



Terms and Conditions of Use of Digitised Theses from Trinity College Library Dublin

Copyright statement

All material supplied by Trinity College Library is protected by copyright (under the Copyright and Related Rights Act, 2000 as amended) and other relevant Intellectual Property Rights. By accessing and using a Digitised Thesis from Trinity College Library you acknowledge that all Intellectual Property Rights in any Works supplied are the sole and exclusive property of the copyright and/or other IPR holder. Specific copyright holders may not be explicitly identified. Use of materials from other sources within a thesis should not be construed as a claim over them.

A non-exclusive, non-transferable licence is hereby granted to those using or reproducing, in whole or in part, the material for valid purposes, providing the copyright owners are acknowledged using the normal conventions. Where specific permission to use material is required, this is identified and such permission must be sought from the copyright holder or agency cited.

Liability statement

By using a Digitised Thesis, I accept that Trinity College Dublin bears no legal responsibility for the accuracy, legality or comprehensiveness of materials contained within the thesis, and that Trinity College Dublin accepts no liability for indirect, consequential, or incidental, damages or losses arising from use of the thesis for whatever reason. Information located in a thesis may be subject to specific use constraints, details of which may not be explicitly described. It is the responsibility of potential and actual users to be aware of such constraints and to abide by them. By making use of material from a digitised thesis, you accept these copyright and disclaimer provisions. Where it is brought to the attention of Trinity College Library that there may be a breach of copyright or other restraint, it is the policy to withdraw or take down access to a thesis while the issue is being resolved.

Access Agreement

By using a Digitised Thesis from Trinity College Library you are bound by the following Terms & Conditions. Please read them carefully.

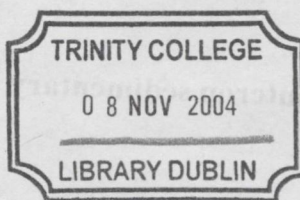
I have read and I understand the following statement: All material supplied via a Digitised Thesis from Trinity College Library is protected by copyright and other intellectual property rights, and duplication or sale of all or part of any of a thesis is not permitted, except that material may be duplicated by you for your research use or for educational purposes in electronic or print form providing the copyright owners are acknowledged using the normal conventions. You must obtain permission for any other use. Electronic or print copies may not be offered, whether for sale or otherwise to anyone. This copy has been supplied on the understanding that it is copyright material and that no quotation from the thesis may be published without proper acknowledgement.

APPENDIX II

Core and outcrop sedimentary logs (1:50 scale)

01443796





THOSIS

7845.2

SEDIMENTOLOGICAL CORE AND OUTCROP LOGS

KEY TO LITHOLOGIES, CONTACTS AND SEDIMENTARY STRUCTURES

SCALE
1:50

N S MEADOWS

LITHOLOGY

	CONGLOMERATE
	INTRACLAST CONGLOMERATE
	SANDSTONE
	SILTY SANDSTONE
	SILTSTONE
	CLAYSTONE

M MASSIVE

R RUBBLE

CLAYSTONE INTRACLASTS

SANDSTONE INTRACLASTS

GRANULES AND PEBBLES

PALAEOW FLOW DIRECTIONS - FLUVIAL

PALAEOW FLOW DIRECTIONS - AEOLIAN

BEDDING CONTACTS

	SHARP
	EROSIONAL/SCOURED
	LOADED
	DESICCATED
	BIOTURBATED

BIOGENIC STRUCTURES

	ROOTLET TRACES
	BIOTURBATED - HORIZONTAL
	BIOTURBATED - VERTICAL
	BIOTURBATED - CHURNED
	INDENT - TETRAPOD FOOTPRINT

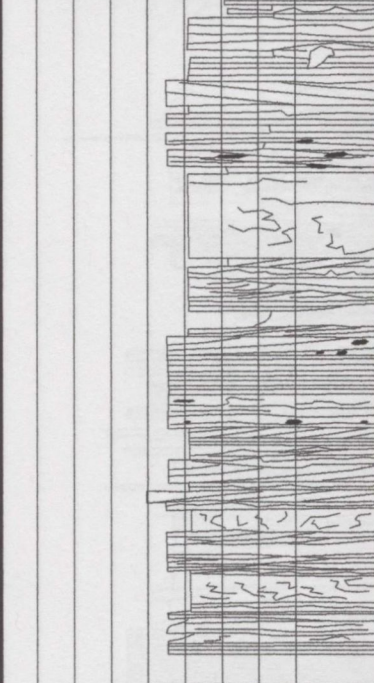
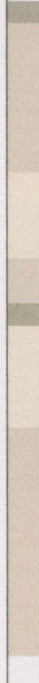
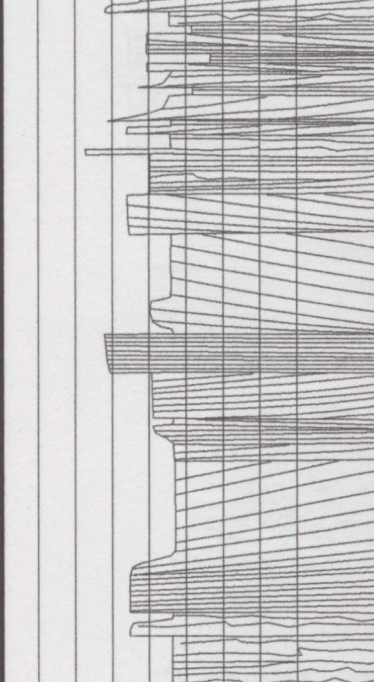
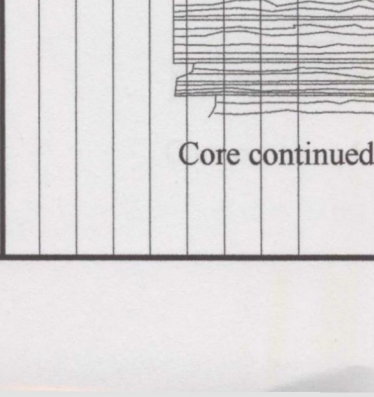
SEDIMENTARY STRUCTURES

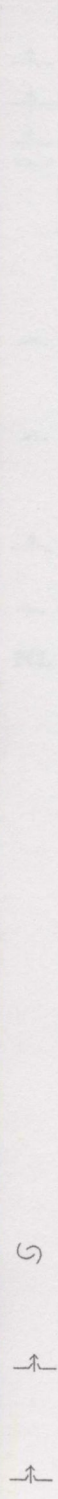
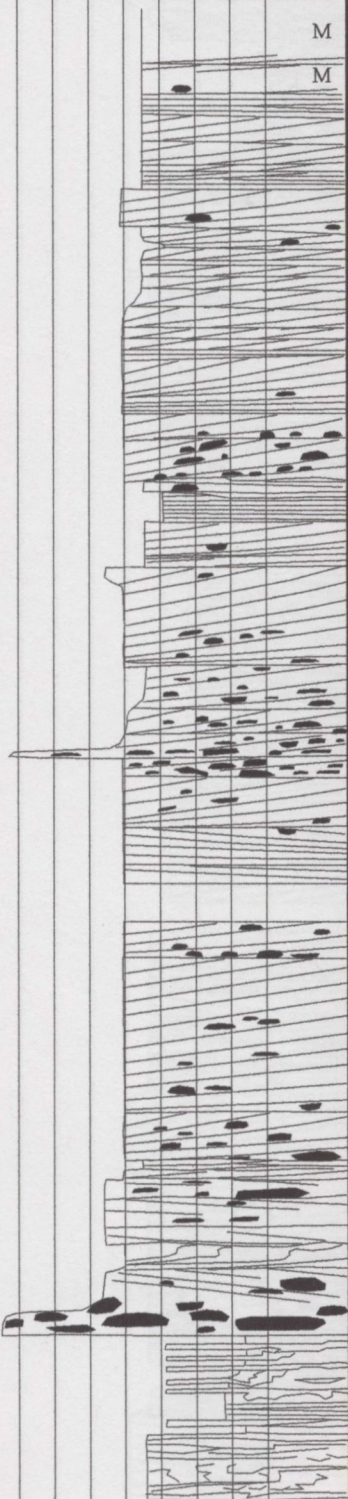
	HORIZONTAL/LAMINATION
	CROSS STRATIFICATION
	TROUGH CROSS-STRATIFICATION
	CURRENT RIPPLES
	WAVE RIPPLES
	WIND RIPPLES
	ADHESION RIPPLES
	LOADED
PCL	PRIMARY CURRENT LINEATION
	WATER MODIFICATION/RAINPRINTS
	DESICCATION CRACK
	WATER ESCAPE/INJECTION
	SLUMPED BEDDING
	COLLAPSE STRUCTURES

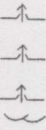
SECONDARY STRUCTURES

	NODULES
	CONCRETIONS
	OPEN FRACTURE
	PARTIALLY CEMENTED FRACTURE
	CEMENTED FRACTURE
BS	BRECCIATED SEDIMENT
Cal	CALCITE
Dol	DOLOMITE
An	ANHYDRITE
Qtz	QUARTZ
Lim	LIMONITE
Py	PYRITE
Bit	BITUMEN
	PERVASIVE CEMENT

[illegible]

Neil Meadows			Location: Well 110/2-6				Stratigraphy Ormskirk Sdst. Fm.																			
Scale: 1:50			Sheet 2 of 27				Structural dip: n/a		Grid. Ref.n/a																	
Stratigraphy	Sed surfaces & pet. samples	Drillers depth/ vertical to bed (metres)	Grain Size and Structures								Lithology	Sedimentary features	Azimuth of cross strat	Post-depositional modification	Diagenesis and fractures	Colour	Comments	Facies								
			Pebble	Granule	Very coarse sand	Coarse sand	Medium sand	Fine sand	Very fine sand	Silt									Clay							
Ormskirk Sandstone Formation OS2b Member			Cored interval continued																							
		950																Micaceous siltstone and wave modified current ripples in moderately sorted very fine sandstone overlying poorly to bimodally sorted and irregularly laminated medium sandstones	PONDED SANDFLAT							
	950.95																						DAMP SANDFLAT			
		953.72									PCL							Poorly sorted fine sandstones interbedded with well to bimodally sorted medium sandstones, partially soft sediment deformed with admixed siltstone and very fine sandstone; sparse sub-horizontal burrows	WET TO PONDED SANDFLAT							
		955																Strongly bimodally sorted and finely laminated fine and medium sandstones with common wind ripples and abundant aeolian type grains	SHEETFLOOD							
		956.15																Bimodally sorted and finely laminated medium and coarse sandstones with cross stratified sets dominated by grainfall laminae interbedded with flat to low angle laminae dominated by wind ripples	DAMP SANDFLAT							
		957.95																Poorly sorted fine and medium sandstones with irregular lamination and silty partings, locally disrupted by Planolites-type burrows	AEOLIAN SANDSHEET							
		960																								
Core continued																										

Neil Meadows			Location: Well 110/2-6				Stratigraphy: Ormskirk Sdst. Fm											
Scale: 1:50			Sheet 4 of 27				Structural dip: n/a		Grid. Ref. n/a									
Stratigraphy	Sed. surfaces & pet. samples	Drillers depth/vertical to bed (metres)	Grain Size and Structures								Lithology	Sedimentary features	Azimuth of cross strat	Post-depositional modification	Diagenesis and fractures	Colour	Comments	Facies
			Pebble	Granule	Very coarse sand	Coarse sand	Medium sand	Fine sand	Very fine sand	Silt								
Sherwood Sandstone Group Ormskirk Sandstone Formation OS2b Member		970	Core continued														Moderately to poorly sorted fine to medium sandstones with sparse red and green siltstone intraclasts and forming decimetre scale sets of moderate to low angle cross stratification	STACKED FLUVIAL CHANNELS Low stage bars
		970.90																
		974.00																
		975																
		977.90																
		980	Core continued													Poorly sorted medium to coarse sandstones with common large grey green siltstone intraclasts forming a channel lag deposit; tightly calcite cemented	PLAYA LAKE SHEETFLOOD	
																Bioturbated and soft sediment deformed inter-bedded siltstones and laminated fine sandstones		

Neil Meadows			Location: Well 110/2-6				Stratigraphy: Ormskirk Sdst. Fm.																		
Scale: 1:50			Sheet 5 of 27				Structural dip: n/a		Grid. Ref. n/a																
Stratigraphy	Sed. surfaces & pet. samples	Drillers depth/vertical to bed (metres)	Grain Size and Structures								Lithology	Sedimentary features	Azimuth of cross strat	Post-depositional modification	Diagenesis and fractures	Colour	Comments	Facies							
			Pebble	Granule	Very coarse sand	Coarse sand	Medium sand	Fine sand	Very fine sand	Silt									Clay						
Sherwood Sandstone Group Ormskirk Sandstone Formation OS2b Member		980	Core continued														Soft sediment deformed laminated siltstones with minor bioturbation and thin fine to medium sandstone laminae	SHEETFLOOD							
																						PLAYA LAKE			
		981.50																						WET AND PONDED SANDFLAT	
																								DAMP SANDFLAT	
																									ABANDONMENT
		984.55																	PCL					Moderate to well sorted fine sandstones with mica and silt draped current ripples and primary current lineated very fine sandstones	STACKED FLUVIAL CHANNELS Inter-bar channel
		985																							Low stage bars
		988.70															Moderately sorted medium sandstones with scattered grey green siltstone intraclasts aligned along foreset surfaces within metre scale erosively based sets	Partial abandonment							
																	High stage bar								
		990	Core continued																						

