WORKFLOW CONSULTING LIMITED

BCRDL Dust Exposure Calculator

Release 4.1 Release Notes

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Last Updated: 18 February 2008

Please note - for support you should contact the CAPITA-IRISC helpdesk - see the online help file or BCRDLMAN.PDF file for details

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General Background

This release of the BCRDL Dust Exposure Calculator includes changes that allow calculations for UK Coal collieries post 1994 as set out in the Court Order dated 24 May 2005 with adjustments following position papers lodged after the initial beta release.

Requirements

The requirements for the calculation for UK Coal were listed in the original Court Order of 24 May 2005:

(a) Absolute dust levels for the whole period of each Claimant's employment in a UK Coal Mine shall be calculated on a colliery by colliery basis by the use of 'check samples' taken post privatisation, with an equivalence to PXR of 6mg per annum equal to 1 dust unit. The aforesaid check samples are to be discounted by 50%.

(b) Tortious dust throughout the period of each Claimant's employment in UK Coal Mines shall be 3½% above the area figure for BCC in the period immediately prior to privatisation as set out in Schedule 11 of the CHA.

(c) The job factor applicable throughout the period of each Claimant's employment in UK Coal Mines shall remain the same as for BCC employment.

(d) The respirator factor applicable throughout the period of each Claimant's employment in UK Coal Mines shall be the same as for BCC immediately prior to privatisation.

<u>Apportionment between Defendants</u>

(e) Liability to pay each Claimant's damages shall be apportioned between the DTI and UK Coal where appropriate on the basis of 'Option 2' set out in the Report of Mr Bob Mitchell (i.e. apportionment according to tortious dust exposure), dated 31st January 2002.

In addition to these points further correspondence and discussion indicated:

(f) UK Coal took over most of the collieries at the very end of 1994 so for the purpose of the model which only works in half years anyway the UK Coal period for these collieries starts from 1995 on. A few collieries transferred on different dates and these dates have been agreed.

(g) The "uplift" of 16% that is applied to PXR values is not applicable to UK Coal.

(h) Where there are no check values for a particular year for a particular colliery the same method of "extrapolation and interpolation" will be used as is used for PXR surveys. i.e. straight line interpolation will be used between the averaged values for the first year found with some reading before the year with no values and the first year after. At the end of each series any data will be extrapolated - i.e. if there is no value in 1995 or 1996 but there is a value for 1997 the 1997 value will apply to 1995 and 1996 as well. Likewise the values from the last years with readings will be applied to all subsequent years up until the present.

(i) Where a colliery has no readings at all in the post 1994 period where check samples are to be used then an average of all the check samples for all the other UK Coal collieries for each year will be used.

Implementation

Using the same letters ((a) to (i)) as in the requirements these items where dealt with as follows:

(a) Check Sample to PXR Survey conversion

The equivalence of check samples to PXR is given as 6mg to 1 dust unit but the check samples need to be discounted by 50%. The original Wardell Armstrong documentation gives a formula for converting PXR survey data to equivalent dust insult units which if reversed gives:

PXR Score = (Dust Insult Units) x 625/35

Thus because we also have:

Dust Insult Unit = (Check Sample Value to Use in mg)/6mg

And for the 50% discount:

(Check Sample Value to Use in mg) = (Check Sample Value in mg) x 50/100

We can combine the three formulae to give:

PXR Score = (Check Sample Value in mg)/6mg x 50/100 x 625/35

Thus we are able to derive a value equivalent to the PXR Survey values used as the core data for the rest of the model - this can be "plugged" into the Dust Matrix to allow the normal calculation method to be used for UK Coal with the minor adjustments given below. The (Check Sample Value in mg) is taken by averaging all the check samples provided for each year for a particular colliery (and filling in missing data as per (h) and (i) below). To allow for the requirements of (b) and (e) below these PXR survey equivalent values were assigned to new colliery entries based on the name of the BCC colliery with the added identifier of "UK Coal" - so for example "Asfordby" was supplemented with a UK Coal entry "Asfordby UK Coal". A list of the collieries added is given in Appendix 1 along with a note about the check samples found.

