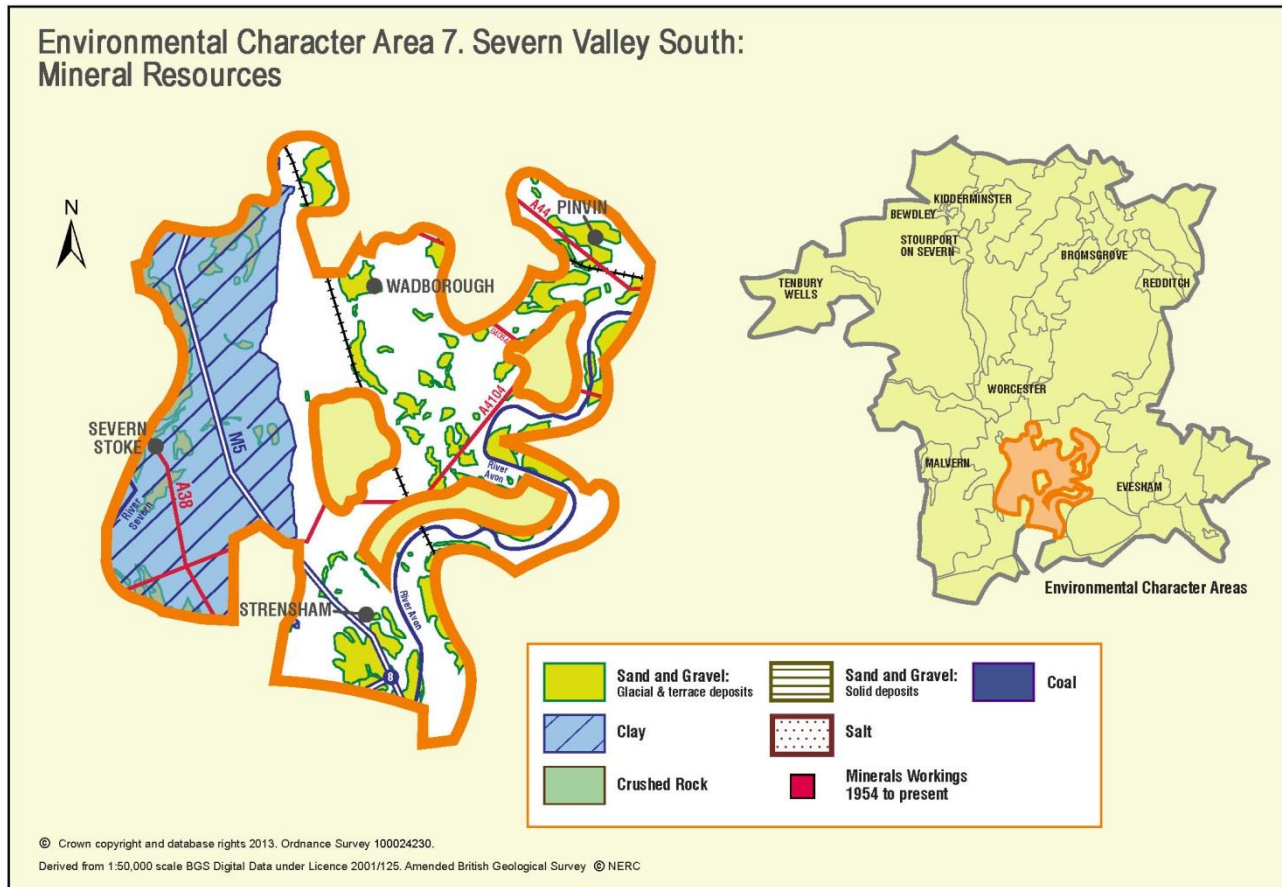


Appendix 7: Analysis of aggregate resources in ECA 7: Severn Valley South



ECA Summary for the Fourth Stage consultation on MLP (Winter 2018):

Sand and gravel

There are 29 resource areas identified for sand and gravel in Severn Valley South ECA:

- Key: 2
- Significant: 8
- Not significant: 8
- Compromised: 11

Crushed rock

There are no resource areas identified in Severn Valley South ECA for crushed rock.

Non-aggregates

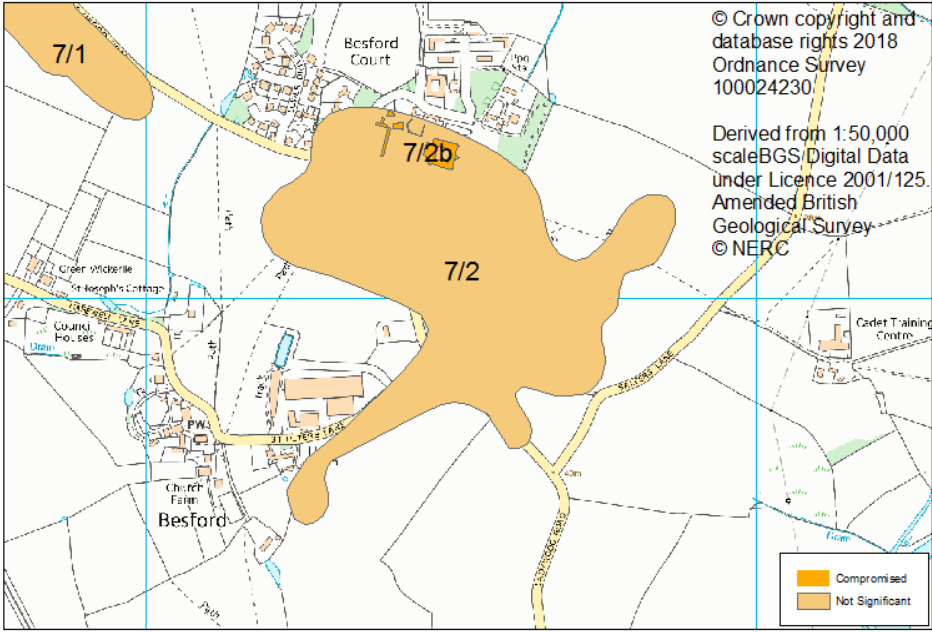
BGS data indicates that there are deposits of clay in this ECA.

Overview of resource assessment for ECA 7

Sand and gravel resource areas:

| Resource number* | Second Stage Consultation | | Third Stage Consultation | | Fourth Stage Consultation | | |
|------------------|--|-----------------|--|-----------------|---|--|-------------|
| | Original estimated resource tonnage (2 tonnes/m ³) | Significance | Revised estimate of resource tonnage (1.65 tonnes/m ³) | Significance | New resource number (where resource has been split) | Revised estimate of resource tonnage (1.65 tonnes/m ³) | Result |
| 7/1 | Depth not known | Not significant | Depth not known | Not significant | Not reassessed | | |
| 7/2 | Depth not known | Not significant | Depth not known | Not significant | | | |
| 7/3 | Depth not known | Significant | Depth not known | Significant | | Depth not known | Significant |
| 7/3 a | Depth not known | Compromised | Depth not known | Compromised | Not reassessed | | |
| 7/4 | 1,610,000 | Significant | 1,328,250 | Significant | 7/4 | 952,875 | Significant |
| | | | | | 7/4b | | Compromised |
| 7/5 | Depth not known | Significant | Depth not known | Significant | 7/5 | Depth not known | Significant |
| | | | | | 7/5b | | Compromised |
| 7/6 | 1,610,000 | Significant | 1,328,250 | Significant | | 1,328,250 | Significant |
| 7/7 | 110,000 | Compromised | 90,750 | Compromised | Not reassessed | | |
| 7/8 | 710,000 | Significant | 585,750 | Not significant | | | |
| 7/9 | Depth not known | Not significant | Depth not known | Not significant | | | |
| 7/10 | 336,000 | Not significant | 277,200 | Not significant | | | |
| 7/10a | 84,000 | Compromised | 69,300 | Compromised | | | |
| 7/11 | 896,000 | Significant | 739,200 | Significant | 7/11 | 716,100 | Significant |
| | | | | | 7/11b | | Compromised |
| 7/12 | 385,000 | Not significant | 317,625 | Not significant | Not reassessed | | |
| 7/13 | 4,968,000 | Key | 4,098,600 | Key | 7/13 | 3,853,575 | Key |
| | | | | | 7/13b | | Compromised |
| 7/14 | 2,576,000 | Key | 2,125,200 | Key | 7/14 | 2,011,350 | Key |
| | | | | | 7/14b | | Compromised |
| | | | | | 7/14c | | Compromised |
| 7/15 | 425,000 | Not significant | 350,625 | Not significant | Not reassessed | | |
| 7/16 | 868,000 | Significant | 716,100 | Significant | 7/16 | 716,100 | Significant |
| | | | | | 7/16b | | Compromised |
| 7/17 | 1,760,000 | Significant | 1,452,000 | Significant | 7/17 | 1,287,000 | Significant |
| | | | | | 7/17b | | Compromised |
| | | | | | 7/17c | | Compromised |
| 7/18 | 440,000 | Not significant | 363,000 | Not significant | Not reassessed | | |
| 7/19 | Not assessed | Not assessed | 1,540,000 | Significant | 7/19 | 1,540,000 | Significant |
| | | | | | 7/19b | | Compromised |

| Overview | |
|---|---|
| Resource number: | 7/1 |
| Resource name: | Croome Perry Wood |
| Resource area: | 36 ha |
| Resource depth: | Not known |
| Location | |
| OS sheet reference: | SO 94 NW |
| National grid ref: | 390494, 246028 |
| | |
| Resource description: | |
| Resource description: | A 4 th terrace (Ailstone) sand and gravel deposit. No information on depths available for this location. |
| Assessment of resource for the second consultation on MLP (Autumn 2013) | |
| Commentary: | A small deposit with small-scale dispersed development across the resource area. |
| Crude estimate of resource: | Depth not known. |
| Conclusion: | Not significant: Small deposit with no information to estimate the resource in this area. Not for consideration in defining areas of search. |
| Assessment of resource for the Third Stage consultation on MLP (Spring 2015) | |
| Revised estimate of resource: | No change to the assessment. |
| Conclusion: | Not significant. |
| Assessment of resource for the Fourth Stage consultation on MLP (August 2018) | |
| Not reassessed due to resource not being classified as Key or Significant in the Third Stage Consultation | |

| Overview | |
|--|---|
| Resource number: | 7/2 |
| Resource name: | Besford |
| Resource area: | 20 Ha |
| Resource depth: | Not known |
| Location | |
| OS sheet reference: | SO 94 NW |
| National grid ref: | 391501, 245044 |
|  <p>© Crown copyright and database rights 2018 Ordnance Survey 100024230</p> <p>Derived from 1:50,000 scale BGS Digital Data under Licence 2001/125. Amended British Geological Survey © NERC</p> | |
| Resource description: | |
| Resource description: | 4 th terrace (Ailstone) sand and gravel. No information on depths available for this location. |
| Assessment of resource for the second consultation on MLP (Autumn 2013) | |
| Commentary: | A small deposit with roads across the resource area and small-scale development at Besford Court in the north of the resource area. |
| Crude estimate of resource: | Depth not known. |
| Conclusion: | Not significant: Small deposit with no information to estimate the resource in this area. Not for consideration in defining areas of search. |
| Assessment of resource for the Third Stage consultation on MLP (Spring 2015) | |
| Revised estimate of resource: | No change to the assessment. |
| Conclusion: | Not significant. |
| Assessment of resource for the Fourth Stage consultation on MLP (August 2018) | |
| Not reassessed due to resource not being classified as Key or Significant in the Third Stage Consultation | |

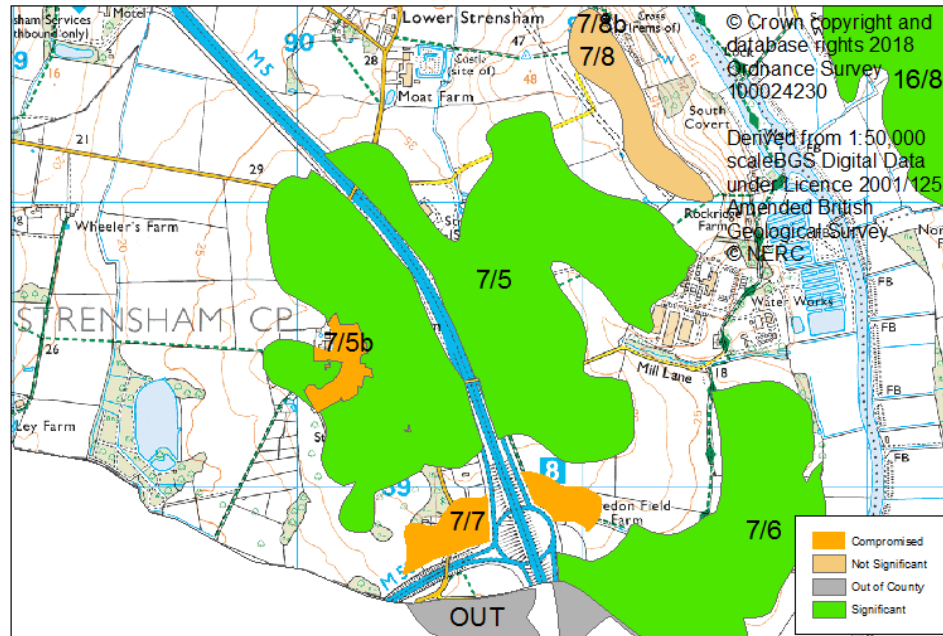
| Overview | |
|---|---|
| Resource number: | 7/3 |
| Resource name: | Pinvin |
| Resource area: | 68 ha |
| Resource depth: | Not known |
| Location | |
| OS sheet reference: | SO 94 NE |
| National grid ref: | 395439, 248723 |
| | |
| Resource description: | |
| Resource description: | A 3 rd terrace (New Inn) sand and gravel depoist. No information on depths available for this location. |
| Assessment of resource for the second consultation on MLP (Autumn 2013) | |
| Commentary: | A medium-sized resource area partially compromised by the village of Pinvin. The deposit extends to the south beneath Pershore. The section south of the A44 is not considered in this resource area as it is overlain by Pershore. |
| Crude estimate of resource: | Depth not known |
| Conclusion: | Significant. Consider in defining areas of search. |
| Assessment of resource for the Third Stage consultation on MLP (Spring 2015) | |
| Revised estimate of resource: | No change to the assessment. |
| Conclusion: | Significant. |
| Assessment of resource for the Fourth Stage consultation on MLP (August 2018) | |
| Resource area: | 59 ha |
| Resource depth: | Depth not known |
| Revised estimate of resource: | Depth not known |
| Conclusion: | Significant resource |

