CHAIN OF CUSTODY

DORAL MINERAL SANDS
Lot 7 Harris Road, PICTON WA 6229

Doral

Project Name/No.: Yalyalup PASS Sampling Dec 2017	**Results Required Date:**
Email results to: malcolm.newman@doral.com.au damon.bourke@abecenviron.com.au	**Lab / Lab Quote No.:**
	Purchase Order No.: -
COMMENTS: Please keep all samples on cold storage for future CRS analaysis	

LAB ID	SAMPLE ID	DATE/TIME	PHASE	BOTTLE	pHFOX	Cold Storage		CRS					Notes
1752508/038	PASS_52 0-1	11-Dec-17	Soil	250g snaplock	x	x							
039	PASS_52 1-2	11-Dec-17	Soil	250g snaplock	x	x							
040	PASS_52 2-3	11-Dec-17	Soil	250g snaplock	x	x							
041	PASS_52 3-4	11-Dec-17	Soil	250g snaplock	x	x							
042	PASS_52 4-5	11-Dec-17	Soil	250g snaplock	x	x							
043	PASS_52 5-6	11-Dec-17	Soil	250g snaplock	x	x							
044	PASS_52 6-7	11-Dec-17	Soil	250g snaplock	x	x							
045	PASS_52 7-8	11-Dec-17	Soil	250g snaplock	x	x							
046	PASS_52 8-9	11-Dec-17	Soil	250g snaplock	x	x							
047	PASS_47 0-1	11-Dec-17	Soil	250g snaplock	x	x							
048	PASS_47 1-2	11-Dec-17	Soil	250g snaplock	x	x							
049	PASS_47 2-3	11-Dec-17	Soil	250g snaplock	x	x							
050	PASS_47 3-4	11-Dec-17	Soil	250g snaplock	x	x							
051	PASS_47 4-5	11-Dec-17	Soil	250g snaplock	x	x							
052	PASS_47 5-6	11-Dec-17	Soil	250g snaplock	x	x							
053	PASS_47 6-7	11-Dec-17	Soil	250g snaplock	x	x							
054	PASS_47 7-8	11-Dec-17	Soil	250g snaplock	x	x							
055	PASS_47 8-9	11-Dec-17	Soil	250g snaplock	x	x							
1752508/056	PASS_47 9-10	11-Dec-17	Soil	250g snaplock	x	x							

RECEIVED
ChemCentre
By: Kevin Robins
Date: 14-12-17
Time: 10:45
frozen (cold) ambient
Job # 1752508

Relinquished by: Damon Bourke Date: 13/12/17 Received by:

Sample Condition Upon Receipt: Cold.

CHAIN OF CUSTODY

DORAL MINERAL SANDS
Lot 7 Harris Road, PICTON WA 6229

Doral

Project Name/No.: Yalyalup PASS Sampling Dec 2017	**Results Required Date:**
Email results to: malcolm.newman@doral.com.au damon.bourke@abecenviron.com.au	**Lab / Lab Quote No.:**
	Purchase Order No.: -

COMMENTS: Please keep all samples on cold storage for future CRS analaysis

LAB ID	SAMPLE ID	DATE/TIME	PHASE	BOTTLE	pHFOX	Cold Storage		CRS					Notes
175250S/057	PASS_48 0-1	11-Dec-17	Soil	250g snaplock	x	x							
058	PASS_48 1-2	11-Dec-17	Soil	250g snaplock	x	x							
059	PASS_48 2-3	11-Dec-17	Soil	250g snaplock	x	x							
060	PASS_48 3-4	11-Dec-17	Soil	250g snaplock	x	x							
061	PASS_48 4-5	11-Dec-17	Soil	250g snaplock	x	x							
062	PASS_48 5-6	11-Dec-17	Soil	250g snaplock	x	x							
063	PASS_48 6-7	11-Dec-17	Soil	250g snaplock	x	x							
064	PASS_48 7-8	11-Dec-17	Soil	250g snaplock	x	x							
065	PASS_48 8-9	11-Dec-17	Soil	250g snaplock	x	x							
066	PASS_41 0-1	11-Dec-17	Soil	250g snaplock	x	x		✓					
067	PASS_41 1-2	11-Dec-17	Soil	250g snaplock	x	x		✓					
068	PASS_41 2-3	11-Dec-17	Soil	250g snaplock	x	x		✓					
069	PASS_41 3-4	11-Dec-17	Soil	250g snaplock	x	x		✓					
070	PASS_41 4-5	11-Dec-17	Soil	250g snaplock	x	x		✓					
071	PASS_41 5-6	11-Dec-17	Soil	250g snaplock	x	x		✓					
072	PASS_41 6-7	11-Dec-17	Soil	250g snaplock	x	x		✓					
073	PASS_41 7-8	11-Dec-17	Soil	250g snaplock	x	x		✓					
175250S/074	PASS_41 8-9	11-Dec-17	Soil	250g snaplock	x	x		✓					
	~~PASS~~	11-Dec-17	Soil	250g snaplock	x	x							

RECEIVED
ChemCentre
By: Kevin Robins
Date: 14-12-17
Time: 10:45
frozen (cold) ambient
Job # 175250S

Relinquished by: Damon Bourke Date: 13/12/17 Received by:

Sample Condition Upon Receipt: Cold.

