

## C) SOUNDNESS

### Matter 1 – Proposed Mineral Sites

#### iii) Sand and Gravel MS-1: *Production of Sand and Gravel*

#### Site Specific Questions for allocations within Policy MS-1: Production of Sand and Gravel

#### AS-15: *Tatchells Quarry Extension, Wareham*

129. Can the “Very significant adverse impact” (Category A) identified in the Site Assessment on criterion C13 –surface waters be adequately mitigated?

129. Yes. The Category A impact identified is qualified in the sub text, where it states that it is graded as such owing to “a pond being within 50m of the site, however, depending on the nature of this pond, this criterion could be reduced to a lower impact level”.

The pond in question is part of the existing quarry workings and was originally formed by the operators of the quarry at the time for the purposes of silt disposal. This pond will be incorporated into the restoration of the site. It has, and will continue to be, subject to enhancement measures through natural regeneration. To date these measures have already resulted in enhanced bio-diversity at the site. It is therefore considered the Category A impact could be reduced to a category E impact for this feature.

It remains the case that the site is located within 250m of a surface water feature and thus a Category B impact arises.

However, a planning application has been made to the Dorset County Council in relation to the proposed working of the extension site (bearing reference: 6/2018/0378). The application was submitted on 25 June 2018 and is accompanied by a Hydrogeological and Hydrological Impact Assessment and Flood Risk Assessment. This assessment concludes that there are no overriding hydrogeological or hydrological based reasons why the development should not proceed, subject to compliance with the recommendations in the assessment and to such conditions as may reasonably be imposed by the Council. A copy of the assessment is attached at Appendix 1.

The Environment Agency has responded to consultation on the application and has raised no objections. A copy of the Environment Agency’s response is attached at Appendix 2.

130. Have all significant matters been properly taken into account in the SA and Site Assessment and, if not, what matters require further consideration?

130. Yes. As noted in answer to question 129 above, it is considered that the Category A impact against surface waters can be reduced for the feature identified to a category E impact. The category B impact remains, however it has been addressed through the submission of a planning application for the proposed extension site which was accompanied by a Hydrogeological and Hydrological Impact Assessment and Flood Risk Assessment.

Following a screening request, Dorset County Council provided a screening opinion for the proposed development, which determined that it did not represent EIA development and therefore an

Environmental Statement was not required to accompany the application. Nonetheless, when the application was submitted on 25 June 2018, it was accompanied by the following technical reports:

- Planning Statement
- Ecology Appraisal
- Archaeology Assessment
- Landscape and Visual Impact Assessment
- Environmental Scheme covering Noise, Dust and Air Quality
- Transport Statement; and
- Hydrogeological and Hydrological Impact Assessment
- Flood Risk Assessment

In so doing the application took account of the DGs outlined for the site which are therefore considered appropriate. To date no objections have been received to the planning application from any of the statutory consultees.

**131. Should the DGs provide more direction on the mitigation measures required for this category "A" impact?**

131. No. This is not considered necessary owing to the response provided in relation to question 129 above.

**132. Are there any other details that should be added to the DGs, including issues raised by statutory consultees and other representors?**

132. No.

**APPENDIX 1 – Hydrogeological and Hydrological Impact Assessment and FRA accompanying  
Application 6/2018/0378**

Aggregate Industries UK Limited

Tatchells Quarry  
Wareham, Dorset

Extension to Existing Mineral Workings  
Baggs Land Extension

Flood Risk Assessment

Version 1

14th June 2018

Report Prepared For:



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Wareham, Dorset

Extension to Existing Mineral Workings  
Baggs Land Extension

Flood Risk Assessment

Version 1

14th June 2018

Report Prepared By:



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<b>Contents</b>	<b>Page Number</b>
<b>1 INTRODUCTION .....</b>	<b>1</b>
1.1 Background.....	1
1.2 The Site.....	2
1.2.1 Site Location and Setting .....	2
1.2.2 Proposed Site Development.....	2
1.2.3 Hydrological Setting.....	3
1.2.4 Hydrogeological Setting.....	3
<b>2 BASIS OF ASSESSMENT.....</b>	<b>7</b>
2.1 Aims of the FRA .....	7
2.2 Terms of Reference & Scope of Assessment .....	7
2.2.5 National Guidance .....	7
2.2.6 Regional Guidance .....	7
2.3 Methodology & Data Sources .....	7
<b>3 FORM OF ASSESSMENT .....</b>	<b>9</b>
3.1 Introduction .....	9
3.2 Note upon Application of the Sequential Test .....	9
3.3 Note Upon Allowance for Climate Change.....	10
3.4 The Sequential Test .....	10
<b>4 FORMS OF FLOOD RISK.....</b>	<b>11</b>
<b>5 FLOOD RISK POSED TO THE SITE .....</b>	<b>13</b>
5.1 Flooding from Surface Waters (Pluvial Flooding).....	13
5.1.1 Background .....	13
5.1.2 Alteration of Runoff Routes / Rates During Mineral Extraction .....	13
5.1.3 Alteration of Runoff Routes / Rates Following Restoration .....	13
5.1.4 Mitigation Measures.....	14
5.2 Flooding from Groundwater.....	14
5.2.5 Background .....	14
5.2.6 Interception of Perched Groundwaters .....	14
5.2.7 Mitigation Measures.....	15
<b>6 NPPF REQUIREMENTS .....</b>	<b>17</b>
6.1 Site Status .....	17
6.2 Site Layout.....	19



