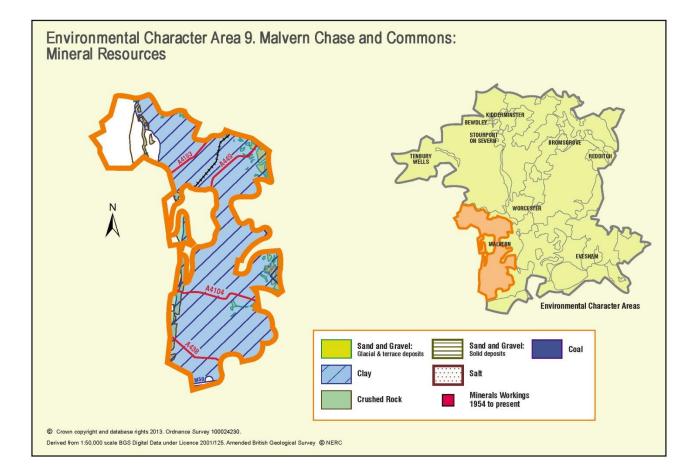
Appendix 9: Analysis of aggregate resources in ECA 9: Malvern Chase and Commons



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

Sand and gravel

There are 10 resource areas identified for sand and gravel in Malvern Chase and Commons ECA:

- Key: 2
- Significant: 3
- Not significant: 3
- Compromised: 2

Crushed rock

There are five resource areas identified in Malvern Chase and Commons ECA for crushed rock:

• Key: 5

Non-aggregates

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

Overview of resource assessment for ECA 9

Sand and gravel resource areas:

Resource	Second Stage Consultation		Third Stage Consultation	
number*	Original estimated resource	Significance	Revised estimate of resource	Significance
	tonnage (2 tonnes/m ³)		tonnage (1.65 tonnes/m ³)	
9/1	510,000	Not significant	420,750	Not significant
9/2	3,570,000	Key	2,945,250	Key
9/3	1,800,000	Significant	1,485,000	Significant
9/4	290,000	Not significant	239,250	Not significant
9/5	385,000	Compromised	317,625	Compromised
9/6	1,435,000	Significant	1,183,875	Significant
9/7	2,484,000	Key	2,049,300	Key
9/7a	690,000	Compromised	569,250	Compromised
9/8	780,000	Significant	643,500	Significant
9/9	Depth not known	Not significant	Depth not known	Not significant

Crushed rock resource areas:

Resource	Second Stage Consultation		Third Stage Consultation	
number*	Original estimated resource	Significance	Revised estimate of resource	Significance
	tonnage (2.7 tonnes/m ³)		tonnage (2.45 tonnes/m ³)	
9/10	937,575,000	Key	850,762,500	Key
9/11	129,600,000	Key	117,600,000	Key
9/12	30,375,000	Key	27,562,500	Key
9/13	2,025,000	Key	1,837,500	Key
9/14	3,442,500	Key	3,123,750	Кеу

Overview		
Resource number: Resource name: Resource area: Resource depth: Location OS sheet reference: National grid ref:	9/1 Northend Farm 34 ha Estimated 1.5m SO 84 SW 383811, 243751	
Resource description:		
Resource description:	4 th terrace (Kidderminster Station) sand and gravel. No boreholes or exposures are recorded but the 4 th terrace deposits are tentatively correlated with those in the Teme Valley at Lower Poswick Farm where up to 1.5m of gravel are present. (Estimated resource depth based on exposure at Lower Poswick Farm of 1.5m)	
Assessment of resource	e 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: 34ha x average depth: 1.5m / 2 Estimated resource volume: 255,000m ³ . Estimated resource tonnage (at 2 t/m ³): 510,000 tonnes	
Conclusion:	Not significant: Small deposit with less than 300,000m ³ . Not for consideration in defining areas of search.	
	e for the Third Stage consultation on MLP (Spring 2015)	
Revised estimate of resource:	Area: 34ha x average depth: 1.5m / 2 Estimated resource volume: 255,000m ³ . Estimated resource tonnage (at 1.65 t/m ³): 420,750 tonnes	
Conclusion:	Not significant.	