| | |
|---|---|
| Overview | |
| Resource number: | 7/3a |
| Resource name: | Pershore Station |
| Resource area: | 22 ha |
| Resource depth: | Not known |
| Location | |
| OS sheet reference: | SO 94 NE |
| National grid ref: | 395231, 247948 |
| | |
| Resource description: | |
| Resource description: | A 3 rd terrace (New Inn) sand and gravel deposit. No information on depths available for this location. |
| Assessment of resource for the second consultation on MLP (Autumn 2013) | |
| Commentary: | A medium-sized resource area partially compromised by the village of Pinvin. The deposit extends to the south beneath Pershore. The section south of the A44 is not considered in this resource area as it is overlain by Pershore. |
| Crude estimate of resource: | Depth not known |
| Conclusion: | Compromised by development. |
| Assessment of resource for the Third Stage consultation on MLP (Spring 2015) | |
| Revised estimate of resource: | No change to the assessment. |
| Conclusion: | Compromised by development. |
| Assessment of resource for the Fourth Stage consultation on MLP (August 2018) | |
| Not reassessed due to resource not being classified as Key or Significant in the Third Stage Consultation | |

| Overview | |
|---|---|
| Resource number: | 7/4 |
| Resource name: | South west of Pershore |
| Resource area: | 46 ha |
| Resource depth: | Estimated 3.5m |
| Location | |
| OS sheet reference: | SO 94 NE |
| National grid ref: | 394445, 247421 |
| | |
| Resource description: | |
| Resource description: | 2 nd terrace (Wasperton) and 3 rd terrace (New Inn) sand and gravel. In gravel pits in the 2 nd terrace at Lower Moor, to the east of this resource area, from 2.4-4.6m of sand with gravelly layers are exposed. There is no information to estimate the depth of the 3 rd terrace in this location. (Estimated resource depth based on Lower Moor Gravel pits (median average of 2.4 to 4.6 = 3.5)) |
| Assessment of resource for the second consultation on MLP (Autumn 2013) | |
| Commentary: | A small deposit with small-scale development on the periphery of the resource area. |
| Crude estimate of resource: | Area: 46 ha x average depth: 3.5 m ÷ 2 Estimated resource: 805,000 m ³ . Estimated resource tonnage (at 2 t/m³): 1,610,000 tonnes |
| Conclusion: | Significant. Consider in defining areas of search. |
| Assessment of resource for the Third Stage consultation on MLP (Spring 2015) | |
| Revised estimate of resource: | Area: 46 ha x average depth: 3.5 m ÷ 2 Estimated resource: 805,000 m ³ . Estimated resource tonnage (at 1.65 t/m³): 1,328,250 tonnes |
| Conclusion: | Significant. |
| Assessment of resource for the Fourth Stage consultation on MLP (August 2018) | |
| This resource area has been split into areas 7/4 and 7/4b. | |
| Resource area 7/4 | Resource area 7/4b |

| | | | |
|--------------------------------------|---|--------------------|---|
| Resource area: | 33 ha | Commentary: | Screened out due to the following appendix A criterion: <ul style="list-style-type: none"> - Allocated site in South Worcestershire Development Plan - Settlement Boundary |
| Resource depth: | Estimated 3.5m | | |
| Revised estimate of resource: | Area: 33 ha x average depth: 3.5m ÷ 2 Estimated resource volume: 577,500 m ³ Estimated resource tonnage (at 1.65 t/m³): 952,875 tonnes | | |
| Conclusion: | Significant resource | Conclusion: | Compromised |

| Overview | |
|---------------------|----------------|
| Resource number: | 7/5 |
| Resource name: | Strensham |
| Resource area: | 120 ha |
| Resource depth: | Not known |
| Location | |
| OS sheet reference: | SO 93 NW |
| National grid ref: | 390571, 239623 |



| Resource description: | |
|---|---|
| Resource description: | 2 nd terrace (Wasperton) sand and gravel. No information on depths available for this location. |
| Assessment of resource for the second consultation on MLP (Autumn 2013) | |
| Commentary: | A medium-sized deposit bisected by the M5 and partially compromised by the village of Upper Strensham and the motorway service area. The area overlain by the M5 is not considered as part of this resource area. |
| Crude estimate of resource: | Depth not known |
| Conclusion: | Significant. Consider in defining areas of search. |
| Assessment of resource for the Third Stage consultation on MLP (Spring 2015) | |
| Revised estimate of resource: | No change to the assessment. |
| Conclusion: | Significant. |
| Assessment of resource for the Fourth Stage consultation on MLP (August 2018) | |
| This resource area has been split into areas 7/5 and 7/5b. | |
| Resource area 7/5 | |
| Resource area: | 116 ha |
| Resource depth: | Depth not known |
| Revised estimate of resource: | Depth not known |
| Resource area 7/5b | |
| Commentary: | Screened out due to the following appendix A criterion: <ul style="list-style-type: none"> - Listed Buildings - Settlement Boundary |

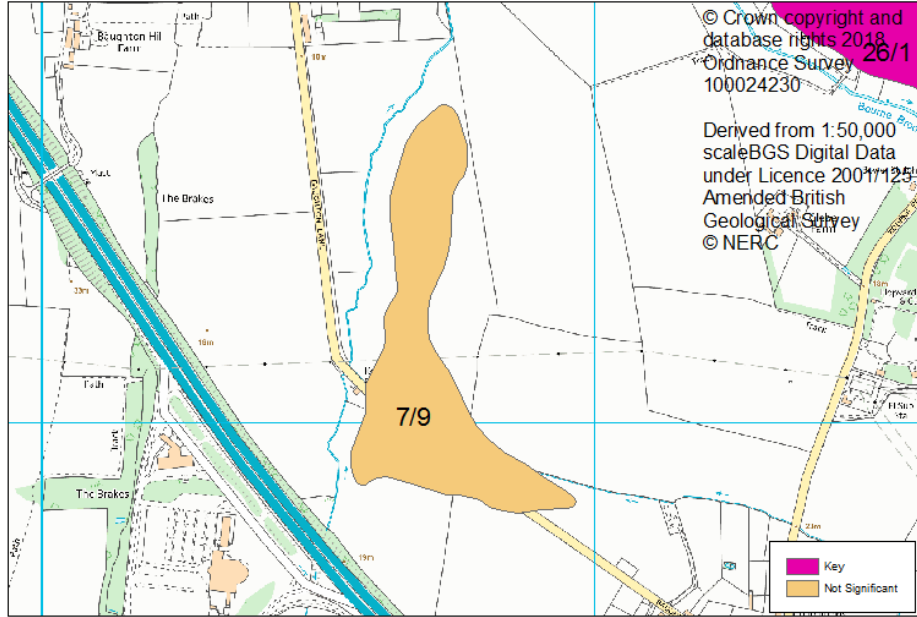
| | | | |
|--------------------|----------------------|--------------------|-------------|
| Conclusion: | Significant resource | Conclusion: | Compromised |
|--------------------|----------------------|--------------------|-------------|

| | | |
|--|--|--|
| Overview | | |
| Resource number: | 7/6 | |
| Resource name: | Bredon Fields | |
| Resource area: | 46 ha | |
| Resource depth: | 3.5m | |
| Location | | |
| OS sheet reference: | SO 93 NW | |
| National grid ref: | 391487, 238820 | |
| Resource description: | | |
| Resource description: | <p>1st terrace (Bretford) and 2nd Avon terrace (Wasperton) sand and gravel. The memoir subdivides the 2nd terrace into a lower part 2a and an upper part 2b, resting upon two distinct benches. At Bredon Fields the terraces are contiguous, there are no boreholes or exposures recorded in the memoir but in common with other 2nd terraces in the Avon Valley the deposit is probably a sandy gravel with bunter pebbles. A ditch section south-south-east of Bredon Fields revealed 1m of pale brown medium-grained sand containing bunter pebbles and an M5 borehole 250m into Gloucestershire recorded 2.7m of sand and gravel on 3.1m of clayey sand (total 5.8m). Trial holes near Bredon Fields Cottages proved up to a maximum of 4.7m of sand and gravel, and at Twyning Green in Gloucestershire the terrace was formerly worked to a depth of 4.6m.</p> <p>A Cemex application (2009) for the eastern part of this deposit showed an depth of between 0m and 3.4m, averaging 1.22m across the application area but stated that within the outcrop of terrace deposits the average thickness is 2.5m.</p> <p>(Estimated resource depth based on mean average of: a) Bredon Fields: 1m, b) M5 borehole: 5.8m, c) Trial holes near Bredon fields cottages: 4.7m, d) Twyning Green: 4.6m and e) Cemex application average: 1.22m = 3.5m)</p> | |
| Assessment of resource for the second consultation on MLP (Autumn 2013) | | |
| Commentary: | A small resource area with very small-scale development. The deposit extends to the west into Gloucestershire. | |
| Crude estimate of resource: | Area: 46ha x average depth: 3.5 ÷ 2 Estimated resource volume: 805,000 m ³ . | |