[illegible]

Neil Meadows			Location: Well 110/2-6				Stratigraphy: Ormskirk Sdst. Fm.													
Scale: 1:50			Sheet 7 of 27				Structural dip: n/a			Grid. Ref. n/a										
Stratigraphy	Sed. surfaces & Pet samples	Drillers depth/ vertical to bed (metres)	Grain Size and Structures								Lithology	Sedimentary features	Azimuth of cross strat	Post-depositional modification	Diagenesis and fractures	Colour	Comments	Facies		
			Pebble	Granule	Very coarse sand	Coarse sand	Medium sand	Fine sand	Very fine sand	Silt									Clay	
			Core continued																	
1000																				
1000.30																				

Neil Meadows			Location: Well 110/2-6				Stratigraphy: Ormskirk Sdst. Fm.												
Scale: 1:50			Sheet 13 of 27				Structural dip: n/a		Grid. Ref. n/a										
Stratigraphy	Sed. surfaces & Pet. samples	Drillers depth/vertical to bed (metres)	Grain Size and Structures								Lithology	Sedimentary features	Azimuth of cross strat	Post-depositional modification	Diagenesis and fractures	Colour	Comments	Facies	
			Pebble	Granule	Very coarse sand	Coarse sand	Medium sand	Fine sand	Very fine sand	Silt									Clay
			Core continued																
1060																		Irregularly laminated and poorly sorted fine sandstones with laminae and discontinuous lenses of medium to coarse sandstone and thin silty partings overlying wave and adhesion ripples	DAMP SANDFLAT
1062.25																	Strongly bimodally laminated medium sandstones with wind ripples and minor water disruption	AEOLIAN SANDSHEET FLUVIAL CHANNEL Inter-bar channel	
1065																		Moderateto poorly sorted medium sandstones with sparse claystone intraclasts that locally exceed the core diameter. The sandstones form decimetre to metre scale sets with erosive and partially scoured bases interbedded with silty fine sandstones exhibiting current ripples and minor injection	High stage bar ABANDONMENT High stage bar Inter-bar channel Low stage bar
1065.90																			
1068.80																		Poorly sorted fine and medium sandstones that are irregularly laminated with thin silty drapes and interbedded with thin bimodally laminated and wind ripples laminae	DAMP SANDFLAT
1070			Core continued																

Neil Meadows			Location: Well 110/2-6					Stratigraphy: Ormskirk Sdst. Fm.											
Scale: 1:50			Sheet 15 of 27					Structural dip: n/a			Grid. Ref. n/a								
Stratigraphy	Sed. surfaces & Pet. samples	Drillers depth/ vertical to bed (metres)	Grain Size and Structures								Lithology	Sedimentary features	Azimuth of cross strat	Post-depositional modification	Diagenesis and fractures	Colour	Comments	Facies	
			Pebble	Granule	Very coarse sand	Coarse sand	Medium sand	Fine sand	Very fine sand	Silt									Clay
Sherwood Sandstone Group Ormskirk Sandstone Formation OS 1 Member	1080.15	1080	Core continued															Soft sediment disrupted claystones with fine sandstone injection structures overlying laminated and current rippled very fine sandstones	DAMP SANDFLAT
																			PLAYA LAKE
																			SHEETFLOODS
																			VEGETATED FLOODPLAIN AND PLAYA
																			DAMP SANDFLAT
																			PONDED SANDFLAT
																			DAMP SANDFLAT
																			DRY SANDFLAT
	1086.95	1085	Core continued																

Neil Meadows			Location: Well 110/2-6				Stratigraphy: Ormskirk Sdst. Fm.											
Scale: 1:50			Sheet 18 of 27				Structural dip: n/a		Grid. Ref. n/a									
Stratigraphy	Sed. surfaces & Pet. samples	Drillers depth/vertical to bed (metres)	Grain Size and Structures								Lithology	Sedimentary features	Azimuth of cross strat	Post-depositional modification	Diagenesis and fractures	Colour	Comments	Facies
			Pebble	Granule	Very coarse sand	Coarse sand	Medium sand	Fine sand	Very fine sand	Silt								
Ormskirk Sandstone Formation OS 1 Member		1110	Core continued														Moderately to poorly sorted fine and medium sandstones with silty partings disrupted by fine sand-filled burrows	DAMP SANDFLAT
		1111.20															Bimodally sorted and grain size laminated medium and medium to coarse sandstones with common wind ripples and rare water disruption	AEOLIAN SANDSHEET
																		AEOLIAN DUNE
																		DAMP SANDFLAT
																		DRY SANDFLAT
		1114.40																
		1115															Moderate to poorly sorted medium sandstones with scattered claystone intra-clasts forming decimetre to metre scale sets. Basal set includes large claystone and fine sandstone clasts, the latter including damp sandflat sandstones	High stage bars

Neil Meadows			Location: Well 110/2-6				Stratigraphy: Ormskirk Sdst. Fm.														
Scale: 1:50			Sheet 19 of 27		Structural dip: n/a		Grid. Ref. n/a														
Stratigraphy	Sed. surfaces & Pet. samples	Drillers depth/ vertical to bed (metres)	Grain Size and Structures								Lithology	Sedimentary features	Azimuth of cross strat	Post-depositional modification	Diagenesis and fractures	Colour	Comments	Facies			
			Pebble	Granule	Very coarse sand	Coarse sand	Medium sand	Fine sand	Very fine sand	Silt									Clay		
			Core continued																		
1120																					

[illegible]

Neil Meadows			Location: Well 110/2-6					Stratigraphy: Ormskirk Sdst. Fm.															
Scale: 1:50			Sheet 22 of 27					Structural dip: n/a			Grid. Ref. n/a												
Stratigraphy	Sed. surfaces & Pet. samples	Drillers depth/ vertical to bed (metres)	Grain Size and Structures								Lithology	Sedimentary features	Azimuth of cross strat	Post-depositional modification	Diagenesis and fractures	Colour	Comments	Facies					
			Pebble	Granule	Very coarse sand	Coarse sand	Medium sand	Fine sand	Very fine sand	Silt									Clay				
Sherwood Sandstone Group Ormskirk Sandstone Formation OS 1 Member		1150	Core continued														Bimodally sorted fine and medium sandstones with common wind rippled laminae locally disrupted by surface wetting and minor bioturbation	AEOLIAN SANDSHEET					
	1150.80																						
	1153.95																						
		1155																					

Neil Meadows			Location: Well 110/2-6				Stratigraphy: Ormskirk Sdst. Fm.																																																																																																																																																					
Scale: 1:50			Sheet 23 of 27				Structural dip: n/a		Grid. Ref. n/a																																																																																																																																																			
Stratigraphy	Sed. surfaces & Pet. samples	Drillers depth/ vertical to bed (metres)	Grain Size and Structures								Lithology	Sedimentary features	Azimuth of cross strat	Post-depositional modification	Diagenesis and fractures	Colour	Comments	Facies																																																																																																																																										
			Pebble	Granule	Very coarse sand	Coarse sand	Medium sand	Fine sand	Very fine sand	Silt									Clay																																																																																																																																									
Sherwood Sandstone Group Ormskirk Sandstone Formation OS 1 Member			1160	Core continued																																																																																																																																																								

[illegible]

Neil Meadows			Location: Well 110/2-6					Stratigraphy: St Bees Sdst. Fm.											
Scale: 1:50			Sheet 26 of 27					Structural dip: n/a			Grid. Ref. n/a								
Stratigraphy	Sed. surfaces & Pet. samples	Drillers depth/vertical to bed (metres)	Grain Size and Structures								Lithology	Sedimentary features	Azimuth of cross strat	Post-depositional modification	Diagenesis and fractures	Colour	Comments	Facies	
			Pebble	Granule	Very coarse sand	Coarse sand	Medium sand	Fine sand	Very fine sand	Silt									Clay
Sherwood Sandstone Group St. Bees Sandstone Formation Calder Member		1190	Core continued																
																	Poorly sorted medium sandstones with siltstone intraclasts forming a lag deposit at the base decimetre scale cross stratified sets overlying thin rippled siltstones	STACKED FLUVIAL CHANNELS Low stage bars ABANDONMENT	
																	Poorly sorted massive (possibly slumped) medium sandstones with scattered siltstone intraclasts and metre scale asymptotically based sets	High stage bars	
		1192.95																	
																	Moderately to poorly sorted fine sandstones with trough cross stratification, current ripples and flat lamination overlying soft sediment deformed claystones	ABANDONMENT	
																		Low stage bars	
		1195																	
																	Poorly sorted medium sandstones with scattered green and red siltstone intraclasts and common reworked well rounded aeolian grains within metre scale asymptotically based cross stratified sets	High stage bars	
		1195.55																	
																	Irregularly laminated and poorly sorted fine and medium sandstones with thin silty drapes locally disrupted by minor bioturbation overlying bimodally laminated wind rippled sandstones	DAMP SANDFLAT AEOLIAN SANDSHEET STACKED FLUVIAL CHANNELS Low stage bars	
																	Moderate to well sorted fine sandstones forming metre scale cross stratified sets with soft sediment deformation due to slumping at the top	High stage bars	
			1200	Core continued															ABANDONMENT

[illegible]

[illegible]

[illegible]

Neil Meadows			Location: Well 110/8a-5					Stratigraphy: Ormskirk Sdst. Fm.										
Scale: 1:50			Sheet 3 of 8					Structural dip: n/a			Grid. Ref. n/a							
Stratigraphy	Sed. surfaces & Pet. samples	Drillers depth/vertical to bed (metres)	Grain Size and Structures								Lithology	Sedimentary features	Azimuth of cross strat	Post-depositional modification	Diagenesis and fractures	Colour	Comments	Facies
			Pebble	Granule	Very coarse sand	Coarse sand	Medium sand	Fine sand	Very fine sand	Silt								
Ormskirk Sandstone Formation OS2b Member		1250								Continued							Moderately sorted fine sandstones with diffuse low angle cross stratification	SHEETFLOODS
																	Highly disorganised moderately sorted fine sandstones with abundant anhydrite cement and thin claystone drapes	CLASTIC SABKHA
																		DAMP SANDFLAT
																		SHEETFLOODS
																	Moderately sorted fine sandstones with low angle cross stratified sets interbedded with irregularly flat laminae exhibiting thin silty drapes	DAMP SANDFLAT
																		SHEETFLOODS
																		DAMP SANDFLAT
																		SHEETFLOODS
																		DAMP SANDFLAT
																		SHEETFLOODS
		1255															Deformed anhydrite cemented laminae within poorly sorted fine and very fine sandstones exhibiting irregular and current rippled lamination	CLASTIC SABKHA
																		DAMP SANDFLAT
																		SHEETFLOODS
																		DAMP SANDFLAT
																		SHEETFLOODS
		1258.85															Irregularly laminated and locally soft sediment deformed fine sandstones with thin concentrations of coarse aeolian grains	AEOLIAN DUNE
																		AEOLIAN SANDSHEET
		1260								Continued								

Neil Meadows			Location: Well 110/8a-5			Stratigraphy: Ormskirk Sdst. Fm.													
Scale: 1:50			Sheet 4 of 8			Structural dip: n/a			Grid. Ref. n/a										
Stratigraphy	Sed. surfaces & Pet. samples	Drillers depth/vertical to bed (metres)	Grain Size and Structures								Lithology	Sedimentary features	Azimuth of cross strat	Post-depositional modification	Diagenesis and fractures	Colour	Comments	Facies	
			Pebble	Granule	Very coarse sand	Coarse sand	Medium sand	Fine sand	Very fine sand	Silt									Clay
			Continued																AEOLIAN SANDSHEET
1260																	Moderate to well sorted fine sandstones, locally bimodally sorted with wind rippled laminae, forming tabular cross stratified non-erosive sets	AEOLIAN DUNE	
																		AEOLIAN SANDSHEET	
																	Poorly sorted fine and very fine sandstones with irregular lamination and thin silty drapes	DAMP SANDFLAT	
																		AEOLIAN DUNE	
																		SHEETFLOODS	
																		DAMP SANDFLAT	
																		PLAYA MARGIN	
																		SHEETFLOODS	
1265																	Very poorly sorted very fine sandstones with intense bioturbation interbedded with argillaceous siltstones disrupted by local desiccation and water injection structures	PLAYA LAKE	
																		PLAYA MARGIN	
																		SHEETFLOODS	
																	Finely pinstripe laminated and bimodally sorted fine sandstones with abundant wind rippled laminae locally disrupted by subvertical and sparse subhorizontal sand-filled burrows. Sparse nodular dolomite cement	AEOLIAN SANDSHEET	
																		SHEETFLOOD	
																	Moderately sorted fine sandstones with sparse claystone intraclasts forming a single erosively based massive bed	AEOLIAN SANDSHEET	
1270																			
			Continued																

