



# APG Consultants

## Palynostratigraphic Data

## Katnook #2

### Report 651/01

Page 1 of 11

21/06/2000

(Print: 07:37 7/7/00)

Sample Depth Prep. Number	Palynostratigraphic Unit Age [Index Species]	Inferred Lithostratigraphic Unit (Log interpreted Unit (Morton et al 1995))	Inferred Depositional Environment	Palynomorph			Remarks
				Preservation	Yield	Diversity	
	Eumeralla Formation   ?m - 1892m						
SWC 30 1846.0m P19658	APK321  <i>Ruffordiaspora</i> - <i>Cyathidites</i> palynofacies  [ <i>F. wonthaggiensis</i> , <i>P. parvispinosus</i> , ]	lower Eumeralla Formation or upper Windermere Member  (lower Eumeralla Formation)	Fluvial - shallow lacustrine	Fair  thin, corroded but mostly entire; somewhat over oxidised	Moderate	Moderate	Palynoflora dominated by fern spores but are somewhat restricted in diversity; mostly <i>Cyathidites spp</i> , <i>Osmundacidites</i> conspicuous; <i>Ruffordiaspora</i> notable; isolated <i>Pilosisorites sp.</i> Conifer pollen remnants prominent; mostly unassignable corroded and fragmented inaperturate pollen and saccate pollen remnants. Lycopod spores prominent; mostly <i>Ceratosporites equalis</i> , <i>Retitriteles</i> conspicuous but few identifiable; <i>L. verrucatus</i> notable. Bryophytes scarce and restricted in diversity. Aquatic forms notable; mostly leiospheres.
SWC 28 & 50 1851.0m P19549	APK12 - APK3 tentatively APK3  <i>?Cyathidites</i> palynofacies  [ <i>D. speciosus</i> , <i>C. equalis</i> ,]	lower Eumeralla Formation or upper Windermere Member  (lower Eumeralla Formation)	Shallow lacustrine	Fair  thin, corroded but mostly entire; somewhat over oxidised	Moderate	Moderate	Palynoflora dominated by fern spores but are restricted in diversity; mostly <i>Cyathidites spp</i> , <i>Osmundacidites</i> conspicuous. Conifer pollen remnants sub dominant; mostly corroded and fragmented inaperturate pollen and saccate pollen remnants that are mostly unidentifiable. Lycopod spores prominent; mostly <i>Ceratosporites equalis</i> , <i>Retitriteles</i> conspicuous but few identifiable; <i>L. verrucatus</i> notable. Bryophytes scarce and restricted in diversity. Aquatic forms conspicuous; mostly leiospheres.
SWC 26 1857.0m P19550	APK321  <i>Pilosisorites</i> - <i>Cyathidites</i> palynofacies  [ <i>P. notensis</i> , <i>P. rotundus</i> , <i>P. parvispinosus</i> , <i>R. australiensis</i> , <i>C. variabilis</i> , <i>F. asymmetricus</i> , <i>F. wonthaggiensis</i> "lunaris" <i>D. speciosus</i> , <i>C. equalis</i> ]	lower Eumeralla Formation or upper Windermere Member  (lower Eumeralla Formation)	Shallow lacustrine	Fair  Slide 1 thin, mostly entire; over oxidised; slides 2 & 3 strongly over oxidised	Moderate	High	Palynoflora dominated by conifer pollen; mostly fragmented saccate pollen and inaperturate pollen remnants; few identifiable. Cycad pollen ( <i>Cycadopites</i> ) notable. Fern pollen subdominant; mostly <i>Cyathidites</i> , <i>Pilosisorites notensis</i> conspicuous. Bryophyte spores notable and moderately diverse. Lycopod spores scarce and restricted in diversity. Aquatic form conspicuous; mostly small leiospheres; <i>S. reticulatus</i> notable.
Core 1861.6m P19551	APK321  <i>Pilosisorites</i> - <i>Cyathidites</i> palynofacies  [ <i>P. notensis</i> , <i>P. rotundus</i> , <i>P. parvispinosus</i> , <i>R. australiensis</i> , <i>R. Ludbrookiae</i> , <i>R. "megaaustralensis"</i> , <i>F. asymmetricus</i> , <i>F. wonthaggiensis</i> , <i>D. speciosus</i> , <i>C. equalis</i> ]	lower Eumeralla Formation or upper Windermere Member  (lower Eumeralla Formation)	Fluvial - shallow lacustrine	Fair  Slide 1 & 2 thin, some fragmented;	Moderate	High	Palynoflora dominated by fern pollen dominant; mostly <i>Cyathidites minor</i> , <i>Pilosisorites spp</i> prominent; <i>Ruffordiaspora</i> scarce but moderately diverse. Conifer pollen subdominant; mostly fragmented saccate pollen and inaperturate pollen remnants; few identifiable; trisaccate pollen prominent. Bryophyte spores conspicuous but restricted in diversity; mostly <i>Foraminisporis</i> . Lycopod spores scarce and restricted in diversity. Few aquatic forms conspicuous; mostly small leiospheres.
1861.6m	Deepest occurrence of <i>Pilosisorites parvispinosus</i>						



# APG Consultants

## Palynostratigraphic Data

## Katnook #2

### Report 651/01

Page 2 of 11

21/06/2000

(Print: 07:37 7/7/00)