| | |
|--|---|
| | Estimated resource tonnage (at 2 t/m³): 1,610,000 tonnes |
| Conclusion: | Significant. Consider in defining areas of search. |
| Assessment of resource for the Third Stage consultation on MLP (Spring 2015) | |
| Revised estimate of resource: | Area: 46ha x average depth: 3.5 ÷ 2 Estimated resource volume: 805,000 m ³ . Estimated resource tonnage (at 1.65 t/m³): 1,328,250 tonnes |
| Conclusion: | Significant. |
| Assessment of resource for the Fourth Stage consultation on MLP (August 2018) | |
| Resource area: | 46 ha |
| Resource depth: | 3.5m |
| Revised estimate of resource: | Area: 46ha x average depth: 3.5 ÷ 2 Estimated resource volume: 805,000 m ³ . Estimated resource tonnage (at 1.65 t/m³): 1,328,250 tonnes |
| Conclusion: | Significant resource |

| | |
|---|---|
| Overview | |
| Resource number: | 7/7 |
| Resource name: | Junction 8 of the M5 |
| Resource area: | 8 ha |
| Resource depth: | 1m |
| Location | |
| OS sheet reference: | SO 93 NW |
| National grid ref: | 390711, 238896 |
| | |
| Resource description: | |
| Resource description: | 4 th terrace (Cropthorne) sand and gravel. A shallow trench at Showborough Lodge showed 1m of sandy bunter gravel overlying grey lias clay. (Estimated resource depth 1m) |
| Assessment of resource for the second consultation on MLP (Autumn 2013) | |
| Commentary: | A small deposit over half of which is compromised by Junction 8 of the M5 and other small-scale development. The area under the motorway is excluded from assessment, leaving only 8ha remaining. |
| Crude estimate of resource: | Area: 11ha x average depth: 1m ÷ 2 Estimated resource volume: 55,000m ³ . Estimated resource tonnage (at 2 t/m³): 110,000 tonnes |
| Conclusion: | Compromised by development with less than 10ha of the deposit remaining. |
| Assessment of resource for the Third Stage consultation on MLP (Spring 2015) | |
| Revised estimate of resource: | Area: 11ha x average depth: 1m ÷ 2 Estimated resource volume: 55,000m ³ . Estimated resource tonnage (at 1.65 t/m³): 90,750 tonnes |
| Conclusion: | Compromised by development. |
| Assessment of resource for the Fourth Stage consultation on MLP (August 2018) | |
| Not reassessed due to resource not being classified as Key or Significant in the Third Stage Consultation | |

| Overview | |
|---|--|
| Resource number: | 7/8 |
| Resource name: | Strensham Church |
| Resource area: | 10 ha |
| Resource depth: | 7.1m |
| Location | |
| OS sheet reference: | SO 94 SW |
| National grid ref: | 391168, 240334 |
| | |
| Resource description: | |
| Resource description: | 6 th terrace (Spring Hill) sand and gravel. 7.2m of pebbly sand, rather clayey in the upper half, were exposed to the west during the construction of the M50, although in general the maximum thickness of the 6 th terrace deposits is likely to be 7m. (Estimated resource depth based on average depth calculated as: $7.2\text{m} + 7\text{m} / 2 = 7.1\text{m}$) |
| Assessment of resource for the second consultation on MLP (Autumn 2013) | |
| Commentary: | A small deposit with small-scale development on the northern periphery of the resource area. |
| Crude estimate of resource: | Area: 10ha x average depth: 7.1m ÷ 2 Estimated resource: 355,000m ³ Estimated resource tonnage (at 2 t/m³): 710,000 tonnes |
| Conclusion: | Significant. Consider in defining areas of search. |
| Assessment of resource for the Third Stage consultation on MLP (Spring 2015) | |
| Revised estimate of resource: | Area: 10ha x average depth: 7.1m ÷ 2 Estimated resource: 355,000m ³ Estimated resource tonnage (at 1.65 t/m³): 585,750 tonnes |
| Conclusion: | Change to conclusion: Not significant. |
| Assessment of resource for the Fourth Stage consultation on MLP (August 2018) | |
| Not reassessed due to resource not being classified as Key or Significant in the Third Stage Consultation | |

| Overview | |
|---|--|
| Resource number: | 7/9 |
| Resource name: | Baughton Lane |
| Resource area: | 10 ha |
| Resource depth: | Not known |
| Location | |
| OS sheet reference: | SO 84 SE |
| National grid ref: | 389706, 241129 |
|  | |
| Resource description: | |
| Resource description: | 2 nd terrace (Wasperton) sand and gravel. The memoir subdivides the 2 nd terrace into a lower part 2a and an upper part 2b, resting upon two distinct benches. No information on depths available for this location. |
| Assessment of resource for the second consultation on MLP (Autumn 2013) | |
| Commentary: | A small deposit with Baughton Lane intersecting the southern end but no other built development in the resource area. |
| Crude estimate of resource: | Depth not known |
| Conclusion: | Not significant: Small deposit with no information to estimate the resource in this area. Not for consideration in defining areas of search. |
| Assessment of resource for the Third Stage consultation on MLP (Spring 2015) | |
| Revised estimate of resource: | No change to the assessment. |
| Conclusion: | Not significant. |
| Assessment of resource for the Fourth Stage consultation on MLP (August 2018) | |
| Not reassessed due to resource not being classified as Key or Significant in the Third Stage Consultation | |

| Overview | |
|--|---|
| Resource number: | 7/10 |
| Resource name: | Defford |
| Resource area: | 16 ha |
| Resource depth: | 2.1m |
| Location | |
| OS sheet reference: | SO 94 SW |
| National grid ref: | 392120, 243555 |
| | |
| Resource description: | |
| Resource description: | <p>2nd terrace (Wasperton) and 3rd terrace (New Inn) sand and gravel. The only section recorded in the memoir showing the 2nd terrace is south-east of Birlingham which showed pebbly sand to 1m overlying 0.3m (seen) of sand and gravel with pebbles (total 1.3m). 3rd terrace maximum thickness is likely to be 2-3m. The 2nd Avon terrace deposits are proven in one borehole at Defford. There, 3.7m of sand and gravel lay beneath 1.2m of overburden. No boreholes are located in the 3rd Avon terrace but at disused pit at Old Fallows (near Little Comberton, approximately 5km east of this resource area) exposed 3m of sand and gravel on lias clay. However, south of Crophorne these deposits are much thinner (0.05m to 0.15m).</p> <p>(Estimated resource depth based on mean average of: a) section south-east of Birlingham: 1.3m, b) 3rd terrace likely maximum thickness (median average 2 to 3 m = 2.5m), c) borehole at Defford: 3.7m, d) disused pit at Old Fallows: 3m, e) south of Crophorne (median average 0.05m to 0.15m = 0.1m) = 2.1 m)</p> |
| Assessment of resource for the second consultation on MLP (Autumn 2013) | |
| Commentary: | A small resource area scattered development throughout the resource area. The deposit extends under the village of Defford, this section is considered separately as resource area 7/10a. |
| Crude estimate of resource: | <p>Area: 16ha x average depth: 2.1m ÷ 2</p> <p>Estimated resource volume: 168,000m³.</p> <p>Estimated resource tonnage (at 2 t/m³): 336,000 tonnes</p> |
| Conclusion: | <p>Not significant: Small deposit with less than 300,000m³.</p> <p>Not for consideration in defining areas of search.</p> |
| Assessment of resource for the Third Stage consultation on MLP (Spring 2015) | |