Overview	
Resource number: Resource name: Resource area: Resource depth: Location OS sheet reference: National grid ref:	9/2 Hanley Castle 102 ha Estimated 3.5m SO 84 SW 384024, 242220 Gilbert's 17 Gilbert's 17 Bines righted and a set as 2 for 5 and 5 bines 2 for
Resource description:	
Resource description:	3 rd terrace (Holt Heath) sand and gravel. No boreholes or exposures are recorded but the 3 rd terrace generally comprises gravel, sandy gravel and sand which may be clayey or cobbly and between 1m and 6m thick. (Estimated resource depth based on median depth of 3.5m)
Assessment of resourc	e for the second consultation on MLP (Autumn 2013)
Commentary:	A medium-sized deposit partially compromised by the village of Hanley Castle and with small-scale dispersed development across the resource area.
Crude estimate of resource:	Area: 102ha x average depth: 3.5m / 2 Estimated resource volume: 1,785,000m ³ . Estimated resource tonnage (at 2 t/m ³): 3,570,000 tonnes
Conclusion:	Significant – key resource. Use to define areas of search.
Assessment of resourc	e for the Third Stage consultation on MLP (Spring 2015)
Revised estimate of resource:	Area: 102ha x average depth: 3.5m / 2 Estimated resource volume: 1,785,000m ³ . Estimated resource tonnage (at 1.65 t/m ³): 2,945,250 tonnes
Conclusion:	Significant – key resource.

Overview			
Resource number: Resource name: Resource area: Resource depth: Location OS sheet reference: National grid ref:	9/3 East of Hanley Castle 45ha 4m SO 84 SW 384494, 241434	N 9/1 Melovale Fm Melovale Fm Scoren Gilbert's Schol Silbert's Scoren Fm PH PH PH PH PH PH PH PH PH PH	
Resource description:			
Resource description:	is usually described as The deposit generally v	sand and gravel. The pebble content is indistinguishable from that of the 3 rd terrace. It sand and gravel although some boreholes in the 2 nd terrace proved only silt and clay. varies between 2m and 6m in thickness.	
Assessment of resource	rce for the second consultation on MLP (Autumn 2013)		
Commentary:		nall-scale dispersed development across the resource area.	
Crude estimate of resource:	Area: 45ha x average d Estimated resource vol Estimated resource to		
Conclusion:	Significant. Consider in defining are	eas of search.	
		nsultation on MLP (Spring 2015)	
Revised estimate of resource:	Area: 45ha x average d Estimated resource vol Estimated resource to		
Conclusion:	Significant.		

Overview			
Resource number:	9/4		
Resource name:	Gilbert's		
Resource area:	14ha End 9/2 Castle 1		
Resource depth:	Estimated 3.5m		
Location			
OS sheet reference:	Estimated 3.5m		
National grid ref:			
	21		
	All Brotheridge Castle State		
	Green		
	Derived fformer: 60, 700 scale. BGS Diggel Data under Licence 2001/1/25 Amended British George Status		
	(c) NERC.		
	(c) Crown copyright and database rights 2013 Ordanos Survey 1€024230. The The		
Resource description:			
Resource description:	3 rd terrace (Holt Heath) sand and gravel. No boreholes or exposures are recorded but the memoir for this area		
•	states that the 3 rd terrace generally comprises gravel, sandy gravel and sand which may be clayey or cobbly		
	and between 1m and 6m thick.		
	(Estimated resource depth based on median depth of 3.5m)		
Assessment of resource	e for the second consultation on MLP (Autumn 2013)		
Commentary:	A small deposit with small-scale development on the north-western periphery of the resource area.		
Crude estimate of	Area: 14ha x average depth: 3.5m / 2		
resource:	Estimated resource volume: 245,000m ³		
	Estimated resource tonnage (at 2 t/m ³): 290,000 tonnes.		
Conclusion:	Not significant: Small deposit with less than 300,000m ³ .		
	Not for consideration in defining areas of search.		
	e for the Third Stage consultation on MLP (Spring 2015)		
Revised estimate of	Area: 14ha x average depth: 3.5m / 2		
resource:	Estimated resource volume: 245,000m ³		
	Estimated resource tonnage (at 1.65 t/m ³): 239,250 tonnes		
Conclusion:	Not significant.		