<b>7</b>	<b>OFF-SITE FLOOD RISK POSED BY THE PROPOSED DEVELOPMENT ...</b>	<b>21</b>
7.1	Introduction .....	21
7.2	Fluvial Flooding .....	21
7.3	Surface Water Flooding.....	21
7.4	Groundwater Flooding.....	21
7.5	Mitigation Measures .....	22
7.6	Residual Flooding Risks.....	22
<b>8</b>	<b>SUMMARY AND CONCLUSIONS.....</b>	<b>23</b>

## **TABLES**

Table A1: Potential Forms of Flood Risk Posed to the Site

Table A2: Summary Impact and Mitigation Schedule

## **APPENDICES**

Appendix A1: Data Sources

## **FIGURES**

Figure A1: Site Location and Setting

Figure A2: Concept Restoration

Figure A3: Flood Risk Mapping

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## **BCL CONSULTANT HYDROGEOLOGISTS LIMITED**

### **EXPERIENCE & QUALIFICATIONS**

BCL is an independent consultancy specialising in all aspects of hydrogeology and hydrology as they relate to minerals extraction, water supply and environmental issues.

Peter Simpson (the author of this report) holds an honours degree (Environmental Science) conferred by The University of Birmingham, 2003 and a Master of Science Degree (Hydrogeology), also conferred by The University of Birmingham, in 2011.

Staff of BCL have provided specialist services and advice to the extractive industry since 1990. During this time experience has been gained from involvement in the study of hydrogeological and hydrological systems in connection with planning matters at over 220 quarries or associated secondary and tertiary operations throughout the United Kingdom, Republic of Ireland and mainland Europe.

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# 1 INTRODUCTION

## 1.1 Background

- 1.1.1 Aggregate Industries UK Limited (AI) presently undertake mineral extraction operations (fine sand) at Tatchells Quarry, Wareham, Dorset (the Site) under current planning permissions 6/98/0694, as issued by Dorset County Council (DCC) in 1998. The location of the Site is illustrated at *figure A1*.
- 1.1.2 It is proposed that the existing mineral workings be extended to the south east over an area of some 2.5 hectares (ha) into an area known as Baggs land (the Proposed Development). This is intended to release 230,000 tonnes of fine sands with the associated extraction of 50,000 tonnes of clay flint overburden over a period of some 4 years.
- 1.1.3 National Planning Policy Framework (NPPF: Department for Communities and Local Government [DCLG], March 2012; superseding Planning Policy Statement 25: Development and Flood Risk) states that a site specific Flood Risk Assessment (FRA) is required for “*any planning proposals of 1 hectare or greater in Flood Zone 1 (FRZ 1: i.e. outside the 1:1,000-year flood envelope); all proposals for new development (including minor development and change of use) in Flood Zones 2 (FRZ2: 1:1,000-yr to 1:100-yr) and 3 (<1:100-yr)*”.
- 1.1.4 The Proposed Development involves mineral extraction and subsequent restoration within an area exceeding 1 hectare (ha). Thus, on the basis of scale alone, the Proposed Development falls within the scope of NPPF requirements regarding the need for a site specific FRA.
- 1.1.5 In view of planning requirements, BCL Consultant Hydrogeologists Limited (BCL; the authors of this report) have been commissioned by AI to undertake a formal FRA with respect to the Proposed Development.
- 1.1.6 BCL’s wider work at the Site has included the preparation during 2018 of a Hydrogeological and Hydrological Assessment (H&HA) of the Proposed Development (to which this report is appended). Much of the baseline descriptive data referred to within this FRA is taken from this over-arching H&HA document.

## 1.2 The Site

### 1.2.1 Site Location and Setting

1.2.1.1 The Site is approximately centred upon National Grid Reference (NGR) <sup>3</sup>90651 <sup>0</sup>88653, 0.3 kilometres (km) to the west of the town of Wareham, 0.9 km to the north of the village of Worgret, in the Purbeck District of the County of Dorset.

1.2.1.2 The topography of the local area is dominated by the valley of the River Piddle. The Site is located upon the northern flank of the Piddle Valley, with ground elevations ranging from 35maOD to 13maOD, generally falling southwards.

1.2.1.3 Land use in the locality is dominated by agriculture, with areas of woodland, heathland and urban development also being present. Quarrying is common across the region. The Proposed Development area is presently used for grazing.

### 1.2.2 Proposed Site Development

#### *Overview*

1.2.2.1 The Site is subdivided by the Carey Road, which separates former mineral workings (in part restored) and the mineral processing and stockpiling area (the Northern Site) from the active mineral extraction area (the Southern Site).

1.2.2.2 It is proposed that the Southern Site be extended laterally to the east, with extracted materials being transported via dumper to the Northern Site for processing and sale.

1.2.2.3 Mineral extraction is proposed to be undertaken to a basal level of 10maOD, forming a continuous closed depression with the adjacent existing Southern Site mineral workings.

1.2.2.4 Restoration is to be at low level to agricultural lands and nature conservation within a closed depression formed via the re-placement of stripped soils and overburdens within the extracted area (*figure A2*). This is to be undertaken without use of imported infill.