| | |
|---|---|
| Revised estimate of resource: | Area: 16ha x average depth: 2.1m ÷ 2 Estimated resource volume: 168,000m ³ . Estimated resource tonnage (at 1.65 t/m³): 277,200 tonnes |
| Conclusion: | Not significant. |
| Assessment of resource for the Fourth Stage consultation on MLP (August 2018) | |
| Not reassessed due to resource not being classified as Key or Significant in the Third Stage Consultation | |

| Overview | |
|--|--|
| Resource number: | 7/10a |
| Resource name: | Defford a) |
| Resource area: | 4 ha |
| Resource depth: | 2.1m |
| Location | |
| OS sheet reference: | SO 94 SW |
| National grid ref: | 392120, 243555 |
| | |
| Resource description: | |
| Resource description: | <p>2nd terrace (Wasperton) and 3rd terrace (New Inn) sand and gravel. The only section recorded in the memoir showing the 2nd terrace is south-east of Birlingham which showed pebbly sand to 1m overlying 0.3m (seen) of sand and gravel with pebbles (total 1.3m). 3rd terrace maximum thickness is likely to be 2-3m.</p> <p>The 2nd Avon terrace deposits are proven in one borehole at Defford. There, 3.7m of sand and gravel lay beneath 1.2m of overburden. No boreholes are located in the 3rd Avon terrace but at disused pit at Old Fallows (near Little Comberton, approximately 5km east of this resource area) exposed 3m of sand and gravel on lias clay. However, south of Crophorne these deposits are much thinner (0.05m to 0.15m).</p> <p>(Estimated resource depth based on mean average of: a) section south-east of Birlingham: 1.3m, b) 3rd terrace likely maximum thickness (median average 2 to 3 m = 2.5m), c) borehole at Defford: 3.7m, d) disused pit at Old Fallows: 3m, e) south of Crophorne (median average 0.05m to 0.15m = 0.1m) = 2.1 m)</p> |
| Assessment of resource for the second consultation on MLP (Autumn 2013) | |
| Commentary: | A small resource area compromised by the village of Defford. The deposit extends to the north and east of the village, this section is considered separately as resource area 7/10. |
| Crude estimate of resource: | <p>Area: 4ha x average depth: 2.1m ÷ 2</p> <p>Estimated resource volume: 42,000 m³.</p> <p>Estimated resource tonnage (at 2 t/m³): 84,000 tonnes</p> |
| Conclusion: | Compromised by development. |
| Assessment of resource for the Third Stage consultation on MLP (Spring 2015) | |

| | |
|---|---|
| Revised estimate of resource: | Area: 4ha x average depth: 2.1m ÷ 2 Estimated resource volume: 42,000 m ³ . Estimated resource tonnage (at 1.65 t/m³): 69,300 tonnes |
| Conclusion: | Compromised by development. |
| Assessment of resource for the Fourth Stage consultation on MLP (August 2018) | |
| Not reassessed due to resource not being classified as Key or Significant in the Third Stage Consultation | |

| Overview | |
|---|---|
| Resource number: | 7/11 |
| Resource name: | Allesborough Hill |
| Resource area: | 32 ha |
| Resource depth: | 2.8m |
| Location | |
| OS sheet reference: | SO 94 NW |
| National grid ref: | 393899, 246208 |
| | |
| Resource description: | |
| Resource description: | 5 th terrace (Pershore) sand and gravel. A single borehole in 5 th Severn terrace deposits at Besford proved 2.8m of sand with stones including a waste parting 1.2m thick (in the absence of evidence that this waste parting is common across the deposit, we have assumed a depth of 2.8m). Wills (1938) noted 2.7m of sand with some gravel in the terrace at Besford Court. (Estimated resource depth based on average depth calculated as: $2.7m + 2.8m / 2 = 2.75m$) |
| Assessment of resource for the second consultation on MLP (Autumn 2013) | |
| Commentary: | A small deposit with small-scale dispersed development across the resource area. |
| Crude estimate of resource: | Area: 32ha x average depth: $2.8m \div 2$ Estimated resource volume: 448,000m ³ . Estimated resource tonnage (at 2 t/m³): 896,000 tonnes |
| Conclusion: | Significant. Consider in defining areas of search. |
| Assessment of resource for the Third Stage consultation on MLP (Spring 2015) | |
| Revised estimate of resource: | Area: 32ha x average depth: $2.8m \div 2$ Estimated resource volume: 448,000m ³ . Estimated resource tonnage (at 1.65 t/m³): 739,200 tonnes |
| Conclusion: | Significant. |
| Assessment of resource for the Fourth Stage consultation on MLP (August 2018) | |
| This resource area has been split into areas 7/11 and 7/11b. | |
| Resource area 7/11 | Resource area 7/11b |

| | | | |
|--------------------------------------|---|--------------------|--|
| Resource area: | 31 ha | Commentary: | Screened out due to the following appendix A criterion: <ul style="list-style-type: none"> - Listed Buildings - Settlement Boundary |
| Resource depth: | 2.8m | | |
| Revised estimate of resource: | Area: 31ha x average depth: 2.1m ÷ 2 Estimated resource volume: 434,000m ³ . Estimated resource tonnage (at 1.65 t/m³): 716,100 tonnes | | |
| Conclusion: | Significant resource | Conclusion: | Compromised |

| Overview | |
|---|--|
| Resource number: | 7/12 |
| Resource name: | Wyre Road |
| Resource area: | 11 ha |
| Resource depth: | 3.5m |
| Location | |
| OS sheet reference: | SO 94 NE |
| National grid ref: | 395481, 247423 |
| <p>© Crown copyright and database rights 2018 Ordnance Survey 100024230</p> <p>Derived from 1:50,000 scale BGS Digital Data File under Licence 2001/125. Amended British Geological Survey © NERC</p> | |
| Resource description: | |
| Resource description: | 2 nd terrace (Wasperton) sand and gravel. In gravelpits in the 2 nd terrace at Lower Moor, to the east of this resource area, from 2.4-4.6m of sand with gravelly layers are exposed. (Estimated resource depth based on median average of 2.4m to 4.6m = 3.5m) |
| Assessment of resource for the second consultation on MLP (Autumn 2013) | |
| Commentary: | A small deposit partially compromised by development. |
| Crude estimate of resource: | Area: 11ha x average depth: 3.5m ÷ 2 Estimated resource volume: 192,500m ³ . Estimated resource tonnage (at 2 t/m³): 385,000 tonnes |
| Conclusion: | Not significant: Small deposit with less than 300,000m ³ . Not for consideration in defining areas of search. |
| Assessment of resource for the Third Stage consultation on MLP (Spring 2015) | |
| Revised estimate of resource: | Area: 11ha x average depth: 3.5m ÷ 2 Estimated resource volume: 192,500m ³ . Estimated resource tonnage (at 1.65 t/m³): 317,625 tonnes |
| Conclusion: | Not significant. |
| Assessment of resource for the Fourth Stage consultation on MLP (August 2018) | |
| Not reassessed due to resource not being classified as Key or Significant in the Third Stage Consultation | |