CHAIN OF CUSTODY

DORAL MINERAL SANDS
Lot 7 Harris Road, PICTON WA 6229

Doral

Project Name/No.: Yalyalup PASS Sampling Dec 2017	**Results Required Date:**
Email results to: malcolm.newman@doral.com.au damon.bourke@abecenviron.com.au	**Lab / Lab Quote No.:**
	Purchase Order No.: -
COMMENTS: Please keep all samples on cold storage for future CRS analaysis	

LAB ID	SAMPLE ID	DATE/TIME	PHASE	BOTTLE	pHFOX	Cold Storage		CRS					Notes
175250875	PASS_49 0-1	11-Dec-17	Soil	250g snaplock	x	x							
076	PASS_49 1-2	11-Dec-17	Soil	250g snaplock	x	x							
077	PASS_49 2-3	11-Dec-17	Soil	250g snaplock	x	x							
078	PASS_49 3-4	11-Dec-17	Soil	250g snaplock	x	x							
079	PASS_49 4-5	11-Dec-17	Soil	250g snaplock	x	x							
080	PASS_49 5-6	11-Dec-17	Soil	250g snaplock	x	x							
081	PASS_49 6-7	11-Dec-17	Soil	250g snaplock	x	x							
082	PASS_49 7-8	11-Dec-17	Soil	250g snaplock	x	x							
083	PASS_49 8-9	11-Dec-17	Soil	250g snaplock	x	x							
084	PASS_49 9-10	11-Dec-17	Soil	250g snaplock	x	x							
085	PASS_49 10-11	11-Dec-17	Soil	250g snaplock	x	x							
086	PASS_49 11-12	11-Dec-17	Soil	250g snaplock	x	x							
087	PASS_39 0-1	11-Dec-17	Soil	250g snaplock	x	x							
088	PASS_39 1-2	11-Dec-17	Soil	250g snaplock	x	x							
089	PASS_39 2-3	11-Dec-17	Soil	250g snaplock	x	x							
090	PASS_39 3-4	11-Dec-17	Soil	250g snaplock	x	x							
091	PASS_39 4-5	11-Dec-17	Soil	250g snaplock	x	x							
092	PASS_39 5-6	11-Dec-17	Soil	250g snaplock	x	x							
093	PASS_39 6-7	11-Dec-17	Soil	250g snaplock	x	x							

RECEIVED
ChemCentre
By: Kevin Robins
Date: 14-12-17
Time: 19:45
frozen (cold) ambient
Job # 175250875

Relinquished by: Damon Bourke Date: 13/12/17 Received by:

Sample Condition Upon Receipt: Cold.

CHAIN OF CUSTODY

DORAL MINERAL SANDS
Lot 7 Harris Road, PICTON WA 6229

Doral

Project Name/No.: Yalyalup PASS Sampling Dec 2017	**Results Required Date:**
Email results to: malcolm.newman@doral.com.au damon.bourke@abecenviron.com.au	**Lab / Lab Quote No.:**
	Purchase Order No.: -
COMMENTS: Please keep all samples on cold storage for future CRS analaysis	

LAB ID	SAMPLE ID	DATE/TIME	PHASE	BOTTLE	pHFOX	Cold Storage		CRS					Notes
1752508/094	PASS_39 7-8	11-Dec-17	Soil	250g snaplock	x	x							
095	PASS_39 8-9	11-Dec-17	Soil	250g snaplock	x	x							
096	PASS_36 0-1	11-Dec-17	Soil	250g snaplock	x	x		✓					
097	PASS_36 1-2	11-Dec-17	Soil	250g snaplock	x	x		✓					
098	PASS_36 2-3	11-Dec-17	Soil	250g snaplock	x	x		✓					
099	PASS_36 3-4	11-Dec-17	Soil	250g snaplock	x	x		✓					
100	PASS_36 4-5	11-Dec-17	Soil	250g snaplock	x	x		✓					
101	PASS_36 5-6	11-Dec-17	Soil	250g snaplock	x	x		✓					
102	PASS_36 6-7	11-Dec-17	Soil	250g snaplock	x	x		✓					
103	PASS_36 7-8	11-Dec-17	Soil	250g snaplock	x	x		✓					
104	PASS_36 8-9	11-Dec-17	Soil	250g snaplock	x	x		✓					
105	PASS_36 9-10	11-Dec-17	Soil	250g snaplock	x	x		✓					
106	PASS_36 10-11	11-Dec-17	Soil	250g snaplock	x	x		✓					
107	PASS_36 11-12	11-Dec-17	Soil	250g snaplock	x	x		✓					
108	PASS_32 0-1	11-Dec-17	Soil	250g snaplock	x	x		✓					
* 109	PASS_32 1-2	11-Dec-17	Soil	250g snaplock	x	x		✓					
110	PASS_32 2-3	11-Dec-17	Soil	250g snaplock	x	x		✓					
111	PASS_32 3-4	11-Dec-17	Soil	250g snaplock	x	x		✓					
1752508/112	PASS_32 4-5	11-Dec-17	Soil	250g snaplock	x	x		✓					

