

ROSEBERY LITHOLOGY_VMS LOG

Hole ID: WSP17



Project: WSP

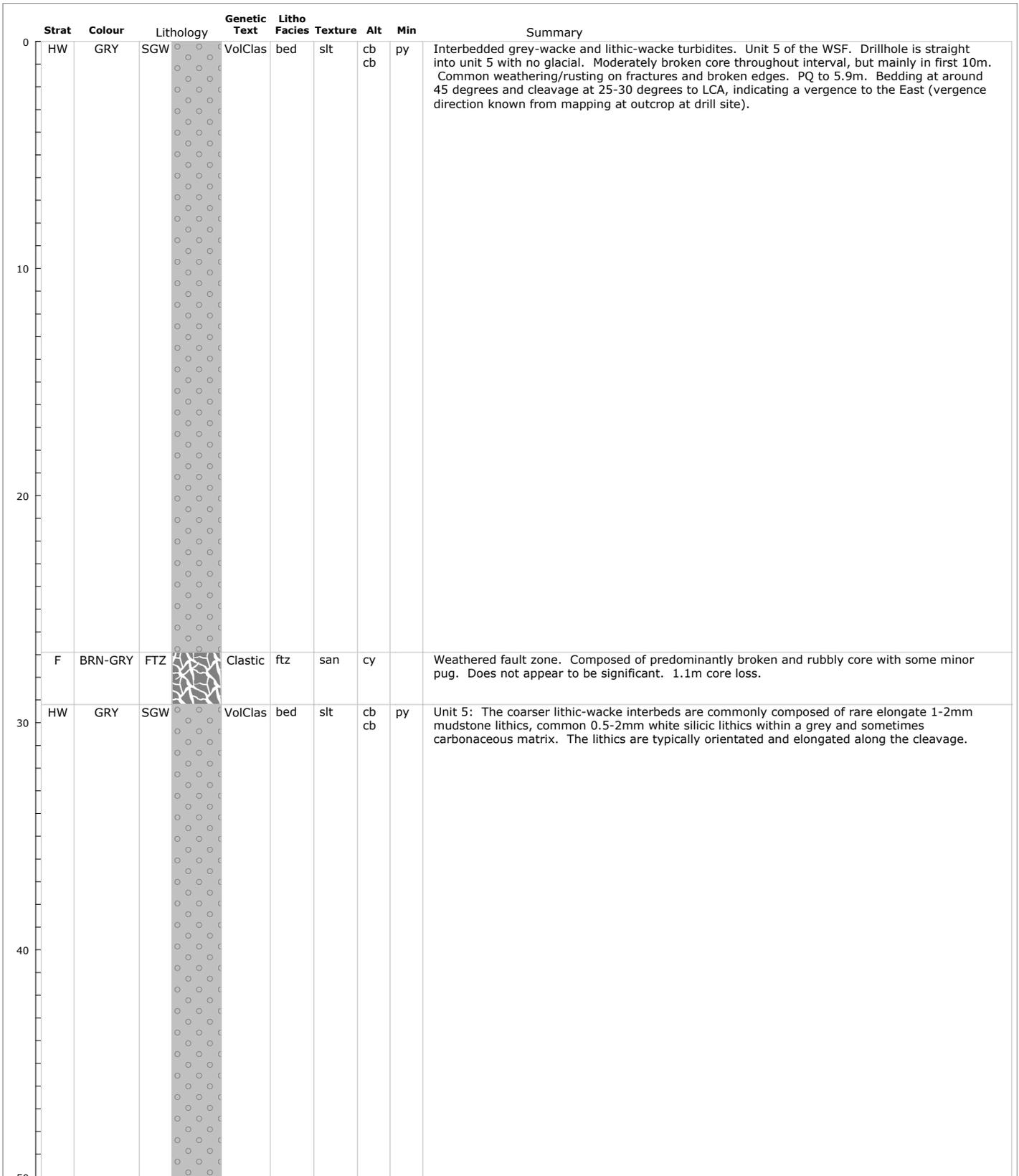
White Spur

Prospect: WSP

Whitespur

Northing: 5360970.0 mN
Easting: 376540.0 mE
RL: 630.0 mRL
CoordSys: MGA55 (GDA94)