#### *Water Management*

1.2.2.5 The Proposed Development is to be worked dry without need for dewatering, and is to maintain a standoff from maximum groundwater elevations (estimated at some 2m within the 2018 H&HA). Mineral processing is to be undertaken via dry screening

only without consumptive water use (within the Northern Site and in line with present, permitted, operations).

1.2.2.6 There is no requirement for any discharge to be made from the Site. All incident rainfall is to be captured and contained within the closed depression formed by the Southern Site mineral workings / restored landform. Such waters will be attenuated within basal waterbodies (informal during mineral extraction and within a dedicated pond upon completion of restoration) prior to dissipation to groundwater.

### **1.2.3 Hydrological Setting**

1.2.3.1 The Site is located entirely within the catchment of River Piddle. This watercourse rises in the Dorset Downs before flowing southwards and eastwards, to the south of the Site (0.2km at closest approach) before ultimately discharging to the English Channel at Poole Harbour.

1.2.3.2 The River Piddle is indicated to be in continuity with groundwater and to be gaining flow via groundwater baseflow.

1.2.3.3 Minor watercourses in the vicinity of the Site drain to the River Piddle. This includes a number of drainage ditches upon the Piddle flood plain and a number of streams which rise upon outcropping clays to the north and west of the Site.

1.2.3.4 The majority of waterbodies in the Site vicinity are formed from areas of mineral extraction. This includes 3 no. basal waterbodies and 1 no silt lined lagoon within the Southern Site (all of which are indicated to be perched).

1.2.3.5 There are no watercourse or waterbodies within the Proposed Development area.

### **1.2.4 Hydrogeological Setting**

1.2.4.1 The Site is underlain by the sands and subordinate, interbedded, clays / silts of the Poole Formation (PF) of the Bracklesham Group (of Paleogene Age). The PF is indicated to have a thickness of some 32m within the Proposed Development.

1.2.4.2 The PF is discontinuously overlain by the sands and gravels of the River Terrace Deposits (RTD) of estimated at 2.5m thickness.

1.2.4.3 The PF is underlain by the regionally pervasive clays of the London Clay Formation of the Thames Group (estimated 30-40m thickness).



- 1.2.4.4 The RTD and PF form a single unconfined aquifer (the Aquifer) featuring diffuse, intergranular groundwater flow, relatively high unsaturated thickness (estimated 20m) and rapid, vertical recharge. Permeability is anticipated to be relatively high.
- 1.2.4.5 The base of the Aquifer is formed by the regionally pervasive LC, which forms an aquiclude of low permeability, hydraulically isolating the Site from underlying strata.
- 1.2.4.6 Groundwater elevations within the Aquifer are indicated to fall southwards, with groundwater flow within the Proposed Development thus being made in this direction, towards the River Piddle (maximum elevations within the Proposed Development being at approximately 7.8maOD).
- 1.2.4.7 The PF is known to feature interbedded low permeability horizons (clays / silts) which function as aquicludes. These aquicludes can support perched groundwaters, springs and seepages and are known to retard recharge.
- 1.2.4.8 The interbedded aquicludes within the PF are discontinuous with their distribution and elevation being heterogeneous. The influence of these aquicludes is considered minor at the regional scale, though they can exert a strong control on groundwaters locally.

## **2 BASIS OF ASSESSMENT**

### **2.1 Aims of the FRA**

2.1.1 This report presents the findings of the FRA and has been prepared to inform the design, consultation and determination of the Application. Where likely significant potential impacts have been identified, mitigation measures have been outlined.

### **2.2 Terms of Reference & Scope of Assessment**

#### **2.2.5 National Guidance**

2.2.5.1 The principal terms of reference consulted in preparation of this FRA are:

“National Planning Policy Framework” (NPPF: Department for Communities and Local Government [DCLG], March 2012).

"Flood Risk and Coastal Change", Planning Practice Guidance (PPG), DCLG / Department for the Environment Food and Rural Affairs (DEFRA), 15th April 2015.

2.2.5.2 These documents are promoted by the Environment Agency (EA) as the lead guidance for developers involved in the preparation of FRA.

2.2.5.3 Paragraph 030 of the PPG requires that FRA should demonstrate / provide:

- i. Whether the Proposed Development is likely to be affected by current or future flooding from any source.
- ii. Whether the Proposed Development will increase flood risk elsewhere.
- iii. That the measures proposed to deal with any effects and risks are appropriate.
- iv. The evidence for the local planning authority to apply (if necessary) the Sequential Test.
- v. Whether the development will be safe and pass the Exception Test, if applicable.

#### **2.2.6 Regional Guidance**

2.2.6.1 Regional guidance consulted in preparation of the FRA comprises the ‘*Purbeck District Council Strategic Flood Risk Assessment (SFRA), Version 8*’, Purbeck District Council, September 2011.

### **2.3 Methodology & Data Sources**

2.3.1 Technical guidance regarding the methodology of assessment and published data consulted in the course of this FRA are detailed at *appendix A1*. Data sources include

both current guidance and site-specific data relating to the design of operations and planning matters at the Site.

### 3 FORM OF ASSESSMENT

#### 3.1 Introduction

3.1.1 Paragraph 100 of NPPF states: "*inappropriate development in areas at risk of flooding<sup>1</sup> should be avoided by directing development away from areas at highest risk, but where development is necessary, making it safe without increasing flood risk<sup>2</sup> elsewhere*". This is achieved using a sequential risk based approach - "The Sequential Test", to assess the suitability of location and types of development with regard to flood risk.

