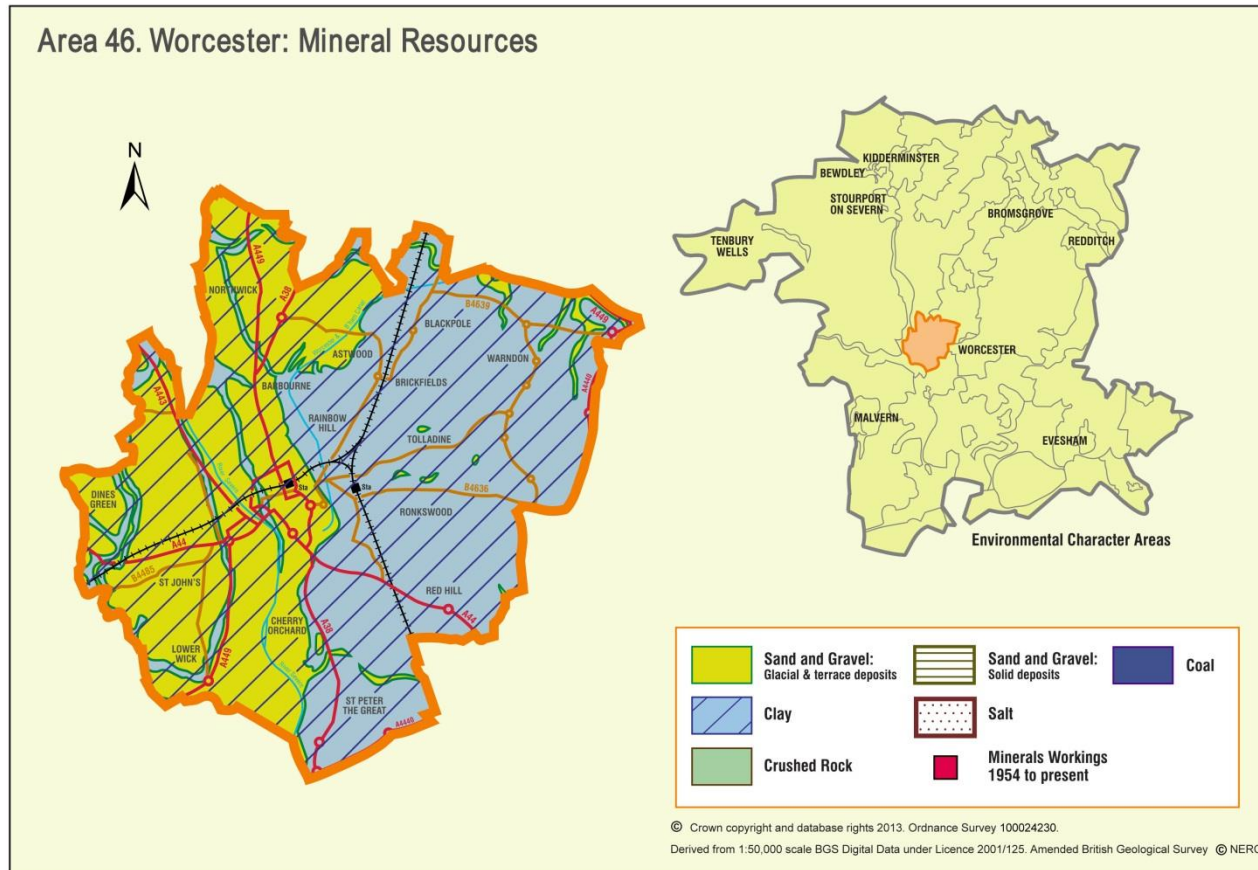


Appendix 46: Analysis of aggregate resources in Area 46: Worcester



ECA Summary for the Third Stage consultation on MLP (Spring 2015):

Sand and gravel

There are 8 resource areas identified for sand and gravel in Worcester Area:

- Key: 1
- Significant: 2
- Compromised: 5

Crushed rock:

There are no resource areas identified for crushed rock in Worcester Area.