Resource name: Callow End 11 ha Resource depth: Estimated 3.5m Location So 84 NW OS sheet reference: SO 84 NW National grid ref: 383594, 249383 Resource description: Resource description: Resource description: 3 rd terrace (Holt Heath) sand and gravel. No boreholes or exposures are recorded but the memoir for this area states that the 3 rd terrace generally comprises gravel, sandy gravel and sand which may be clayey or cobbly and between 1m and 6m thick. (Estimated resource depth based on median depth of 3.5m) Assessment of resource A small deposit, almost entirely compromised by Callow End village. Crude estimate of a concurrent resource depth. 3.5m x 0.5 resource: Conclusion: Compromised by development. Assessment of resource for the sace nonsultation on MLP (Spring 2015) Revised estimate of Assessment of resource volume: 192,500m ³ Estimated resource volume: 192,500m ³ Estimated resource volume: 192,500m ³	Overview			
Resource depth: 11 ha Resource depth: Estimated 3.5m Location 05 sheet reference: SO 84 NW National grid ref: 383594, 249383 Resource description: Resource description: Resource description: 3 rd terrace (Holt Heath) sand and gravel. No boreholes or exposures are recorded but the memoir for this area states that the 3 rd terrace generally comprises gravel, sandy gravel and sand which may be clayey or cobbly and between 1m and 6m thick. (Estimated resource dopth: A rea: 11ha x average depth: 3.5m x 0.5 Conclusion: Compromised by Callow 3.5m (12,500m) Reseurce: Estimated resource tornage (at 2 t/m²): 385,000 tonnes Conclusion: Compromised by development. Assessment of resource for the Interace (Holt Heath): 3.5m x 0.5 Resource: Estimated resource dopth: 3.5m x 0.5 Resource: Estimated resource dopth: 3.5m x 0.5 Resource: Estimated resource tornage (at 2 t/m²): 385,000 tonnes Conclusion: Compromised by development. Assessment of resource for the Third Stage consultation on MLP (Spring 2015) Revised estimate of resource tornage (at 1.65 t/m²): 317,625 tonnes	Resource number:	9/5		
Resource depth: Estimated 3.5m Location OS OS sheet reference: S0 84 NW National grid ref: 383594, 249383 Image: Solid state st	Resource name:	Callow End		
Location DS sheet reference: SO 84 NW National grid ref: 383594, 249383 Image: Solid state of the second consultation on the second consecond to second consultation on the second con	Resource area:	11 ha		
OS sheet reference: SO 84 NW National grid ref: 383594, 249383 Resource description: The resource is a second of the resource of the resource dependence of the second consultation on MLP (Autumn 2013) Commentary: A small deposit, almost entirely compromised by Callow End village. Crude estimate of resource is that the average depth: 3.5m x 0.5 Resource is that the resource of the Third Stage consultation on MLP (Spring 2015) Reve: The area of resource for the Third Stage consultation on MLP (Spring 2015) Reve: The area of resource of the Third Stage consultation on MLP (Spring 2015) Revised estimate of resource for the Third Stage consultation on MLP (Spring 2015) Revised estimate of resource for the Third Stage consultation on MLP (Spring 2015) Revised estimate of resource for the Third Stage consultation on MLP (Spring 2015) Revised estimate of resource for the Third Stage consultation on MLP (Spring 2015) Revised estimate of resource for the Third Stage consultation on MLP (Spring 2015) Revised estimate of resource for the Third Stage consultation on MLP (Spring 2015) Revised estimate of resource (or the Third Stage consultation on MLP (Spring 2015) Revised estimate of resource (or the Third Stage consultation on MLP (Spring 2015) Revised estimate of resource (or the Third Stage consultation on MLP (Spring 2015) Revised estimate of resource for the Thi	Resource depth:	Estimated 3.5m		
National grid ref: 383594, 249383 Resource description: Resource description: Resource description: 3 rd terrace (Holt Heath) sand and gravel. No boreholes or exposures are recorded but the memoir for this area states that the 3 rd terrace generally comprises gravel, sandy gravel and sand which may be clayey or cobbly and between 1m and 6m thick. (Estimated resource depth based on median depth of 3.5m) Assessment of resource for the second consultation on MLP (Autumn 2013) Conductor: A small deposit, almost entirely compromised by Callow End village. Crude estimate of resource for the second consultation on MLP (Autumn 2013) Conclusion: Componised by Callow End village. Conclusion: Componised by Callow End village. Conclusion: Componised by Gevelopment. Assessment of resource for the Third Stage consultation on MLP (Spring 2015) Revised estimate of resource for the Third Stage consultation on MLP (Spring 2015) Revised estimate of resource toronage (at 1.65 t/m ³): 317,625 tonnes	Location			
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Resource description: 3 rd terrace (Holt Heath) sand and gravel. No boreholes or exposures are recorded but the memoir for this area states that the 3 rd terrace generally comprises gravel, sandy gravel and sand which may be clayey or cobbly and between 1m and 6m thick. (Estimated resource depth based on median depth of 3.5m) Assessment of resource for the second consultation on MLP (Autumn 2013) Commentary: A small deposit, almost entirely compromised by Callow End village. Crude estimate of Area: 11ha x average depth: 3.5m x 0.5 resource: Estimated resource tornage (at 2 t/m ³): 385,000 tonnes Conclusion: Compromised by development. Assessment of resource for the Third Stage consultation on MLP (Spring 2015) Revised estimate of resource tornage (at 1.65 t/m ³): 317,625 tonnes		PH		
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Resource description: 3 rd terrace (Holt Heath) sand and gravel. No boreholes or exposures are recorded but the memoir for this area states that the 3 rd terrace generally comprises gravel, sandy gravel and sand which may be clayey or cobbly and between 1m and 6m thick. (Estimated resource depth based on median depth of 3.5m) Assessment of resource for the second consultation on MLP (Autumn 2013) Commentary: A small deposit, almost entirely compromised by Callow End village. Crude estimate of resource: Estimated resource volume: 192,500m ³ Estimated resource tonnage (at 2 t/m ³): 385,000 tonnes Conclusion: Compromised by development. Assessment of resource for the Third Stage consultation on MLP (Spring 2015) Revised estimate of resource volume: 192,500m ³ Estimated resource volume: 192,500m ³ Estimated feresource for the Third Stage consultation on MLP (Spring 2015) Revised estimate of resource for the Third Stage consultation on MLP (Spring 2015) Revised estimate of resource volume: 192,500m ³ Estimated resource tonnage (at 1.65 t/m ³): 317,625 tonnes		Control of the sind delige wars 20 1 Dordance 0 0 00000000000000000000000000000000		
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Estimated resource tonnage (at 2 t/m³): 385,000 tonnesConclusion:Compromised by development.Assessment of resource for the Third Stage consultation on MLP (Spring 2015)Revised estimate of resource:Area: 11ha x average depth: 3.5m x 0.5 Estimated resource volume: 192,500m³ Estimated resource tonnage (at 1.65 t/m³): 317,625 tonnes	Crude estimate of	Area: 11ha x average depth: 3.5m x 0.5		
Conclusion: Compromised by development. Assessment of resource for the Third Stage consultation on MLP (Spring 2015) Revised estimate of resource 11ha x average depth: 3.5m x 0.5 resource: Estimated resource volume: 192,500m ³ Estimated resource tonnage (at 1.65 t/m ³): 317,625 tonnes	resource:			
Assessment of resource for the Third Stage consultation on MLP (Spring 2015) Revised estimate of resource: Area: 11ha x average depth: 3.5m x 0.5 Estimated resource volume: 192,500m ³ Estimated resource tonnage (at 1.65 t/m ³): 317,625 tonnes				
Revised estimate of resource: Area: 11ha x average depth: 3.5m x 0.5 Estimated resource volume: 192,500m ³ Estimated resource tonnage (at 1.65 t/m ³): 317,625 tonnes	Conclusion:			
resource: Estimated resource volume: 192,500m ³ Estimated resource tonnage (at 1.65 t/m ³): 317,625 tonnes	Assessment of resourc			
Estimated resource tonnage (at 1.65 t/m ³): 317,625 tonnes	Revised estimate of	Area: 11ha x average depth: 3.5m x 0.5		
	resource:	Estimated resource volume: 192,500m ³		
Conclusion: Compromised by development.		Estimated resource tonnage (at 1.65 t/m ³): 317,625 tonnes		
	Conclusion:	Compromised by development.		