#### 3.2 Note upon Application of the Sequential Test

3.2.1 The Sequential Test should normally be applied by Planning Authorities to enable strategic Local Development Plans (LDP) to be advanced. The test is applied across a selection of sites with the purpose of allocating development to the most appropriate areas.

3.2.2 Sand and gravel workings are afforded special consideration as (by virtue of their relationship with river systems) it is acknowledged that it may not be possible to guide extraction to areas outside of the risk of flooding. Paragraph 018 of PGG states:

*"It should also be recognised that mineral deposits have to be worked where they are (and sand and gravel extraction is defined as 'water-compatible development', acknowledging that these deposits are often in flood risk areas)."*

*"However, mineral working should not increase flood risk elsewhere and needs to be designed, worked and restored accordingly".*

3.2.3 Once the location of the Proposed Development has been assessed for compliance with the principles of the Sequential Test, the development will be assessed against additional requirements made by the NPPF to ensure the development design and

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<sup>1</sup> "areas at risk of flooding" means land within Flood Zones 2 and 3.

<sup>2</sup> "flood risk" means risk from all sources of flooding - including from rivers and the sea, directly from rainfall on the ground surface and rising groundwater, overwhelmed sewers and drainage systems, and from reservoirs, canals and lakes and other artificial sources.

layout is deemed appropriate to flooding risk. Paragraph 103 of the NPPF requires demonstration that:

i. within the site, the most vulnerable development is located in areas of lowest flood risk unless there are overriding reasons to prefer a different location;

and

ii. development is appropriately flood resilient and resistant, including safe access and escape routes where required, and that any residual risk can be safely managed, including by emergency planning; and it gives priority to the use of sustainable drainage systems.

3.2.4 The foregoing imperatives, coupled with demonstration that the Proposed Development will not exacerbate existing flood risk elsewhere, thus form the core requirements of the following site specific FRA conducted in respect of the Proposed Development.

### **3.3 Note Upon Allowance for Climate Change**

3.3.1 Associated guidance to NPPF requires FRA to take into account potential effects of climate change. This has been incorporated where appropriate.

### **3.4 The Sequential Test**

3.4.1 The starting point for the Sequential Test is to identify which Flood Zone(s) the Proposed Development is located within, followed by assessment of risks from other sources.

## 4 FORMS OF FLOOD RISK

### *Overview*

- 4.1 Data has been obtained from the EA detailing areas in the vicinity of the Site which are vulnerable to flooding. This has been supplemented with data contained with local guidance documents to identify sources of flooding potentially affecting the Site and surrounding area, as presented below.

### *Fluvial Flooding*

- 4.2 The EA flood zone map is reproduced here at *figure A3*.
- 4.3 The Site, in its entirety, is located within FRZ1, the lowest risk classification of FRZ, defined as areas with an Annual Exceedance Probability (AEP) of less than 0.01 (risk of fluvial flooding of less than 1 in 1,000 in each year). FRZ1 is applied to all areas not classed as being within FRZ2 or FRZ3.
- 4.4 Areas classed as within FRZ2 (AEP of between 0.01 and 0.1 or risk of fluvial flooding of between 1 in 1,000 and 1 in 100 in each year) and areas of FRZ3a/b (AEP of greater than 0.1 or risk of fluvial flooding of 1 in 100 or greater in each year) are seen to be present in association with local major watercourses, including the River Piddle, and are present 0.1km to the south of the Proposed Development at closest approach.

### *Surface Water (Pluvial) Flooding*

- 4.5 As indicated by EA pluvial flooding mapping data, the vast majority of the Site lies within an area classed as being at 'Very Low' risk of flooding from surface waters (AEP of 0.1%).
- 4.6 Areas classed as being at 'Low' to 'High' risk of surface water flooding (AEP of between 1% and 3.3% and of 3.3% or greater respectively) are present within the existing mineral workings of the Southern Site and within the Northern Site mineral processing area.

### ***Groundwater Flooding***

4.7 The Site is located upon an unconfined aquifer and is known to feature low permeability horizons with the potential to support perched groundwaters. There is therefore potential for groundwater flooding to occur in the local area.

### ***Flooding from Other Sources***

4.8 The Site is not identified as being at risk of flooding from reservoirs, sewers or other sources.

### ***Summary***

4.9 The potential for identified forms of flood risk to impact upon the Site, and any requirement for further consideration is detailed at *table A1*.

Table A1: Potential Forms of Flood Risk Posed to the Proposed Development		
Potential Risk	Potential for Occurrence (Qualitative)	Notes
Flooding From:	Rivers	No Potential Site entirely within FRZ1. <i>No further consideration required</i>
	Incident Rainfall	Some Potential Mineral extraction / restoration will alter ground elevations and rainfall / runoff rates / routing.  <b>Some further consideration required</b>
	Groundwater	Some Potential Development of the Site will involve the lowering of ground elevations within an unconfined aquifer potentially featuring perched groundwaters. <i>Some further consideration required</i>
	Adjoining Lands	No Potential <i>No further Consideration Required</i>
	The Sea	No Potential <i>No further Consideration Required</i>
	Sewers	No Potential <i>No further Consideration Required</i>
	Reservoirs, Canals, other Artificial Sources	No Potential <i>No further Consideration Required</i>

## **5 FLOOD RISK POSED TO THE SITE**

### **5.1 Flooding from Surface Waters (Pluvial Flooding)**

#### **5.1.1 Background**

5.1.1.1 As discussed, the Site is classified as being at risk of surface water flooding via the following mechanisms:

- i. Alteration of runoff routes / rates during mineral extraction.
- ii. Alteration of runoff routes / rates following restoration.