| | |
|--|---|
| Overview | |
| Resource number: | 7/13 |
| Resource name: | Wadborough Park Farm |
| Resource area: | 184 ha |
| Resource depth: | 2.7m |
| Location | |
| OS sheet reference: | SO 84 NE, SO 85 SE, SO 94 NW |
| National grid ref: | 389951, 249176 |
| | |
| Resource description: | |
| Resource description: | 5 th terrace (Pershore) sand and gravel. The most significant occurrences of the 5 th Severn terrace are on the east bank of the Severn between Hatfield and Besford where the deposits comprise sandy and clayey gravels containing Sherwood Sandstone Group clasts. The deposits are believed to be thin, although Wills (1938) noted 2.7m of sand with some gravel in the terrace Besford Court and similar thicknesses were proved in a borehole in that area. (Estimated resource depth based on Wills: 2.7m) |
| Assessment of resource for the second consultation on MLP (Autumn 2013) | |
| Commentary: | A medium-sized deposit partially compromised by the villages of Wadborough in the south and Stoulton in the north-east. Other scattered development throughout the resource area. |
| Crude estimate of resource: | Area: 184 ha x average depth: 2.7m ÷ 2 Estimated resource: 2,484,000 m ³ Estimated resource tonnage (at 2 t/m³): 4,968,000 |
| Conclusion: | Significant – key resource. Use to define areas of search. |
| Assessment of resource for the Third Stage consultation on MLP (Spring 2015) | |
| Revised estimate of resource: | Area: 184 ha x average depth: 2.7m ÷ 2 Estimated resource: 2,484,000 m ³ Estimated resource tonnage (at 1.65 t/m³): 4,098,600 tonnes |
| Conclusion: | Significant – key resource. |
| Assessment of resource for the Fourth Stage consultation on MLP (August 2018) | |

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|--|--|----------------------------|--|
| This resource area has been split into areas 7/13 and 7/13b. | | | |
| Resource area 7/13 | | Resource area 7/13b | |
| Resource area: | 173 ha | Commentary: | Screened out due to the following appendix A criterion: <ul style="list-style-type: none"> - Ancient Semi-Natural Woodland - Conservation Area - Listed Buildings - Settlement Boundary |
| Resource depth: | 2.7m | | |
| Revised estimate of resource: | Area: 173ha x average depth: 2.7m ÷ 2 Estimated resource volume: 2,335,500m ³ . Estimated resource tonnage (at 1.65 t/m³): 3,853,575 tonnes | | |
| Conclusion: | Key resource | Conclusion: | Compromised |

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|------------------------------|---|--|
| Overview | | <p>Derived from 1:50,000 scale BGS Digital Data under Licence 2001/125, Amended British Geological Survey, © NERC</p> <p>© Crown copyright and database rights 2018 Ordnance Survey 100024230</p> |
| Resource number: | 7/14 | |
| Resource name: | Stonehall | |
| Resource area: | 112 ha | |
| Resource depth: | Estimated 2.3m | |
| Location | | |
| OS sheet reference: | SO 84 NE, SO 85 SE | |
| National grid ref: | 387819, 249093 | |
| Resource description: | | |
| Resource description: | <p>6th terrace (Spring Hill) sand and gravel. A large, irregular spread of 6th terrace caps slopes at Stonehall. The terrace consists mostly of red to orange-brown sand, seen in disused working on Kempsey Common. The topography suggests a thickness of 3-4m although resistivity soundings indicate a more variable thickness between 0.6m and 0.7m at one sounding and 2.0 to 3.7m at a second sounding.</p> <p>Estimated resource depth based on mean average calculated as: a) topography: (median average of 3m to 4m = 3.5m), b) resistivity sounding 1: (median average of 0.6m to 0.7m = 0.65m), c) resistivity sounding 2: (median average of 2.0m to 3.7m = 2.85m) = 2.3m</p> | |

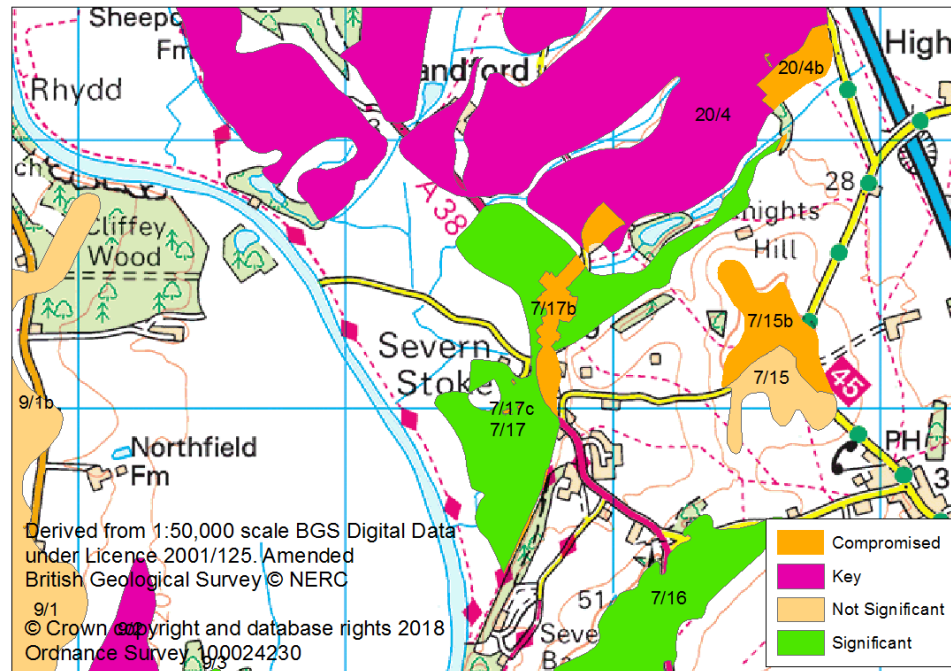
| Assessment of resource for the second consultation on MLP (Autumn 2013) | | | |
|--|--|----------------------------|---|
| Commentary: | A medium-sized deposit with dispersed development throughout the resource area, including the hamlets of Stonehall and Hatfield. | | |
| Crude estimate of resource: | Area: 112 ha x average depth: 2.3m ÷ 2 Estimated resource: 1,288,000 m ³ Estimated resource tonnage (at 2 t/m³): 2,576,000 | | |
| Conclusion: | Significant – key resource. Use to define areas of search. | | |
| Assessment of resource for the Third Stage consultation on MLP (Spring 2015) | | | |
| Revised estimate of resource: | Area: 112 ha x average depth: 2.3m ÷ 2 Estimated resource: 1,288,000 m ³ Estimated resource tonnage (at 1.65 t/m³): 2,125,200 tonnes | | |
| Conclusion: | Significant – key resource. | | |
| Assessment of resource for the Fourth Stage consultation on MLP (August 2018) | | | |
| This resource area has been split into areas 7/14 and 7/14b. | | | |
| Resource area 7/14 | | Resource area 7/14b | |
| Resource area: | 106 ha | Commentary: | Screened out due to the following appendix A criterion: - Settlement Boundary |
| Resource depth: | 2.3m | | |
| Revised estimate of resource: | Area: 106ha x average depth: 2.3m ÷ 2 Estimated resource volume: 1,219,000m ³ . Estimated resource tonnage (at 1.65 t/m³): 2,011,350 tonnes | | |
| Conclusion: | Key resource | Conclusion: | Compromised |
| Assessment of resource for the Fourth Stage consultation on MLP (November 2018) | | | |
| This resource area has been split into areas 7/14 and 7/14c. | | | |
| Resource area 7/14 | | Resource area 7/14c | |
| Resource area: | 106 ha | Commentary: | Screened out due to the following appendix A criterion: - Scheduled Ancient Monument |
| Resource depth: | 2.3m | | |
| Revised estimate of resource: | Area: 106ha x average depth: 2.3m ÷ 2 Estimated resource volume: 1,219,000m ³ . Estimated resource tonnage (at 1.65 t/m³): 2,011,350 tonnes | | |
| Conclusion: | Key resource | Conclusion: | Compromised |