RECEIVED
ChemCentre
By: Kevin Robins
Date: 14-12-17
Time: 10:45
frozen (cold) ambient
Job # 1752508

Relinquished by: Damon Bourke Date: 13/12/17 Received by:

Sample Condition Upon Receipt: Cold.

* Sample bag labelled PASS_34 1-2m but received in PASS_32 series bag. KSR 14/12/17.

CHAIN OF CUSTODY

DORAL MINERAL SANDS
Lot 7 Harris Road, PICTON WA 6229

Doral

Project Name/No.: Yalyalup PASS Sampling Dec 2017	**Results Required Date:**
Email results to: malcolm.newman@doral.com.au damon.bourke@abecenviron.com.au	**Lab / Lab Quote No.:**
	Purchase Order No.: -
COMMENTS: Please keep all samples on cold storage for future CRS analaysis	

LAB ID	SAMPLE ID	DATE/TIME	PHASE	BOTTLE	pHFOX	Cold Storage		CRS					Notes
1752508/113	PASS_32 5-6	11-Dec-17	Soil	250g snaplock	x	x		✓					
114	PASS_32 6-7	11-Dec-17	Soil	250g snaplock	x	x		✓					
115	PASS_32 7-8	11-Dec-17	Soil	250g snaplock	x	x		✓					
116	PASS_32 8-9	11-Dec-17	Soil	250g snaplock	x	x		✓					
117	PASS_34 0-1	11-Dec-17	Soil	250g snaplock	x	x		✓					
118	PASS_34 1-2	11-Dec-17	Soil	250g snaplock	x	x		✓					
119	PASS_34 2-3	11-Dec-17	Soil	250g snaplock	x	x		✓					
120	PASS_34 3-4	11-Dec-17	Soil	250g snaplock	x	x		✓					
121	PASS_34 4-5	11-Dec-17	Soil	250g snaplock	x	x		✓					
122	PASS_34 5-6	11-Dec-17	Soil	250g snaplock	x	x		✓					
123	PASS_34 6-7	11-Dec-17	Soil	250g snaplock	x	x		✓					
124	PASS_34 7-8	11-Dec-17	Soil	250g snaplock	x	x		✓					
125	PASS_34 8-9	11-Dec-17	Soil	250g snaplock	x	x		✓					
126	PASS_34 9-10	11-Dec-17	Soil	250g snaplock	x	x		✓					
127	PASS_34 10-11	11-Dec-17	Soil	250g snaplock	x	x		✓					
1752508/128	PASS_34 11-12	11-Dec-17	Soil	250g snaplock	x	x		✓					
	PASS_	11-Dec-17	Soil	250g snaplock	x	x							
	PASS_	11-Dec-17	Soil	250g snaplock	x	x							
	PASS_	11-Dec-17	Soil	250g snaplock	x	x							

RECEIVED
ChemCentre
By: Kevin Robins
Date: 14-12-17
Time: 10:45
frozen (cold) ambient
Job # 1752508

Relinquished by: Damon Bourke Date: 13/12/17 Received by:

Sample Condition Upon Receipt: Cold.

CHAIN OF CUSTODY

DORAL MINERAL SANDS
Lot 7 Harris Road, PICTON WA 6229

Doral

Project Name/No.: Yalyalup PASS Sampling Dec 2017	**Results Required Date:**
Email results to: malcolm.newman@doral.com.au damon.bourke@abecenviron.com.au	**Lab / Lab Quote No.:**
	Purchase Order No.: -
COMMENTS: Please keep all samples on cold storage for future CRS analaysis	