Overview			
Resource number: Resource name: Resource area: Resource depth: Location OS sheet reference: National grid ref:	9/6 North of Callow End 41ha 3.5m SO 85 SW 383270, 250200 Prive York Network Science PSD Binst Data Ander Licence York Tork Network Science PSD Binst Data Ander Licence PERCE Deriver York Network Science PSD Binst Data Ander Licence PERCE Network Science PSD Binst Data Ander Licence PERCE		
	(c) Crowin oppyright shorestease exprisition 3 Ordance 9/5 Burvey 1000/24230		
Resource description:			
Resource description:	3 rd terrace (Holt Heath) sand and gravel. No boreholes or exposures are recorded but the memoir for this area states that the 3 rd terrace generally comprises gravel, sandy gravel and sand which may be clayey or cobbly and between 1m and 6m thick. (Estimated resource depth based on median depth of 3.5m)		
Assessment of resource	e for the second consultation on MLP (Autumn 2013)		
Commentary:	A small resource area with small-scale dispersed development across the resource area.		
Crude estimate of	Area: 41ha x average depth: 3.5m x 0.5		
resource:	Estimated resource volume: 717,500m ³		
	Estimated resource tonnage (at 2 t/m ³): 1,435,000 tonnes		
Conclusion:	Significant.		
	Consider in defining areas of search.		
Assessment of resource	e for the Third Stage consultation on MLP (Spring 2015)		
Revised estimate of	Area: 41ha x average depth: 3.5m x 0.5		
resource:	Estimated resource volume: 717,500m ³ .		
	Estimated resource tonnage (at 1.65 t/m ³): 1,183,875 tonnes		