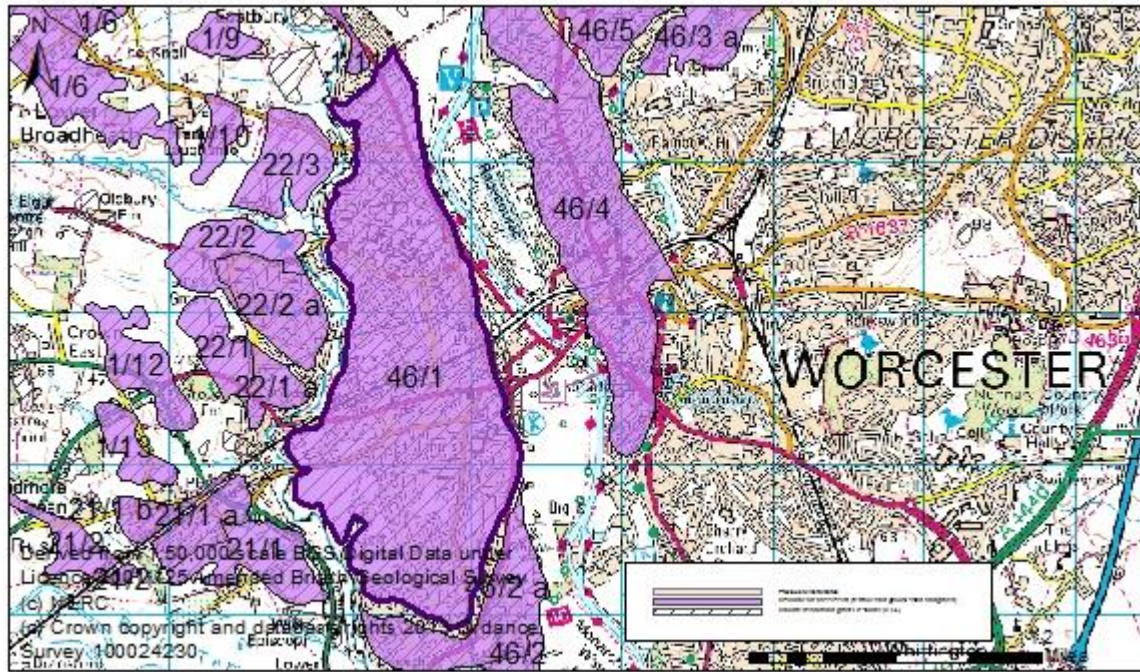
Non-aggregates


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

Overview of resource assessment for ECA 46

Sand and gravel resource areas:

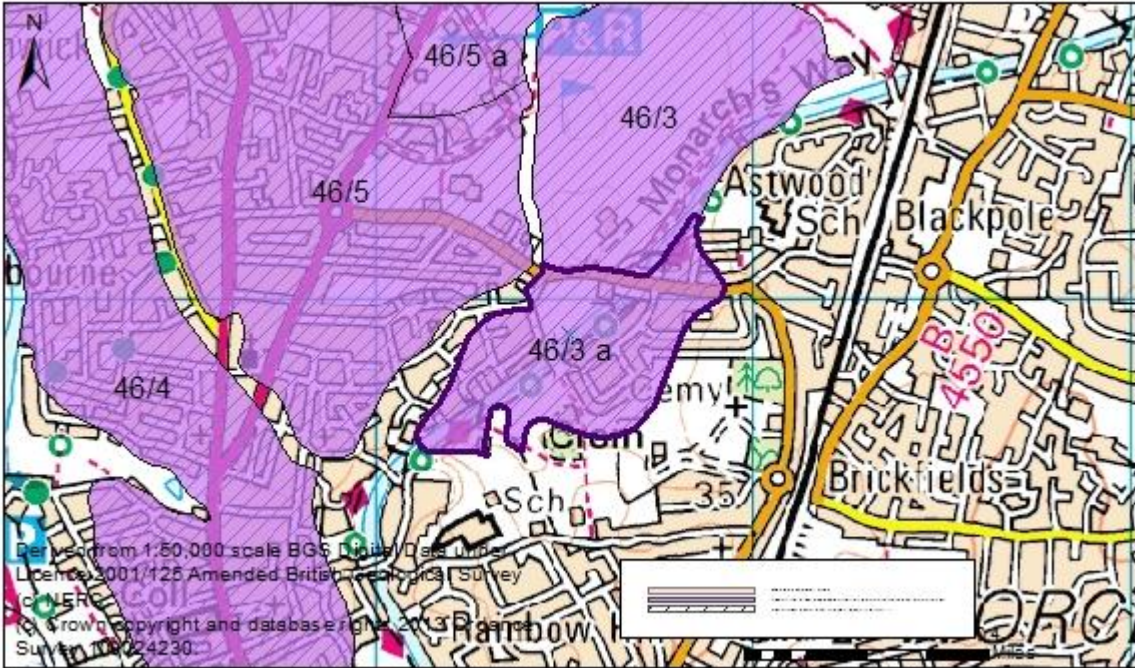
Resource number*	Second Stage Consultation		Third Stage Consultation	
	Original estimated resource tonnage (2 tonnes/m ³)	Significance	Revised estimate of resource tonnage (1.65 tonnes/m ³)	Significance
46/1	18,880,000	Compromised	15,576,000	Compromised
46/2	830,000	Significant	684,750	Significant
46/2 a	4,150,000	Compromised	3,423,750	Compromised
46/3	2,714,000	Key	2,239,050	Key
46/3 a	1,475,000	Compromised	1,216,875	Compromised
46/4	14,691,000	Compromised	12,120,075	Compromised
46/5	6,667,000	Compromised	5,500,275	Compromised
46/5a	2,006,000	Key	1,654,950	→ Significant