LAB ID	SAMPLE ID	DATE/TIME	PHASE	BOTTLE	pHFOX	Cold Storage		CRS					Notes
175250 8/129	PASS_33 0-1	11-Dec-17	Soil	250g snaplock	x	x							
130	PASS_33 1-2	11-Dec-17	Soil	250g snaplock	x	x							
131	PASS_33 2-3	11-Dec-17	Soil	250g snaplock	x	x							
132	PASS_33 3-4	11-Dec-17	Soil	250g snaplock	x	x							
133	PASS_33 4-5	11-Dec-17	Soil	250g snaplock	x	x							
134	PASS_33 5-6	11-Dec-17	Soil	250g snaplock	x	x							
135	PASS_33 6-7	11-Dec-17	Soil	250g snaplock	x	x							
136	PASS_33 7-8	11-Dec-17	Soil	250g snaplock	x	x							
137	PASS_33 8-9	11-Dec-17	Soil	250g snaplock	x	x							
138	PASS_33 9-10	11-Dec-17	Soil	250g snaplock	x	x							
139	PASS_33 10-11	11-Dec-17	Soil	250g snaplock	x	x							
175250 8/140	PASS_33 11-12	11-Dec-17	Soil	250g snaplock	x	x							
	PASS_	11-Dec-17	Soil	250g snaplock	x	x							
	PASS_	11-Dec-17	Soil	250g snaplock	x	x							
	PASS_	11-Dec-17	Soil	250g snaplock	x	x							
	PASS_	11-Dec-17	Soil	250g snaplock	x	x							
	PASS_	11-Dec-17	Soil	250g snaplock	x	x							
	PASS_	11-Dec-17	Soil	250g snaplock	x	x							
	PASS_	11-Dec-17	Soil	250g snaplock	x	x							

~~RECEIVED~~
~~ChemCentre~~
~~By:~~ Kevin Rebiny
~~Date:~~ 14-12-17
~~Time:~~ 15:45
~~frozen~~ (cold) ~~ambient~~
~~Job #~~ 175250 8

Relinquished by: Damon Bourke Date: 13/12/17 Received by:

Sample Condition Upon Receipt: Cold.

CHAIN OF CUSTODY

DORAL MINERAL SANDS
Lot 7 Harris Road, PICTON WA 6229

Doral

Project Name/No.: Yalyalup PASS Sampling Dec 2017					Results Required Date:								
Email results to: malcolm.newman@doral.com.au damon.bourke@abecenviron.com.au					Lab / Lab Quote No.:								
					Purchase Order No.: -								
COMMENTS: Please keep all samples on cold storage for future CRS analaysis					pHFOX	Cold Storage		CRS					Notes
LAB ID	SAMPLE ID	DATE/TIME	PHASE	BOTTLE									
1752508/141	PASS_63 0-1	12-Dec-17	Soil	250g snaplock	x	x		✓					
142	PASS_63 1-2	12-Dec-17	Soil	250g snaplock	x	x		✓					
143	PASS_63 2-3	12-Dec-17	Soil	250g snaplock	x	x		✓					
144	PASS_63 3-4	12-Dec-17	Soil	250g snaplock	x	x		✓					
145	PASS_63 4-5	12-Dec-17	Soil	250g snaplock	x	x		✓					
146	PASS_63 5-6	12-Dec-17	Soil	250g snaplock	x	x		✓					
147	PASS_63 6-7	12-Dec-17	Soil	250g snaplock	x	x		✓					
148	PASS_63 7-8	12-Dec-17	Soil	250g snaplock	x	x		✓					
149	PASS_63 8-9	12-Dec-17	Soil	250g snaplock	x	x		✓					
150	PASS_64 0-1	12-Dec-17	Soil	250g snaplock	x	x							
151	PASS_64 1-2	12-Dec-17	Soil	250g snaplock	x	x							
152	PASS_64 2-3	12-Dec-17	Soil	250g snaplock	x	x							
153	PASS_64 3-4	12-Dec-17	Soil	250g snaplock	x	x							
154	PASS_64 4-5	12-Dec-17	Soil	250g snaplock	x	x							
155	PASS_64 5-6	12-Dec-17	Soil	250g snaplock	x	x							
156	PASS_64 6-7	12-Dec-17	Soil	250g snaplock	x	x							
157	PASS_64 7-8	12-Dec-17	Soil	250g snaplock	x	x							
1752508/158	PASS_64 8-9	12-Dec-17	Soil	250g snaplock	x	x							
	~~PASS~~	12-Dec-17	Soil	250g snaplock	x	x							

RECEIVED
ChemCentre
By: Kevin Robins
Date: 14-12-17
Time: 10:45
frozen (cold) ambient
Job # 1752508

Relinquished by: Damon Bourke Date: 13/12/17 Received by:

Sample Condition Upon Receipt: Cold

CHAIN OF CUSTODY

DORAL MINERAL SANDS
Lot 7 Harris Road, PICTON WA 6229

Doral

Project Name/No.: Yalyalup PASS Sampling Dec 2017	**Results Required Date:**
Email results to: malcolm.newman@doral.com.au damon.bourke@abecenviron.com.au	**Lab / Lab Quote No.:**
	Purchase Order No.: -