Overview			
Resource number:	9/7	160 4 200 1	
Resource name:	Powick A	19/8 End	
Resource area:	54 ha	Q'A	
Resource depth:	Estimated 4.6m	Collett's	
Location			
OS sheet reference:	SO 85 SW	Green Green	
National grid ref:	IN NERE	9/7 1:30000 scale Bisantinial Data Unda 1:30000 scale Bisantinial Data Unda 1:10 Amended Britten Seolacid Hollow boyright and database rights (1:3 Ordano 9/6 0:242:30.	
Resource description:	ord		
Resource description:		gravel. The memoir for this area states that the 3 rd terrace generally	
		d sand which may be clayey or cobbly. A borehole in Powick records 4.6m	
	of sand and gravel.	an barabala danth of 1 6m)	
Assossment of resource	(Estimated resource depth based on borehole depth of 4.6m) ce for the second consultation on MLP (Autumn 2013)		
Commentary:	A medium-sized resource area intersected by a road with small-scale ribbon development and other small scale development on the periphery of the resource area. The deposit extends under Powick village, this is considered as resource area 9/7a.		
Crude estimate of	Area: 54ha x average depth: 4.6m / 2		
resource:	Estimated resource volume: 1,242,000m ³ .		
	Estimated resource tonnage (at	•	
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	Area: 54ha x average depth: 4.6m		
resource:	Estimated resource volume: 1,242		
	Estimated resource tonnage (at	1.65 t/m³): 2,049,300 tonnes	

Overview			
Resource number:	9/7a		
Resource name:	Powick a)	M: 1	
Resource area:	15 ha	NULLE	
Resource depth:	Estimated 4.6m	1	
Location	9/8 9/8 160 4 100	14 0	
OS sheet reference:	SO 85 SW		
National grid ref:	383235, 251168	A Pro-	
	Collett's	Atrite	
	Green 9/7a	A TITLE	
	The dieen in the second s	No.	
	Powerk		
		~~	
	BURN AS US AND	13	
	Perive Dien 1 School and RESSOCIATE Data under 9/7		
	brence 2001/125 Amended British Geological Survey 25	d and gravel)	
	(c) Crown oppyright and detables e lights 2013 Ordance		
	Survey 1002 122	j.	
Resource description:			
Resource description:	3 rd terrace (Holt Heath) sand and gravel. The memoir for this area states that the 3 rd terrace generally		
	comprises gravel, sandy gravel and sand which may be clayey or cobbly. A borehole in Powick record	ls 4.6m	
	of sand and gravel.		
	(Estimated resource depth based on borehole depth of 4.6m)		
	e for the second consultation on MLP (Autumn 2013)		
Commentary:	A small resource area compromised by Powick village, with less than 10ha remaining.		
Crude estimate of	Area: 15ha x average depth: 4.6m / 2		
resource:	Estimated resource volume: 345,000m ³ .		
O an a huad a se	Estimated resource tonnage (at 2 t/m ³): 690,000 tonnes		
Conclusion:	Compromised by development with less than 10ha of the deposit remaining.		
	e for the Third Stage consultation on MLP (Spring 2015)		
Revised estimate of	Area: 15ha x average depth: 4.6m / 2		
resource:	Estimated resource volume: 345,000m ³		
Conclusion	Estimated resource tonnage (at 1.65 t/m ³): 569,250 tonnes		
Conclusion:	Compromised by development.		

Overview			
Resource number:	9/8	Bransford em Lower Lower Hick Hilder Ma	
Resource name:	King's End	Court Wick Wick Wick	
Resource area:	26ha	Fn	
Resource depth:	Estimated 3m	Wair	
Location		Ham Hitt	
OS sheet reference:	SO 85 SW	Dawsbury Powick	
National grid ref:	382491, 251890	9/8 Hams 9/8 Hams 9/8 Hams 9/8 Hams 169 9/7a PH Defined from 1:50,000-scále Act O bits Peter widt Defined from 1:50,000-scále Act O bits Peter widt De	
Resource description:			
Resource description:	4 th terrace (Kidderminst	ter Station) sand and gravel. The deposit varies in grade from gravel to sand and	
•		nemoirs its thickness is believed to range from 1-5m, and may be up to 3m thick at this	
	point.		
	(Estimated resource depth based on median depth of 3m)		
		Itation on MLP (Autumn 2013)	
Commentary:	A small deposit with sm	nall-scale dispersed development across the resource area.	
Crude estimate of	Area: 26ha x average c		
resource:	Estimated resource volume: 390,000m ³		
		onnage (at 2 t/m³): 780,000 tonnes	
Conclusion:	Significant.		
	Consider in defining are		
		onsultation on MLP (Spring 2015)	
Revised estimate of	Area: 26ha x average c		
resource:	Estimated resource vol		
	Estimated resource to	onnage (at 1.65 t/m³): 643,500 tonnes	
Conclusion:	Significant.		