#### **5.1.2 Alteration of Runoff Routes / Rates During Mineral Extraction**

5.1.2.1 The Proposed Development requires the lowering of ground elevations with associated potential to impact upon surface water runoff routes / rates and thus on Site pluvial flood risk.

5.1.2.2 The Proposed Development will form a closed depression within which all incident waters will be captured and contained. Such waters will drain to the base of the workings where they will be allowed to dissipate to groundwater via contact with undisturbed, unsaturated, and readily permeable aquifer materials upon the base / faces of the extraction (as mineral extraction will not remove the full thickness of Aquifer material underlying the Site and will maintain an estimated 2m stand off from groundwater).

5.1.2.3 This is in line with historic practices undertaken at the Site (notably within the existing Southern Site mineral extraction area) within which significant surface water flooding has not been experienced.

5.1.2.4 The Proposed Development is thus considered to have negligible potential to result in significant on-Site pluvial flooding as a result of the alteration of runoff routes / rates during mineral extraction.

#### **5.1.3 Alteration of Runoff Routes / Rates Following Restoration**

5.1.3.1 Following restoration, ground elevations will be raised relative to maximum extraction depths via the re-placement of stripped soils and overburdens. This has the associated potential to impact upon surface water runoff routes / rates.

5.1.3.2 The restored landform will continue to form a closed depression within which all incident waters will be captured and contained. Such waters will drain to the base of



the workings where they will be attenuated within a basal pond and allowed to dissipate to groundwater via contact with unsaturated and readily permeable aquifer materials upon the base / slopes of the restoration landform (as the base of the restored landform will maintain an estimated 5m standoff from maximum groundwater elevations).

5.1.3.3 It should however be noted that a proportion of the stripped overburdens (which will include clays / silts) will be of lower permeability than the Aquifer material it is replacing. This has the potential to impede the drainage of the restored Site and result in on-Site surface water flooding.

5.1.3.4 It is thus recommended that the placement of stripped soils / overburdens be undertaken in a manner so as to preclude the blanket coverage of the restored landform with low permeability materials, with permeable pathways being maintained to facilitate the free drainage of the restored Site.

5.1.3.5 It should be noted that the restored landform is to be returned to agricultural and nature conservation landuse which is not considered to be vulnerable to flood related impact.

## **5.1.4 Mitigation Measures**

5.1.4.1 The placement of stripped soils / overburdens during the restoration of the Proposed Development should be undertaken in a manner so as to preclude the blanket coverage of the restored landform with low permeability materials, with permeable pathways being maintained to facilitate the free drainage of the restored Site.

## **5.2 Flooding from Groundwater**

### **5.2.5 Background**

5.2.5.1 As discussed, the Site is considered to be at potential risk of groundwater flooding via the following mechanisms:

- i. Interception of perched groundwaters

### **5.2.6 Interception of Perched Groundwaters**

5.2.6.1 The Proposed Development requires the lowering of ground elevations within an unconfined Aquifer. This has the potential to result in the interception of such waters with associated potential to result in on-Site groundwater flooding.

- 5.2.6.2 As discussed within the 2018 H&HA, groundwater monitoring data collected at the Site demonstrates that the proposed maximum depth of working and subsequent restoration are to maintain standoffs from maximum estimated groundwater elevations of 2m and 5m respectively. Groundwaters within the Aquifer saturated zone will thus not be intercepted by the works and will pose no risk of forming a source of groundwater flooding.
- 5.2.6.3 The removal of part of the unsaturated zone within an Aquifer which is known to feature low permeability horizons capable of supporting perched groundwaters does however have the potential to result in the interception of such groundwaters, with associated potential to result in on site groundwater flooding.
- 5.2.6.4 It should be noted that the low permeability horizons within the Aquifer are indicated to be poorly inter-connected and of limited extent. The volumes of perched groundwaters that may potentially be intercepted are thus anticipated to be modest.
- 5.2.6.5 It should further be noted that the adjacent Southern Site mineral extraction does not feature any significant discrete inflows of groundwater.
- 5.2.6.6 In the event that the interception of perched groundwaters was to occur, such waters would be able to drain to the base of workings for eventual dissipation to the Aquifer in line with surface water drainage (as discussed at *section 5.2.2*). This also applies to the restored landform (subject to implementation of above recommended mitigation).
- 5.2.6.7 The Proposed Development is thus considered to have negligible potential to result in significant on-Site groundwater flooding as a result of the interception of perched groundwaters.

## 5.2.7 Mitigation Measures

- 5.2.7.1 Mitigation measures further to those already formulated with regards to on-Site surface water flood risk are not considered necessary in this regard.

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## 6 NPPF REQUIREMENTS

### 6.1 Site Status

6.1.2 Having assessed the potential sources for flood risk at the Site, the next stage of the Sequential Test is to establish the status (or type) of the Proposed Development with regard to the NPPF.