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|---|---|
| Overview | |
| Resource number: | 7/15 |
| Resource name: | South of Knights Hill |
| Resource area: | 17 ha |
| Resource depth: | Estimated 2.5m |
| Location | |
| OS sheet reference: | SO 84 SE |
| National grid ref: | 386599, 244192 |
| | |
| Resource description: | |
| Resource description: | 6 th terrace (Spring Hill). A small exposure in this resource area (in the region of the ponds north of Madge Hill) shows about 1m of red-brown pebbly sand with gravel lenses, the pebbles being mostly less than 10mm in diameter. Resistivity soundings show thicknesses up to 1.9m to 3.1m. Estimated resource depth based on median average of 1.9m to 3.1m = 2.5m |
| Assessment of resource for the second consultation on MLP (Autumn 2013) | |
| Commentary: | A small deposit intersected by roads. |
| Crude estimate of resource: | Area: 17 ha x average depth: 2.5m ÷ 2 Estimated resource: 212,500 m ³ Estimated resource tonnage (at 2 t/m³): 425,000 tonnes |
| Conclusion: | Not significant: Small deposit with less than 300,000m ³ . Not for consideration in defining areas of search. |
| Assessment of resource for the Third Stage consultation on MLP (Spring 2015) | |
| Revised estimate of resource: | Area: 17 ha x average depth: 2.5m ÷ 2 Estimated resource: 212,500 m ³ Estimated resource tonnage (at 1.65 t/m³): 350,625 tonnes |
| Conclusion: | Not significant. |
| Assessment of resource for the Fourth Stage consultation on MLP (August 2018) | |
| Not reassessed due to resource not being classified as Key or Significant in the Third Stage Consultation | |

| Overview | |
|---|---|
| Resource number: | 7/16 |
| Resource name: | Hollybeds Farm |
| Resource area: | 28 ha |
| Resource depth: | Estimated 3.1m |
| Location | |
| OS sheet reference: | SO 84 SE |
| National grid ref: | 386097, 243146 |
| | |
| Resource description: | |
| Resource description: | 6 th terrace (Spring Hill) sand and gravel. Field evidence suggests a generally coarser grade of gravel than that in resource area 7/15, with numerous pebbles up to 0.1m diameter spread over the fields, comprising predominantly bunter quartzites, with rare flints, granitic rocks and other exotic pebbles. Resistivity soundings show thicknesses between 2.7m to 3.4m. Estimated resource depth based on average of 2.7m to 3.4m = 3.1m |
| Assessment of resource for the second consultation on MLP (Autumn 2013) | |
| Commentary: | A small deposit intersected by the A38 and with small-scale development on the periphery of the resource area. |
| Crude estimate of resource: | Area: 28 ha x average depth: 3.1m ÷ 2 Estimated resource: 434,000 m ³ Estimated resource tonnage (at 2 t/m³): 868,000 tonnes |
| Conclusion: | Significant. Consider in defining areas of search. |
| Assessment of resource for the Third Stage consultation on MLP (Spring 2015) | |
| Revised estimate of resource: | Area: 28 ha x average depth: 3.1m ÷ 2 Estimated resource: 434,000 m ³ Estimated resource tonnage (at 1.65 t/m³): 716,100 tonnes |
| Conclusion: | Significant. |
| Assessment of resource for the Fourth Stage consultation on MLP (August 2018) | |

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| This resource area has been split into areas 7/16 and 7/16b. | | | |
| Resource area 7/16 | | Resource area 7/16b | |
| Resource area: | 28 ha | Commentary: | Screened out due to the following appendix A criterion: - Listed Buildings |
| Resource depth: | 3.1m | | |
| Revised estimate of resource: | Area: 28ha x average depth: 3.1m ÷ 2 Estimated resource volume: 434,000m ³ . Estimated resource tonnage (at 1.65 t/m³): 716,100 tonnes | | |
| Conclusion: | Significant resource | Conclusion: | Compromised |

| | |
|----------------------------|--------------------|
| Overview | |
| Resource number: | 7/17 |
| Resource name: | Severn Stoke |
| Resource area: | 44 ha |
| Resource depth: | 4m |
| Location | |
| OS sheet reference: | SO 84 SE, SO 84 NE |
| National grid ref: | 385739, 244219 |

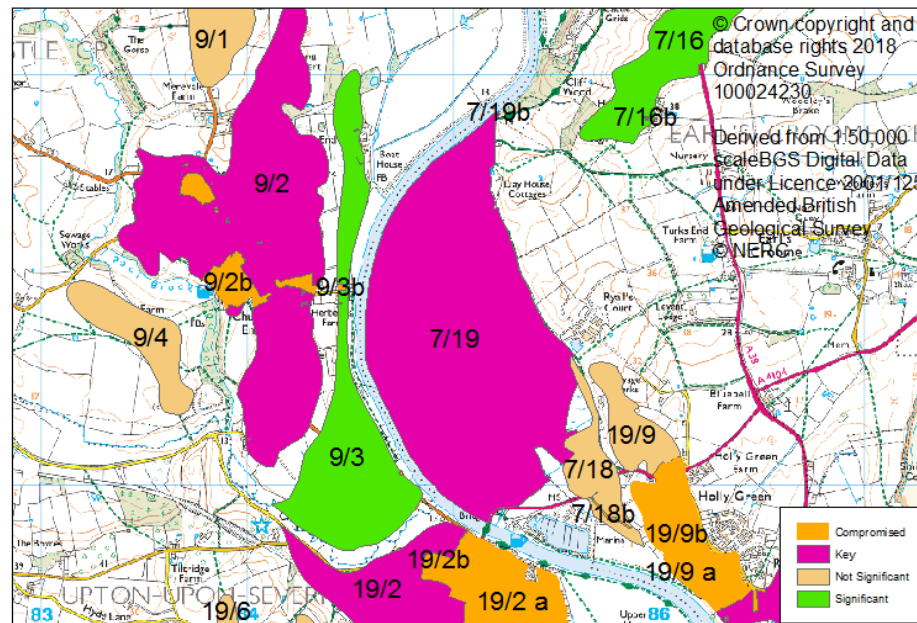


| | |
|------------------------------|--|
| Resource description: | 2 nd terrace (Worcester) and 3 rd terrace (Holt Heath) sand and gravel. |
| Resource description: | <p>One borehole in the 2nd terrace within a built-up area of Kempsey proved 3.1m of sand and gravel beneath 0.3m of overburden. Another east of Baynhall Farm found 7.6m of sand and gravel beneath 0.6m of overburden.</p> <p>There are no boreholes in the 3rd terrace and no exposures recorded but the terrace generally comprises gravel, sandy gravel and sand which may be clayey or cobbly in part. The maximum known thickness is 5.2m of overburden overlying 3m of gravel (in St Johns Worcester) but between 1m and 6m is probably the</p> |