Overview			
Resource number: Resource name: Resource area: Resource depth: Location OS sheet reference: National grid ref:	9/9 Welland Lodge 21ha Not known. SO 73 NE 381148, 239525	Brookend Farmer 9/9 Derives from ve 00 scale BCS Den Der ouer Derives from ve 00 scale BCS Den Der ouer Der ve 00 scale BCS Den Der ve 00 scale BCS Den Der ouer Der ve 00 scale BCS Den Der	
		Survey 100024230	
Resource description:	ond ()		
Resource description:		sand and gravel. The upper part of the 2 nd terrace deposit is typically more sandy than	
		e a misleading impression of the gravel content. There is no information on depth in this	
A	area.		
		Itation on MLP (Autumn 2013)	
Commentary:	•	nall-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	e for the Third Stage co	onsultation on MLP (Spring 2015)	
Revised estimate of resource:	No change to the asse	ssment.	
Conclusion:	Not significant.		

Overview		
Resource number:	9/10	
Resource name:	North Hill to	A Start A Start A Start
	Hangman's Hill	
Resource area:	463 ha	
Resource depth:	Estimated 1658m,	20347
	maximum working	
	depth estimated 150m	
Location	00 74 NE 00 74 05	
OS sheet reference:	SO 74 NE, SO 74 SE	
National grid ref:	376863, 243606	9/2
		9741 19/9
		Dek Weight grin 1,50,000 & date El33 Digital Description
		Licender 2001/125 Amended British, Geologias - Unvey
		(c) QFpwn, copyr Chivand, databas eir ights 20 C and databas
		10 40 37 50 75 15 425 319/1 Turcey 400024223
Resource description:		
Resource description:	Malverns complex and V	Warren House formation (crushed rock). The Malverns Complex of Precambrian age
•	•	Hills which straddle the border between Worcestershire and Herefordshire. The
	Complex comprises mai	nly intrusive igneous rocks. These include diorites and tonalities, with minor granites
	and ultrabasic rocks. Ma	any of the rocks are extensively sheared and are cut by microdiorite dykes and granite
	pegmatites.	
		1
	. .	p ¹ indicates that in some areas of the Malvern Hills, the pre-Cambrian rock is an
	•	(at Worcestershire Beacon). However, the geological map indicates that, due to
		e-cambrian rock is likely to be much less than this at the southern end of the range,
	•••	00m depth at Herefordshire Beacon. The memoir for Worcester reports that the
		km north-west of this resource area, in Herefordshire) did not reach the pre-Cambrian ut that seismic readings suggested this should have been 1800m.
		at that seising readings suggested this should have been roouth.
	The intrusive Malvern ro	ocks were widely used for roadstone and building stone in and around Malvern for
	much of the 19 th and 20 th	th centuries. The Malvern Hills Conservators (a locally elected body charged with the
	ownership and care of th	The Hills) have been granted a number of local Acts of Parliament which included the
		hase quarries. As a result of these Acts and Appeal decisions by the Secretary of
		Norcestershire, at Tank (Pyx) quarry, closed in 1969.

¹ Cross-sections shown on the 1:50000 Series England and Wales Sheet 199, Worcester, Solid and Drift Geology)

	Estimated resource depth could be based on the average of a) 3000m at Worcestershire Beacon b) 200m at Herefordshire Beacon and c) Borehole at Collington (median average 1710m to 1800m): 1775 = 1658m but as the deepest quarry in Europe is 142m deep (Rubislaw Quarry, Aberdeen) it is considered sensible to calculate resource potential based on a maximum depth of 150m.
Assessment of resour	ce for the second consultation on MLP (Autumn 2013)
Commentary:	A large resource area with little built development. This deposit extends beyond the county boundary into Herefordshire.
Crude estimate of	Area: 463 ha x average depth: 150 m ÷ 2
resource:	Estimated resource volume: 347,250,000 m ³
	Estimated resource tonnage (at 2.7 t/m ³): 937,575,000 tonnes
Conclusion:	Significant – key resource.
	Use to define areas of search.
Assessment of resour	ce for the Third Stage consultation on MLP (Spring 2015)
Revised estimate of	Area: 463 ha x average depth: 150 m ÷ 2
resource:	Estimated resource volume: 347,250,000 m ³
	Estimated resource tonnage (at 2.45 t/m ³): 850,762,500 tonnes
Conclusion:	Significant – key resource.