Neil Meadows			Location: Well 110/8a-5				Stratigraphy: Ormskirk Sdst. Fm.												
Scale: 1:50			Sheet 6 of 8				Structural dip: n/a				Grid. Ref. n/a								
Stratigraphy	Sed. surfaces & Pet. samples	Drillers depth/vertical to bed (metres)	Grain Size and Structures								Lithology	Sedimentary features	Azimuth of cross strat	Post-depositional modification	Diagenesis and fractures	Colour	Comments	Facies	
			Pebble	Granule	Very coarse sand	Coarse sand	Medium sand	Fine sand	Very fine sand	Silt									Clay
			1280	Continued														Moderately sorted fine sandstones forming decimetre scale sets with low angle cross stratification	STACKED FLUVIAL CHANNELS Low stage bars
																		ABANDONMENT	
																		Low stage bars	
																		PARTIAL ABANDONMENT	
																		Low stage bars	
																		ABANDONMENT	
																		Low stage bars	
																		ABANDONMENT	
																		Low stage bars	
			1285															Poorly sorted fine and medium sandstones with abundant grey green claystone and siltstone intraclasts plus common well rounded quartz granules and small pebbles within decimetre to metre scale cross stratified sets with planar erosive and scoured bases forming overall upward fining sequences	Low stage bars
																		High stage bars	
																		Low stage bars	
																		ABANDONMENT	
																		Argillaceous siltstones and silty very fine sandstones locally intensely disrupted by sand-filled burrows and minor water escape structures	ABANDONMENT
																		Moderately sorted fine sandstones forming decimetre scale cross stratified sets disrupted near the top by vertical sand-filled <i>Skolithos</i> -type burrows	Low stage bars
			1290															ABANDONMENT	
				Continued															

Neil Meadows			Location: Well 110/8a-5				Stratigraphy: Ormskirk Sdst. Fm.											
Scale: 1:50			Sheet 7 of 8				Structural dip: n/a		Grid. Ref. n/a									
Stratigraphy	Sed. surfaces & Pet. samples	Drillers depth/ vertical to bed (metres)	Grain Size and Structures							Lithology	Sedimentary features	Azimuth of cross strat	Post-depositional modification	Diagenesis and fractures	Colour	Comments	Facies	
			Pebble	Granule	Very coarse sand	Coarse sand	Medium sand	Fine sand	Very fine sand									Silt
			Continued														STACKED FLUVIAL CHANNELS Low stage bar	
																	PARTIAL ABANDONMENT	
1290																	Low stage bars	
1292.35																	PARTIAL ABANDONMENT	
																	Compound bar	
1295																	High stage bars	
																	ABANDONMENT	
																	Low stage bars	
																	AEOLIAN SANDSHEET	
																	AEOLIAN DUNE	
																	AEOLIAN SANDSHEET	
																	DRY SANDFLAT	
1300			Continued															

[illegible]

[illegible]

Neil Meadows			Location: Well 110/13-5				Stratigraphy: Ormskirk Sdst. Fm.													
Scale: 1:50			Sheet 2 of 12				Structural dip: n/a		Grid. Ref. n/a											
Stratigraphy	Sed. surfaces & Pet. samples	Drillers depth/ vertical to bed (metres)	Grain Size and Structures								Lithology	Sedimentary features	Azimuth of cross strat	Post-depositional modification	Diagenesis and fractures	Colour	Comments	Facies		
			Pebble	Granule	Very coarse sand	Coarse sand	Medium sand	Fine sand	Very fine sand	Silt									Clay	
Ormskirk Sandstone Formation Sherwood Sandstone Group OS2b Member		860								Continued							Dol	Well sorted fine sandstones with irregular lamination locally forming thin adhesion ripples	DAMP SANDFLAT	
										M							Py Dol Py An An	Well sorted fine to medium sandstones with flat lamination and thin bimodally sorted wind rippled laminae interbedded with poorly sorted fine and medium sandstones with irregular lamination locally disrupted by sand-filled burrows	SHEETFLOOD AEOLIAN SANDSHEET AEOLIAN DUNE DAMP SANDFLAT AEOLIAN DUNE DAMP SANDFLAT	
																	Dol An Dol An Dol Py Dol	Moderate to poorly sorted fine sandstones forming decimetre scale sharply based cross stratified sets	FLUVIAL CHANNEL Low stage bars	
																	Py		DAMP SANDFLAT	
		865															Py		AEOLIAN DUNE	
																	Py Dol	Moderate to poorly sorted fine and fine to medium sandstones with irregular flat lamination, interbedded thin wind rippled laminae and rare current ripples with silty drapes	DAMP SANDFLAT	
																	Dol An			
																	Dol An			
																	Dol Py	Poorly sorted fine sandstones with small claystone intraclasts aligned along set bases within sub-decimetre scale sets	SHEETFLOODS AEOLIAN SANDSHEET	
		868.66																		
			870								Continued							Py	Moderate to well sorted fine sandstones forming stacked cross stratified sets with slumping and recumbent folding of predominantly grainfall laminae over locally disrupted set bases	STACKED AEOLIAN DUNES

Neil Meadows			Location: Well 110/13-5				Stratigraphy: Ormskirk Sdst. Fm.													
Scale: 1:50			Sheet 4 of 12		Structural dip: n/a		Grid. Ref. n/a													
Stratigraphy	Sed. surfaces & Pet. samples	Drillers depth/vertical to bed (metres)	Grain Size and Structures								Lithology	Sedimentary features	Azimuth of cross strat	Post-depositional modification	Diagenesis and fractures	Colour	Comments	Facies		
			Pebble	Granule	Very coarse sand	Coarse sand	Medium sand	Fine sand	Very fine sand	Silt									Clay	
Ormskirk Sandstone Formation Sherwood Sandstone Group OS2b Member			880	Continued															STACKED AEOLIAN DUNES	
															</					

Neil Meadows			Location: Well 110/13-5				Stratigraphy: Ormskirk Sdst. Fm.												
Scale: 1:50			Sheet 5 of 12				Structural dip: n/a			Grid. Ref. n/a									
Stratigraphy	Sed. surfaces & Pet. samples	Drillers depth/vertical to bed (metres)	Grain Size and Structures								Lithology	Sedimentary features	Azimuth of cross strat	Post-depositional modification	Diagenesis and fractures	Colour	Comments	Facies	
			Pebble	Granule	Very coarse sand	Coarse sand	Medium sand	Fine sand	Very fine sand	Silt									Clay
			Continued																
Ormskirk Sandstone Formation	OS2b Member	890.09															Moderate to well sorted fine to medium sandstones forming metre scale cross stratified sets dominated by grainfall lamination with laminae obscured near the base due to intense calcite and dolomite cementation	STACKED AEOLIAN DUNES	
																	Moderate to poorly sorted fine silty sandstones with thin silt draped flat lamination and wave ripples	WET SANDFLAT	
																		AEOLIAN DUNE	
																		SHEETFLOOD ABANDONMENT OR PLAYA	
																		SHEETFLOODS	
	OS2a Member	895																Micaceous wave and current rippled siltstones and fine sandstones overlying moderatelt sorted fine to medium sandstones with sparse grey claystone intraclasts aligned along foreset laminae	ABANDONMENT
																		STACKED FLUVIAL CHANNELS	
																		Low stage bars	
																		ABANDONMENT	
		899.14																Moderately sorted fine sandstones with sparse quartz and feldspar small pebbles and granules and forming decimetre scale sets of very low angle cross stratification	Inter-bar channel
			Continued																

Neil Meadows			Location: Well 110/13-5				Stratigraphy: Ormskirk Sdst. Fm.												
Scale: 1:50			Sheet 6 of 12				Structural dip: n/a		Grid. Ref. n/a										
Stratigraphy	Sed. surfaces & Pet. samples	Drillers depth/vertical to bed (metres)	Grain Size and Structures								Lithology	Sedimentary features	Azimuth of cross strat	Post-depositional modification	Diagenesis and fractures	Colour	Comments	Facies	
			Pebble	Granule	Very coarse sand	Coarse sand	Medium sand	Fine sand	Very fine sand	Silt									Clay
			Continued																
900																	Poorly sorted medium sandstones with sparse grey calystone intraclasts and quartz pebbles forming metre scale low angle cross stratified sets	STACKED FLUVIAL CHANNELS High stage bars	
																		STACKED FLUVIAL CHANNELS Low stage bars	
																		STACKED FLUVIAL CHANNELS Low stage bars	
																		STACKED FLUVIAL CHANNELS Low stage bars	
																		STACKED FLUVIAL CHANNELS Low stage bars	
																		STACKED FLUVIAL CHANNELS Low stage bars	
																		STACKED FLUVIAL CHANNELS Low stage bars	
																		STACKED FLUVIAL CHANNELS Low stage bars	
																		STACKED FLUVIAL CHANNELS Low stage bars	
																		STACKED FLUVIAL CHANNELS Low stage bars	
																		STACKED FLUVIAL CHANNELS Low stage bars	
																		STACKED FLUVIAL CHANNELS Low stage bars	
																		STACKED FLUVIAL CHANNELS Low stage bars	
																		STACKED FLUVIAL CHANNELS Low stage bars	
																		STACKED FLUVIAL CHANNELS Low stage bars	
																		STACKED FLUVIAL CHANNELS Low stage bars	
																		STACKED FLUVIAL CHANNELS Low stage bars	
																		STACKED FLUVIAL CHANNELS Low stage bars	
																		STACKED FLUVIAL CHANNELS Low stage bars	
																		STACKED FLUVIAL CHANNELS Low stage bars	
																		STACKED FLUVIAL CHANNELS Low stage bars	
																		STACKED FLUVIAL CHANNELS Low stage bars	
																		STACKED FLUVIAL CHANNELS Low stage bars	
																		STACKED FLUVIAL CHANNELS Low stage bars	
																		STACKED FLUVIAL CHANNELS Low stage bars	
																		STACKED FLUVIAL CHANNELS Low stage bars	
																		STACKED FLUVIAL CHANNELS Low stage bars	
																		STACKED FLUVIAL CHANNELS Low stage bars	
																		STACKED FLUVIAL CHANNELS Low stage bars	
																		STACKED FLUVIAL CHANNELS Low stage bars	
																		STACKED FLUVIAL CHANNELS Low stage bars	
																		STACKED FLUVIAL CHANNELS Low stage bars	
						</													

Neil Meadows			Location: Well 110/13-5				Stratigraphy: Ormskirk Sdst. Fm.											
Scale: 1:50			Sheet 9 of 12		Structural dip: n/a			Grid. Ref. n/a										
Stratigraphy	Sed. surfaces & Pet. samples	Drillers depth/vertical to bed (metres)	Grain Size and Structures								Lithology	Sedimentary features	Azimuth of cross strat	Post-depositional modification	Diagenesis and fractures	Colour	Comments	Facies
			Pebble	Granule	Very coarse sand	Coarse sand	Medium sand	Fine sand	Very fine sand	Silt								
			Continued															Low stage bars
930																	Well sorted fine sandstones exhibiting very fine flat lamination and sparse diffuse very low angle cross stratification	STACKED FLUVIAL CHANNELS
																		Inter-bar channel
																		Low stage bars
																	Moderate to poorly sorted fine sandstones with locally abundant pink and grey claystone intraclasts aligned along foresets within decimetre to metre scale sets bounded by moderate to low angle dipping surfaces	Compound bar
935																		
																	Moderate to well sorted fine sandstones, locally micaceous, with finely developed lamination forming sigmoidal cross stratification overlying a planar erosive base	Inter-bar channel
																		ABANDONMENT
																	Blocky claystones interbedded with current and wave rippled very fine sandstones and disrupted by water escape structures	Low stage bars
940																		
			Continued															

Neil Meadows			Location: Well 110/13-5						Stratigraphy: Ormskirk Sdst. Fm.														
Scale: 1:50			Sheet 11 of 12						Structural dip: n/a			Grid. Ref. n/a											
Stratigraphy	Sed. surfaces & Pet. samples	Drillers depth/vertical to bed (metres)	Grain Size and Structures								Lithology	Sedimentary features	Azimuth of cross strat	Post-depositional modification	Diagenesis and fractures	Colour	Comments	Facies					
			Pebble	Granule	Very coarse sand	Coarse sand	Medium sand	Fine sand	Very fine sand	Silt									Clay				
			Continued																				
950																				Moderately to very poorly sorted fine and medium sandstones with scattered grey green claystone intraclasts overlying a basal intraclastic conglomerate comprising claystone, siltstone and fine sandstone clasts with the maximum clast size exceeding the core diameter		STACKED FLUVIAL CHANNELS	
																				High stage bars			
																				Low stage bars			
																				Inter-bar channel			
																				Low stage bars			
																				Inter-bar channel			
955																				Moderately sorted fine and fine to medium sandstones with scattered grey claystone intraclasts forming decimetre scale cross stratified sets with planar erosive set bases		Low stage bars	
																				High stage bars			
																				Inter-bar channel			
																				Low stage bars			
																				Inter-bar channel			
960																				Moderately sorted fine sandstones, commonly micaceous, with finely developed flay to very low angle lamination locally exhibiting primary current lineation		Inter-bar channel	
																				Low stage bars			
			Continued																				