Dip: -85.00
MAG_Azim: 77.00
Total Depth: 881.4 m
DrillCompany: BLY



▲ Breccia - Undifferentiated	■ Felsic Flow	■ Disseminated Sulphides	● Interbedded sandstone/siltstone	■ Intermediate flow	■ Undifferentiated Volcaniclastic
▲ Fault Zone	■ Feldspathic porphyry	■ Quartz	▲ Andesite	■ Intermediate Volcaniclastic	▼ Volcanic Breccia
▲ Hyaloclastite Breccia	■ Mafic Dyke	■ Limestone	▲ Crystal Tuff	■ Lapilli Tuff	○ Volcanic Conglomerate
▲ Pyroclastic Breccia	■ Quartz Feldspar Porphyry	■ Dolomite	▲ Dacite	■ Lithic Tuff	○ Volcanic Sandstone
▲ Vein quartz	■ Quartz Porphyry	■ Shale	▲ Dacite Lapilli Tuff	■ Rhyolite	○ Volcanic Siltstone
▲ Vein Carbonate	■ Schist	■ Siltstone	▲ Felsic tuff	■ Rhyolite Breccia	○ Not logged or recorded
▲ Quartz Carbonate Vein	■ Slate	■ Chert	▲ Felsic Volcaniclastic	■ Tuff Siltstone	
▲ Andesite Flow	■ Massive sulphide	■ Greywacke	▲ Feldspathic (ash) tuff	■ Undifferentiated Tuff	
▲ Dacite Flow	■ Semi-massive Sulphides	■ Sandstone	▲ Interbedded VSS/VSL/VSM &	■ Undifferentiated Volcanic	