As an example of the calculations performed to prepare the "PXR Survey Equivalent" values take pit Asfordby in 1995 where there were three check sample readings as per table below:

Pit	Site	Type	Stat	Mth	Year	First	Avg	Check	Ratio
ASFORDBY	WEST TRUNK	DRIVAGE	NOT COAL	01/05/1995	1995	3.7	3.7	4.3	1.16

ASFORDBY	102 MG HEAD	DRIVAGE	NOT COAL	01/05/1995	1995	0.4	0.4	2.2	5.5
ASFORDBY	WEST MANRIDER	DRIVAGE	NOT COAL	01/05/1995	1995	2.5	2.5	4.8	1.92

The total check sample value is 4.3+2.2+4.8 = 11.3 averaged to 11.3/3 = 3.7667mg. This is converted to dust units by the agreed 6mg per unit thus Dust Insult Units = 3.7667/6 = 0.6278. And is then discounted by 50% to 0.3139. This can then be converted to an equivalent PXR value using:

PXR Score = (Dust Insult Units) x 625/35 = 0.3139 x 625/35 = 5.61

This is then a PXR Survey equivalent value that can be entered as a pseudo PXR survey for 1995 for "Asfordby UK Coal" in the "dust matrix" so the rest of the calculation can be done with little alteration.

(b) Tortious Dust Values

Tortious dust values are held in the model against the "Coal Area" that a colliery is assigned to. The requirement to uplift the tortious dust values by 3.5% was met by creating a set of "pseudo" Coal Areas for UK Coal pits that could be assigned the higher tortious value. Appendix 2 shows what was done - including the period pre UK Coal that was taken as the " period immediately prior to privatisation" and the tortious value that applied in that period and the UK Coal value used (which was 3.5 + prior value as all values are percentages). Each of the "pseudo" collieries created in (a) above was then assigned to the appropriate "pseudo" Coal Area based on the actual Coal Area the pit had been in when it was with British Coal.

(c) Job Factors

No change was needed to the model for these as the values are to be the same as the BCC values.

(d) Respirator Factors

No change was needed to the model for these as the values are to be the same as the BCC values which are in fact no relevant anyway as the respirator factor is applied from the beginning of 1965 to mid 1985 so is not in effect for " BCC immediately prior to privatisation".

(e) Apportionment

The apportionment model requested is **different** to that already specified for Small Mines so a whole new method of apportionment needed to be added using tortious dust values to apportion UK Coal while still using dust insult units to apportion Small Mines. Where there is both Small Mines and UK Coal involvement the system now first splits off the portion for UK Coal as per Mr Bob Mitchell's "Option 2" method and then allocates the remainder between the Small Mines and British Coal using the existing Dust Insult method. This means the model can now apportion for claims where there is BC, UK Coal and Small Mine employment in the same claim (and indeed it can also accommodate claims were there is on UK Coal and Small Mine involvement or claims which have just UK Coal or just Small Mine involvement).

It should be noted that a minor error was found in Mr Bob Mitchell's report. On page 23 of the report he indicates that the "total tortious dust (post limitation with progressively capped respirator correction)" could be calculated "by multiplying the value in line F137 (*Reference 25*) by the total (adjusted) years worked which is given at line F99 (*Reference 12*). While this worked out correctly for his example in fact F99 represents the total adjusted years worked over the whole period but to calculate the total post limitation we need the total adjusted years post limitation. On the output included with Mr Mitchell's report he tags the line "F99: Total adjusted years worked" with his "Reference 12" but also highlights the value used with a "*" and this value is the value beneath row F99 which is "Working years post limitation date". In his particular example all the

work was post limitation so both had value 30. In adjusting the model I have used the "Working years post limitation date" value.

(f) Open range

The actual closure dates of any of the UK Coal pits have now been entered were available. Appendix 3 shows the opening and closing dates that was already held for the UK Coal collieries in the model. Each colliery now has a British Coal part and a UK Coal part - the British Coal part obviously had effective closure when the colliery was transferred to UK Coal and the UK Coal part have effective opening after this. For most collieries which conveniently transferred in December 1994 this means the British Coal end year is set to 1994 and the UK Coal start year to 1995. For the few colliers that transferred mid year the end year for British Coal and the start year for UK Coal have been set to the same value. Were the closure date on record for a colliery was post 1995 that has been entered as the closure date. Appendix 4 shows how the close dates of the "British Coal" entries for these collieries and the open dates for the "UK Coal" entries for these collieries have been adjusted to indicate the transition that took place.