[illegible]

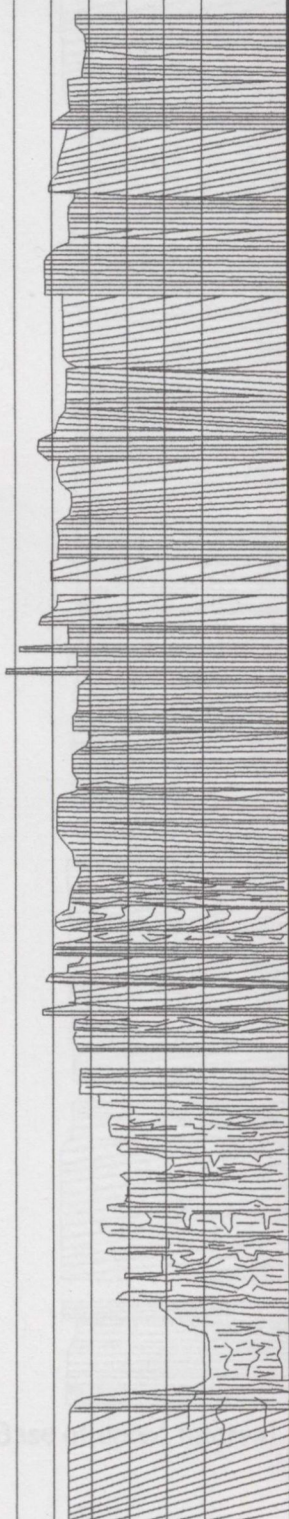
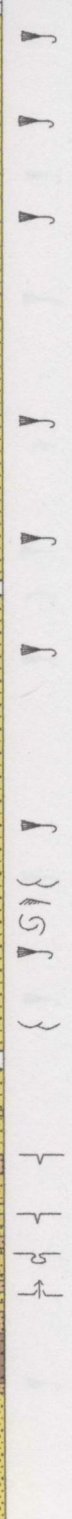
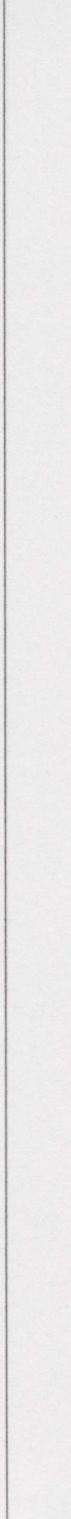
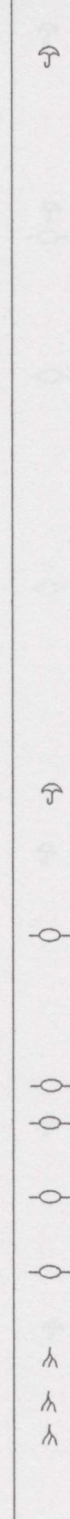
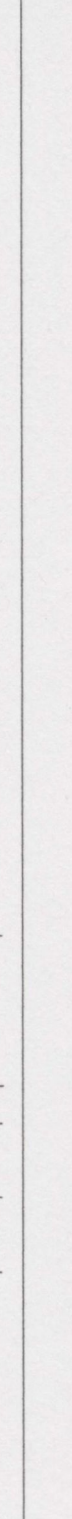
Neil Meadows			Location: Well 110/14-3					Stratigraphy: Ormskirk Sdst. Fm.										
Scale: 1:50			Sheet 1 of 7			Structural dip: n/a			Grid. Ref.: n/a									
Stratigraphy	Sed. surfaces & Pet. samples	Drillers depth/vertical to bed (metres)	Grain Size and Structures								Lithology	Sedimentary features	Azimuth of cross strat	Post-depositional modification	Diagenesis and fractures	Colour	Comments	Facies
			Pebble	Granule	Very coarse sand	Coarse sand	Medium sand	Fine sand	Very fine sand	Silt								
Mercia Mudstone Group		1060																AEOLIAN SANDSHEET
																		AEOLIAN DUNE
																		AEOLIAN SANDSHEET
																		AEOLIAN DUNE
																		AEOLIAN SANDSHEET
																		AEOLIAN DUNE
																		AEOLIAN SANDSHEET
																		AEOLIAN DUNE
																		AEOLIAN SANDSHEET
																		AEOLIAN DUNE
																		AEOLIAN SANDSHEET
																		AEOLIAN DUNE
																		AEOLIAN SANDSHEET
																		AEOLIAN DUNE
																		AEOLIAN SANDSHEET
																		AEOLIAN DUNE
																		AEOLIAN SANDSHEET
																		AEOLIAN DUNE
																		AEOLIAN SANDSHEET
																		AEOLIAN DUNE
																		AEOLIAN SANDSHEET
																		AEOLIAN DUNE
																		AEOLIAN SANDSHEET
																		AEOLIAN DUNE
																		AEOLIAN SANDSHEET
																		AEOLIAN DUNE
																		AEOLIAN SANDSHEET
																		AEOLIAN DUNE
																		AEOLIAN SANDSHEET
																		AEOLIAN DUNE
																		AEOLIAN SANDSHEET
																		AEOLIAN DUNE
																		AEOLIAN SANDSHEET
																		AEOLIAN DUNE
																		AEOLIAN SANDSHEET
																		AEOLIAN DUNE
																		AEOLIAN SANDSHEET
																		AEOLIAN DUNE
																		AEOLIAN SANDSHEET
																		AEOLIAN DUNE
																		AEOLIAN SANDSHEET
																		AEOLIAN DUNE
																		AEOLIAN SANDSHEET
																		AEOLIAN DUNE
																		AEOLIAN SANDSHEET
																		AEOLIAN DUNE
																		AEOLIAN SANDSHEET
																		AEOLIAN DUNE
																		AEOLIAN SANDSHEET
																		AEOLIAN DUNE
																		AEOLIAN SANDSHEET
																		AEOLIAN DUNE
																		AEOLIAN SANDSHEET
																		AEOLIAN DUNE
																		AEOLIAN SANDSHEET
																		AEOLIAN DUNE
																		AEOLIAN SANDSHEET
																		AEOLIAN DUNE
																		AEOLIAN SANDSHEET
																		AEOLIAN DUNE
																		AEOLIAN SANDSHEET
																		AEOLIAN DUNE
																		AEOLIAN SANDSHEET
																		AEOLIAN DUNE
																		AEOLIAN SANDSHEET
																		AEOLIAN DUNE
																		AEOLIAN SANDSHEET
																		AEOLIAN DUNE
																		AEOLIAN SANDSHEET
																		AEOLIAN DUNE
																		AEOLIAN SANDSHEET
																		AEOLIAN DUNE
																		AEOLIAN SANDSHEET
																		AEOLIAN DUNE
																		AEOLIAN SANDSHEET
																		AEOLIAN DUNE
																		AEOLIAN SANDSHEET
																		AEOLIAN DUNE
																		AEOLIAN SANDSHEET
																		AEOLIAN DUNE
																		AEOLIAN SANDSHEET
																		AEOLIAN DUNE
																		AEOLIAN SANDSHEET
																		AEOLIAN DUNE
																		AEOLIAN SANDSHEET
																		AEOLIAN DUNE
																		AEOLIAN SANDSHEET
																		AEOLIAN DUNE
																		AEOLIAN SANDSHEET
																		AEOLIAN DUNE
																		AEOLIAN SANDSHEET
																		AEOLIAN DUNE
																		AEOLIAN SANDSHEET
																		AEOLIAN DUNE
																		AEOLIAN SANDSHEET
																		AEOLIAN DUNE
																		AEOLIAN SANDSHEET
																		AEOLIAN DUNE
																		AEOLIAN SANDSHEET
																		AEOLIAN DUNE
																		AEOLIAN SANDSHEET
																		AEOLIAN DUNE
																		AEOLIAN SANDSHEET
																		AEOLIAN DUNE
																		AEOLIAN SANDSHEET
																		AEOLIAN DUNE
																		AEOLIAN SANDSHEET
																		AEOLIAN DUNE
																		AEOLIAN SANDSHEET
																		AEOLIAN DUNE
																		AEOLIAN SANDSHEET
																		AEOLIAN DUNE
																		AEOLIAN SANDSHEET
																		AEOLIAN DUNE
																		AEOLIAN SANDSHEET
																		AEOLIAN DUNE
																		AEOLIAN SANDSHEET
																		AEOLIAN DUNE
																		AEOLIAN SANDSHEET
																		AEOLIAN DUNE
																		AEOLIAN SANDSHEET
																		AEOLIAN DUNE
																		AEOLIAN SANDSHEET
																		AEOLIAN DUNE
																		AEOLIAN SANDSHEET
																		AEOLIAN DUNE
																		AEOLIAN SANDSHEET
																		AEOLIAN DUNE
																		AEOLIAN SANDSHEET
																		AEOLIAN DUNE
																		AEOLIAN SANDSHEET
																		AEOLIAN DUNE
																		AEOLIAN SANDSHEET
																		AEOLIAN DUNE
																		AEOLIAN SANDSHEET
																		AEOLIAN DUNE
																		AEOLIAN SANDSHEET
																		AEOLIAN DUNE
																		AEOLIAN SANDSHEET

Neil Meadows			Location: Well 110/14-3				Stratigraphy: Ormskirk Sdst. Fm.												
Scale: 1:50			Sheet 2 of 7				Structural dip: n/a		Grid. Ref.: n/a										
Stratigraphy	Sed. surfaces & Pet. samples	Drillers depth/vertical to bed (metres)	Grain Size and Structures								Lithology	Sedimentary features	Azimuth of cross strat	Post-depositional modification	Diagenesis and fractures	Colour	Comments	Facies	
			Pebble	Granule	Very coarse sand	Coarse sand	Medium sand	Fine sand	Very fine sand	Silt									Clay
Ormskirk Sandstone Formation OS2b Member		1070	Core continued																AEOLIAN SANDSHEET
																	Moderately sorted medium sandstone forming decimetre scale sets of tabular cross stratification. Sparse well rounded aeolian grains	AEOLIAN DUNES	
																		AEOLIAN SANDSHEET	
		1075															Poorly sorted fine and medium sandstones with silty laminae locally exhibiting adhesion structures and thin wind rippled laminae	DAMP SANDFLAT	
																		AEOLIAN SANDSHEET	
																	Brecciated fragments of pinstripe laminated fine and medium sandstone set in disrupted and contorted matrix of similar sandstone	DISRUPTED AEOLIAN DUNE	
		1077.47																	
																	Moderate to well sorted medium sandstones forming metre scale tabular cross stratified sets with asymptotic bases, locally disrupted by sub-vertical sand-filled burrows of Skolithos type with rare preserved spreiten	STACKED AEOLIAN DUNES	
		1080																	
			Core continued																

Neil Meadows			Location: Well 110/14-3				Stratigraphy: Ormskirk Sdst. Fm.																
Scale: 1:50			Sheet 3 of 7			Structural dip: n/a			Grid. Ref.: n/a														
Stratigraphy	Sed. surfaces & Pet. samples	Drillers depth/vertical to bed (metres)	Grain Size and Structures								Lithology	Sedimentary features	Azimuth of cross strat	Post-depositional modification	Diagenesis and fractures	Colour	Comments	Facies					
			Pebble	Granule	Very coarse sand	Coarse sand	Medium sand	Fine sand	Very fine sand	Silt									Clay				
			Core continued																	AEOLIAN SANDSHEET			
																				DAMP SANDFLAT			
1080																				AEOLIAN DUNES			
1082.05																				AEOLIAN SANDSHEET			
																				PONDED SANDFLAT			
																				Moderately sorted medium sandstones with fine pinstripe lamination and sparse well rounded grains, disrupted by locally abundant Skolithos- and Planolites type burrows		AEOLIAN SANDSHEET	
																				AEOLIAN DUNES			
1085																				AEOLIAN SANDSHEET			
																				AEOLIAN DUNE			
																				Moderately sorted medium sandstones with common wind ripples and isolated sand-filled Skolithos-type burrows		AEOLIAN SANDSHEET	
																				AEOLIAN DUNE			
																				AEOLIAN SANDSHEET			
																				AEOLIAN DUNES			
																				Well sorted medium sandstones forming metre scale tabular cross stratified sets dominated by grainfall lamination		AEOLIAN SANDSHEET	
																				AEOLIAN DUNE			
																				AEOLIAN SANDSHEET			
																				STACKED AEOLIAN DUNES			
1090			Core continued																				