Sample Depth Prep. Number	Palynostratigraphic Unit Age [Index Species]	Inferred Lithostratigraphic Unit (Log interpreted Unit (Morton et al 1995))	Inferred Depositional Environment	Palynomorph			Remarks
				Preservation	Yield	Diversity	
Core 1865.5m P19552	APK2- APK3 possibly APK31  <i>Ruffordiaspora</i> - <i>Cyathidites</i> palynofacies  [ <i>F. wonthaggiensis</i> , <i>D. speciosus</i> , <i>R. australiensis</i> , <i>R. ludbrookiae</i> ]	lower Eumeralla Formation or upper Windermere Member  ( <i>lower Eumeralla Formation</i> )	Fluvial shallow lacustrine; ?paralic	Poor  Slide 1 & 2 thin corroded and fragmented	Low	Moderate	Conifer pollen co-dominant; mostly by fragmented saccate pollen and inaperturate pollen remnants; few identifiable. Spore associations restricted in diversity; mostly the more robust forms identifiable. Fern spores co-dominant; mostly <i>Cyathidites</i> , <i>Ruffordiaspora</i> scarce but modestly diverse. Lycopod spores notable; mostly <i>Leptolepidites</i> and <i>Ceratosporites</i> . Few Bryophytes. Few aquatic forms; isolated spinose acritarch.
Core 1869.9m P19553	APK22- APK321 possibly APK31  <i>Ruffordiaspora</i> - <i>Cyathidites</i> Palynofacies  [ <i>P. notensis</i> , <i>D. speciosus</i> , <i>R. australiensis</i> ]	basal Eumeralla Formation or Windermere - Katnook Sandstone  ( <i>lower Eumeralla Formation</i> )	Fluvial - shallow lacustrine	Very poor  Slide 1 & 2 thin corroded fragmented & stained	Low	Moderate	Palynoflora sparse with a high proportion of unidentifiable remnants. Conifer pollen prominent; mostly ?saccate and inaperturate pollen fragments; very few identifiable. Spores dominant but mostly the more robust distinctively ornamented forms identified. Fern spores prominent; mostly <i>Cyathidites</i> , <i>Pilosporites</i> scarce; <i>Ruffordiaspora</i> scarce. Lycopod spores conspicuous; mostly <i>Leptolepidites</i> and <i>Ceratosporites</i> . Few bryophyte spores. Aquatic forms conspicuous; mostly small leiospheres.
1874.46m	<b>Shallowest occurrence of <i>Microfsta evansii</i>; it is present consistently from this level down into the Crayfish Group</b>						
Core 1874.46m P19554	APK31 - APK321 possibly APK31  <i>Ruffordiaspora</i> - <i>Cyathidites</i> Palynofacies  [ <i>P. notensis</i> , <i>F. asymmetricus</i> , <i>R. australiensis</i> , <i>R. ludbrookiae</i> , <i>Cica. hughesii</i> , <i>M. evansii</i> ]	basal Eumeralla Formation or Windermere - Katnook Sandstone  ( <i>lower Eumeralla Formation</i> )	Fluvial	Poor  Slide 1 & 2 very thin corroded & fragmented	Moderate	Moderate	Palynoflora dominated by thin fragmented inaperturate pollen and saccate pollen remnants; few identifiable and difficult to distinguish from thin corroded cuticle fragments. Spores prominent but many thin fragmented and unidentifiable. Fern spores prominent; mostly <i>Cyathidites</i> , isolated <i>Pilosporites</i> ; <i>Ruffordiaspora</i> - <i>Cicatricosisporites</i> scarce but modestly diverse. Lycopod spores notable but mostly the more robust distinctively ornamented forms. Few Bryophyte spores. Aquatic forms notable; isolated <i>M. evansii</i> .
Core 1874.97m P19555	APK22 - APK321 possibly APK22 - APK31  <i>Ruffordiaspora</i> - <i>Cyathidites</i> Palynofacies  [ <i>P. notensis</i> , <i>C. variabilis</i> , <i>C. stylosus</i> , <i>R. ludbrookiae</i> , <i>R. "tirawarensis"</i> , <i>M. evansii</i> ]	basal Eumeralla Formation or Windermere - Katnook Sandstone  ( <i>lower Eumeralla Formation</i> )	Fluvial - shallow lacustrine	Poor  corroded and fragmented	Low	High	Palynoflora dominated by thin fragmented inaperturate pollen and saccate pollen remnants; few identifiable and difficult to distinguish from thin corroded cuticle fragments. Fern spores prominent; mostly <i>Cyathidites</i> , isolated <i>Pilosporites</i> , <i>Ruffordiaspora</i> - <i>Cicatricosisporites</i> scarce but modestly diverse. Lycopod spores notable but mostly the more robust distinctively ornamented forms. Few Bryophyte spores. Aquatic forms notable; <i>S. reticulata</i> notable; <i>M. evansii</i> scarce.
Core 1875.23m P19556	Indeterminant Mesozoic  [ <i>M. antarcticus</i> , <i>Cyathidites</i> ]	Indeterminate  ( <i>basal Eumeralla Formation</i> )	Oxidising depositional environment	Very poor  corroded and fragmented	Very low	Extremely low	Meagre recovery of mostly unidentifiable fragments; few modern contaminants (angiosperm pollen). Probably a sandy lithology