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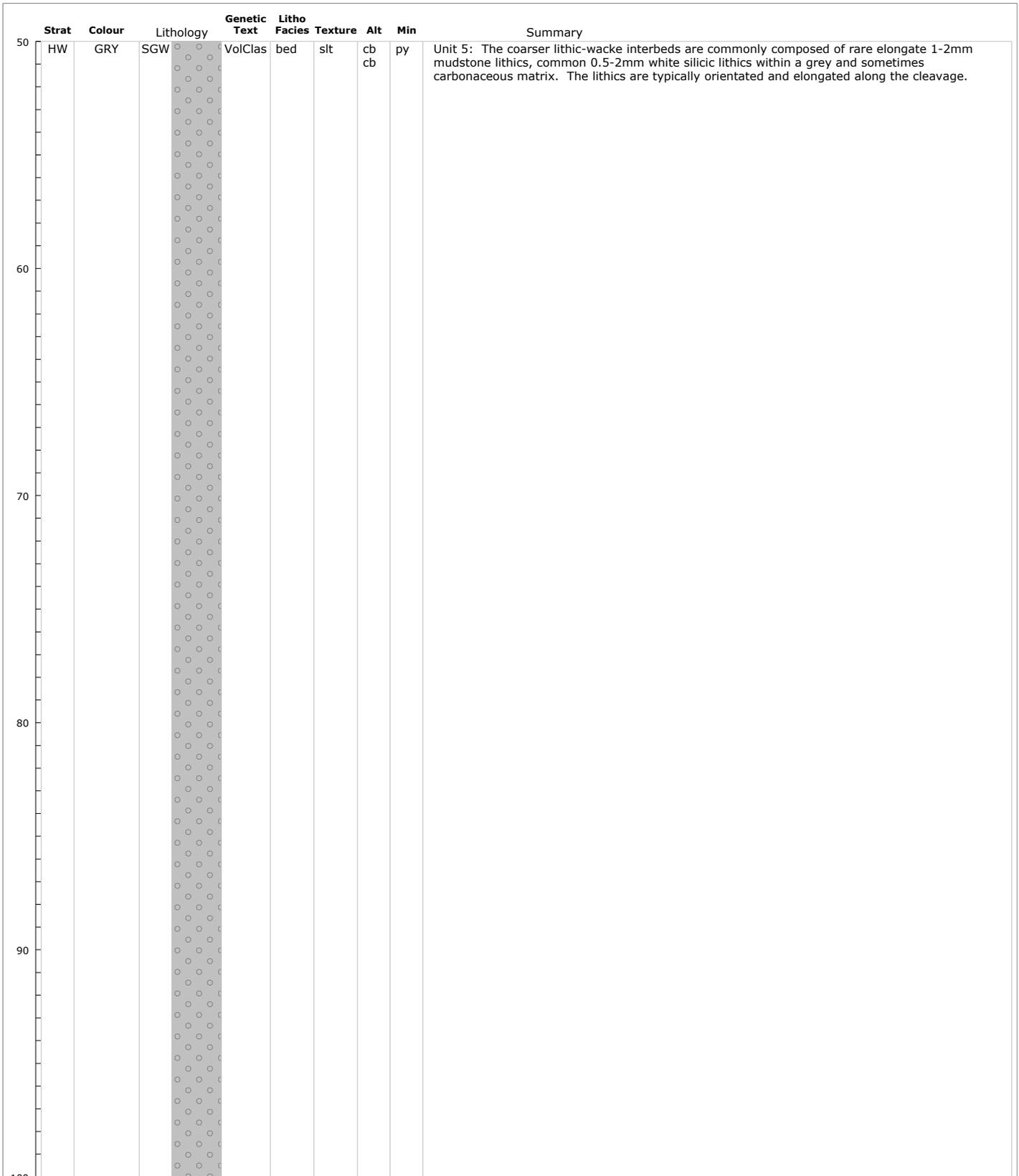
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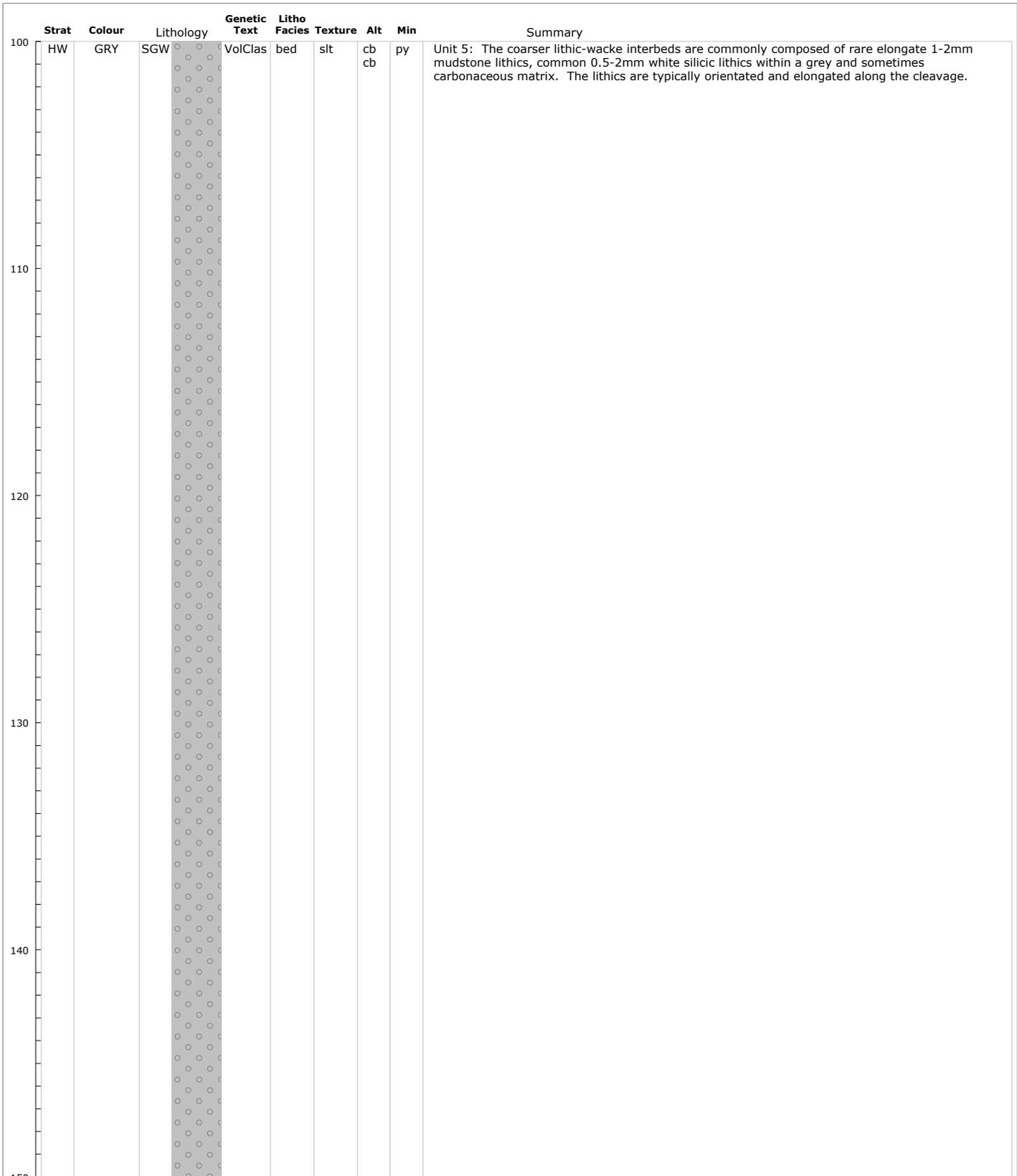
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Strat	Colour	Lithology	Genetic Text	Litho Facies	Texture	Alt	Min	Summary
HW	GRY	SGW	VolClas	bed	slt	cb	py	Unit 5: The coarser lithic-wacke interbeds are commonly composed of rare elongate 1-2mm mudstone lithics, common 0.5-2mm white silicic lithics within a grey and sometimes carbonaceous matrix. The lithics are typically orientated and elongated along the cleavage.