Neil Meadows			Location: Well 110/14-3					Stratigraphy: Ormskirk Sdst. Fm.											
Scale: 1:50			Sheet 4 of 7			Structural dip: n/a			Grid. Ref. n/a										
Stratigraphy	Sed. surfaces & Pet. samples	Drillers depth/ vertical to bed (metres)	Grain Size and Structures								Lithology	Sedimentary features	Azimuth of cross strat	Post-depositional modification	Diagenesis and fractures	Colour	Comments	Facies	
			Pebble	Granule	Very coarse sand	Coarse sand	Medium sand	Fine sand	Very fine sand	Silt									Clay
Sherwood Sandstone Group Ormskirk Sandstone Formation OS2b Member		1090	Core continued															Moderate to poorly sorted pinstripe laminated medium sandstones with coarse sandstone laminae	STACKED AEOLIAN DUNES
		1091.20																Moderately sorted medium sandstones exhibiting irregular lamination with rare thin silty drapes	DAMP SANDFLAT
																		AEOLIAN SANDSHEET	
																		Moderately sorted medium sandstones dominated by well rounded aeolian type grains forming mainly grainfall laminae within asymptotically based sets	STACKED AEOLIAN DUNES
																		STACKED BIO-TURBATED AEOLIAN DUNES	
		1095																Moderate to well sorted medium sandstones forming metre scale cross stratified sets dominated by grainfall lamination and disrupted by <i>Skolithos</i> type burrows up to 5mm diameter and 10cm long	STACKED BIO-TURBATED AEOLIAN DUNES
																		AEOLIAN SANDSHEET	
																		AEOLIAN SANDSHEET	
																		AEOLIAN DUNE	
																		Moderate to well sorted medium sandstones with common wind ripples and pinstripe lamination	AEOLIAN SANDSHEET
	1100.00	1100	Core continued																

Neil Meadows			Location: Well 110/14-3				Stratigraphy: Ormskirk Sdst. Fm.												
Scale: 1:50			Sheet 5 of 7		Structural dip: n/a			Grid. Ref. n/a											
Stratigraphy	Sed. surfaces & Pet. samples	Drillers depth/vertical to bed (metres)	Grain Size and Structures								Lithology	Sedimentary features	Azimuth of cross strat	Post-depositional modification	Diagenesis and fractures	Colour	Comments	Facies	
			Pebble	Granule	Very coarse sand	Coarse sand	Medium sand	Fine sand	Very fine sand	Silt									Clay
Ormskirk Sandstone Formation OS2b Member		1100	Core continued															Moderately sorted medium sandstones with fine pinstripe laminations	AEOLIAN SANDSHEET
																		DAMP SANDFLAT	
																		AEOLIAN DUNE	
																		DAMP SANDFLAT	
																		AEOLIAN SANDSHEET	
																		DAMP SANDFLAT	
																		AEOLIAN DUNE	
																		DAMP SANDFLAT	
			1105															Moderately to well sorted medium sandstones forming thin pinstripe laminated and wind rippled intervals interbedded with grainfall laminated and low angle cross stratified beds	AEOLIAN SANDSHEET WITH AEOLIAN DUNE REMNANTS
		1110	Core continued															Moderately to well sorted medium sandstones comprising mainly well rounded aeolian type grains and forming decimetre to metre scale tabular and asymptotically based sets	STACKED AEOLIAN DUNES WITH SANDSHEET INTERCALATIONS

Neil Meadows			Location: Well 110/14-3				Stratigraphy: Ormskirk Sdst. Fm.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
Scale: 1:50			Sheet 6 of 7			Structural dip: n/a			Grid. Ref. n/a																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
Stratigraphy	Sed. surfaces & Pet. samples	Drillers depth/ vertical to bed (metres)	Grain Size and Structures								Lithology	Sedimentary features	Azimuth of cross strat	Post-depositional modification	Diagenesis and fractures	Colour	Comments	Facies																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
			Pebble	Granule	Very coarse sand	Coarse sand	Medium sand	Fine sand	Very fine sand	Silt									Clay																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
			Core continued																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
1110																																																											Moderately sorted medium sandstone with wind rippled pinstripe lamination with rare irregular laminae								AEOLIAN SANDSHEET																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							

Neil Meadows			Location: Beeston Castle				Stratigraphy: Helsby Sdst. Fm.													
Scale: 1:50			Sheet 1 of 1				Structural dip: 5/010		Grid. Ref. 3537 3593											
Stratigraphy	Sed. surfaces & Pet. samples	Drillers depth/vertical to bed (metres)	Grain Size and Structures								Lithology	Sedimentary features	Azimuth of cross strat	Post-depositional modification	Diagenesis and fractures	Colour	Comments	Facies		
			Pebble	Granule	Very coarse sand	Coarse sand	Medium sand	Fine sand	Very fine sand	Silt									Clay	
			Top of outcrop																STACKED FLUVIAL CHANNELS	
																			Low stage bar	
																			Inter-bar channel	
																			Low stage bars	
																			Compound bar	
																			Inter-bar channel	
																			High stage bar	

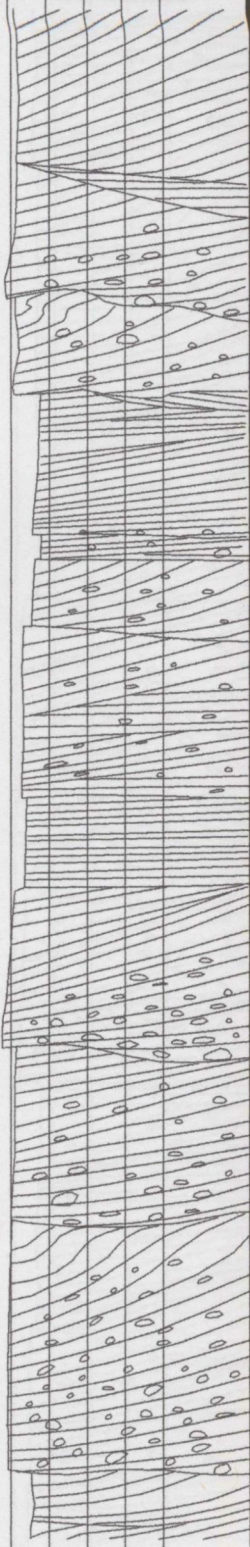
Stratigraphy	Sed. surfaces & Pet. samples	Drillers depth/vertical to bed (metres)	Grain Size and Structures								Lithology	Sedimentary features	Azimuth of cross strat	Post-depositional modification	Diagenesis and fractures	Colour	Comments	Facies
			Pebble	Granule	Very coarse sand	Coarse sand	Medium sand	Fine sand	Very fine sand	Silt								
Sherwood Sandstone Group Chester Pebble Beds Fomation		10					Continued										Well sorted upper fine sandstone, finely flat laminated and truncated by overlying fluvial erosion surface Fault striking c350° with breccia and unknown displacement	STACKED FLUVIAL CHANNELS Inter-bar channel
																		Low stage bars
																		High stage bar
																		Low stage bars
																		High stage bar
			15															Low stage bars
																		High stage bar
																		Partial abandonment
																		High stage bars
																		Inter-bar channel
			20															High stage bars
								Continued										

Neil Meadows			Location: Bromborough Beach				Stratigraphy: Chester Pebble Beds Fm.													
Scale: 1:50			Sheet 3 of 6		Structural dip: 6/040		Grid. Ref. 3359 3831													
Stratigraphy	Sed. surfaces & Pet. samples	Drillers depth/vertical to bed (metres)	Grain Size and Structures								Lithology	Sedimentary features	Azimuth of cross strat	Post-depositional modification	Diagenesis and fractures	Colour	Comments	Facies		
			Pebble	Granule	Very coarse sand	Coarse sand	Medium sand	Fine sand	Very fine sand	Silt									Clay	
			Continued																Moderately sorted medium sandstones forming metre scale cross stratified sets with common pebbles of quartz, lithified sandstone and siltstone, chert and volcanics scattered along foresets with rare red claystone intraclasts	STACKED FLUVIAL CHANNELS
20																				
																			High stage bars	
																			Finely laminated silty and argillaceous very fine and fine sandstones cut out along section by overlying channel base	Abandonment
																			Moderately sorted medium sandstones with very sparse quartz pebbles forming decimetre scale tabular cross stratified sets	Partial abandonment
																			Moderately to poorly sorted pebbly sandstones with variably small to medium quartz, sandstone and chert exotics aligned along foreset surfaces within decimetre to metre scale sets exhibiting planar erosive bases	Low stage bars/bar top
25																			High stage bars	
																			As above with exotics ranging up to very large pebble grade including quartz, siltstone, sandstone, chert and volcanics	High stage bars
																			Moderately sorted lower medium sandstones with sparse small quartz pebbles and forming centimetre to decimetre scale sets with planar and erosive set bases	Low stage bars
																			High stage bars	
30																			Continued	

Neil Meadows			Location: Bromborough Beach				Stratigraphy: Chester Pebble Beds Fm.											
Scale: 1:50			Sheet 4 of 6				Structural dip: 4/295			Grid. Ref. 3360 3830								
Stratigraphy	Sed. surfaces & Pet. samples	Drillers depth/vertical to bed (metres)	Grain Size and Structures								Lithology	Sedimentary features	Azimuth of cross strat	Post-depositional modification	Diagenesis and fractures	Colour	Comments	Facies
			Pebble	Granule	Very coarse sand	Coarse sand	Medium sand	Fine sand	Very fine sand	Silt								
Chester Pebble Beds Formation		30	Continued														Moderately sorted medium sandstone with subrounded to subangular grains and sparse small to medium pebbles of quartz, siltstone and rare chert aligned along foreset surfaces within decimetre scale sets	STACKED FLUVIAL CHANNELS Low stage bars
			Outcrop obscured															
															Moderately sorted medium sandstones as above with common small pebbles of quartz and mainly red claystone intraclasts aligned along foreset surfaces	Low stage bars		
															Sandstones as above with locally abundant red claystone intraclasts to a maximum clast size of small cobble	High stage bars		
															Well sorted fine to medium sandstones forming decimetre scale trough cross stratified sets	Low stage bars		
															Moderately sorted medium sandstones with very sparse small pebbles of quartz and forming decimetre to metre scale sets of tabular cross bedding exhibiting pronounced changes in apparent orientation	High stage bars		
			35												Sandstones as above but with common red claystone intraclasts aligned along foreset surfaces	Partial abandonment Low stage bars		
															Moderate to well sorted fine and fine to medium sandstones that are finely laminated and form thin locally wedging sets			
		40	Continued															

Neil Meadows			Location: Bromborough Beach				Stratigraphy: Chester Pebble Beds Fm.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
Scale: 1:50			Sheet 5 of 6				Structural dip: 6/280			Grid. Ref. 3361 3828																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
Stratigraphy	Sed. surfaces & Pet. samples	Drillers depth/ vertical to bed (metres)	Grain Size and Structures								Lithology	Sedimentary features	Azimuth of cross strat	Post-depositional modification	Diagenesis and fractures	Colour	Comments	Facies																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
			Pebble	Granule	Very coarse sand	Coarse sand	Medium sand	Fine sand	Very fine sand	Silt									Clay																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
Sherwood Sandstone Group Chester Pebble Beds Formation	BB2	40	Continued														Moderately sorted medium sandstones with subrounded to subangular grains and rare red claystone intraclast. The sandstones form metre to decimetre scale sets overlying planar and scoured erosive basess	Low stage bars STACKED FLUVIAL CHANNELS High stage bars																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														

[illegible]

Stratigraphy	Sed. surfaces & Pet. samples	Drillers depth/vertical to bed (metres)	Grain Size and Structures								Lithology	Sedimentary features	Azimuth of cross strat	Post-depositional modification	Diagenesis and fractures	Colour	Comments	Facies	
			Pebble	Granule	Very coarse sand	Coarse sand	Medium sand	Fine sand	Very fine sand	Silt									Clay
Sherwood Sandstone Group Chester Pebble Beds Formation		20																Moderately sorted medium sandstones with rare well rounded aeolian type grains forming metre scale high angle cross stratified sets with scoured erosive bases. Exotic quartz and K-feldspar pebbles tend to be scattered along foreset surfaces Moderate to well sorted medium sandstones with rare small quartz pebbles forming flat laminated to very low angle cross stratified sets with planar non-erosive bases. These overlie moderately sorted medium sandstones with scattered quartz granules and pebbles forming decimetre scale sets that are individually cut out laterally but are amalgamated in a compound unit that can be traced the extent of the outcrop Moderate to poorly sorted medium and medium to coarse sandstones with common quartz and K-feldspar plus rare volcanic and metamorphic granules and pebbles up to a maximum clast size of very large pebble. Metre scale cross stratified sets with scoured erosive bases can be traced the extent of the outcrop with some lateral wedging. Local slumping affects the upper parts of foresets suggesting inherent bar instability	STACKED FLUVIAL CHANNELS
																	High stage bars		
																	Inter-bar channel		
																	Low stage bars		
			25																Inter-bar channel
																			High stage bars
		30									Continued						Low stage bars		