# APG Consultants

## Palynostratigraphic Data

## Katnook #2

### Report 651/01

Page 3 of 11

21/06/2000

(Print: 07:37 7/7/00)

Sample Depth Prep. Number	Palynostratigraphic Unit Age [ <i>Index Species</i> ]	Inferred Lithostratigraphic Unit ( <i>Log interpreted Unit (Morton et al 1995)</i> )	Inferred Depositional Environment	Palynomorph			Remarks
				Preservation	Yield	Diversity	
1877.24m	Shallowest occurrence of <i>Microfasta evansii</i> in substantial numbers						
Core 1877.24m P19557	APK22 - APK321 probably APK22 - APK31  <i>Ruffordiaspora - Cyathidites</i> Palynofacies  [ <i>Pilosporites ingramii</i> , <i>R. australiensis</i> , <i>R. ludbrookiae</i> , <i>R. "mega-australiensis"</i> , <i>F. "burgeri"</i> , <i>M. evansii</i> ]	basal Eumeralla Formation or Windermere - Katnook Sandstone  ( <i>basal Eumeralla Formation</i> )	Shallow lacustrine	Poor  some strongly corroded & fragmented; some entire but strongly stained	Moderate	High	Fern spore dominant; mostly <i>Cyathidites</i> , <i>Ruffordiaspora - Cicatricosisporites</i> conspicuous and moderately diverse; <i>Pilosporites</i> isolated. Conifer pollen prominent; mostly Inaperturate pollen remnants. Lycopod spores scarce and restricted in diversity. Bryophyte spores notable. Aquatic forms conspicuus; mostly small leiospheres ( <i>Sigmopollis</i> ); <i>Microfasta evansii</i> conspicuous. Minor Tertiary and modern contamination.
	Windermere Sandstone Member 1880 - 1892m						
SWC 25 1880.0m P19558	Indeterminate	Indeterminate  ( <i>Windermere Sandstone Member</i> )	Oxidising depositional environment; ?fluvial	Very poor	extremely low	extremely low	Extremely meagre palynofloras of mostly unidentifiable remnants.
SWC 23 1885.0m P19559	AAPJ6 - APK4  [ <i>L. verrucatus</i> , <i>L. pudens</i> , "V". "pseudobasymmetricus"]	Indeterminate Otway Supergroup  ( <i>Windermere Sandstone Member</i> )	Fluvial	Poor	Very low	Very low	Sparse restricted palynoflora; mostly unidentifiable fragments often difficult to distinguish from cuticle remnants. <i>Cyathidites</i> conspicuous. Few leiospheres
	Katnook Sandstone 1892m - 1979m						
SWC 22 1893.6m P19560	Indeterminate	Indeterminate  ( <i>upper Katnook Sandstone</i> )	Oxidising depositional environment; ?fluvial	Poor	almost nil	almost nil	Very little organic matter recovered; few identifiable palynomorphs.
SWC 21 & 46 1896.5m P19561	APK31  <i>Ruffordiaspora - Cyathidites</i> Palynofacies  [ <i>P. notensis</i> , <i>P. ingramii</i> , <i>R. australiensis</i> , <i>R. ludbrookiae</i> , <i>R. "mega-australiensis"</i> , <i>F. asymmetricus</i> , <i>T. reticulata</i> , <i>M. evansii</i> ]	basal Eumeralla Formation or Windermere Member - Katnook Sandstone  ( <i>upper Katnook Sandstone</i> )	Fluvial	Poor  mostly thin, some fragmented	Moderate	Moderate	Palynoflora dominated by fern spores; mostly <i>Cyathidites australis</i> , <i>Ruffordiaspora</i> conspicuous and morphologically diverse; <i>Trilobosporites</i> notable; <i>Pilosporites</i> scarce. Conifer pollen conspicuous; mostly inaperturate pollen remnants. Bryophyte spores sparse and restricted. Lycopod spores sparse and restricted. Few aquatic forms; mostly leiospheres; isolated <i>M. evansii</i> .
	Deepest unequivocal occurrence of <i>Pilosporites spp</i>						The isolated <i>P. notensis</i> from 21.3m is regarded by Morgan, 1989, 1993 as contamination



# APG Consultants

## Palynostratigraphic Data

## Katnook #2

### Report 651/01

Page 4 of 11

21/06/2000

(Print: 07:37 7/7/00)

