundwater flooding and how SuDS can be used to drain the site.</p> <p>Plan level / regional / wider effects. None noted.</p>					0	0	0
17. To address the needs of a changing population in a sustainable and inclusive manner	<p>Proximity to factors relevant to the needs of a changing population. The site does not conflict with any known allocations in other plans.</p> <p>Local effects. The site would make a significant contribution to self-sufficiency in the supply of sand and gravel and provide a number of new jobs.</p> <p>Plan level / regional / wider effects. The site may also support markets outside of the plan area.</p>		✓	✓		+	+	+

Cumulative / Synergistic effects²⁰	
Planning context	East Appleton is the nearest settlement at 620m east while Catterick is 1.2km north (both Richmondshire). Catterick Garrison 4.6km west is expected to accommodate 1,900 additional houses up to 2028, 62% of the Richmondshire total. Site allocations are not yet finalised in Richmondshire.
Other Minerals and Waste Joint Plan Sites	MWJP sites within 5km: MJP21 Killerby 300m east, MJP33 Home Farm 1.9km north-east, MJP43 Land west of Scruton 3.9km south-east and WJP18 Tancred 3.4km north.
Historic minerals and waste sites	Active or dormant minerals and waste sites lie within 2km including Manor House Farm active quarry 1.2km north-east, historic extraction at the River Swale 1.1km north-east. An historic landfill site is located 1km north-west and a waste water treatment works lies 700m to the south. There will also be cumulative traffic impacts (congestion and emissions).
Landscape Impacts	In combination with other MWJP sites, large areas of the landscape are being irreversibly changed from their natural character, a negative cumulative impact.
Limitations / data gaps	
No significant data gaps. More detailed assessment would be required to fully evaluate a number of effects however. This should be addressed at any subsequent planning application stage.	
Mitigation requirements identified through Site Assessment process	
<ul style="list-style-type: none"> • Design to mitigate impact on ecological issues, in particular with regard to avoiding impacts on Swale Lakes SSSI and protected species • Design to minimise the loss of best and most versatile agricultural land and to protect high quality soil resources • Design of development and landscaping of site to mitigate impact on: heritage assets (Listed Buildings including Rudd Hall and Ghyll Hall, Registered and unregistered park and gardens including Hornby Castle Park, archaeological remains), Hackforth and East Appleton villages, landscape features and their respective settings and users of the A1 • Design to include suitable arrangements for access and local roads taking account of the upgrades to the A1 including the Local Access Road. • Design to include suitable arrangements for public rights of way (diversion or retention, and associated mitigation, as appropriate) including the bridleway along Ghyll Lane. 	

²⁰ Cumulative effects have been factored into the scoring of each SA objective in the assessment framework.

- Design to include suitable flood risk assessment; for an FRA to be satisfactory, it will need to include necessary mitigation, such as compensatory storage, attenuation and SuDS as appropriate.
- Appropriate arrangements for control of and mitigation of the effects of noise, dust.
- Appropriate restoration scheme using opportunities for habitat creation, with well-informed justification for any wetland creation, considering also the potential adverse impacts of new wetland within a birdstrike safeguarding zone and location and proximity to the Hornby Castle Park Registered Park and Garden.

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