Neil Meadows			Location: Burton Point				Stratigraphy: Chester Pebble Beds Fm.																		
Scale: 1:50			Sheet 4 of 11				Structural dip: 24/315		Grid. Ref. 3303 3737																
Stratigraphy	Sed. surfaces & Pet. samples	Drillers depth/vertical to bed (metres)	Grain Size and Structures								Lithology	Sedimentary features	Azimuth of cross strat	Post-depositional modification	Diagenesis and fractures	Colour	Comments	Facies							
			Pebble	Granule	Very coarse sand	Coarse sand	Medium sand	Fine sand	Very fine sand	Silt									Clay						
Chester Pebble Beds Formation	BP1	30	Continued									S	↑				Moderately sorted medium sandstones with rare scattered quartz pebbles forming metre scale high angle cross stratified sets with local slumping. Set boundaries are commonly erosive and scoured with sets being cut out and replaced along the outcrop	STACKED FLUVIAL CHANNELS Low stage bars							
Chester Pebble Beds Formation	BP1	35											↑				Moderate to poorly sorted medium and medium to coarse sandstones with abundant exotic quartz pebbles to a maximum clast size of small cobble plus rare clasts of chert, metamorphics and limestone. Sandstones form metre scale sets as above	High stage bars							
Chester Pebble Beds Formation	BP1												↑					Low stage bar							
Chester Pebble Beds Formation	BP1												↑					Inter-bar channel							
Chester Pebble Beds Formation	BP1												↑					Low stage bars							
Chester Pebble Beds Formation	BP1												↑												
Chester Pebble Beds Formation	BP1												↑												
Chester Pebble Beds Formation	BP1												↑												
Chester Pebble Beds Formation	BP1												↑												
Chester Pebble Beds Formation	BP1												↑												
Chester Pebble Beds Formation	BP1												↑												
Chester Pebble Beds Formation	BP1												↑												
Chester Pebble Beds Formation	BP1												↑												
Chester Pebble Beds Formation	BP1												↑												
Chester Pebble Beds Formation	BP1												↑												
Chester Pebble Beds Formation	BP1												↑												
Chester Pebble Beds Formation	BP1												↑												
Chester Pebble Beds Formation	BP1												↑												
Chester Pebble Beds Formation	BP1												↑												
Chester Pebble Beds Formation	BP1												↑												
Chester Pebble Beds Formation	BP1												↑												
Chester Pebble Beds Formation	BP1												↑												
Chester Pebble Beds Formation	BP1												↑												
Chester Pebble Beds Formation	BP1												↑												
Chester Pebble Beds Formation	BP1												↑												
Chester Pebble Beds Formation	BP1												↑												
Chester Pebble Beds Formation	BP1												↑												
Chester Pebble Beds Formation	BP1												↑												
Chester Pebble Beds Formation	BP1												↑												
Chester Pebble Beds Formation	BP1												↑												
Chester Pebble Beds Formation	BP1												↑												
Chester Pebble Beds Formation	BP1												↑												
Chester Pebble Beds Formation	BP1												↑												
Chester Pebble Beds Formation	BP1												↑												
Chester Pebble Beds Formation	BP1												↑												
Chester Pebble Beds Formation	BP1												↑												
Chester Pebble Beds Formation	BP1												↑												
Chester Pebble Beds Formation	BP1												↑												
Chester Pebble Beds Formation	BP1												↑												
Chester Pebble Beds Formation	BP1												↑												
Chester Pebble Beds Formation	BP1												↑												
Chester Pebble Beds Formation	BP1												↑												
Chester Pebble Beds Formation	BP1												↑												
Chester Pebble Beds Formation	BP1												↑												
Chester Pebble Beds Formation	BP1												↑												
Chester Pebble Beds Formation	BP1												↑												
Chester Pebble Beds Formation	BP1												↑												
Chester Pebble Beds Formation	BP1												↑												
Chester Pebble Beds Formation	BP1												↑												
Chester Pebble Beds Formation	BP1												↑												
Chester Pebble Beds Formation	BP1												↑												
Chester Pebble Beds Formation	BP1												↑												
Chester Pebble Beds Formation	BP1												↑												
Chester Pebble Beds Formation	BP1												↑												
Chester Pebble Beds Formation	BP1												↑												
Chester Pebble Beds Formation	BP1												↑												
Chester Pebble Beds Formation	BP1												↑												
Chester Pebble Beds Formation	BP1												↑												
Chester Pebble Beds Formation	BP1												↑												
Chester Pebble Beds Formation	BP1												↑												
Chester Pebble Beds Formation	BP1												↑												
																		</							

Neil Meadows			Location: Burton Point					Stratigraphy: Kinnerton Sdst. Fm.																			
Scale: 1:50			Sheet 7 of 11			Structural dip: 20/355			Grid. Ref. 3304 3736																		
Stratigraphy	Sed. surfaces & Pet. samples	Drillers depth/ vertical to bed (metres)	Grain Size and Structures								Lithology	Sedimentary features	Azimuth of cross strat	Post-depositional modification	Diagenesis and fractures	Colour	Comments	Facies									
			Pebble	Granule	Very coarse sand	Coarse sand	Medium sand	Fine sand	Very fine sand	Silt									Clay								
Kinnerton Sandstone Formation	BP3	60	Continued														Well sorted fine sandstones with well developed flat lamination locally exhibiting slight upward coarsening typical of wind rippling and, with interbedded high angle cross stratified sets, dominated by well rounded grains	WET SANDFLAT/ PLAYA MARGIN									
																									AEOLIAN SANDSHEET WITH DUNE REMNANTS		
																										STACKED AEOLIAN DUNES	
																										AEOLIAN SANDSHEET	
																										STACKED AEOLIAN DUNES	
																											AEOLIAN SANDSHEET WITH DUNE REMNANTS
																											STACKED AEOLIAN DUNES
				70	Continued																			Well sorted fine sandstones forming stacked high angle cross stratified sets generally bounded by planar erosive surfaces but also including an apparently scoured (?wind sculpted) erosion surface			

Neil Meadows			Location: Burton Point				Stratigraphy: Kinnerton Sdst. Fm.											
Scale: 1:50			Sheet 8 of 11				Structural dip: 20/355		Grid. Ref. 3304 3736									
Stratigraphy	Sed. surfaces & Pet. samples	Drillers depth/vertical to bed (metres)	Grain Size and Structures								Lithology	Sedimentary features	Azimuth of cross strat	Post-depositional modification	Diagenesis and fractures	Colour	Comments	Facies
			Pebble	Granule	Very coarse sand	Coarse sand	Medium sand	Fine sand	Very fine sand	Silt								
			Continued															
70													↑				Well sorted fine sandstones forming high angle cross stratified sets with pinstripe lamination	STACKED AEOLIAN DUNES
													↑				Moderately sorted fine sandstones forming decimetre scale cross stratified sets with counter current ripples and a dessicated, locally mud curled, thin claystone drape overlying the uppermost set	FLUVIAL CHANNEL
													↑				Low stage bars	
													↑				Finely flat laminated argillaceous siltstones overlying moderately sorted fine sandstones	ABANDONMENT
																		FLUVIAL CHANNEL
											</							

Neil Meadows			Location: Burton Point				Stratigraphy: Kinnerton Sdst. Fm.											
Scale: 1:50			Sheet 9 of 11				Structural dip: 20/355		Grid. Ref. 3304 3736									
Stratigraphy	Sed. surfaces & Pet. samples	Drillers depth/vertical to bed (metres)	Grain Size and Structures								Lithology	Sedimentary features	Azimuth of cross strat	Post-depositional modification	Diagenesis and fractures	Colour	Comments	Facies
			Pebble	Granule	Very coarse sand	Coarse sand	Medium sand	Fine sand	Very fine sand	Silt								
Kinnerton Sandstone Formation		80								Continued							Well sorted medium and fine sandstones with well developed pinstripe lamination within metre scale sets preserving wind ripples within the toesets	STACKED AEOLIAN DUNES
										Outcrop obscured								
		85															Moderately sorted fine to medium sandstones with slumped cross stratification within a single cross stratified set overlying a scoured base	AEOLIAN DUNE
																		FLUVIAL CHANNEL High stage bar
																	Well to bimodally sorted fine sandstones forming metre scale sets with high angle cross stratification dominated by grainfall lamination but also preserving isolated grainflows	STACKED AEOLIAN DUNES

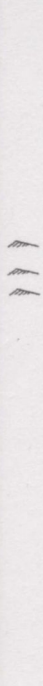
Neil Meadows			Location: Burton Point				Stratigraphy: Kinnerton Sdst. Fm.												
Scale: 1:50			Sheet 10 of 11				Structural dip: 16/348		Grid. Ref. 3305 3736										
Stratigraphy	Sed. surfaces & Pet. samples	Drillers depth/vertical to bed (metres)	Grain Size and Structures									Lithology	Sedimentary features	Azimuth of cross strat	Post-depositional modification	Diagenesis and fractures	Colour	Comments	Facies
			Pebble	Granule	Very coarse sand	Coarse sand	Medium sand	Fine sand	Very fine sand	Silt	Clay								
Kinnerton Sandstone Formation		90									Continued		S	↗				Moderately sorted fine sandstones with slumped foresets overlying a scoured erosive base cut into moderate to well sorted fine sandstones also exhibiting soft sediment deformation in the form of overturned foresets	FLUVIAL CHANNEL High stage bars
													S	↗					
		95											J	↗				Bimodally sorted fine sandstones with well developed pinstripe lamination dominated by wind ripples overlying well sorted and high angle cross stratified fine to medium sandstones	AEOLIAN SANDSHEET AEOLIAN DUNE AEOLIAN SANDSHEET AEOLIAN DUNE
													J	↗					
													J	↗					
													J	↗				Moderately sorted fine to medium sandstones forming decimetre scale sets above an erosive base	FLUVIAL CHANNEL Low stage bars DAMP SANDFLAT
													J	↗				Moderate to poorly sorted fine sandstones exhibiting irregular lamination with thin silty drapes, wave rippling and bioturbation	AEOLIAN DUNE
													J	↗				Well sorted fine sandstones with pinstripe lamination and sparse wind ripples within decimetre scale sets with planar erosive bases	AEOLIAN SANDSHEET
		100									Continued			↖					

[illegible]

Neil Meadows			Location: Carden Park				Stratigraphy: Helsby & Wilmslow Sdst. Fms.											
Scale: 1:50			Sheet 1 of 1				Structural dip: 8/088		Grid. Ref. 3463 3538									
Stratigraphy	Sed. surfaces & Pet. samples	Drillers depth/vertical to bed (metres)	Grain Size and Structures								Lithology	Sedimentary features	Azimuth of cross strat	Post-depositional modification	Diagenesis and fractures	Colour	Comments	Facies
			Pebble	Granule	Very coarse sand	Coarse sand	Medium sand	Fine sand	Very fine sand	Silt								
Sherwood Sandstone Group Helsby Sandstone Formation Delamere Member	CP1	0	Top of outcrop										↑				Moderately to poorly sorted mediumsandstones with subangular to sub-rounded grains and sparse quartz pebbles forming decimetre to metre scale, erosively based cross stratified sets	STACKED FLUVIAL CHANNELS Low stage bars
												↑				Well rounded grains become increasingly common downwards together with scattered small red claystone intra-clasts aligned along foreset surfaces		High stage bars
												↙					Low stage bars	
												↑				Moderately sorted medium sandstone with sparse red claystone intraclasts and variably tight calcite cement concentrated above channel base		High stage bar
												↑					Low stage bars	
												↑				Poorly sorted medium sandstones with common small to medium pebbles of quartz and red claystone intraclasts up to cobble grade, all forming metre scale sets that show wedging geometries	High stage bars	
												↑					Low stage bars	
												↑				Locally clast supported intraclastic and pebble conglomerate comprising red claystones and imbricated sandstone clasts with a matrix of fine to medium sandstone	High stage bars/avulsion unit	
												↑					Low stage bars	
		Wilmslow Sandstone Formation Sherwood Sandstone Group	CP3											↑				Well sorted medium and fine to medium sandstones with abundant aeolian-type well rounded grains forming wind rippled laminae and mainly grain-fall laminated cross stratification with metre scale sets. High angle granulation seams form several conjugate sets
												↓			AEOLIAN DUNE			
				10	Base of outcrop										↓			

Neil Meadows			Location: Fleswick Bay				Stratigraphy: St. Bees Sdst. Fm.																																						
Scale: 1:50			Sheet 1 of 3		Structural dip: 2/170		Grid. Ref. 2947 5129																																						
Stratigraphy	Sed. surfaces & Pet. samples	Drillers depth/vertical to bed (metres)	Grain Size and Structures								Lithology	Sedimentary features	Azimuth of cross strat	Post-depositional modification	Diagenesis and fractures	Colour	Comments	Facies																											
			Pebble	Granule	Very coarse sand	Coarse sand	Medium sand	Fine sand	Very fine sand	Silt									Clay																										
			Continued from St. Bees								South	Head																																	
FC1		0														Moderately sorted fine to medium sandstones with with common grey and red claystone intraclasts. Finely laminated siltstones are locally disrupted by apparent slurry flows but are cut out 20m along the outcrop	STACKED FLUVIAL CHANNELS																												
		High stage bar																																											
		Channel base																																											
		Abandonment																																											
		Low stage bars																																											
		High stage bar																																											
		Inter-bar channel																																											
		FC2																5												Moderate to well sorted fine sandstones with rare claystone intraclasts. The compound sequence is laterally highly complex with multiple scour and fill channel geometries	Low stage bars														
																															FC3														Channel base
																Channel base																													
																																		High stage bars											
																																				Channel base									
																																					High stage bars								
																																				Channel base									
																																					High stage bars								
																																				Channel base									
																																					High stage bars								
																																				Channel base									
																																					High stage bars								
																																				Channel base									
																																					High stage bars								
																																				Channel base									
																																					High stage bars								
																																				Channel base									
																																					High stage bars								
																																				Channel base									
																																					High stage bars								
																																				Channel base									
																																					High stage bars								
																																				Channel base									
																																					High stage bars								
																																				Channel base									
																																					High stage bars								
																																				Channel base									
																																					High stage bars								