6.1.3 *Table 2* of tgNPPF (extract below) shows the Proposed Development to constitute a “Water Compatible” activity.

#### **Water-compatible development**

- Flood control infrastructure.
- Water transmission infrastructure and pumping stations.
- Sewage transmission infrastructure and pumping stations.
- Sand and gravel working.
- Docks, marinas and wharves.
- Navigation facilities.
- Ministry of Defence defence installations.
- Ship building, repairing and dismantling, dockside fish processing and refrigeration and compatible activities requiring a waterside location.
- Water-based recreation (excluding sleeping accommodation).
- Lifeguard and coastguard stations.
- Amenity open space, nature conservation and biodiversity, outdoor sports and recreation and essential facilities such as changing rooms.
- Essential ancillary sleeping or residential accommodation for staff required by uses in this category, subject to a specific warning and evacuation plan.

6.1.4 The Water Compatible definition holds for each of the mineral extraction and post-restoration phases of the Proposed Development. With respect to the post-restoration situation, this is because the restoration will be to open farmland and nature conservation, which, in lieu of classification within guidance, is judged to be water compatible.

6.1.5 The compatibility of the Proposed Development with regard to the FRZ classifications as they impinge upon the Site is established by reference to *Table 3* of tgNPPF; reproduced below.

Flood Zones	Flood Risk Vulnerability Classification				
	Essential infrastructure	Highly vulnerable	More vulnerable	Less vulnerable	Water compatible
Zone 1	✓	✓	✓	✓	✓
Zone 2	✓	Exception Test required	✓	✓	✓
Zone 3a †	Exception Test required †	x	Exception Test required	✓	✓
Zone 3b *	Exception Test required *	x	x	x	✓*

Key:

✓ Development is appropriate

x Development should not be permitted.

- This table does not show the application of the Sequential Test which should be applied first to guide development to Flood Zone 1, then Zone 2, and then Zone 3; nor does it reflect the need to avoid flood risk from sources other than rivers and the sea;
- The Sequential and Exception Tests do not need to be applied to minor developments and changes of use, except for a change of use to a caravan, camping or chalet site, or to a mobile home or park home site;
- Some developments may contain different elements of vulnerability and the highest vulnerability category should be used, unless the development is considered in its component parts.

† In Flood Zone 3a essential infrastructure should be designed and constructed to remain operational and safe in times of flood.

\* \* \* In Flood Zone 3b (functional floodplain) essential infrastructure that has to be there and has passed the Exception Test, and water-compatible uses, should be designed and constructed to:

- remain operational and safe for users in times of flood;
- result in no net loss of floodplain storage;
- not impede water flows and not increase flood risk elsewhere.

6.1.6 Reference to policy statements and accompanying guidance concludes that the Proposed Development constitutes ‘appropriate development’ in the context of the Sequential Test. This applies irrespective of the form of flooding (*i.e.* whether from rivers, groundwater or runoff into the Site from adjacent lands).

## **6.2 Site Layout**

- 6.2.1 As described, the NPPF requires demonstration that the most sensitive parts of the proposed development are located in areas at lowest risk of flooding, unless there are overriding reasons to prefer a different location.
- 6.2.2 As discussed, the Site is entirely situated within areas designated as FRZ1 (the lowest class of flood risk).
- 6.2.3 Based on the foregoing, it is considered that the layout for the Proposed Development will meet the requirements of NPPF (as detailed at paragraph 103).

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## **7 OFF-SITE FLOOD RISK POSED BY THE PROPOSED DEVELOPMENT**

### **7.1 Introduction**

7.1.1 Planning guidance requires that Site-Specific FRA be undertaken for all development proposals with an area greater than one hectare (including those in FRZ's 1 or 2) to ensure that downstream / off-site flood risk is not increased as a result of the Proposed Development.

### **7.2 Fluvial Flooding**

7.2.2 As discussed, the Site is entirely located within FRZ1 and is to be operated without need for any off-Site discharge.

7.2.3 In view of the foregoing, it is considered to be no mechanism by which the Proposed Development may impact upon off-Site / downstream fluvial flood risk.

### **7.3 Surface Water Flooding**

7.3.4 As discussed, during both mineral extraction operations and following restoration, the Proposed Development will form a closed depression within which all incident rainfall / runoff will be captured and contained. Intercepted waters are to be attenuated within the base of workings prior to dissipation to groundwaters within the Aquifer.

7.3.5 In view of the foregoing, it is considered that there is no mechanism by which the Proposed Development may impact upon off-Site / downstream pluvial flood risk.

### **7.4 Groundwater Flooding**

7.4.6 The Site is to maintain a standoff from maximum groundwaters within the Aquifer, with any intercepted perched groundwaters being captured and contained within the closed depression formed by the Proposed Development for eventual dissipation to the Aquifer. The ultimate destination of such waters will thus be unchanged from present conditions. This is the case for both the mineral extraction and restoration stages of the Proposed Development.

7.4.7 In view of the foregoing, it is considered that there is no mechanism by which the Proposed Development may impact upon off-Site groundwater flood risk.



## **7.5 Mitigation Measures**

7.5.8 As no significant potential for the Proposed Development to impact upon off-Site / downstream flood risk has been identified, mitigation measures in this regard are not considered necessary.