Overview	
Resource number:	46/1
Resource name:	St Johns
Resource area:	320 ha
Resource depth:	5.9m
Location	
OS sheet reference:	SO 85 NW
National grid ref:	383566, 254578
	
Resource description:	
Resource description:	<p>3rd terrace (Holt Heath) sand and gravel. In general the 3rd terrace deposits comprise of gravel overlain by sand. The gravels contain a high proportion of exotic material of Scottish and Lake District origin. Boreholes indicate wide variation in the thickness of sand and gravel in this terrace. Wills (1938) at St Johns noted 5.2m of sand overlying at least 3m of gravel. This is the maximum known thickness, elsewhere it fluctuates between 1m and 6m.</p> <p>Estimated resource depth based on mean average of: a) median average of 1m to 6m = 3.5m, b) Wills record for St Johns: 8.2m = 5.9m</p>
Assessment of resource for the second consultation on MLP (Autumn 2013)	
Commentary:	A large resource area overlain by the urban area of St Johns, Worcester.
Crude estimate of resource:	<p>Area: 320 ha x average depth: 5.9m ÷ 2</p> <p>Estimated resource volume: 9,440,000 m³</p> <p>Estimated resource tonnage: 18,880,000 tonnes</p>
Conclusion:	Compromised by development.
Assessment of resource for the Third Stage consultation on MLP (Spring 2015)	
Revised estimate of resource:	<p>Area: 320 ha x average depth: 5.9m ÷ 2</p> <p>Estimated resource volume: 9,440,000 m³</p> <p>Estimated resource tonnage (at 1.65 t/m³): 15,576,000 tonnes</p>
Conclusion:	Compromised by development.

Overview	
Resource number:	46/2
Resource name:	Manor Farm
Resource area:	10 ha
Resource depth:	Estimated 8.3m
Location	
OS sheet reference:	SO 85 SW
National grid ref:	384294, 252636
	
Resource description:	
Resource description:	2 nd terrace (Worcester) sand and gravel. The pebble content is indistinguishable from that of the 3 rd terrace. The deposit varies in thickness from at least 9m in Worcester to 7.6m in Kempsey. Estimated resource depth based on mean average of a) thickness in Worcester 9m and b) Thickness in Kempsey: 7.6m = 8.3m
Assessment of resource for the second consultation on MLP (Autumn 2013)	
Commentary:	A small deposit with some built development. The deposit extends under the settlement of Lower Wick to the north, this is considered as resource area 46/2a.
Crude estimate of resource:	Area: 10 ha x average depth: 8.3m ÷ 2 Estimated resource volume: 415,000 m ³ Estimated resource tonnage: 830,000 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: 10 ha x average depth: 8.3m ÷ 2 Estimated resource volume: 415,000 m ³ Estimated resource tonnage (at 1.65 t/m³): 684,750 tonnes
Conclusion:	Significant.