[illegible]

Neil Meadows			Location: Fleswick Bay				Stratigraphy: St. Bees Sdst. Fm.																		
Scale: 1:50			Sheet 3 of 3				Structural dip: 2/175		Grid. Ref.2945 5134																
Stratigraphy	Sed. surfaces & Pet. samples	Drillers depth/ vertical to bed (metres)	Grain Size and Structures								Lithology	Sedimentary features	Azimuth of cross strat	Post-depositional modification	Diagenesis and fractures	Colour	Comments	Facies							
			Pebble	Granule	Very coarse sand	Coarse sand	Medium sand	Fine sand	Very fine sand	Silt									Clay						
St. Bees Sandstone Formation Rottington Member		20	Continued														Moderately to well sorted fine sandstones forming decimetre to metre scale beds that are cut out laterally in response to the large scale wedging geometries of channel fills	STACKED FLUVIAL CHANNELS							
																							High stage bars		
																								Channel base	
																								Partial abandonment	
																								Bar top reworking	
																									High stage bars
																									Channel base
																									Abandonment
			25	Base of outcrop																					

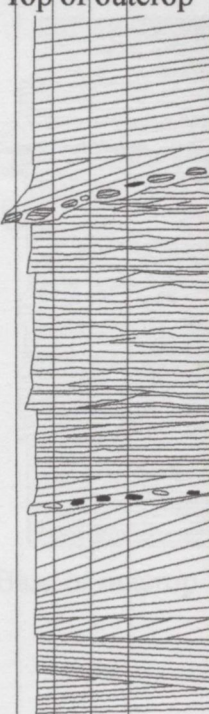
[illegible]

[illegible]

[illegible]

Neil Meadows			Location: Hilbre Point (north)				Stratigraphy: Ormskirk Sdst. Fm											
Scale: 1:50			Sheet 1 of 1		Structural dip: 11/058		Grid. Ref. 3204 3886											
Stratigraphy	Sed. surfaces & Pet. samples	Drillers depth/vertical to bed (metres)	Grain Size and Structures					Lithology	Sedimentary features	Azimuth of cross strat	Post-depositional modification	Diagenesis and fractures	Colour	Comments	Facies			
			Pebble	Granule	Very coarse sand	Coarse sand	Medium sand	Fine sand	Very fine sand	Silt	Clay							
			Top of outcrop															
0													Moderately sorted medium sandstones with subrounded to subangular grains forming decimetre scale sets with moderate to low angle cross stratification and asymptotic foresets. Beds exhibit climbing geometries with downstream transition to sigmoidal cross stratification					STACKED FLUVIAL CHANNELS
													Low stage bars					
													Abandonment					
													High stage bars					
													Thin interbedded an finely laminated claystone and very fine sandstone					Inter-bar channel
													High stage bars					
													Abandonment					
													High stage bars					
5													Poorly sorted coarse sandstones with scattered exotics up to very large pebble grade of very angular quartz and rounded sandstone, gneiss or granitic rock fragments and rare limestone fragments.					High stage bars
													High stage bars					
													Abandonment					
													High stage bars					
													Very poorly sorted coarse sandstones with sparse well rounded grains and very angular quartz, k-feldspar and fine sandstone exotics up to 10cm diameter plus red claystone and siltstone intraclasts up to 25cm long					High stage bars
													High stage bars					
													Abandonment					
													High stage bars					
													Laminated siltstone cut out by overlying channel base and locally disrupted with partially incorporated clasts at base					High stage bars
													High stage bars					
													Abandonment					
													High stage bars					
10													Moderate to poorly sorted coarse sandstones with sparse to locally common well rounded grains and well rounded exotics of quartz, k-feldspar and metamorphics up to large pebble grade					High stage bars
													High stage bars					
													Abandonment					
													High stage bars					
			Base of outcrop															

[illegible]

Neil Meadows			Location: Moss Farm				Stratigraphy: Wilmslow Sdst. Fm.																
Scale: 1:50			Sheet 2 of 2				Structural dip: 5/090		Grid. Ref. 3506 3546														
Stratigraphy	Sed. surfaces & Pet. samples	Drillers depth/ vertical to bed (metres)	Grain Size and Structures								Lithology	Sedimentary features	Azimuth of cross strat	Post-depositional modification	Diagenesis and fractures	Colour	Comments	Facies					
			Pebble	Granule	Very coarse sand	Coarse sand	Medium sand	Fine sand	Very fine sand	Silt									Clay				
Wilmslow Sandstone Formation			0											↑				Moderate to poorly sorted fine sandstone forming metre scale sets with a basal lag of reworked fine sandstone clasts comprising fragments of damp sandflat. Channel fill equates to sheet-flood on Moss Farm 1 Log with basal surface having c1.5m incision	FLUVIAL CHANNEL				
																			DAMP SANDFLAT				
																			AEOLIAN SANDSHEET SHEETFLOOD				
																			AEOLIAN DUNE				
																			AEOLIAN SANDSHEET				
			5										↙			Well sorted to bimodally laminated fine sandstones with abundant well rounded grains and common wind ripples at the base							

Neil Meadows			Location: New Brighton				Stratigraphy: Ormskirk Sdst. Fm.											
Scale: 1:50			Sheet 3 of 4				Structural dip: 2/170			Grid. Ref. 3297 3940								
Stratigraphy	Sed. surfaces & Pet. samples	Drillers depth/vertical to bed (metres)	Grain Size and Structures								Lithology	Sedimentary features	Azimuth of cross strat	Post-depositional modification	Diagenesis and fractures	Colour	Comments	Facies
			Pebble	Granule	Very coarse sand	Coarse sand	Medium sand	Fine sand	Very fine sand	Silt								
Ormskirk Sandstone Formation Sherwood Sandstone Group OS2b Member		0															Moderately to well sorted medium sandstones with common wind rippled laminae	AEOLIAN DUNE AND DAMP SANDFLAT
																	Moderately sorted medium sandstones with scattered intraclasts, forming decimetre scale cross-stratified sets above erosive and scoured bases	FLUVIAL CHANNEL Low stage bars
																	Well sorted medium sandstones forming tabular cross stratified sets and wind rippled laminae	High stage bar
																		DAMP SANDFLAT
																		AEOLIAN DUNE
		5															Moderate to poorly sorted fine to medium sandstones with irregular lamination and thin silty drapes	DAMP SANDFLAT AND AEOLIAN SANDSHEET

Neil Meadows			Location: New Brighton				Stratigraphy: Ormskirk Sdst. Fm.																		
Scale: 1:50			Sheet 4 of 4		Structural dip: 2/170			Grid. Ref. 3296 3940																	
Stratigraphy	Sed. surfaces & Pet. samples	Drillers depth/vertical to bed (metres)	Grain Size and Structures								Lithology	Sedimentary features	Azimuth of cross strat	Post-depositional modification	Diagenesis and fractures	Colour	Comments	Facies							
			Pebble	Granule	Very coarse sand	Coarse sand	Medium sand	Fine sand	Very fine sand	Silt									Clay						
Ormskirk Sandstone Formation OS2b Member	NB3	0	Top of outcrop														Moderate to well sorted fine to medium sandstones with abundant well rounded grains forming wind rippled laminae	AEOLIAN SANDSHEET							
																							Moderately sorted medium sandstone with small claystone intraclasts with erosively based set	DAMP SANDFLAT WITH AEOLIAN DUNE REMNANTS	
																							Moderate to poorly sorted fine and medium sandstones, irregularly laminated with silty drapes	SHEETFLOOD	
																							Well sorted medium sandstones forming tabular cross stratified sets with planar bases and finely wind rippled with bimodal sorting	DAMP SANDFLAT WITH AEOLIAN DUNE REMNANTS	
																								AEOLIAN DUNE	
																									DAMP SANDFLAT WITH AEOLIAN SANDSHEETS
		5	Base of outcrop																						

Neil Meadows			Location: Raw Head			Stratigraphy: Helsby Sdst. Fm.																		
Scale: 1:50			Sheet 1 of 2			Structural dip: 6/088		Grid. Ref. 3508 3547																
Stratigraphy	Sed. surfaces & Pet. smaples	Drillers depth/ vertical to bed (metres)	Grain Size and Structures								Lithology	Sedimentary features	Azimuth of cross strat	Post-depositional modification	Diagenesis and fractures	Colour	Comments	Facies						
			Pebble	Granule	Very coarse sand	Coarse sand	Medium sand	Fine sand	Very fine sand	Silt									Clay					
			Top of outcrop																					
Helsby Sandstone Formation Sherwood Sandstone Group Delamere Member	RH1	0															Moderate to poorly sorted medium sandstones with common quartz pebbles	STACKED FLUVIAL CHANNELS Low stage bars						
																	Poorly to locally very poorly sorted pebbly coarse sandstones with abundant small to large pebbles of quartz, chert, volcanic, sandstone and siltstone aligned along foreset surfaces	High stage bars						
																				Moderately sorted fine to medium and medium sandstones with common well rounded grains	Low stage bars			
																				Sandstones as above with locally abundant red and grey claystone intraclasts either aligned along fore-sets or a basal lagto sets	High stage bars			
																					Inter-bar channel			
	RH2																						Moderately sorted fine to medium and medium sandstones with common well rounded grains	Low stage bars
																							Sandstone as above, finely falt laminated with red claystone intracalsts forming a basal lag to the set	Inter-bar channel
																								Low stage bars
												Fluvial												

Sherwood Sandstone Group

Neil Meadows			Location: Saltom Bay					Stratigraphy: St Bees Sdst.. Fm.											
Scale: 1:50			Sheet 1 of 1			Structural dip: 6/180			Grid. Ref. 2958 5156										
Stratigraphy	Sed. surfaces & Pet. samples	Drillers depth/ vertical to bed (metres)	Grain Size and Structures								Lithology	Sedimentary features	Azimuth of cross strat	Post-depositional modification	Diagenesis and fractures	Colour	Comments	Facies	
			Pebble	Granule	Very coarse sand	Coarse sand	Medium sand	Fine sand	Very fine sand	Silt									Clay
			Top of outcrop																
0																		Upper part of section from 0-5m is sketch logged from photographs due to the inaccessibility of the cliff. Laterally continuous sandstones bounded by prominent surfaces but comprising decimetre scale sets that wedge out laterally above erosive bases incised into the underlying sandstones	STACKED FLUVIAL CHANNELS
																		Low stage bars	
																		Partial abandonment	
																		Low stage bars	
5																		Fine flat laminated sandstones forming a marked break along the cliff and overlying a thick sandstone package in which preserved set thickness decreases upwards from metre scale cross stratified sets near the base through decimetre scale trough cross stratified sets that wedge out laterally	High stage bars
ST1																		Finely laminated and low angle cross stratified fine sandstones forming an upward coarsening sequence directly underlying the fluvial channel described above and overlying laminated siltstones with thin very fine sandstone interbeds	?LACUSTRINE DELTA
																		ABANDONMENT PLAYA LAKE	
																		STACKED FLUVIAL CHANNELS	
																		Low stage bars	
																		Low stage bars	
10			Outcrop obscured																
			Continued																

Scale: 1:50

Location: Saltom Bay

Stratigraphy: St Bees Sdst. Fm.