There is a particular anomaly with North Selby - this apparently closed in 1997 as an independent pit but its shafts remained open controlled by Stillingfleet and workers could have been deployed to either North Selby of Stillingfleet shafts. The data provided by UK Coal highlighted this ambiguity as although they said North Selby closed in July 1997 there were check samples for it post 1997. Previous data had North Selby as closing in 2000 and this has been left as the closure date at present. David Carr of UK Coal has suggested: "The North Selby faces were worked out from the Stillingfleet end of the mine after North Selby shafts were closed therefore the results ought to be combined with Stillingfleet from 2000 onwards. It operated as a combined mine from that date and men could be deployed to either end of the mine from that date." Following representation from BERR the model has been setup so that North Selby is shown as being open up to the same date that Stillingfleet finally closed (2004).

(g) Uplift

16% uplift is normally applied to PXR Survey data to account for x-rays that were taken as part of the survey on non mining staff. The model has been altered to not apply this to the "Equivalent" PXR Survey values assigned to the UK Coal collieries post 1994.

(h) Interpolation and Extrapolation

Very little interpolation was required as there were only a few "holes" in the data sets (see Appendix 1). Missing values were calculated by averaging the values for those pits for the years on either side of the hole. For all collieries where there was no reading for years from their transfer year up to the first year with check samples on or after the transfer year the value first found post transfer was used for all the ""preceding missing years". Likewise the value from the last year with check values was used for all years after it (up until closure if date was known).

(i) Averages for collieries with no Check Samples

Only Gascoigne Wood colliery had no check samples post 1994 at all. For this colliery averages across all the check sample readings were used as shown in Appendix 1 - these were converted to PXR Survey equivalent values in the same way described in (a) above.

Using the changes

To perform a calculation for a miner who worked in a UK Coal pit post 1994 just enter all the job history and smoking history data as normal but for the period working in a UK Coal pit post 1994 use the new UK Coal entry for the pit (and if they were at the pit pre UK Coal use the non UK coal version of the pit for that

period. So for example if the miner worked at " Kellingley; N Yorkshire" from 1979 to 2001 enter this as "Kellingley; N Yorkshire" from 1979 to 1994 and "Kellingley UK Coal; N Yorkshire UK Coal" from 1995 to 2001. The rest of the calculation proceeds as normal except at the end of the calculation there will now some extra information which will be something like the below:

Detailed output mode:

Total tortious value post limitation with progressively capped respirator correction for all jobs	563.75
Total tortious value post limitation for UK COAL	159.25
Proportion of liability for UK COAL %	28.25
Final Proportion of Quantum for UK COAL %	7.59
Proportion of liability for NCB/BC %	71.75
Final Proportion of Quantum for NCB/BC %	19.26

Normal output mode:

Final Proportion of Quantum for UK COAL %	7.59
Final Proportion of Quantum for NCB/BC %	19.26

Release Versions

Release 4.1 is a minor change to Release 4.0 adding functionality for UK Coal.

File	New Version	Previous General Release Version
WCLDust.DLL	2.2.1	2.1.8
DUSTDATA.MDB	49 (Note the version of this file is held in table MODELPARM under PARMNAME Version)	46
BCRDL.EXE	2.1.4 (unchanged)	2.1.4
WCLDustM.DLL	1.0.1 (unchanged)	1.0.1
WCLDustO.DLL	1.0.1 (unchanged)	1.0.1

Upgrade Procedures

The new engine is distributed in a Microsoft Windows Installer ".MSI" package (BCRDLDM4.MSI) combined with the standard BCRDL dust data entry component. For normal "standalone" operation this file can just be "double clicked" to initiate the Microsoft Windows Installer. To ensure t he new components and data are installed you **must** first uninstall and then run the installer again to install the new copy fully. Please note that you may need administrator rights to install under Windows NT/2000/XP. If "double clicking" the file does not initiate the installer it probably means you have not got the Windows Installer installed on your system – if so it can be downloaded free of charge from the Microsoft Download Centre (http://www.microsoft.com/downloads/search.asp?).