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| common range for the terrace. (Estimated resource depth based on mean average of: a) borehole at Kempsey (median average 3.1m to 7.6m = 5.35m), b) St Johns: 3m, c) common range for the terrace: (average 1m to 6m = 3.5m) / 3 = 4m) | | | |
| Assessment of resource for the second consultation on MLP (Autumn 2013) | | | |
| Commentary: | | A small deposit partially compromised by the village of Severn Stoke and intersected by the A38. | |
| Crude estimate of resource: | | Area: 44ha x average depth: 4m ÷ 2 Estimated resource: 880,000m ³ . Estimated resource tonnage (at 2 t/m³): 1,760,000 tonnes | |
| Conclusion: | | Significant. Consider in defining areas of search. | |
| Assessment of resource for the Third Stage consultation on MLP (Spring 2015) | | | |
| Revised estimate of resource: | | Area: 44ha x average depth: 4m ÷ 2 Estimated resource: 880,000m ³ . Estimated resource tonnage (at 1.65 t/m³): 1,452,000 tonnes | |
| Conclusion: | | Significant. | |
| Assessment of resource for the Fourth Stage consultation on MLP (August 2018) | | | |
| This resource area has been split into areas 7/17 and 7/17b. | | | |
| Resource area 7/17 | | Resource area 7/17b | |
| Resource area: | 39 ha | Commentary: | Screened out due to the following appendix A criterion: - Ancient Semi-Natural Woodland - Listed Buildings - Settlement Boundary |
| Resource depth: | 4m | | |
| Revised estimate of resource: | Area: 39ha x average depth: 4m ÷ 2 Estimated resource volume: 780,000m ³ . Estimated resource tonnage (at 1.65 t/m³): 1,287,000 tonnes | | |
| Conclusion: | Significant resource | Conclusion: | Compromised |
| Assessment of resource for the Fourth Stage consultation on MLP (November 2018) | | | |
| This resource area has been split into areas 7/17 and 7/17c. | | | |
| Resource area 7/17 | | Resource area 7/17c | |
| Resource area: | 39 ha | Commentary: | Screened out due to the following appendix A criterion: - Scheduled Ancient Monument |
| Resource depth: | 4m | | |
| Revised estimate of resource: | Area: 39ha x average depth: 4m ÷ 2 Estimated resource volume: 780,000m ³ . Estimated resource tonnage (at 1.65 t/m³): 1,287,000 tonnes | | |
| Conclusion: | Significant resource | Conclusion: | Compromised |

| Overview | |
|---|--|
| Resource number: | 7/18 |
| Resource name: | North of Upton Marina |
| Resource area: | 11 ha |
| Resource depth: | 4m |
| Location | |
| OS sheet reference: | SO 84 SE |
| National grid ref: | 385691, 241075 |
| | |
| Resource description: | |
| Resource description: | 2 nd terrace (Worcester) sand and gravel. The deposit generally varies between 2m and 6m in thickness. (Estimated resource depth based on median depth of 2m to 6m = 4m) |
| Assessment of resource for the second consultation on MLP (Autumn 2013) | |
| Commentary: | A small deposit intersected by the A4104 but with no other built development in the resource area. |
| Crude estimate of resource: | Area: 11ha x average depth: 4m ÷ 2 Estimated resource volume: 220,000m ³ Estimated resource tonnage (at 2 t/m³): 440,000 tonnes |
| Conclusion: | Not significant: Small deposit with less than 300,000m ³ . Not for consideration in defining areas of search. |
| Assessment of resource for the Third Stage consultation on MLP (Spring 2015) | |
| Additional information | A 126ha site with the access route covering part of this resource area was submitted by the landowner the Croome Estate. The majority of the site has been assessed as resource area 7/19. |
| Revised estimate of resource: | Area: 11ha x average depth: 4m ÷ 2 Estimated resource volume: 220,000m ³ Estimated resource tonnage (at 1.65 t/m³): 363,000 tonnes |
| Conclusion: | Not significant. |
| Assessment of resource for the Fourth Stage consultation on MLP (August 2018) | |
| Not reassessed due to resource not being classified as Key or Significant in the Third Stage Consultation | |

| Overview | |
|----------------------------|--------------------|
| Resource number: | 7/19 |
| Resource name: | North of Upton |
| Resource area: | 124 ha |
| Resource depth: | 2.68 m |
| Location | |
| OS sheet reference: | SO 84 SW, SO 84 SE |
| National grid ref: | 385055, 241716 |



Resource description:

Resource description: A resource area proposed by the majority landowner the Croome Estate and by mineral operator Cemex (proposed site known as "Ryall North"). The majority of the area is shown on BGS digital maps as Alluvium, with a small area of 2nd terrace (Worcester) sand and gravel in the south east of the resource area which was not assessed for the second consultation on the MLP as it is less than 10ha and less than 200m wide.

To accompany their site submission, Cemex provided a "Final Report on Geological Investigations At Upton upon Severn (Ryall North)" (dated 15th September 2005) which showed the results of site investigation carried out in October 1992 and October 2004 comprising a total of 46 shell and auger and flight auger boreholes. These revealed a variable deposit of sand and gravel of fluvial origin lying beneath recent alluvium. A deposit of sand and gravel was found in all but one of the boreholes and is described as a red-brown silty, slightly clayey fine grained sand and fine to coarse rounded gravel.

The deposit ranges in thickness, with an average across the site of 2.68m and is thickest in an elongated feature aligned north-south through the central parts of the site, pinching out against the underlying bedrock in the east and under an increasing thickness of overburden in the west.

(Estimated resource depth based on stated average depth = 2.68m)

Assessment of resource for the second consultation on MLP (Autumn 2013)

Commentary: This resource area was not assessed for the second consultation on the MLP. It was proposed as a resource in response to that consultation by the majority landowner the Croome Estate and by mineral operator Cemex.

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| Crude estimate of resource: | Not assessed for the second consultation on the MLP. | | |
| Conclusion: | Not assessed for the second consultation on the MLP. | | |
| Assessment of resource for the Third Stage consultation on MLP (Spring 2015) | | | |
| Commentary: | A medium sized resource area with no built development in the resource area. | | |
| Revised estimate of resource: | <p>Based on resource area and stated average depth, the estimate of resource in this resource area would be: Area: 124ha x average depth: 2.68m ÷ 2 Estimated resource volume: 1,661,600m³ Estimated resource tonnage (at 1.65 t/m³): 2,741,640 tonnes</p> <p>However, Cemex's geological report concluded that "workable mineral resources within an area identified as having the best planning potential within the site are calculated to be 1.54 million tonnes with around 0.98 million cubic metres of associated overburden". This is taken to be the best available evidence of the available resource. Estimated resource tonnage: 1,540,000 tonnes</p> | | |
| Conclusion: | Significant. | | |
| Assessment of resource for the Fourth Stage consultation on MLP (August 2018) | | | |
| This resource area has been split into areas 7/19 and 7/19b. | | | |
| Resource area 7/19 | | Resource area 7/19b | |
| Resource area: | 124 ha | Commentary: | Screened out due to the following appendix A criterion: <ul style="list-style-type: none"> - Ancient Semi-Natural Woodland |
| Resource depth: | 2.68m | | |
| Revised estimate of resource: | <p>Area: 31ha x average depth: 2.68m ÷ 2 Estimated resource volume: 1,661,600m³. Estimated resource tonnage (at 1.65 t/m³): 2,741,640 tonnes</p> <p>However, Cemex's geological report concluded that "workable mineral resources within an area identified as having the best planning potential within the site are calculated to be 1.54 million tonnes with around 0.98 million cubic metres of associated overburden". This is taken to be the best available evidence of the available resource. Estimated resource tonnage: 1,540,000 tonnes</p> | | |
| Conclusion: | Significant resource | Conclusion: | Compromised |