## **7.6 Residual Flooding Risks**

7.6.1 Following restoration of the Site as described above, there are not expected to be any residual offsite flooding related risks.

## 8 SUMMARY AND CONCLUSIONS

- 8.1 A Flood Risk Assessment (FRA) has been carried out, in accordance with the requirements of the NPPF, in respect of a Planning Application (the Application) detailing the extension of Tatchells Quarry, Dorset. The FRA has involved:
- i. An appraisal of the flood risk posed to the site.
  - ii. An assessment of the development plans against the Sequential Test
  - iii. An appraisal of the potential impact of the planned development on flood risk elsewhere.
- 8.2 The Proposed Development is situated within areas designated as Flood Risk Zone 1, giving a fluvial flood risk of between 1 in 1000 or less in any given year. The Sequential Test has been conducted to confirm the suitability of the Proposed Development at the Site.
- 8.3 The FRA concludes that, within the context of the Flood Risk Zoning applying to the Site, the Proposed Development constitutes a “water-compatible” operation. All sources of flood risk to the Site have been assessed. The assessment concludes the risks have been satisfactorily accommodated within the design of the Proposed Development and outlined mitigation measures.
- 8.4 The assessment concludes that with the operation and restoration of the Site as described herein, offsite flood risk will not be significantly impacted and the proposals therefore are considered acceptable in this regard.
- 8.5 *Table A2* summarises the measures to be taken to ensure existing flood risk is not adversely affected by the Proposed Development.



Peter Simpson B.Sc., M.Sc., FGS  
Senior Hydrogeologist  
**BCL Consultant Hydrogeologists Limited**  
14th June 2018

Table A2: Summary Impact & Mitigation Schedule			
Potential Impact	Mitigation by Quarry Design	Mitigation by Procedure	Contingency Action
Flooding from Rivers	Site entirely located within FRZ1 (the lowest class of flood risk) and thus not considered to be at risk of fluvial flooding.	None	None
Flooding from Incident Rainfall	Site to form closed depression within which all incident waters will be captured and contained prior to passive dissipation to groundwaters within the Aquifer.  Site to maintain standoff from maximum groundwater elevations within a readily permeable Aquifer.	Placement of stripped soils / overburdens during restoration to be undertaken in a manner so as to preclude the blanket coverage of the restored landform with low permeability materials, with pathways being maintained to facilitate the free drainage of the restored Site.	None
Flooding from Groundwater	Site to be worked dry without need for dewatering via maintenance of standoff from maximum groundwater elevations.  Site to form closed depression within which any intercepted perched groundwaters will be captured and contained prior to passive dissipation to the Aquifer saturated zone.	None	None
Increase in Off-Site Fluvial Flood Risk	Site entirely located within FRZ1 (the lowest class of flood risk).  No discharge of waters from the Site required by Proposed Development.	None	None
Increase in Off-Site Surface Water Flood Risk	Site to form closed depression within which all incident waters will be captured and contained prior to passive dissipation to groundwaters within the Aquifer.	None	None
Increase in Off-Site Groundwater Flood Risk	Site to maintain standoff from maximum groundwater elevations within a readily permeable Aquifer.  Site to form closed depression within which any intercepted perched groundwaters will be captured and contained prior to passive dissipation to the Aquifer saturated zone.	None	None

Aggregate Industries UK Limited

Tatchells Quarry  
Wareham, Dorset

Extension to Existing Mineral Workings  
Baggs Land Extension

Flood Risk Assessment

Version 1

14th June 2018

Figures

Report Prepared For:



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Existing Site



Proposed Development



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Aggregate Industries Limited

Tatchells Quarry, Wareham, Dorset

Extension to Existing Mineral Workings  
 Bags Land Extension

Flood Risk Assessment

Site Location & Setting

Drawn By: PS Scale: 1:23,500  
 Date: 14/06/18 Figure No. A1



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Aggregate Industries Limited

Tatchells Quarry, Wareham, Dorset






Extension to Existing Mineral Workings  
 Baggs Land Extension

Flood Risk Assessment

Concept Restoration

Drawn By: PS	Scale: 1:5,000
Date: 14/06/18	Figure No. A2



-  Existing Site
-  Proposed Development
-  FRZ1
-  FRZ2
-  FRZ3



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Aggregate Industries Limited

Tatchells Quarry, Wareham, Dorset

Extension to Existing Mineral Workings  
 Bags Land Extension

Flood Risk Assessment

Flood Risk Mapping

Drawn By: PS Scale: 1:23,500  
 Date: 14/06/18 Figure No. A3

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Aggregate Industries UK Limited

Tatchells Quarry  
Wareham, Dorset

Extension to Existing Mineral Workings  
Baggs Land Extension

Flood Risk Assessment

Version 1

14th June 2018

## Appendix A1: Data Sources

Report Prepared For:



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Company Registration Number: 4043373  
Registered in England & Wales. Registered Office: 33, Wolverhampton Road, Cannock

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## Data sources used in assessment

Technical guidance regarding the methodology of assessment and published data consulted in the course of this FRA includes the following:

- i. Department for Communities and Local Governance, “National Planning Policy Framework”, March 2012
- ii. Department for Communities and Local Governance, “Technical Guidance to the National Planning Policy Framework”, March 2012
- iii. Department for Communities and Local Governance / Department for the Environment, Food and Rural Affairs, “Flood Risk and Coastal Change, Planning Practise Guidance”, April 2015
- iv. “Flood Risk Assessment Guidance for New Development, Phase 1, Interim Report (Final Draft) R&D Technical Report FD2320/IR, EA, July 2004.
- v. “Flood Risk Assessment Guidance for New Development, Phase 2, Framework and Guidance for Assessing and Managing, Flood Risk for New Development, Full Documentation and Tools”, R&D Technical Report FD2320/TR2, EA, October 2005.
- vi. Purbeck District Council, ‘Purbeck District Council Strategic Flood Risk Assessment (SFRA), Version 8’, September 2011.
- vii. British Geological Survey (BGS): Published 1:50,000 scale solid and drift geological mapping, sheet-no. 203 (Bedford).
- viii. Institute of Hydrology (IoH), "Flood Estimation Handbook", 1999.
- ix. Centre for Ecology and Hydrology (CEH; formerly the IoH), “Flood Estimation Handbook CD-ROM, Version 3.0”, 2009.
- x. “Development and Flood Risk: A Practice Guide Companion to PPS25”, (PPS25pg) DCLG, 2009.
- xi. R Kellagher, "Rainfall Runoff Management for Developments”, October 2013, joint DEFRA / EA Flood and Coastal Erosion Risk Management R&D Programme, Report SC030219.
- xii. Environment Agency (EA) Modelled 1:100 and 1:1,000 year (i.e. FRZ 3a/3b & FRZ 2) Flood Map, Flooding from Reservoirs Map & Surface Water Flood Map.
- xiii. OS open-source digital data (Meridian2, Panorama).
- xiv. Ordnance Survey (OS): 1:25,000 Explorer published mapping.
- xv. Centre for Ecology & Hydrology (CEH), “National River Flow Archive”, 2015
- xvi. Natural Environment Research Council (NERC), “Flood Studies Report”, 1975

- xvii. UK Sustainable Drainage & Guidance Tools, Surface Water Storage Requirements for Sites, HR Wallingford, 2016

Site specific data, including information relating to the design of operations and planning matters at the Site, includes the following:

- i. BCL Consultant Hydrogeologists Limited, 'Tatchells Quarry, Extension to Existing Mineral Workings, Baggs Land Extension, Hydrogeological and Hydrological Assessment', Version 1, 2018, S/AI/TQ/H&HA18/01

**APPENDIX 2 – Environment Agency Response to Application 6/2018/0378**

Mr Rob Jefferies  
Dorset County Council  
Development Control  
County Hall  
Colliton Park  
Dorchester  
Dorset  
DT1 1XJ

**Our ref:** WX/2018/131919/01-L01  
**Your ref:** 6/2018/0378  
**Date:** 25 July 2018

Dear Mr Jefferies

**PROPOSED EXTENSION TO TATCHELLS QUARRY BY WAY OF EXTRACTION OF BAGGS LAND TO THE SOUTH OF CAREY ROAD. LAND TO THE SOUTH OF CAREY ROAD, ADJ TO TATCHELLS QUARRY, WAREHAMS, DORSET**

Thank you for consulting the Environment Agency on the above mentioned planning application.

We have **no objection** to the proposed development subject to the following informatives being included in any planning permission granted.

**Hydrological and hydrogeological appraisal**

Groundwater Protection

The hydrological and hydrogeological appraisal is considered acceptable in regards to water quality and groundwater protection. We would recommend the following:

**INFORMATIVE**

Safeguards should be implemented during the construction phase to minimise the risks of pollution from the development. Such safeguards should cover:

- the use of plant and machinery
- wheel washing and vehicle wash-down
- oils/chemicals and materials
- the use and routing of heavy plant and vehicles
- the location and form of work and storage areas and compounds
- the control and removal of spoil and wastes.

**INFORMATIVE**

It is unclear how the site waste will be managed, therefore we would highlight that the activity on this site may involve a Mining Waste Environmental Permit. The details of this Environmental Permit will have to be approved by the Environment Agency before

Environment Agency  
Rivers House, Sunrise Business Park, Higher Shaftesbury Road, Blandford, Dorset, DT11 8ST.  
Customer services line: 03708 506 506  
[www.gov.uk/environment-agency](http://www.gov.uk/environment-agency)

Cont/d..

work commences. The applicant should consider the operations of the site against the published requirements:

<https://www.gov.uk/government/publications/environmental-permitting-guidance-the-mining-waste-directive>

#### NOTE TO LPA / LEAD LOCAL FLOOD AUTHORITY

##### Flood Risk

These comments do not constitute an objection from the Environment Agency as the Lead Local Flood Authority (Dorset County Council) Flood Risk Management team are the planning lead for surface water and groundwater flooding.

It is however our recommendation that the Flood Risk Assessment should include an estimate of the effect of more rapid travel times on high flows in the River Piddle during heavy rainfall events, i.e. Appendix 6, Table 9: Alteration to Aquifer Recharge - the statement that the alteration to recharge will be insignificant with the removal of circa 20m unsaturated zone should be supported with additional evidence or calculations.

Please contact us if you have any queries.

Yours sincerely

**MICHAEL HOLM**  
**Planning Advisor - Sustainable Places**



cc David Jarvis Associates Ltd.