Sample Depth Prep. Number	Palynostratigraphic Unit Age [Index Species]	Inferred Lithostratigraphic Unit (Log interpreted Unit (Morton et al 1995))	Inferred Depositional Environment	Palynomorph			Remarks
				Preservation	Yield	Diversity	
SWC 19 1905.0m P19562	Mesozoic	Indeterminate lower Otway Supergroup  (Katnook Sandstone)	Oxidising depositional environment; ?fluvial	Poor  mostly fragmented remnants	Extremely low	Almost nil	Very little organic matter recovered; few identifiable palynomorphs; mostly <i>Cyathidites</i> fragments.
1909m	Shallowest of the " <i>Osmundacidites</i> Palynofacies"						
SWC 18 & 44 1909.0m P19563	APK122- APK3  ? <i>Ruffordiaspora</i> - <i>Osmundacidites</i> Palynofacies  [ <i>D. speciosus</i> , <i>M. evansii</i> , <i>R. ludbrookiae</i> ]	Indeterminate lower Otway Supergroup  (Katnook Sandstone)	Fluvial	Poor  thin, some fragmented	Low	Low	Palynoflora dominated by fern spores; mostly <i>Osmundacidites</i> and <i>Cyathidites</i> . Conifer pollen conspicuous; mostly trisaccate pollen. Lycopod spores notable. Bryophyte spores sparse. Few Aquatic forms; mostly leiospheres; isolated <i>M. evansii</i> .
SWC 43 1912.2m P19564	APJ6 - APK3  ? <i>Osmundacidites</i> Palynofacies  [ <i>F. daiyui</i> , <i>S. reticulata</i> ]	Indeterminate lower Otway Supergroup  (Katnook Sandstone)	Fluvial	Poor  thin, some fragmented	Very low	Very low	Sparse and restricted palynoflora. Mostly fern spores ( <i>Cyathidites</i> and <i>Osmundacidites</i> ). Aquatic forms notable; mostly leiospheres.
SWC 16 1917.6m P19565	upper APK21 - APK3  ? <i>Osmundacidites</i> Palynofacies  [ <i>C. equalis</i> , <i>Cyco. hughesii</i> , <i>D. "westbournensis"</i> , <i>T. reticulatus</i> , <i>M. evansii</i> ]	Indeterminate lower Otway Supergroup  (Katnook Sandstone)	Fluvial - shallow lacustrine; ?paralic	Poor  thin, stained, some fragmented	Low	Low	Sparse and restricted palynoflora. Mostly fern spores ( <i>Cyathidites</i> and <i>Osmundacidites</i> ). Aquatic forms notable; mostly leiospheres; <i>M. evansii evansii</i> notable.
SWC 15 & 42 1925.0m P19566	APK31  ? <i>Ruffordiaspora</i> - <i>Osmundacidites</i> Palynofacies  [ <i>F. asymmetricus</i> , <i>Ruffordiaspora</i> sp, <i>Cyco hughesii</i> , <i>D. speciosus</i> ]	basal Eumeralla Formation or Windermere Member - Katnook Sandstone  (Katnook Sandstone)	Fluvial - shallow lacustrine; ?paralic	Poor  Thin, some corroded and fragmented	Low	Moderate	Palynoflora dominated by fern spores; mostly <i>Cyathidites</i> and <i>Osmundacidites</i> . Lycopod spores and bryophyte spores scarce. Conifer pollen notable; mostly fragmented remnants. Aquatic forms scarce.
1925.0m	Deepest occurrence of <i>Foraminisporis asymmetricus</i>						<i>F. asymmetricus</i> was recovered in Core2 2871.5m but the origins of at least the second slide recorded as being from Core2 2871.5m is in doubt (see remarks for Core2 2871.5m)



# APG Consultants

## Palynostratigraphic Data

## Katnook #2

### Report 651/01

Page 5 of 11

21/06/2000

(Print: 07:37 7/7/00)

Sample Depth Prep. Number	Palynostratigraphic Unit Age [Index Species]	Inferred Lithostratigraphic Unit (Log interpreted Unit (Morton et al 1995))	Inferred Depositional Environment	Palynomorph			Remarks
				Preservation	Yield	Diversity	
SWC 41 1932.0m P19567	upper APK21 - APK31 tentatively APK22  <i>Ruffordiaspora - Osmundacidites</i> Palynofacies  [ <i>F. wonthaggiensis</i> , <i>C. equalis</i> , <i>Ruffordiaspora "mega-australiensis"</i> , <i>Cyclo hughesii</i> , <i>D. speciosus</i> , <i>M. evansii</i> (abundant)]	basal Eumeralla Formation or Windermere Member - Katnook Sandstone  ( <i>Katnook Sandstone</i> )	Fluvial - shallow lacustrine	Poor  thin, fragmented	Low	Low	Palynoflora dominated by fern spores; mostly <i>Cyathidites</i> and <i>Osmundacidites</i> . Lycopod spores notable but somewhat restricted in diversity. Bryophyte spores scarce; mostly corroded remnants. Aquatic forms notable; mostly leiospheres; <i>M. evansii</i> notable (up to two to a traverse)
Between 1932.0m and 2026.0m	94m Sample Gap						
	Laira Formation 1980m - 2850m (upper Laira Formation 1980m - 2490m)						
SWC 13 & 39 2026.0m P19568	APK1 - APK3 tentatively Upper APK21 - APK31  <i>?Ruffordiaspora - Osmundacidites</i> Palynofacies  [ <i>Ruffordiaspora</i> sp., <i>C. equalis</i> , <i>M. evansii</i> ]	basal Eumeralla Formation or Windermere Member - Katnook Sandstone  ( <i>upper Laira Formation</i> )	Fluvial	Very poor  thin, corroded, fragmented, some stained	Very low	Low	Palynoflora dominated by fern spores; mostly <i>Osmundacidites</i> and <i>Cyathidites</i> . Few recognisable conifer pollen or Bryophyte spores. Lycopod spores notable but mostly unidentifiable. Few aquatic forms; <i>M. evansii</i> scarce.
Between 2026m and 2103m	77m Sample Gap						
SWC 12 2103.0m P19569	APK22  Conifer Palynofacies  [ <i>C. stylosus</i> , <i>P. "neograndis"</i> , <i>Cyclo. hughesii</i> , <i>D. speciosus</i> ]	basal Eumeralla Formation or Windermere Member - Katnook Sandstone  ( <i>upper Laira Formation</i> )	Fluvial - shallow lacustrine	Poor  diffuse, corroded and fragmented, some stained	Moderate	Moderate	Palynoflora dominated by saccate pollen and inaperturate pollen; mostly unidentifiable remnants; ?immature ?gymnosperm pollen sporangial clusters notable. Lycopod spores conspicuous; <i>Retitriteles</i> and <i>Leptolepidites</i> notable. Fern spores conspicuous; mostly <i>Cyathidites</i> . Bryophyte spores scarce. Aquatic forms notable; <i>M. evansii</i> notable
2103.0	Deepest occurrence of <i>Pilosiporites notensis sensu lato</i>						Morgan, 1989, 1993 regards this specimen of <i>Pilosiporites notensis</i> s/as contamination