COMMENTS: Please keep all samples on cold storage for future CRS analaysis

LAB ID	SAMPLE ID	DATE/TIME	PHASE	BOTTLE	pHFOX	Cold Storage		CRS					Notes
175250S/159	PASS_59 0-1	12-Dec-17	Soil	250g snaplock	x	x							
160	PASS_59 1-2	12-Dec-17	Soil	250g snaplock	x	x							
161	PASS_59 2-3	12-Dec-17	Soil	250g snaplock	x	x							
162	PASS_59 3-4	12-Dec-17	Soil	250g snaplock	x	x							
163	PASS_59 4-5	12-Dec-17	Soil	250g snaplock	x	x							
164	PASS_59 5-6	12-Dec-17	Soil	250g snaplock	x	x							
165	PASS_59 6-7	12-Dec-17	Soil	250g snaplock	x	x							
166	PASS_59 7-8	12-Dec-17	Soil	250g snaplock	x	x							
167	PASS_59 8-9	12-Dec-17	Soil	250g snaplock	x	x							
168	PASS_67 0-1	12-Dec-17	Soil	250g snaplock	x	x							
169	PASS_67 1-2	12-Dec-17	Soil	250g snaplock	x	x							
170	PASS_67 2-3	12-Dec-17	Soil	250g snaplock	x	x							
171	PASS_67 3-4	12-Dec-17	Soil	250g snaplock	x	x							
172	PASS_67 4-5	12-Dec-17	Soil	250g snaplock	x	x							
173	PASS_67 5-6	12-Dec-17	Soil	250g snaplock	x	x							
174	PASS_67 6-7	12-Dec-17	Soil	250g snaplock	x	x							
175	PASS_67 7-8	12-Dec-17	Soil	250g snaplock	x	x							
175250S/176	PASS_67 8-9	12-Dec-17	Soil	250g snaplock	x	x							
	~~PASS_~~	12-Dec-17	Soil	250g snaplock	x	x							

RECEIVED
ChemCentre
By: Kevin Robins
Date: 14-12-17
Time: 10:45
frozen (cold) ambient
Job # 175250S

Relinquished by: Damon Bourke Date: 13/12/17 Received by:

Sample Condition Upon Receipt: Cold.

CHAIN OF CUSTODY

DORAL MINERAL SANDS
Lot 7 Harris Road, PICTON WA 6229

Sheet 11 of 12

Doral

Project Name/No.: Yalyalup PASS Sampling Dec 2017	**Results Required Date:**
Email results to: malcolm.newman@doral.com.au damon.bourke@abecenviron.com.au	**Lab / Lab Quote No.:**
	Purchase Order No.: -

COMMENTS: Please keep all samples on cold storage for future CRS analysis

LAB ID	SAMPLE ID	DATE/TIME	PHASE	BOTTLE	pHFOX	Cold Storage		CRS					Notes
1752508/177	PASS_71 0-1	12-Dec-17	Soil	250g snaplock	x	x							
178	PASS_71 1-2	12-Dec-17	Soil	250g snaplock	x	x							
179	PASS_71 2-3	12-Dec-17	Soil	250g snaplock	x	x							
180	PASS_71 3-4	12-Dec-17	Soil	250g snaplock	x	x							
181	PASS_71 4-5	12-Dec-17	Soil	250g snaplock	x	x							
182	PASS_71 5-6	12-Dec-17	Soil	250g snaplock	x	x							
183	PASS_71 6-7	12-Dec-17	Soil	250g snaplock	x	x							
184	PASS_71 7-8	12-Dec-17	Soil	250g snaplock	x	x							
185	PASS_71 8-9	12-Dec-17	Soil	250g snaplock	x	x							
186	PASS_71 9-10	12-Dec-17	Soil	250g snaplock	x	x							
187	PASS_71 10-11	12-Dec-17	Soil	250g snaplock	x	x							
188	PASS_71 11-12	12-Dec-17	Soil	250g snaplock	x	x							
189	PASS_70 0-1	12-Dec-17	Soil	250g snaplock	x	x		✓					
190	PASS_70 1-2	12-Dec-17	Soil	250g snaplock	x	x		✓					
191	PASS_70 2-3	12-Dec-17	Soil	250g snaplock	x	x		✓					
192	PASS_70 3-4	12-Dec-17	Soil	250g snaplock	x	x		✓					
193	PASS_70 4-5	12-Dec-17	Soil	250g snaplock	x	x		✓					
194	PASS_70 5-6	12-Dec-17	Soil	250g snaplock	x	x		✓					
1752508/195	PASS_70 6-7	12-Dec-17	Soil	250g snaplock	x	x		✓					

RECEIVED
ChemCentre
By: Kevin Robins
Date: 14-12-17
Time: 10:45
frozen (cold) ambient
Job # 1752508

Relinquished by: Damon Bourke Date: 13/12/17 Received by:

Sample Condition Upon Receipt: Cold.