N.B. This version of the engine will not work with dust data earlier than version 48 as the new requirements have required changes to the structure of the DUSTDATA.MDB

Confirmation of a successful upgrade

When running a calculation the output should now include the version tags as below:

Dust Calculation Engine Version: 2.2.1
Dust Data Version: 49

Windows Vista

The Dust Exposure Calculator was created before Windows Vista was released and so does not officially support Windows Vista however the system has been tested on Windows Vista Business edition and appears to install and run correctly apart from access to the online help files. Microsoft are no longer supporting their old Windows Help file format "out of the box" in Windows Vista. Their explanation of this can be found at http://support.microsoft.com/kb/917607. There is a download of the "Windows Help program (WinHlp32.exe) for Windows Vista" available at http://go.microsoft.com/fwlink/?LinkID=82148 which enables partial support for existing Windows Help format files - this support is slightly crippled as macros in the help file to link to email addresses and external web sites etc. are disabled. With this update installed the online help is effective although the links to Capita support and Workflow Consulting's web site do not work (so need entering manually). Unfortunately Microsoft do not allow software vendors to distribute this download so the only wat to get it is to download it directly from the Microsoft site.

Quality Assurance Tests

Virus Scan

The distributed package was scanned with the Avira AntiVir with their latest virus definitions and found virus free.

Acceptance Testing

The package has been made available for acceptance testing by parties from the CSG, BERR and UK Coal and passed their testing.

Appendix 1: UK Coal Colliery Entries Added

Coal Area	Colliery	Note
Doncaster UK Coal	Rossington UK Coal	Check samples for all years 1996-2002, 2004, 2005
N Nottinghamshire UK Coal	Bilsthorpe UK Coal	Check samples for 1995,1996
N Nottinghamshire UK Coal	Clipstone UK Coal	Check samples for all years 1996-2002
N Nottinghamshire UK Coal	Harworth UK Coal	Check samples for years 1995-2000, 2002, 2004, 2006
N Nottinghamshire UK Coal	Thoresby UK Coal	Check samples for all years 1995-2002, 2004, 2005, 2007
N Nottinghamshire UK Coal	Welbeck UK Coal	Check samples for all years 1995-2002, 2004, 2005, 2007
N West UK Coal	Point of Ayr UK Coal	Check samples for 1995 only
N Yorkshire UK Coal	Gascoigne Wood UK Coal	**No check samples post 1994**
N Yorkshire UK Coal	Kellingley UK Coal	Check samples for all years 1995-2002, 2004-2007
N Yorkshire UK Coal	North Selby UK Coal	Check samples for all years 1995-1999
N Yorkshire UK Coal	Prince of Wales UK Coal	Check samples for all years 1995-2002
N Yorkshire UK Coal	Riccall UK Coal	Check samples for all years 1995-2003
N Yorkshire UK Coal	Stillingfleet UK Coal	Check samples for all years 1995-2002
N Yorkshire UK Coal	Whitemoor UK Coal	Check samples for all years 1995-1997
N Yorkshire UK Coal	Wistow UK Coal	Check samples for all years 1995-2003
Northumberland UK Coal	Ellington UK Coal	Check samples for years 1996-2002 except 2000
S Midlands UK Coal	Daw Mill UK Coal	Check samples for all years 1995-2002, 2004, 2006
S Nottinghamshire UK Coal	Asfordby UK Coal	Check samples for 1995,1996,1997
S Nottinghamshire UK Coal	Calverton UK Coal	Check samples for 1997,1998
S Yorkshire UK Coal	Maltby Main UK Coal	Check samples for all years 1995-2002, 2004, 2005, 2007

The following tables show the actual "PXR Equivalent" values that were calculated. The grey shading shows the open range of the colliery. Red values are interpolated or extrapolated and the purple values (for Gascoigne Wood) are averages - these are also shown in the first column - the averages are calculated from all the original check samples rather than from the values shown in this table (which if used would have been an average of averages thus producing a different result).