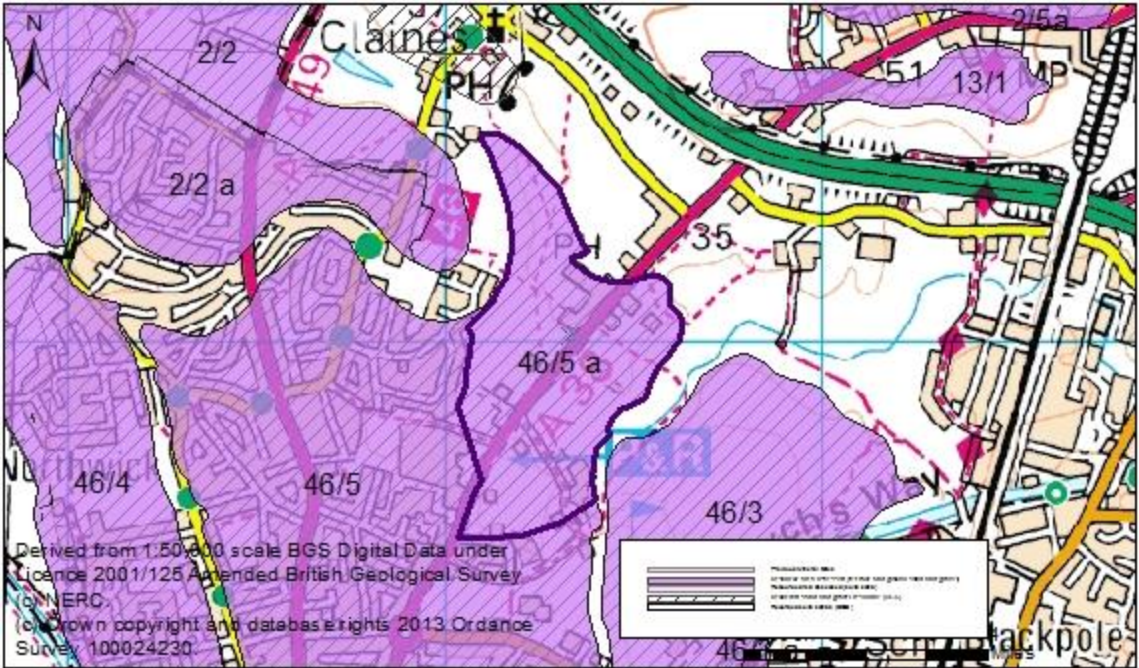
Overview	
Resource number:	46/2a
Resource name:	Manor Farm a)
Resource area:	50 ha
Resource depth:	Estimated 8.3m
Location	
OS sheet reference:	SO 85 SW
National grid ref:	384294, 252636
Resource description:	
Resource description:	2 nd terrace (Worcester) sand and gravel. The pebble content is indistinguishable from that of the 3 rd terrace. The deposit varies in thickness from at least 9m in Worcester to 7.6m in Kempsey. Estimated resource depth based on mean average of a) thickness in Worcester 9m and b) Thickness in Kempsey: 7.6m = 8.3m
Assessment of resource for the second consultation on MLP (Autumn 2013)	
Commentary:	A small deposit overlain by the urban area of Lower Wick, Worcester. The deposit continues to the south, this section is considered as resource area 46/2.
Crude estimate of resource:	Area: 50 ha x average depth: 8.3m ÷ 2 Estimated resource volume: 2,075,000 m ³ Estimated resource tonnage: 4,150,000 tonnes
Conclusion:	Compromised by development.
Assessment of resource for the Third Stage consultation on MLP (Spring 2015)	
Revised estimate of resource:	Area: 50 ha x average depth: 8.3m ÷ 2 Estimated resource volume: 2,075,000 m ³ Estimated resource tonnage (at 1.65 t/m³): 3,423,750 tonnes
Conclusion:	Compromised by development.