Overview		
Resource number: Resource name:	9/11 Hollybush, Midsummer and Swinyard Hills	Wedington the Herberton Chine a Castlemonto Common of Co
Resource area: Resource depth:	64 ha Estimated 200m maximum working depth estimated 150m	Eastnor Park Opplia.
Location OS sheet reference: National grid ref:	SO 73 NE 376251, 237336	Million Million Million Million Brensi Brensi Brensi Million Brensi Brensi Brensi Million Brensi Brensi Brensi Million Brensi Brensi Brensi Brensi Brensi Brensi Brensi Derklad fron 1.50 Brensi Brensi Brensi Ubende 2001/125 Amended British Geolog/dal Sumer Brensi Brensi Brensi Brensi Brensi Brens Brensi Brensi <
Resource description:		
Resource description:	which straddle the bord igneous rocks. These ir	shed rock). The Malverns Complex of Precambrian age rock forms the Malvern Hills ler between Worcestershire and Herefordshire. The Complex comprises mainly intrusive include diorites and tonalities, with minor granites and ultrabasic rocks. Many of the heared and are cut by microdiorite dykes and granite pegmatites.
	much of the 19 th and 20 ownership and care of t right to compulsory pure	ocks were widely used for roadstone and building stone in and around Malvern for p th centuries. The Malvern Hills Conservators (a locally elected body charged with the the Hills) have been granted a number of local Acts of Parliament which included the chase quarries. As a result of these Acts and Appeal decisions by the Secretary of Worcestershire, at Tank (Pyx) quarry, closed in 1969.
		ap ² indicates that the depth of pre-cambrian rock is roughly 200m depth at a little to the north of this resource area.
		pth could be based on 200m depth at Herefordshire Beacon, but as the deepest Quarry (Rubislaw Quarry, Aberdeen it is considered sensible to calculate resource potential lepth of 150m)

² Cross-sections shown on the 1:50000 Series England and Wales Sheet 199, Worcester, Solid and Drift Geology)

Assessment of resour	Assessment of resource for the second consultation on MLP (Autumn 2013)	
Commentary:	A small resource area with little built development. This deposit extends beyond the county boundary into	
-	Herefordshire.	
Crude estimate of	Area: 64 ha x average depth: 150m ÷ 2	
resource:	Estimated resource volume: 48,000,000 m ³	
	Estimated resource tonnage (at 2.7 t/m ³): 129,600,000 tonnes	
Conclusion:	Significant – key resource.	
	Use to define areas of search.	
Assessment of resour	ce for the Third Stage consultation on MLP (Spring 2015)	
Revised estimate of	Area: 64 ha x average depth: 150m ÷ 2	
resource:	Estimated resource volume: 48,000,000 m ³	
	Estimated resource tonnage (at 2.45 t/m ³): 117,600,000 tonnes	
Conclusion:	Significant – key resource.	

Overview		
Resource number: Resource name: Resource area: Resource depth:	9/12 Chase End Hill 15 ha Estimated 200m maximum working depth estimated 150m	Whiteleaved Oak 79 Rye Court
Location		
OS sheet reference: National grid ref:	SO 73 NE 376150, 235374	Howler's Wood Heath Delved from 1:50,800 scale BGS'D gital Lats under licence 2001/125 Amendeo British Geological Survey (a) BRC. (c) Obvin copyright and databas e rights 2013 Ordance Survey 10 Broand Sberrow (c) Survey 10 Broand Sberrow
Resource description:		
Resource description:	which straddle the bord intrusive igneous rocks. the rocks are extensive The intrusive Malvern ro much of the 19 th and 20 ownership and care of t right to compulsory pure	shed rock). The Malverns Complex of Precambrian age rock forms the Malvern Hills er between Worcestershire and Herefordshire. The Complex comprises mainly These include diorites and tonalities, with minor granites and ultrabasic rocks. Many of ly sheared and are cut by microdiorite dykes and granite pegmatites. Ocks were widely used for roadstone and building stone in and around Malvern for the centuries. The Malvern Hills Conservators (a locally elected body charged with the he Hills) have been granted a number of local Acts of Parliament which included the chase quarries. As a result of these Acts and Appeal decisions by the Secretary of Worcestershire, at Tank (Pyx) quarry, closed in 1969.
		ap ³ indicates that the depth of pre-cambrian rock is roughly 200m depth at 4km to the north of this resource area.
		oth could be based on 200m depth at Herefordshire Beacon, but as the deepest Quarry (Rubislaw Quarry, Aberdeen) it is considered sensible to calculate resource potential epth of 150m)
Assessment of resourc		tation on MLP (Autumn 2013)