Year	AVERAGES	ASFORDBY	BILSTHORPE	CALVERTON	CLIPSTONE
1994	4.59			6.17	6.40
1995	4.46	5.61	4.36	6.17	6.40
1996	5.03	3.42	4.61	6.17	6.40
1997	5.92	3.47	4.61	6.17	5.56
1998	5.97			6.10	5.95
1999	5.02			6.10	6.77
2000	5.18				4.46
2001	4.79				6.70
2002	4.69				3.72
2003	4.43				3.72
2004	4.74				
2005	6.07				
2006	3.83				
2007	7.35				
2008 on					

Year	DAW MILL	ELLINGTON	GASCOIGNE WOOD	HARWORTH	KELLINGLEY
1994					
1995	4.80	3.44	4.46	4.72	4.10
1996	3.30	3.44	5.03	9.03	5.48
1997	4.51	3.89	5.92	8.09	6.92
1998	5.27	3.10	5.97	4.76	4.72
1999	4.34	8.41	5.02	5.01	6.31
2000	3.67	6.22	5.18	8.00	5.58
2001	4.46	4.02	4.79	6.10	6.13
2002	4.22	0.89	4.69	4.20	4.40
2003	4.57	1.51	4.43	4.86	4.26
2004	4.91	2.13	4.74	5.51	4.12
2005	5.02	2.13		3.50	5.95
2006	5.13			1.49	2.38
2007	5.13				3.72
2008 on	5.13				3.72

Year	MALTBY MAIN	NORTH SELBY	POINT OF AYR	PRINCE OF WALES	RICCALL
1994					
1995	4.96	3.00	3.94	3.63	3.40
1996	4.79	4.69	3.94	3.44	4.85
1997	5.84	6.40		3.33	7.01
1998	6.88	9.11		7.19	7.44
1999	4.58	2.23		6.80	3.55
2000	2.50	2.23		9.77	5.36
2001	6.03	2.23		4.69	1.04
2002	4.80	2.23		3.72	6.35
2003	4.63	2.23			2.18
2004	4.46	2.23			2.18
2005	7.34				
2006	6.25				
2007	5.16				
2008 on					

Year	ROSSINGTON	STILLINGFLEET	THORESBY	WELBECK	WHITEMOOR
1994	6.18				
1995	6.18	4.84	4.23	6.21	5.16
1996	6.18	5.23	5.74	5.18	5.40
1997	4.19	4.76	6.34	5.51	4.76
1998	9.97	5.36	6.93	7.51	4.76
1999	3.66	4.84	4.76	4.02	
2000	2.16	4.22	5.54	5.28	
2001	3.79	2.68	5.88	4.94	
2002	5.06	6.58	4.37	5.51	
2003	4.39	6.58	5.26	6.72	
2004	3.72	6.58	6.15	7.92	
2005	3.13		2.60	7.12	
2006	3.13		4.93	10.21	
2007			7.25	13.29	
2008 on			7.25	13.29	

Year	WISTOW
1994	
1995	4.30
1996	5.79
1997	7.16
1998	4.74
1999	5.34
2000	6.04
2001	4.59
2002	4.96
2003	11.16
2004	11.16
2005	
2006	
2007	
2008 on	

Appendix 2: Pseudo Coal Areas Added

ID	Coal Area	Tortious % Value for UK Coal	Tortious Value Period Pre UK Coal	Tortious % Value for BCC Just Prior to UK Coal
301	Barnsley UK Coal	24.5	1990-1995	21
302	Doncaster UK Coal	24.5	1990-1995	21
303	Durham UK Coal	17.5	1990-1995	14
306	Kent UK Coal	17.5	1990-1995	14
307	N Derbyshire UK Coal	17.5	1990-1995	14
309	N Nottinghamshire UK Coal	17.5	1990-1995	14
311	N Yorkshire UK Coal	24.5	1990-1995	21
313	Northumberland UK Coal	17.5	1990-1995	14
314	S Midlands UK Coal	17.5	1990-1995	14
315	S Nottinghamshire UK Coal	22.5	1990-1995	19
316	S Wales UK Coal	24.5	1990-1995	21
317	S Yorkshire UK Coal	22.5	1990-1995	19
319	Staffordshire UK Coal	22.5	1990-1995	19
325	N West UK Coal	22.5	1990-1995	19
338	Scotland South UK Coal	17.5	1990-1995	14
339	Scotland North UK Coal	17.5	1990-1995	14

Note - pseudo areas were created for all the coal areas even though only some will be used as UK Coal did not have pits in all these areas.