Overview		
Resource number:	46/3	
Resource name:	Monarch's Way	
Resource area:	46 ha	
Resource depth:	Estimated 5.9m	
Location		
OS sheet reference:	SO 85 NE	
National grid ref:	385753, 257520	
Resource description:		
Resource description:	<p>3rd terrace (Holt Heath) sand and gravel. In general the 3rd terrace deposits comprise of gravel overlain by sand. The gravels contain a high proportion of exotic material of Scottish and Lake District origin. Boreholes indicate wide variation in the thickness of sand and gravel in this terrace. Wills (1938) at St Johns noted 5.2m of sand overlying at least 3m of gravel. This is the maximum known thickness, elsewhere it fluctuates between 1m and 6m.</p> <p>Estimated resource depth based on mean average of: a) median average of 1m to 6m = 3.5m, b) Wills record for St Johns: 8.2m = 5.9m</p>	
Assessment of resource for the second consultation on MLP (Autumn 2013)		
Commentary:	A small deposit with some built development. The deposit extends to the south under the settlement of Worcester, this assessed as resource area 46/3a.	
Crude estimate of resource:	Area: 46 ha x average depth: 5.9m ÷ 2 Estimated resource volume: 1,357,000 m ³ Estimated resource tonnage 2,714,000 tonnes	
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: 46 ha x average depth: 5.9m ÷ 2 Estimated resource volume: 1,357,000 m ³ Estimated resource tonnage (at 1.65 t/m³): 2,239,050 tonnes	
Conclusion:	Significant – key resource.	

Overview	
Resource number:	46/3a
Resource name:	Monarch's Way a)
Resource area:	25 ha
Resource depth:	Estimated 5.9m
Location	
OS sheet reference:	SO 85 NE
National grid ref:	385528, 256858
	
Resource description:	
Resource description:	<p>3rd terrace (Holt Heath) sand and gravel. In general the 3rd terrace deposits comprise of gravel overlain by sand. The gravels contain a high proportion of exotic material of Scottish and Lake District origin. Boreholes indicate wide variation in the thickness of sand and gravel in this terrace. Wills (1938) at St Johns noted 5.2m of sand overlying at least 3m of gravel. This is the maximum known thickness, elsewhere it fluctuates between 1m and 6m.</p> <p>Estimated resource depth based on mean average of: a) median average of 1m to 6m = 3.5m, b) Wills record for St Johns: 8.2m = 5.9m</p>
Assessment of resource for the second consultation on MLP (Autumn 2013)	
Commentary:	A small resource area overlain by the settlement of Worcester. The deposit extends to the north, this is assessed as resource area 46/3.
Crude estimate of resource:	<p>Area: 25 ha x average depth: 5.9m ÷ 2</p> <p>Estimated resource volume: 737,500 m³</p> <p>Estimated resource tonnage: 1,475,000 tonnes</p>
Conclusion:	Compromised by development.
Assessment of resource for the Third Stage consultation on MLP (Spring 2015)	
Revised estimate of resource:	<p>Area: 25 ha x average depth: 5.9m ÷ 2</p> <p>Estimated resource volume: 737,500 m³</p> <p>Estimated resource tonnage (at 1.65 t/m³): 1,216,875 tonnes</p>
Conclusion:	Compromised by development.

Overview	
Resource number:	46/4
Resource name:	Worcester Riverside
Resource area:	177 ha
Resource depth:	Estimated 8.3m
Location	
OS sheet reference:	SO 85 NE
National grid ref:	384632,256047
Resource description:	
Resource description:	<p>2nd terrace (Worcester) sand and gravel. The pebble content is indistinguishable from that of the 3rd terrace. The deposit varies in thickness from at least 9m in Worcester to 7.6m in Kempsey.</p> <p>Estimated resource depth based on mean average of a) thickness in Worcester 9m and b) Thickness in Kempsey: 7.6m = 8.3m</p>
Assessment of resource for the second consultation on MLP (Autumn 2013)	
Commentary:	This resource area is overlain by the urban area of Worcester.
Crude estimate of resource:	<p>Area: 177ha x average depth: 8.3m ÷ 2</p> <p>Estimated resource volume: 7,345,500</p> <p>Estimated resource tonnage: 14,691,000 tonnes</p>
Conclusion:	Compromised by development.
Assessment of resource for the Third Stage consultation on MLP (Spring 2015)	
Revised estimate of resource:	<p>Area: 177ha x average depth: 8.3m ÷ 2</p> <p>Estimated resource volume: 7,345,500</p> <p>Estimated resource tonnage (at 1.65 t/m³): 12,120,075 tonnes</p>
Conclusion:	Compromised by development.