³ Cross-sections shown on the 1:50000 Series England and Wales Sheet 199, Worcester, Solid and Drift Geology)

Commentary:	A small resource area with little built development. This deposit extends beyond the county boundary into Herefordshire.	
Crude estimate of	Area: 15 ha x average depth: 150 m ÷ 2	
resource:	Estimated resource volume: 11,250,000 m ³	
	Estimated resource tonnage (at 2.7 t/m ³): 30,375,000 tonnes	
Conclusion:	Significant – key resource.	
	Use to define areas of search.	
Assessment of resource	ce for the Third Stage consultation on MLP (Spring 2015)	
Revised estimate of	Area: 15 ha x average depth: 150 m ÷ 2	
resource:	Estimated resource volume: 11,250,000 m ³	
	Estimated resource tonnage (at 2.45 t/m ³): 27,562,500 tonnes	
Conclusion:	Significant – key resource.	

Overview	
Overview Resource number: Resource name: Resource area: Resource depth: Location OS sheet reference: National grid ref:	9/13 Ravenshill Wood 10 ha Estimated 15m SO 75 SW 374117, 253519
	Control of the second decision of the se
Resource description:	
Resource description:	Woolhope Limestone Formation (crushed rock). In this area, the formation ranges from about 6m to 18m in thickness, although the BGS memoirs state that over much of its outcrop it maintains a relatively uniform thickness of about 15m, perhaps thinning regionally northwards from 17m in the Colwall Tunnel. The minimum thickness of 6m was recorded in a disused quarry at Merryhill Common, Storridge.
Assossment of resource	(Estimated depth based on the relatively uniform thickness of 15m) the for the second consultation on MLP (Autumn 2013)
Commentary:	A small resource area with no built development.
Crude estimate of	A small resource area with no built development. Area: 10 ha x average depth: 15 m ÷ 2
resource:	Estimated resource tonnage (at 2.7 t/m ³): 2,025,000 tonnes
Conclusion:	Significant – key resource. Use to define areas of search.
Assessment of resourc	e for the Third Stage consultation on MLP (Spring 2015)
Revised estimate of resource:	Area: 10 ha x average depth: 15 m ÷ 2 Estimated resource volume: 750,000 m ³ Estimated resource tonnage (at 2.45 t/m ³): 1,837,500 tonnes
Conclusion:	Significant – key resource.

Overview	
Resource number:	9/14
Resource name:	Alfrick Pound
Resource area:	17 ha
Resource depth:	Estimated 15m
Location	
OS sheet reference:	SO 75 SW
National grid ref:	374525, 252183
Resource description:	
Resource description:	Woolhope Limestone Formation (crushed rock). In this area, the formation ranges from about 6m to 18m in
	thickness, although the BGS memoirs state that over much of its outcrop it maintains a relatively uniform thickness of about 15m, perhaps thinning regionally northwards from 17m in the Colwall Tunnel. The minimum
	thickness of about 15m, perhaps unining regionally northwards norm 17m in the Colwair Furner. The minimum thickness of 6m was recorded in a disused quarry at Merryhill Common, Storridge.
•	(Estimated depth based on the relatively uniform thickness of 15m)
	e for the second consultation on MLP (Autumn 2013)
Commentary:	A small resource area with no built development.
Crude estimate of	Area: 17 ha x average depth: 15 m ÷ 2
resource:	Estimated resource volume: 1,275,000 m ³
Conclusion:	Estimated resource tonnage (at 2.7 t/m ³): 3,442,500 tonnes
Conclusion:	Significant – key resource. Use to define areas of search.
Assessment of resource	e for the Third Stage consultation on MLP (Spring 2015)
Revised estimate of	Area: 17 ha x average depth: 15 m ÷ 2
resource:	Estimated resource volume: 1,275,000 m ³
	Estimated resource tonnage (at 2.45 t/m ³): 3,123,750 tonnes
Conclusion:	Significant – key resource.