CHAIN OF CUSTODY

DORAL MINERAL SANDS
Lot 7 Harris Road, PICTON WA 6229

Doral

Project Name/No.: Yalyalup PASS Sampling Dec 2017	Results Required Date:
Email results to: malcolm.newman@doral.com.au damon.bourke@abecenviron.com.au	Lab / Lab Quote No.:
	Purchase Order No.: -
COMMENTS: Please keep all samples on cold storage for future CRS analaysis	

LAB ID	SAMPLE ID	DATE/TIME	PHASE	BOTTLE	pHFOX	Cold Storage		CRS					Notes
	PASS_70 7-8	12-Dec-17	Soil	250g snaplock	x	x		✓					
	PASS_70 8-9	12-Dec-17	Soil	250g snaplock	x	x		✓					
	PASS_70 9-10	12-Dec-17	Soil	250g snaplock	x	x		✓					
	PASS_70 10-11	12-Dec-17	Soil	250g snaplock	x	x		✓					
	PASS_70 11-12	12-Dec-17	Soil	250g snaplock	x	x		✓					
	PASS_	12-Dec-17	Soil	250g snaplock	x	x							
	PASS_	12-Dec-17	Soil	250g snaplock	x	x							
	PASS_	12-Dec-17	Soil	250g snaplock	x	x							
	PASS_	12-Dec-17	Soil	250g snaplock	x	x							
	PASS_	12-Dec-17	Soil	250g snaplock	x	x							
	PASS_	12-Dec-17	Soil	250g snaplock	x	x							
	PASS_	12-Dec-17	Soil	250g snaplock	x	x							
	PASS_	12-Dec-17	Soil	250g snaplock	x	x							
	PASS_	12-Dec-17	Soil	250g snaplock	x	x							
	PASS_	12-Dec-17	Soil	250g snaplock	x	x							
	PASS_	12-Dec-17	Soil	250g snaplock	x	x							
	PASS_	12-Dec-17	Soil	250g snaplock	x	x							
	PASS_	12-Dec-17	Soil	250g snaplock	x	x							
	PASS_	12-Dec-17	Soil	250g snaplock	x	x							

Relinquished by: Damon Bourke   Date: 13/12/17   Received by:

Sample Condition Upon Receipt:

Doral

Doral

Doral Mineral Sands Pty Ltd ABN 18 096 342 451 ACN 096 342 451 Lot 7 Harris Road, Picton WA 6229
Tel:+61 8 9725 5444 Fax:+61 8 9725 4557 Email: admin@doral.com.au Website: www.doral.com.au

APPENDIX 2

YALYALUP MINE CLOSURE RISK ASSESSMENT

DARDANUP MINE CLOSURE RISK ASSESSMENT

						Risk Analysis				Control Analysis			
							Inherent				Residual		
Item No.	Risk	Hazard	Possible Causes	Potential Impacts	Worst Case Scenario	Likelihood	Consequence	Risk Rating	Control	Likelihood	Consequence	Risk Rating
1	Compliance	Legal Obligations and commitments	1. Failure to plan to meet legal obligations. 2. Failure to implement / undertake legal obligations. 3. Failure to understand, or difference in interpretation, of obligations.	1. Prosecution with associated penalties. 2. Delay to relinquishing land tenure, involving management time and cost. 3. Cost of rework. 4. Deterioration of public reputation. 5. Failure to get bonds released.	Earthworks are required to rework final landform(s) to meet an obligation.	Possible	Catastrophic	High	1. Legal obligations and commitments identified and included within MCP. 2. MCP includes tracking of how obligations and commitments are being met. 3. 'Decision making stakeholder' review and acceptance of how obligations are being met, prior to closure. 4. AER includes discussion on closure and rehabilitation 5. Update and maintain Legal Compliance Register	Rare	Major	Medium
2	Completion Criteria	Geotechnical stability (subsidence)	1. Backfill in mine pits consolidation pattern is unknown or not as expected. 2. Post-mining land owners build structures on backfilled mining voids.	1. Cost of rework to correct (e.g. maintenance backfilling of shallow slumps). 2. Compensation (cost) to future land users if structures fail. 3. Changes to surface water drainage if not corrected. 4. Restrictions to post-mining agricultural management (e.g. hazards to livestock or restriction to vehicle and equipment movement). 5. Structural failure of road (built over mine pit). 6. Reduced land value at time of sale.	Cost to correct or remedy structure (i.e. road, house or shed) built on backfilled mine pit which fails due to ground subsidence.	Possible	Major	High	1. Mined out road tenure (i.e. areas where post-mining landuse is road reserve) is backfilled with materials that meet compaction specifications. 2. Subsidence monitoring and rework to correct. 3. Land is retained by Doral for at least 3 years prior to resale. 4. Map rehabilitated mine pit backfill types and depth.	Rare	Moderate	Low
3	Completion Criteria	Landuse	1. Landuse not agreed with landowners and/or DMIRS. 2. Change in landuse post-closure to a landuse incompatible with land capability. 3. Post-mining land capability is not able to support agreed landuse.	1. Delay in handover / relinquishment of land as it is not fit for new purpose. 2. Cost to rework to meet required landuse.	Cost of rework to meet landuse standards	Possible	Major	High	1. Landowner agreements include broad post-mining landuse. 2. Over next 6-12 months submit designs and discuss post-mining landuse with landowners to work out details. 3. MCP submitted and approved by DMIRS. 4. Obtain legal advice on mechanisms for limiting Doral's liability of future landholders utilising land for landuses other than those the landform was designed for.	Unlikely	Major	High
4	Completion Criteria	Weeds (agricultural, environmental and declared)	1. Failure to identify, monitor and control weeds	1. Cost of control. 2. Compliance (declared weeds, revegetation composition). 3. Deterioration of public relations. 4. Competition from weeds results in failure of revegetation.	Competition from weeds results in revegetation failure (either native or agricultural revegetation).	Almost certain	Moderate	Extreme	1. Pre-disturbance surveys 2. Inspections 3. Removal and spraying of weeds in native vegetation areas and declared weeds. 4. Implement weed control in other agricultural areas.	Unlikely	Minor	Low