Appendix 3: Open/Close Dates Prior to UK Coal Changes

AREA	COLLIERY	OPEN	CLOSE
Doncaster	Rossington	1912	
N Nottinghamshire	Bilsthorpe	1925	1997
N Nottinghamshire	Clipstone	1920	
N Nottinghamshire	Harworth	1920	
N Nottinghamshire	Thoresby	1925	
N Nottinghamshire	Welbeck	1912	
N West	Point of Ayr	1873	1996
N Yorkshire	Gascoigne Wood	1900	
N Yorkshire	Kellingley	1960	
N Yorkshire	North Selby	1900	2000
N Yorkshire	Prince of Wales	1872	
N Yorkshire	Riccall	1900	
N Yorkshire	Stillingfleet	1900	
N Yorkshire	Whitemoor	1900	
N Yorkshire	Wistow	1900	
Northumberland	Ellington	1900	
S Midlands	Daw Mill	1965	
S Nottinghamshire	Asfordby	1989	1997
S Nottinghamshire	Calverton	1938	1999
S Yorkshire	Maltby Main	1910	

Note: 1900 was used by the model as the "default" open date where no clear date was available.

Appendix 4: Open/Close Dates Adjusted for British Coal to UK Coal Transfer

Colliery	British Coal Start	British Coal End	UK Coal Start	UK Coal End	Check Samples in UK Coal Period
Asfordby	1989	1994	1995	1997	Yes
Bilsthorpe	1925	1994	1995	1997	Yes
Calverton [Note 1]	1938	1993	1994	1999	Yes
Clipstone [Note 1]	1920	1994	1994	2003	Yes
Daw Mill	1965	1994	1995	- [Note 3]	Yes
Ellington [Note 1]	1900 [Note 2]	1994	1995	2005	Yes
Gascoigne Wood	1900 [Note 2]	1994	1995	2004	No [Note 5]
Harworth	1920	1994	1995	2006	Yes
Kellingley	1960	1994	1995	- [Note 3]	Yes
Maltby Main	1910	1994	1995	2007	Yes
North Selby	1900 [Note 2]	1994	1995	2004 [Note 4]	Yes
Point of Ayr	1873	1994	1995	1996	Yes
Prince of Wales	1872	1994	1995	2002	Yes
Riccall	1900 [Note 2]	1994	1995	2004	Yes
Rossington [Note 1]	1912	1993	1994	2006	Yes
Stillingfleet	1900 [Note 2]	1994	1995	2004	Yes
Thoresby	1925	1994	1995	- [Note 3]	Yes
Welbeck	1912	1994	1995	- [Note 3]	Yes
Whitemoor	1900 [Note 2]	1994	1995	1998	Yes
Wistow	1900 [Note 2]	1994	1995	2004	Yes

Notes:

1. The highlighted collieries had transfer dates other than the end of 1994 where they opened as UK Coal predecessor RJB.
2. Where the system does not have any recorded definite open date it uses 1900 as the assumed earliest allowable date.
3. No closure date was supplied for these collieries so the system will assume they are still open.
4. In the new closure data North Selby is listed as having closed in July 1997 - however the system already had 2000 as the closure year for North Selby. After discussions between UK Coal and BERR it was agreed that because the North Selby shafts were still in operation as part of Stillingfleet it would be available as a separate choice up until Stillingfleet closed in 2004 - please see specific note in main document
5. There are no check samples available for Gascoigne Wood in the UK Coal period. As per earlier agreement a year by year average of all other check samples for UK Coal pits is used for this colliery (in much the same way as the so called "area averages" are used collieries with no PXR surveys).