# APG Consultants

## Palynostratigraphic Data

## Katnook #2

### Report 651/01

Page 6 of 11

21/06/2000

(Print: 07:37 7/7/00)

Sample Depth Prep. Number	Palynostratigraphic Unit Age [Index Species]	Inferred Lithostratigraphic Unit (Log interpreted Unit (Morton et al 1995))	Inferred Depositional Environment	Palynomorph			Remarks
				Preservation	Yield	Diversity	
SWC 11 & 38 2111.5m P19570	Upper APK21 - APK31 possibly Upper APK21  <i>Ruffordiaspora - Osmundacidites</i> Palynofacies  [ <i>R. ludbrookiae</i> , <i>Cicatricosisporites hughesii</i> , <i>Fisciniasporites "burgeri"</i> , <i>F. wonthaggiensis</i> , <i>M. evansii</i> ]	upper Laira Formation  (upper Laira Formation)	Fluvial - shallow lacustrine	Poor  thin, corroded fragmented	Low	Low	Sparse restricted palynoflora. Mostly saccate pollen and inaperturate pollen remnants; few identifiable and often difficult to distinguish from cuticle fragments. Fern spores conspicuous; mostly <i>Cyathidites</i> and <i>Osmundacidites</i> ; <i>Ruffordia-Cicatricosisporites</i> group scarce but diverse. Few bryophyte and lycopod spores. Aquatic forms notable; mostly leiospheres; <i>M. evansii</i> scarce.
SWC 27 2131.5m P19571	Middle APK21 - 31 possibly Upper APK21  <i>?Ruffordiaspora - Osmundacidites</i> Palynofacies  [ <i>F. wonthaggiensis</i> , <i>Ruffordiaspora</i> spp, <i>M. evansii</i> ]	upper Laira Formation  (upper Laira Formation)	Fluvial - shallow lacustrine	Very poor  thin, corroded, fragmented, diffuse	Moderate	Low	Mostly saccate pollen and inaperturate pollen remnants; few identifiable and often difficult to distinguish from cuticle fragments and leiospheres. Cryptogam spores conspicuous but mostly fragmented and difficult to identify; Fern spores conspicuous mostly <i>Cyathidites</i> and <i>Osmundacidites</i> ; scarce <i>Ruffordiaspora</i> . Few bryophyte and lycopod spores. Aquatic forms notable; mostly leiospheres; <i>M. evansii</i> notable.
SWC 9 & 36 2155.0m P19572	Upper APK21 - APK2 probably Upper APK21  <i>Ruffordiaspora - Osmundacidites</i> Palynofacies  [ <i>?F. wonthaggiensis</i> , <i>C. stylosus</i> , <i>D. speciosus</i> , <i>R. "mega-australiensis"</i> , <i>R. australiensis</i> , <i>C. equalis "robustus"</i> , <i>C. equalis "tenuisetosus"</i> , <i>D. filiosus</i> , <i>M. evansii</i> ]	upper Laira Formation  (upper Laira Formation)	Fluvial - shallow lacustrine	Poor  thin, some fragmented and corroded	Moderate	High	Conifer pollen co-dominant; mostly saccate pollen and inaperturate pollen remnants; trisaccate pollen conspicuous. Fern spores co-dominant; mostly <i>Osmundacidites</i> and <i>Cyathidites</i> ; scarce <i>Ruffordiaspora</i> . Lycopod spores notable and moderately diverse; mostly <i>Retitriteles</i> . Bryophyte spores scarce but modestly diverse. Aquatic forms conspicuous; mostly <i>M. evansii</i>
SWC 8 & 35 2171.0m P19573	APK122 - APK2 possibly Middle APK21 - Upper APK21  Conifer palynofacies  [ <i>D. speciosus</i> , <i>Cyelo hughesii</i> , <i>A. spinulosus</i> , <i>C. stylosus</i> , <i>C. equalis "rotundus"</i> , <i>M. evansii</i> (abundant)]	upper Laira Formation  (upper Laira Formation)	Shallow lacustrine	Poor  thin, some fragmented and corroded	Moderate	High	Conifer pollen dominant; mostly bisaccate and trisaccate pollen remnants. Fern spores subdominant; mostly <i>Osmundacidites</i> and <i>Cyathidites</i> . Lycopod spores prominent and moderately diverse; mostly <i>Retitriteles</i> and <i>Kekryphalospora</i> . Bryophyte spores scarce and restricted in diversity. Aquatic forms conspicuous; mostly <i>Microfista evansii</i> .



