

OR/15/013 Data integration

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Woods, M A, Newell, A J, Haslam, R, Farrant, A R and Smith, H. 2015. A physical property model of the Chalk of southern England. *British Geological Survey Internal Report*, OR/15/013.

Borehole paths (i.e. the linear track of a borehole in three-dimensional space) were imported via normal SKUA-GOCAD 2013.2 well location import filters. SOBI well identifiers were standardised to exclude back-slash, underscore or other separators. Each borehole was tagged with additional identification information (held in Well Constant fields within SKUA-GOCAD 2013.2) including the borehole name (spaces replaced by underscores), the BGS identification number and a tag to identify specific groups of uploaded well information. Wells were imported as simple vertical paths, several of the wells are known to be deviated and these paths will be amended as deviated path information becomes available.

I	B	C	D	E	F	G	H	Z	I	J
1	WELL	X	Y	KB	LENGTH	ALIAS	BGS_ID	Z		WELLSET
2	SP90NE9	499200	207920	105.75		71.15 WATERWORKS_BERKHAMPTSTEAD		359931		105.75 SP90NE9_CHALK_FACIES_1
3	SP91SE14	496300	213700	149.83		205 STOCKS_HOTEL_ALDBURY		360207		149.83 SP91SE14_CHALK_FACIES_1
4	ST91NW26	390899	117606	219.58		110 ASHMORE_PIEZOMETER		13087176		219.58 ST91NW26_CHALK_FACIES_1
5	SU06NE2	405800	167440	169.41		128.93 THREE_BARROWS_BISHOPS_CANNINGS		399305		101.41 SU06NE2_CHALK_FACIES_1
6	SU07SE4	406080	170150	171.61		100.58 YATESBURY_FIELD_CHERHILL		399607		101.41 SU07SE4_CHALK_FACIES_1
7	SU16SW15A	412480	164790	199.55		193 SHAW_HOUSE_OBH_HUSH		401841		101.41 SU16SW15A_CHALK_FACIES_1
8	SU36NW27	432780	165530	113.9		160 SHALBOURNE_EXPERIMENTAL		407724		101.41 SU36NW27_CHALK_FACIES_1
9	SU37NE6	436120	175470	107.07		200.58 LAMBOURNE_PS1_GREAT_SHEFFORD		407946		101.41 SU37NE6_CHALK_FACIES_1
10	SU37NW8	433230	179710	130.42		129.84 NORTH_FARM_LAMBOURN		407875		101.41 SU37NW8_CHALK_FACIES_1
11	SU46NE43	446120	167940	79.19		152.4 SPEEN_CROFT_PS_NOS_NEWBURY_BERKS		432941		101.41 SU46NE43_CHALK_FACIES_1
12	SU47NE9	443940	175510	114.23		141.71 CHAPEL_WOOD_PLEASEMORE_PS3		433513		101.41 SU47NE9_CHALK_FACIES_1
13	SU47SE56	443420	171640	90.6		139 WINTERBOURNE_CORED_BORING_B		433685		101.41 SU47SE56_CHALK_FACIES_1

Table 2 Format for well path information.

Facies data were imported via SKUA-GOCAD 2013.2 well property import filters. Note the necessity of a NULL entry (-99999) in the final line.

	A	B	C	D	E
	TopDepth	BottomDepth	LithoCode	FaciesCode	
2	19.83	22.51	Chalk		1
3	22.51	23.29	Marly Chalk		3
4	23.29	25.97	Chalk		1
5	25.97	27.31	Marly Chalk		3
6	27.31	28.57	Chalk		1
7	28.57	29.21	Marly Chalk		3
8	29.21	35.78	Chalk		1
9	35.78	36.06	Marl		2
10	36.06	40.43	Chalk		1
11	40.43	40.73	Marl		2
12	40.73	43.33	Hard Chalk		5
13	43.33	43.67	Marly Chalk		3
14	43.67	47.35	Hard Chalk		5
15	47.35	48.27	Marly Chalk		3
16	48.27	50.87	Hard Chalk		5
17	50.87	54.26	Hardground		4
18	54.26	55.6	Marl		2
19	55.6	58.91	Chalk		1
20	58.91	59.19	Marly Chalk		3
21	59.19	64.07	Chalk		1
22	64.07	64.27	Marly Chalk		3
23	64.27	68.43	Chalk		1
24	68.43	-99999	NULL		-99999

Table 3 Example format for the upload of facies information.

Downhole depths for formation tops and marker bed were imported using normal SKUA- GOCAD 2013.2 import filters.

Geophysical log data were imported for a selection of wells as LAS files. During batch upload LAS files were matched to well paths using file names rather than standard LAS identifiers held within the file. This necessitated renaming of LAS files (Table 4). Unfortunately BGS Recall log database exports LAS files with SOBI identifiers with back-slash characters that are not permitted in SKUA- GOCAD 2013.2.

TR35SW24.LAS	12/12/2013 12:33	LAS File	381 KB
TR35SW23.LAS	12/12/2013 12:32	LAS File	366 KB
TR34NW3.LAS	12/12/2013 12:31	LAS File	418 KB
TR24SW2.LAS	12/12/2013 12:30	LAS File	295 KB
TR24SE10.LAS	12/12/2013 12:30	LAS File	454 KB

Table 4 Naming convention for LAS files.

OS Terrain 50 was converted from ESRI grid format to Zmap format for import into SKUA- GOCAD 2013.2. DigMapGB-50 were imported as shapefiles and given an elevation attribution by fitting to OS Terrain 50.

A variety of raster maps showing geological and topographical features were imported as images.

Geological linework, well markers and other stratigraphic data were assigned to their corresponding Horizon feature class (Figure 6).

Horizons		
<input type="checkbox"/>	<input type="checkbox"/> Topography	Project (Active)
<input type="checkbox"/>	<input type="checkbox"/> TopChalkUnconformity	Project (Active)
<input type="checkbox"/>	<input type="checkbox"/> TopCulverChalkFormation	Project (Active)
<input type="checkbox"/>	<input type="checkbox"/> BaseChalkUnconformity	Project (Active)
<input type="checkbox"/>	<input type="checkbox"/> TopNewhavenChalkFormation	Project (Active)
<input type="checkbox"/>	<input type="checkbox"/> TopSeafordChalkFormation	Project (Active)
<input type="checkbox"/>	<input type="checkbox"/> TopLewesNodularChalkFormation	Project (Active)
<input type="checkbox"/>	<input type="checkbox"/> BasePalaeogeneUnconformity	Project (Active)
<input type="checkbox"/>	<input type="checkbox"/> CompositeTopChalkUnconformity	Project (Active)
<input type="checkbox"/>	<input type="checkbox"/> TopBurnhamChalkFormation	Project (Active)
<input type="checkbox"/>	<input type="checkbox"/> TopZigZagChalkFormation	Project (Active)
<input type="checkbox"/>	<input type="checkbox"/> TopHolywellNodularChalkFormation	Project (Active)
<input type="checkbox"/>	<input type="checkbox"/> TopWeltonChalkFormation	Project (Active)
<input type="checkbox"/>	<input type="checkbox"/> TopWestMelburyMarlyChalkFormation	Project (Active)
<input type="checkbox"/>	<input type="checkbox"/> TopNewPitChalkFormation	Project (Active)
<input type="checkbox"/>	<input type="checkbox"/> TopFerribyChalkFormation	Project (Active)
<input type="checkbox"/>	<input type="checkbox"/> TopWestMelburyChalkFormation	Project (Active)

Figure 6 List of Horizon feature classes used in the model.

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