Sheet 2 of 3

Structural dip: 4/175

Grid. Ref. 2957 5155

[illegible]

[illegible]

Neil Meadows			Location: St Bees South Head				Stratigraphy: St Bees Sdst. Fm.											
Scale: 1:50			Sheet 2 of 12		Structural dip: 7/180		Grid. Ref. 2953 5118											
Stratigraphy	Sed. surfaces & Pet. samples	Drillers depth/vertical to bed (metres)	Grain Size and Structures								Lithology	Sedimentary features	Azimuth of cross strat	Post-depositional modification	Diagenesis and fractures	Colour	Comments	Facies
			Pebble	Granule	Very coarse sand	Coarse sand	Medium sand	Fine sand	Very fine sand	Silt								
Sherwood Sandstone Group St Bees Sandstone Formation Rottington Member		10	Continued										↗				Moderate to well sorted fine sandstones forming decimetre scale moderate to low angle cross stratified sets with planar erosive bases. Interbedded argillaceous siltstones are cut out along the section	STACKED FLUVIAL CHANNELS Low stage bars ABANDONMENT
												↖				Sandstones as above forming metre scale moderate angle cross stratified sets that are laterally continuous for more than 100m along the outcrop	High stage bars ABANDONMENT	
												↗				Intraclastic lag deposits comprising locally clast supported conglomerates of reworked red siltstones and very fine sandstones	High stage bars Inter-bar channel	
												↗				Well sorted very fine to fine sandstones with finely developed flat lamination although the unit is cut out laterally	High stage bar Inter-bar channel	
												↖					High stage bar	
																	Low stage bars	
																	High stage bars	
																	ABANDONMENT	
			20	Continued										↘				

Neil Meadows			Location: St Bees South Head				Stratigraphy: St Bees Sdst. Fm.												
Scale: 1:50			Sheet 4 of 12				Structural dip: 6/175		Grid. Ref. 2951 5119										
Stratigraphy	Sed. surfaces & Pet. samples	Drillers depth/ vertical to bed (metres)	Grain Size and Structures								Lithology	Sedimentary features	Azimuth of cross strat	Post-depositional modification	Diagenesis and fractures	Colour	Comments	Facies	
			Pebble	Granule	Very coarse sand	Coarse sand	Medium sand	Fine sand	Very fine sand	Silt									Clay
Sherwood Sandstone Group St Bees Sandstone Formation Rottington Member		30								Continued							Moderately sorted fine sandstones forming metre scale sets with moderate angle cross stratification that are laterally continuous and can be traced for more than 200 metres	STACKED FLUVIAL CHANNELS High stage bars	
																		Inter-bar channel	
																		Low stage bars	
																		Inter-bar channel	
																		PARTIAL ABANDONMENT	
																		Low stage bars	
																		Inter-bar channel	
			35															Moderately sorted fine sandstones forming metre scale cross stratified sets with locally deeply scoured bases that are cut out or replaced along the outcrop	High stage bars
																		Low stage bars	
																		High stage bar	
		40								Continued							Moderately to well sorted lower fine sandstones forming stacked decimetre scale sets that are laterally discontinuous individually while the sequence can be traced for >200 metres	Inter-bar channel	

Neil Meadows			Location: St Bees South Head				Stratigraphy: St Bees Sdst. Fm.											
Scale: 1:50			Sheet 5 of 12		Structural dip: 8/180		Grid. Ref. 2951 5120											
Stratigraphy	Sed. surfaces & Pet. samples	Drillers depth/vertical to bed (metres)	Grain Size and Structures								Lithology	Sedimentary features	Azimuth of cross strat	Post-depositional modification	Diagenesis and fractures	Colour	Comments	Facies
			Pebble	Granule	Very coarse sand	Coarse sand	Medium sand	Fine sand	Very fine sand	Silt								
Sherwood Sandstone Group St Bees Sandstone Formation Rottington Member		40								Continued								STACKED FLUVIAL CHANNELS Inter-bar channel
																		Low stage bars
																		High stage bars
																		Low stage bars
			45															Inter-bar channel
																		Low stage bars
																		Inter-bar channel
																		High stage bars
																		PARTIAL ABANDONMENT
																		Inter-bar channel
		50								Continued								PARTIAL ABANDONMENT

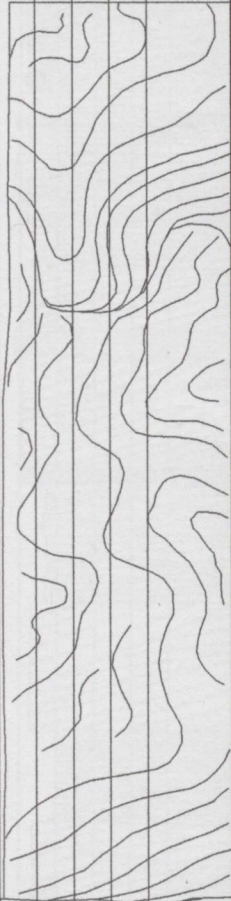
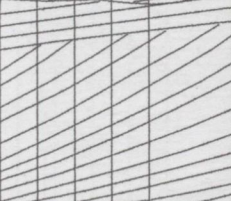
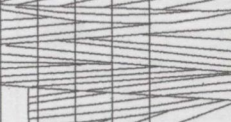
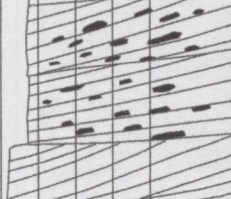
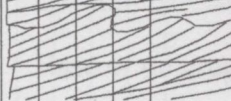
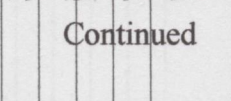
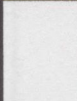
Stratigraphy	Sed. surfaces & Pet. samples	Drillers depth/ vertical to bed (metres)	Grain Size and Structures								Lithology	Sedimentary features	Azimuth of cross strat	Post-depositional modification	Diagenesis and fractures	Colour	Comments	Facies
			Pebble	Granule	Very coarse sand	Coarse sand	Medium sand	Fine sand	Very fine sand	Silt								
Sherwood Sandstone Group St Bees Sandstone Formation Rottington Member		50								Continued						Moderately sorted fine sandstones forming decimetre scale cross stratified sets with planar erosive bases that tend to be cut out laterally	PARTIAL ABANDONMENT STACKED FLUVIAL CHANNELS Low stage bars	
																	Inter-bar channel	
																Moderately sorted upper fine sandstones forming decimetre to metre scale moderate to high angle cross stratified sets with a uniform palaeocurrent direction towards the north and a laterally continuous basal surface with common red claystone intraclasts	High stage bars	
																	Inter-bar channel	
			55														Low stage bars	
																	PARTIAL ABANDONMENT	
																	Inter-bar channel	
																	Low stage bars	
			60								Continued						Moderately to well sorted fine sandstones forming decimetre scale cross stratified sets that are commonly cut out laterally but also a flat laminated interval that is laterally continuous for >100m	Inter-bar channel

Stratigraphy	Sed. surfaces & Pet. samples	Drillers depth/ vertical to bed (metres)	Grain Size and Structures								Lithology	Sedimentary features	Azimuth of cross strat	Post-depositional modification	Diagenesis and fractures	Colour	Comments	Facies
			Pebble	Granule	Very coarse sand	Coarse sand	Medium sand	Fine sand	Very fine sand	Silt								
Sherwood Sandstone Group St Bees Sandstone Formation Rottington Member		60									Continued						Well sorted fine sandstones with well developed flat lamination to very low angle cross stratification with very low angle discordances	STACKED FLUVIAL CHANNELS Inter-bar channel
																		High stage bar
																	Moderate to well sorted fine sandstones forming decimetre scale cross stratified sets with scoured erosive bases. Sets are laterally discontinuous and the whole unit is cut out laterally beneath the overlying channel base	Low stage bars
		65															Moderately sorted upper fine sandstones forming laterally extensive metre scale cross stratified sets	High stage bars

Neil Meadows			Location: St Bees South Head				Stratigraphy: St Bees Sdst. Fm.											
Scale: 1:50			Sheet 9 of 12				Structural dip: 4/180		Grid. Ref. 2949 5124									
Stratigraphy	Sed. surfaces & Pet. samples	Drillers depth/vertical to bed (metres)	Grain Size and Structures								Lithology	Sedimentary features	Azimuth of cross strat	Post-depositional modification	Diagenesis and fractures	Colour	Comments	Facies
			Pebble	Granule	Very coarse sand	Coarse sand	Medium sand	Fine sand	Very fine sand	Silt								
			Continued															
80																	Moderate to well sorted fine sandstones with well defined flat to very low angle lamination within very low relief bedforms separated by very low angle discordances	STACKED FLUVIAL CHANNELS
																		Inter-bar channel

Neil Meadows			Location: St Bees South Head				Stratigraphy: St Bees Sdst. Fm.													
Scale: 1:50			Sheet 10 of 12				Structural dip: 4/165		Grid. Ref. 2949 5125											
Stratigraphy	Sed. surfaces & Pet. samples	Drillers depth/vertical to bed (metres)	Grain Size and Structures								Lithology	Sedimentary features	Azimuth of cross strat	Post-depositional modification	Diagenesis and fractures	Colour	Comments	Facies		
			Pebble	Granule	Very coarse sand	Coarse sand	Medium sand	Fine sand	Very fine sand	Silt									Clay	
Sherwood Sandstone Group St Bees Sandstone Formation Rottington Member		90								Continued								Moderately sorted fine and fine to medium sandstones forming decimetre to metre scale sets, locally soft sediment deformed, that are cut out laterally by scoured erosive set bases but combine to form laterally continuous units over 100's metres	STACKED FLUVIAL CHANNELS	
																			High stage bars	
																			Low stage bars	
																			High stage bars	
																			High stage bars	
																			Inter-bar channel	
																			High stage bar	
																			Inter-bar channel	
																			Low stage bar	
																			Inter-bar channel	
																			Low stage bars	
																			Inter-bar channel	
																			High stage bar	
			100								Continued									

Neil Meadows			Location: St Bees South Head				Stratigraphy: St Bees Sdst. Fm.											
Scale: 1:50			Sheet 12 of 12				Structural dip: 2/160		Grid. Ref. 2947 5128									
Stratigraphy	Sed. surfaces & Pet. samples	Drillers depth/ vertical to bed (metres)	Grain Size and Structures								Lithology	Sedimentary features	Azimuth of cross strat	Post-depositional modification	Diagenesis and fractures	Colour	Comments	Facies
			Pebble	Granule	Very coarse sand	Coarse sand	Medium sand	Fine sand	Very fine sand	Silt								
St Bees Sandstone Formation Rottington Member		110															Moderately sorted fine sandstones with red clay-stone intraclasts aligned along foreset surfaces within decimetre scale low angle cross stratified sets with commonly scoured erosive bases	STACKED FLUVIAL CHANNELS Low stage bars
																		High stage bars
		115																Moderately sorted fine sandstones forming a laterally extensive unit traceable over 100's metres and comprising metre scale cross stratified sets overlying an extensive flat to very low angle cross stratified bed

Neil Meadows			Location: Thurstaston Road Cutting				Stratigraphy: Helsby Sdst. Fm.															
Scale: 1:50			Sheet 1 of 2				Structural dip: 6/108		Grid. Ref. 3245 3847													
Stratigraphy	Sed. surfaces & Pet. samples	Drillers depth/vertical to bed (metres)	Grain Size and Structures								Lithology	Sedimentary features	Azimuth of cross strat	Post-depositional modification	Diagenesis and fractures	Colour	Comments	Facies				
			Pebble	Granule	Very coarse sand	Coarse sand	Medium sand	Fine sand	Very fine sand	Silt									Clay			
			Top of outcrop																			
0																				Well sorted medium sandstones comprising abundant very well rounded grains with frosted surfaces. The metre scale sets are extensively collapsed and slumped with evidence of lateral displacement and deformed set boundaries		STACKED COLLAPSED AEOLIAN DUNES
5																				Moderately to well sorted medium to coarse sandstones forming a metre scale tabular cross stratified set with common grainflow laminae		
																				Bimodally sorted coarse sandstones with abundant well rounded frosted grains and common wind rippled laminae		AEOLIAN SANDSHEET
TRC1																				Moderately sorted medium sandstones with abundant grey claystone intraclasts and sparse well rounded grains forming a metre scale cross stratified set		FLUVIAL CHANNEL
																				Moderate to well sorted medium sandstones with common well rounded grains overlying a highly erosive and scoured base		High stage bars
10																				Moderate to well sorted medium sandstones with common well rounded grains overlying a highly erosive and scoured base		AEOLIAN DUNE
			Continued																			

Neil Meadows			Location: Thurstaston Road Cutting				Stratigraphy: Helsby Sdst. Fm.											
Scale: 1:50			Sheet 2 of 2				Structural dip: 4/120		Grid. Ref.3244 3848									
Stratigraphy	Sed. surfaces & Pet. samples	Drillers depth/ vertical to bed (metres)	Grain Size and Structures								Lithology	Sedimentary features	Azimuth of cross strat	Post-depositional modification	Diagenesis and fractures	Colour	Comments	Facies
			Pebble	Granule	Very coarse sand	Coarse sand	Medium sand	Fine sand	Very fine sand	Silt								
			Continued															
Ormskirk Sandstone Formation OS1 Member	TRC2	10															Well to bimodally sorted medium and coarse sandstones with common wind ripples and irregular laminae with thin silty drapes. Bioturbation includes 0.5-1.0cm wide sub-vertical sand-filled burrows and rare tetrapod indent marks	AEOLIAN SANDSHEET
																		DAMP SANDFLAT
																		PONDED SANDFLAT
																		AEOLIAN DUNE
																		AEOLIAN SANDSHEET
																		AEOLIAN DUNE
																		DAMP SANDFLAT
																		AEOLIAN DUNE
																		AEOLIAN SANDSHEET
																		AEOLIAN DUNE
		15															Well sorted medium sandstones forming a complex cross stratified set that is replaced laterally by flat laminated and wind rippled sandstones overlying bimodally laminated fine to medium sandstone with abundant wind ripples, sub-vertical burrows and tetrapod indents	AEOLIAN SANDSHEET
																		AEOLIAN DUNE
																		DAMP SANDFLAT
																		STACKED AEOLIAN DUNES
																	Well sorted medium sandstones forming tangentially based sets with both grainflow and grainfall laminae and common low angle discordances	AEOLIAN SANDSHEET
																		AEOLIAN DUNE
			Base of outcrop															
			20															