Sample Depth Prep. Number	Palynostratigraphic Unit Age [Index Species]	Inferred Lithostratigraphic Unit (Log interpreted Unit (Morton et al 1995))	Inferred Depositional Environment	Palynomorph			Remarks
				Preservation	Yield	Diversity	
SWC 34 2177.0m P17574	Upper APK21 - APK22 probably Upper APK21  <i>Ruffordiaspora</i> - <i>Osmundacidites</i> Palynofacies  [ <i>R. ludbrookiae</i> , <i>R. australiensis</i> , <i>R. "mega-australiensis"</i> , <i>Cyelo hughesii</i> , <i>D. speciosus</i> , <i>C. equalis</i> "rotundus", <i>D. filiosus</i> , <i>F. wonthaggiensis</i> wonthaggiensis, <i>T. reticulatus</i> , <i>A. verrucosus</i> , <i>S. lunaris</i> , <i>M. evansii</i> ]	upper Laira Formation  (upper <i>Laira Formation</i> )	Fluvial - shallow lacustrine. ?Paralic.	Poor  thin corroded fragmented	Moderate	Moderate	Palynoflora dominated by fern spores; mostly <i>Osmundacidites</i> , <i>Ruffordiaspora</i> sparse but modestly diverse. Conifer pollen conspicuous; mostly saccate pollen remnants but most difficult to distinguish from cuticle fragments. Lycopod and bryophyte spores notable but difficult to assign to species. Aquatic forms notable; <i>M. evansii</i> notable.
2177.0m	Deepest occurrence of consistent, moderately diverse <i>Ruffordiaspora</i> spp. Deepest <i>Foraminisporis wonthaggiensis</i> "wonthaggiensis" 662s						
Between 2177m and 2566m	389m Sample Gap						
	lower <i>Laira Formation</i> 2490m - 2850m						Mid APK21 not recognized; probably within this sample gap
SWC 33 2566.0m P19575	Lower APK21 - Middle APK21  <i>Cyathidites</i> Palynofacies  [ <i>Cyelo hughesii</i> , <i>C. equalis</i> , <i>F. wonthaggiensis</i> "gracilis" <i>S. "killanoolensis"</i> , <i>A. spinulosus</i> , <i>M. evansii</i> ]	<i>Laira Formation</i>  (lower <i>Laira Formation</i> )	Fluvial	Poor  thin, stained, some corroded & fragmented;	Moderate	Moderate	Fern spore dominated palynoflora; mostly <i>Cyathidites</i> and <i>Osmundacidites</i> . Conifer pollen prominent; mostly fragmented inaperturate pollen. Lycopod and bryophyte spores scarce. Aquatic forms scarce; <i>M. evansii</i> scarce
SWC 32 2595.5m P19576	Upper APK122 - APK2 possibly Middle APK21  Conifer Palynofacies  [ <i>Cyelo hughesii</i> , <i>C. equalis</i> "rotundus", <i>D. speciosus</i> , <i>A. spinulosus</i> , <i>A. verrucosus</i> , <i>Januasporites</i> spp., <i>T. reticulatus</i> , <i>M. evansii</i> ]	mid <i>Laira Formation</i>  (lower <i>Laira Formation</i> )	Lacustrine	Poor  over oxidised, thin, corroded but mostly entire	Moderate	Moderate	Palynoflora dominated by inaperturate pollen remnants; bi and trisaccate pollen conspicuous. Fern spores conspicuous but restricted in diversity; mostly <i>Osmundacidites</i> . Lycopod spores notable but restricted in diversity. Bryophyte spores scarce. Aquatic forms subdominant; mostly <i>M. evansii</i> .  Note: Morgan 1989 positively records <i>T. reticulatus</i> ; however the present study could not relocate this specimen and found only poorly preserved (rather thin) specimens the best of which had a recognisable perine with a coarse distal reticulum but the finer proximal reticulum was poorly resolved (if at all); its assignment therefor is somewhat tentative but accepted. The record of <i>F. wonthaggiensis</i> by Morgan, 1989 falls outside the presently adopted morphological limits of this taxon.