					Risk Analysis				Control Analysis			
						Inherent				Residual		
Item No.	Risk	Hazard	Possible Causes	Potential Impacts	Worst Case Scenario	Likelihood	Consequence	Risk Rating	Control	Likelihood	Consequence	Risk Rating
5	Completion Criteria	Agricultural Productivity (is not as good as or better than pre-mining levels)	1. Post-mining soil profiles do not support productive pastures 2. Saline ground water contaminates surface soils 3. Poor pasture management practices (e.g. fertiliser use, weed control, stock management)	1. Post-mining land fails to be as productive as pre-mining land. 2. Loss of access to future deposits. 3. Inability to realise commercial value of land held by Doral upon sale of land.	Landowners refuse to provide access to southern extension and other future mining areas	Possible	Catastrophic	Extreme	1. Design soils profiles for each rehab block with at least 1m of soil materials on top of sand tails. 2. Keep 100mm of topsoil and subsoil where available for use in rehab. 3. Measure soil properties and agricultural productivity (pre and post mining). 4. Control of brackish and saline groundwater during operations, such that rehab surface soils are not contaminated. 5. Implement good practice pasture management practices. 6. Develop and obtain landholder agreement to detailed landform designs.	Unlikely	Moderate	Medium
6	Completion Criteria	Erosion	1. Unstable and unvegetated surface soils (i.e. sands) and drainage lines. 2. Landform design does not accommodate surface water flows off site.	1. Unacceptable turbidity in waterways. 2. Meandering drainage lines kill revegetation by eroding and/or sedimentation of vegetation. 3. Increase siltation within drainage lines . 4. Cost of rework. 5. Deterioration of public reputation. 6. Impacts on neighbours (e.g. road reserves, adjoining landowners)	Unstable drainage line meanders annually killing vegetation, modifying topography and deteriorating downstream water quality.	Unlikely	Moderate	Medium	1. Reconstruct drainage lines less than 1:130. Where they are at a steeper slope than this rock armouring is utilised to prevent scouring. 2. Each drainage line created in rehabilitation areas is subject to site specific design. 3. Inspection and rework to correct smaller issues before escalation to significant damage.	Rare	Minor	Low
7	Completion Criteria	Contaminated Sites	1. Dry plant tails not adequately covered with low radiation soils. 2. Diesel (or other hydrocarbon) spill or leak. 3. Acid Sulphate Soils are oxidised creating acidity.	1. Elevated radiation levels at the final landform surface. 2. Hydrocarbon contaminated soil and/or water. 3. Acidified soil and/or water.	Contaminated site prevents relinquishment of land and incurs significant costs for ongoing treatment	Possible	Major	High	1. Undertake hydrocarbon site contamination assessment. 2. Decontaminate any hydrocarbon contamination identified. 3. Pre- and post-mining radiation surveys. 4. Water and soil monitoring to detect acidification resulting from ASS. 5. Implementation of the ASS Managment Plan.	Rare	Moderate	
8	Completion Criteria	Native Revegetation (fails to establish where planted)	1. Planted in areas with too little soil water available (e.g. mine voids backfilled with sand tails). 2. Stock or vermin (e.g. rabbits) eat seedlings 3. Area is unexpectedly waterlogged and seedlings die due to waterlogging. 4. Vegetation succumbs to disease (i.e.. dieback). 5. Erosion 6. Weed competition. 7. Low rainfall seasonal conditions.	1. Native vegetation rehabilitation targets not able to be achieved (resulting in compliance issue, loss of licence to operate and/or difficulty getting access to new areas). 2. Cost of rework (where rework solution is possible). 3. Change to post-mining landuse.	Native revegetation fails to establish.	Likely	Major	Extreme	1. Deep rooted vegetation is not planted in rehabilitated mine pits that have been backfilled with sand tails. 2. Seedlings area planted and tree guards installed. 3. Implement dieback management measures. 4. Vegetation species are selected based on the expected conditions of the site (e.g. wetland species to be planted in areas where waterlogging could be expected). 5. Kangaroo fencing and managed culling. 6. Rabbit control baiting. 7. Site preparation activities, including weed control for 2 years prior to planting, ripping and scalping. 8. Inspection and adaptive management (response to weeds, grazing pressure, erosion)	Unlikely	Moderate	Medium
9	Completion Criteria	Mining Infrastructure removal (failure to completely remove)	1. Not enough money available at closure to remove all infrastructure. 2. Not all infrastructure identified and costed. 3. Recovery/Sale value assumed in cost estimate overly optimistic.	1. Delay in handover / relinquishment of land until infrastructure removed. 2. Ongoing liability to public safety for any infrastructure left on site. 3. Deterioration of public reputation.	Delay in handover / relinquish of land resulting in ongoing cost incursion.	Possible	Major	High	1. Closure cost estimates and provisioning includes removal of infrastructure. 2. Closure cost estimates and provisioning is reviewed and updated on annual basis.	Unlikely	Major	High