Overview		
Resource number:	46/5	
Resource name:	Perdiswell	
Resource area:	113ha	
Resource depth:	Estimated 5.9m	
Location		
OS sheet reference:	SO 85 NE, SO 95 NW	
National grid ref:	384801, 257454	
Resource description:		
Resource description:	<p>3rd terrace (Holt Heath) sand and gravel. In general the 3rd terrace deposits comprise of gravel overlain by sand. The gravels contain a high proportion of exotic material of Scottish and Lake District origin. Boreholes indicate wide variation in the thickness of sand and gravel in this terrace. Wills (1938) at St Johns noted 5.2m of sand overlying at least 3m of gravel. This is the maximum known thickness, elsewhere it fluctuates between 1m and 6m.</p> <p>Estimated resource depth based on mean average of: a) median average of 1m to 6m = 3.5m, b) Wills record for St Johns: 8.2m = 5.9m</p>	
Assessment of resource for the second consultation on MLP (Autumn 2013)		
Commentary:	A medium-sized resource area overlain by the urban area of Worcester. The deposit extends to the north east, this section is considered as resource area 46/5a.	
Crude estimate of resource:	<p>Area: 113 ha x average depth: 5.9m ÷ 2</p> <p>Estimated resource volume: 3,333,500m³</p> <p>Estimated resource tonnage: 6,667,000 tonnes</p>	
Conclusion:	Compromised by development.	
Assessment of resource for the Third Stage consultation on MLP (Spring 2015)		
Revised estimate of resource:	<p>Area: 113 ha x average depth: 5.9m ÷ 2</p> <p>Estimated resource volume: 3,333,500m³</p> <p>Estimated resource tonnage (at 1.65 t/m³): 5,500,275 tonnes</p>	
Conclusion:	Compromised by development.	

Overview	
Resource number:	46/5a
Resource name:	Perdiswell a)
Resource area:	34ha
Resource depth:	Estimated 5.9m
Location	
OS sheet reference:	SO 85 NE, SO 85 NW
National grid ref:	385280, 257946
	
Resource description:	
Resource description:	<p>3rd terrace (Holt Heath) sand and gravel. In general the 3rd terrace deposits comprise of gravel overlain by sand. The gravels contain a high proportion of exotic material of Scottish and Lake District origin. Boreholes indicate wide variation in the thickness of sand and gravel in this terrace. Wills (1938) at St Johns noted 5.2m of sand overlying at least 3m of gravel. This is the maximum known thickness, elsewhere it fluctuates between 1m and 6m.</p> <p>Estimated resource depth based on mean average of: a) median average of 1m to 6m = 3.5m, b) Wills record for St Johns: 8.2m = 5.9m</p>
Assessment of resource for the second consultation on MLP (Autumn 2013)	
Commentary:	A small resource area with some development. The deposit extends to the south and west, this section is considered as resource area 46/5a.
Crude estimate of resource:	<p>Area: 34 ha x average depth: 5.9 m ÷ 2</p> <p>Estimated resource volume: 1,003,000 m³</p> <p>Estimated resource tonnage: 2,006,000 tonnes</p>
Conclusion:	<p>Significant – key resource.</p> <p>Use to define areas of search.</p>
Assessment of resource for the Third Stage consultation on MLP (Spring 2015)	
Revised estimate of resource:	<p>Area: 34 ha x average depth: 5.9 m ÷ 2</p> <p>Estimated resource volume: 1,003,000 m³</p> <p>Estimated resource tonnage (at 1.65 t/m³): 1,654,950 tonnes</p>
Conclusion:	Change to conclusion: Significant.