Sample Depth Prep. Number	Palynostratigraphic Unit Age [Index Species]	Inferred Lithostratigraphic Unit (Log interpreted Unit (Morton et al 1995))	Inferred Depositional Environment	Palynomorph			Remarks
				Preservation	Yield	Diversity	
2595.5m	Deepest <i>Januasporites</i> spp, <i>Aequitriradites</i> spp, deepest abundant <i>Microfasta evansii</i> acme Deepest <i>Triporoletes reticulatus</i>						
SWC 7 2697.0m P19577	APK1 - APK4  [ <i>M. evansii</i> ]	Otway Supergroup  (lower <i>Laira</i> Formation)	indeterminate	Poor	Very low	Extremely low	Very little organic matter recovered; mostly opaque palynodebris; very few identifiable palynomorphs
SWC 6 2724.5m P19578	APK122 - APK21 possibly Middle APK21  <i>Osmundacidites</i> - <i>Retitritiletes</i> Palynofacies  [ <i>C. equalis</i> , <i>C. "mackundaensis"</i> , <i>Cyclo. hughesii</i> , <i>D. "cloisonne"</i> , <i>D. speciosus</i> , <i>C. stylosus</i> , <i>F. wonthaggiensis "gracilis"</i> , <i>M. evansii</i> ]	mid to lower (but not basal) Crayfish Sub Group  (lower <i>Laira</i> Formation)	Fluvial	Very poor  Thin, corroded, stained, some fragmented.	Low	Moderate	Palynoflora dominated by fern spores; mostly <i>Osmundacidites</i> . Conifer pollen conspicuous; mostly ?inaperturate pollen remnants; few identifiable saccate pollen remnants. Lycopods conspicuous; mostly <i>Retitritiletes</i> . Bryophytes scarce and restricted in diversity. Aquatic forms scarce; isolated <i>M. evansii</i> .  <i>F. wonthaggiensis "gracilis"</i> is represented by a rather poorly preserved remnant in which the proximal face is corroded; the identification is somewhat tentative but accepted.
	Deepest occurrence of <i>Foraminisporis wonthaggiensis "gracilis"</i>						
	Deepest sample with a reasonable recovery of identifiable palynomorphs with respect of reliably establishing 3 <sup>rd</sup> and 4 <sup>th</sup> order Palynostratigraphic Units.						
SWC 5 2753.0m P19579	APK122 - APK21 possibly APK122  Lycopod Palynofacies  [ <i>D. speciosus</i> , <i>D. "cloisonne"</i> , <i>C. equalis</i> ]	mid to lower (but not basal) Crayfish Sub Group  (lower <i>Laira</i> Formation)	Fluvial	Very poor  thin, corroded stained and fragmented	Low	Low	Palynoflora dominated by lycopod spores; mostly <i>Retitritiletes</i> . Fern spores conspicuous but restricted in diversity. Conifer pollen remnants conspicuous but few identifiable. Few bryophyte spores. Few aquatic forms.
	Pretty Hill Formation 2850m - TD						





Sample Depth Prep. Number	Palynostratigraphic Unit Age [Index Species]	Inferred Lithostratigraphic Unit (Log interpreted Unit (Morton et al 1995))	Inferred Depositional Environment	Palynomorph			Remarks
				Preservation	Yield	Diversity	
Core 2 2870.6m P19580	Middle APK122 - Middle APK21 probably APK122 (no older Middle APK122)  ? <i>Osmundacidites</i> - <i>Retitriteles</i> Palynofacies  [ <i>Cyclo hughesii</i> , ? <i>D. speciosus</i> , <i>R. ludbrookiae</i> "parallelus" <i>C. equalis</i> , <i>M. evansi</i> ]	mid to lower (but not basal) Crayfish Sub Group  (upper Pretty Hill Formation)	Fluvial	Very poor  thin, corroded stained and fragmented	Low	Very low	Palynoflora restricted and mostly unidentifiable saccate pollen and spore remnants.
Core 2 2871.5m P19581	Middle APK122 - Middle APK21 probably APK122 (no older Middle APK122)  (See remarks)  [ <i>S. "killanoolensis"</i> , <i>R. ludbrookiae</i> "parallelus"]	Indeterminate  (upper Pretty Hill Formation)	Indeterminate	Very poor  thin, corroded stained and fragmented	Low	Very low	<b>SLIDE 1 ONLY</b> Palynoflora restricted and mostly unidentifiable saccate pollen and spore remnants.  Note: the second slide labelled as being from Core 2871.5m is fairly sparse with relatively few identifiable forms; much (if not all) of the cuticle, pollen and spores seem too fresh (in comparison to the first slide and also to the overlying samples) to be endemic to 2871.5m. The taxa from the second slide (which includes the APK22 - APK3 forms such as <i>Foraminisporis asymmetricus</i> , <i>Pilosporites parvispinosus</i> , <i>Crybelosporites stylosus</i> , <i>Crybelosporites "burgeri"</i> , <i>Ruffordiaspora australiensis</i> , <i>Ruffordiaspora ludbrookiae</i> ) have been omitted from the distribution lists. Interestingly, one of the slides given as 1877.24m had been labelled initially as 2873.8m (and another slide the reverse); perhaps the conventional cores from Katnook #2 were all processed together (or consecutive batches) and there has been a laboratory mixup between Core 1 - 1877.24m and Core 2 - 2873.8m (recognised and corrected at the time) and between Core 2 - 2871.5m and a sample from Core 1 (not recognised).
	<b>Deepest occurrence of large <i>Ruffordiaspora</i> spp, and <i>S. "killanoolensis"</i></b>						
Core 2 2873.8m P19582	APK122 - APK21 probably APK122  ? <i>Osmundacidites</i> - <i>Retitriteles</i> Palynofacies  [ <i>C. equalis</i> , <i>Cyclo. hughesii</i> , ? <i>D. speciosus</i> , <i>L. bellfordii</i> ]	middle Crayfish Sub Group  (upper Pretty Hill Formation)	Fluvial	Very poor  thin, corroded stained and fragmented	Low	Low	Palynoflora restricted in diversity; mostly unidentifiable remnants.
Core 2 2876.3m P19583	APK122 - lower APK21 probably APK122  ? <i>Osmundacidites</i> - <i>Retitriteles</i> Palynofacies  [ <i>C. equalis</i> "rotundus", <i>Cyclosporites</i> sp, <i>D. "cloisonne"</i> , <i>M. evansi</i> , <i>Crybelosporites "burgeri"</i> ]	middle Crayfish Sub Group  (upper Pretty Hill Formation)	Fluvial	Very poor  thin, corroded stained and fragmented	Low	Low	Palynoflora restricted in diversity; mostly unidentifiable remnants; almost no saccate pollen identifiable.