					Risk Analysis				Control Analysis			
						Inherent				Residual		
Item No.	Risk	Hazard	Possible Causes	Potential Impacts	Worst Case Scenario	Likelihood	Consequence	Risk Rating	Control	Likelihood	Consequence	Risk Rating
10	Completion Criteria	Infrastructure reinstatement (failure to reinstate to required standard)	1. Failure to plan to reinstate all required infrastructure. 2. Reinstated instructure not build to required standard.	1. Unplanned rework cost. 2. Delay in handover / relinquishment of land.	Cost of rework / remediation.	Possible	Major	High	1. Infrastructure to be reinstated is clearly identified and costed for within MCP. 2. Utilisation of City of Busselton road standards. 3. Define irrigation and access infrastructure in consultation with landholders and include within MCP.	Rare	Moderate	Low
11	Completion Criteria	Groundwater (does not return similar to pre-mining functioning)	1. Groundwater patterns and flows on site not understood. 2. Groundwater flows and quality not considered in rehabilitation planning. 3. Backfill of mine pits with sand or overburden/tails locally changes the groundwater behaviour (i.e. localised waterlogging / flooding occurs, or soil suffers springtime 'drought').	1. Amenity / use of land is compromised. 2. Agricultural productivity is reduced. 3. Land not able to sustain target native vegetation growth. 4. Neighbours water bores dry up at or post-closure.	Neighbours water bores dry up at or post-closure.	Possible	Moderate	High	1. Groundwater investigation, modelling and assessment undertaken, including post-mining groundwater recovery. 2. Groundwater monitoring includes neighbouring landowners bores.	Unlikely	Moderate	Medium
12	Completion Criteria	Native revegetation areas (are not sustained)	1. Dieback kills established vegetation 2. Altered water regime (ie local drought or waterlogging resulting from removal of SEPs)	1. Loss of access to future deposits. 2. Deterioration of public reputation.	Native vegetation dies shortly after closure and acccess to future mineral deposits is denied by Government.	Unlikely	Catastrophic	High	1. Legal mechanisms for implementing management controls of are established by Doral prior to land transfer.	Rare	Catastrophic	High
13	Completion Criteria	Landforms (do not support agreed landuses)	1. Design landforms and soil profiles do not support agreed landuse. 2. Performance of landforms and soil profiles not well understood and assumptions prove incorrect. 3. Landforms and soil profiles are not created (implemented) as designed.	1. Delay in handover / relinquishment of land as it is not fit for new landuse 2. Cost to rework to meet agreed landuse.	Cost of rework / remediation.	Possible	Major	High	1. Landform and soil profile design based on industry experience, good science and site specific information. 2. Adequate supervision of rehabilitation activities so that landforms and soil profiles are created as designed. 3. Monitor/measure performance of landforms and soil profiles in rehabilitated areas, and incorporate any learnings/lessons into future rehabilitation design.	Unlikely	Major	Medium
14	Cost	Inadequate Provision	1. Underestimate of costs 2. Specific items required at and post-closure are not costed. 3. Assumptions used prove to be inaccurate. 4. Schedule blows out.	1. State government pursues Doral owners for costs. 2. Deterioration of public reputation.	State government pursues Doral owners for costs	Likely	Catastrophic	Extreme	1. Annual review of MCP and cost estimates, with continual improvement in the level of detail contained. 2. Feedback from actual rehabilitation expenditure is utilised in updates to rehabilitation cost estimates and provisioning. 3. Assumptions used in cost estimates to be included within the MCP and reviewed annually.	Unlikely	Catastrophic	High
15	Closure Plan	Schedules	1. Closure implementation not planned for. 2. Closure implementation schedule not based on learnings from progressive rehabilitation. 3. Schedule is not location specific.	1. Cost overrun due to increased duration of activities. 2. Deterioration of public reputation. 3. Impact on neighbouring landowners and community due ongoing delays (e.g. ongoing road closures, noise impacts, irrigation channel control)	Cost overrun due to increased duration of activities	Likely	Catastrophic	Extreme	1. MCP and rehabilitation schedule annually updated. 2. Ongoing consultation with neighbours, community and other stakeholders regarding planned implementation of closure.	Unlikely	Major	High