# APG Consultants

## Palynostratigraphic Data

## Katnook #2

### Report 651/01

Page 10 of 11

21/06/2000

(Print: 07:37 7/7/00)

Sample Depth Prep. Number	Palynostratigraphic Unit Age [Index Species]	Inferred Lithostratigraphic Unit (Log interpreted Unit (Morton et al 1995))	Inferred Depositional Environment	Palynomorph			Remarks
				Preservation	Yield	Diversity	
2876.3m	Deepest <i>C. equalis</i> "rotundus".						
	Below 2876.3m, most samples gave poor palynomorph recoveries; reliable palynostratigraphic resolution generally limited to 1 <sup>st</sup> and 2 <sup>nd</sup> order units						
SWC23 2883.0m P19584	APJ3 - APK2  [ <i>L. verrucatus</i> ]	mid to lower Crayfish Sub Group  (upper Pretty Hill Formation)	Fluvial	Extremely poor  thin, strongly corroded stained and fragmented	Very low	Very low	Palynoflora restricted in diversity; mostly unidentifiable remnants; many remnants difficult to distinguish from cuticle remnants.
SWC 3 2907.4m P19585	Mesozoic	Indeterminate  (upper Pretty Hill Formation)	Fluvial	Extremely poor  thin, strongly corroded stained and fragmented	Extremely low	Extremely low	Palynoflora sparse and extremely restricted in diversity; mostly unidentifiable remnants; many remnants difficult to distinguish from cuticle remnants.
SWC 2 3031.0m P19586	Mesozoic	Indeterminate  (upper Pretty Hill Formation)	Indeterminate	Extremely poor  thin, strongly corroded stained and fragmented	Extremely low	Extremely low	Palynoflora sparse and extremely restricted in diversity; mostly unidentifiable remnants; many remnants difficult to distinguish from cuticle remnants. A significant proportion of the few forms identifiable seem likely to be contaminants.
SWC 1 3035.0m P19587	APK122 - lower APK21 probably APK122  ?Conifer Palynofacies  [ <i>Cyclo. hughesii</i> , <i>C. equalis</i> , <i>D. speciosus</i> "strigosus", ? <i>D. speciosus speciosus</i> , <i>D. "cloisonne"</i> , <i>M. evansi</i> ]	middle Crayfish Group  (upper Pretty Hill Formation)	Fluvial	Very Poor  Thin, corroded, stained; many fragmented	Moderate	Low	Mostly unidentifiable remnants; many palynomorph fragments (especially the saccate and inaperturate pollen) difficult to distinguish from corroded cuticle fragments. Lycopod spores conspicuous and moderately diverse. Isolated aquatic forms (including <i>M. evansi</i> ) recognisable.
3035.0m	Deepest <i>Dictyosporites speciosus</i> .						
3035.0m	Deepest sample with a sufficient recovery of identifiable palynomorphs to reliably establish 1 <sup>st</sup> & 2 <sup>nd</sup> order Palynostratigraphic Units; only 1 <sup>st</sup> order units resolved below this.						



Sample Depth Prep. Number	Palynostratigraphic Unit Age [Index Species]	Inferred Lithostratigraphic Unit (Log interpreted Unit (Morton et al 1995))	Inferred Depositional Environment	Palynomorph			Remarks
				Preservation	Yield	Diversity	
SWC 16 3059.0m P19588	APK1 - APK21 possibly APK1  [ <i>C. "quasilinearis"</i> , <i>R. australiensis</i> , <i>Contignisporites</i> , <i>L. verrucatus</i> , <i>L. major</i> ,]	middle Crayfish Group  (upper Pretty Hill Formation)	Fluvial	Very poor  corroded, stained, carbonised	Low	Very low	Low recovery of identifiable forms; mostly the more robust forms. A minor but significant proportion of less carbonised somewhat over oxidized forms (including <i>Ruffordiaspora australiensis</i> ) which probably represent mud borne contamination
Between 3059m and 3195.5m	100.5m sample gap						
SWC 12 3159.5m P19589	Mesozoic	Indeterminate  (upper Pretty Hill Formation)	Fluvial	Extremely poor	Extremely low	almost nil	Very meagre yield of organic matter; almost no identifiable forms; few remnants probably derived from mud contamination.
Between 3195.5m and 3256.5m	97m sample gap						
SWC 9 3256.5m P19659	Indeterminate	Indeterminate  (upper Pretty Hill Formation)	Indeterminate	Variable	Almost nil	Almost nil	Extremely meagre yield of organic matter; very few identifiable forms most of which probably are derived from the drilling mud.
Between 3256.5m and 3440.0m	183.5m sample gap						
SWC 2 3440.0m P19660	APJ6 - APK21 possibly APK1  [ <i>L. verrucatus</i> , <i>C. "quasihughesii"</i> , <i>M. antarcticus</i> ]	middle Crayfish Sub Group  (upper Pretty Hill Formation)	Fluvial	Very poor  corroded, fragmented, stained, some thin	Low	Very low	Sparse palynoflora of mostly unidentifiable fragments; only the more robust forms identifiable. Saccate pollen fragments prominent but almost all unidentifiable. Lycopod spore remnants conspicuous.