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F	GRY	FTZ	Clastic	ftz	slt	gp		Broken and graphitic fault with some minor pug, wholly within a shale bed.
HW	GRY	SSS	VolClas	bed	slt	cb	py	Interbedded mudstone/grey-wacke and lithic-wacke. Becoming more mudstone dominant now.
HW	GRY	SSS	VolClas	bed	slt	cb	py	Predominantly mudstone now with occasional thin interbeds of coarser sandstone. Interesting interval, where the bedding clearly flattens to being almost parallel with core axis between 258-270m and subsequently back to ~40 degrees LCA by 272m. The core through the sub-parallel bedding zone is quite broken in parts, with an obvious quartz vein running parallel with bedding, however, the broken extent of the core may be a by-product of drilling parallel with the main fabric. This unit typically sits below unit 5 and is arguably the fine top of Unit 4, however it is a very transitional contact.

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HW	GRY	SSS	VolClas	bed	slt	cb	py	<p>Predominantly mudstone now with occasional thin interbeds of coarser sandstone. Interesting interval, where the bedding clearly flattens to being almost parallel with core axis between 258-270m and subsequently back to ~40 degrees LCA by 272m. The core through the sub-parallel bedding zone is quite broken in parts, with an obvious quartz vein running parallel with bedding, however, the broken extent of the core may be a by-product of drilling parallel with the main fabric. This unit typically sits below unit 5 and is arguably the fine top of Unit 4, however it is a very transitional contact.</p>
HW	GRY	VBX	VolClas	brc	qfp fia	si cb qt	<p>Unit 4 of the WSF (crystal rich mass flow.). Conformable and gradational upper contact - moving from the above mudstone/sandstone into a siltstone containing 2-3 pumice floats. The upper siltstone is strongly silicified with an almost hornfelsed appearance. From 285-330m, the rock is very well graded, moving from a siliceous siltstone with a gradual increase of white Fd and Qz crystals. At 30m onwards is generally similar grain sized. Compositionally; 20-25% Fd, 5-10% Qz, with clasts composed of common fiamme, mudstone clasts typically <5cm (only 1 large clast up to ~25cm unlike WSP16), common rhyolitic clasts and common aphyric textured/siliceous clasts. This unit is easily correlated to that of WSP16. Common milky white Qz veins up to 6cm thick in parts.</p>	

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⊖ Hyaloclastite Breccia	■ Mafic Dyke	■ Limestone	▲ Crystal Tuff	■ Lapilli Tuff	○ Volcanic Conglomerate
▲ Pyroclastic Breccia	■ Quartz Feldspar Porphyry	■ Dolomite	▲ Dacite	■ Lithic Tuff	○ Volcanic Sandstone
■ Vein quartz	■ Quartz Porphyry	■ Shale	▲ Dacite Lapilli Tuff	■ Rhyolite	○ Volcanic Siltstone
■ Vein Carbonate	■ Schist	■ Siltstone	■ Felsic tuff	■ Rhyolite Breccia	○ Not logged or recorded
■ Quartz Carbonate Vein	■ Slate	■ Chert	■ Felsic Volcaniclastic	■ Tuff Siltstone	
▲ Andesite Flow	■ Massive sulphide	■ Greywacke	■ Feldspathic (ash) tuff	■ Undifferentiated Tuff	
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300	HW	GRY	VBX	VolClas	brc	qfp fia	si cb qt	Unit 4 of the WSF (crystal rich mass flow.). Conformable and gradational upper contact - moving from the above mudstone/sandstone into a siltstone containing 2-3 pumice floats. The upper siltstone is strongly silicified with an almost hornfelsed appearance. From 285-330m, the rock is very well graded, moving from a siliceous siltstone with a gradual increase of white Fd and Qz crystals. At 30m onwards is generally similar grain sized. Compositionally; 20-25% Fd, 5-10% Qz, with clasts composed of common fiamme, mudstone clasts typically <5cm (only 1 large clast up to ~25cm unlike WSP16), common rhyolitic clasts and common aphyric textured/siliceous clasts. This unit is easily correlated to that of WSP16. Common milky white Qz veins up to 6cm thick in parts.
310								
320								
330								
340								
350								

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⊖ Hyaloclastite Breccia	■ Mafic Dyke	■ Limestone	▲ Crystal Tuff	■ Lapilli Tuff	○ Volcanic Conglomerate
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■ Vein Carbonate	■ Schist	■ Siltstone	■ Felsic tuff	■ Rhyolite Breccia	○ Not logged or recorded
■ Quartz Carbonate Vein	■ Slate	■ Chert	■ Felsic Volcaniclastic	■ Tuff Siltstone	
▲ Andesite Flow	■ Massive sulphide	■ Greywacke	■ Feldspathic (ash) tuff	■ Undifferentiated Tuff	
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350	HW	GRY	VBX	VolClas	brc	qfp fia	si cb qt	Unit 4 of the WSF (crystal rich mass flow.). Conformable and gradational upper contact - moving from the above mudstone/sandstone into a siltstone containing 2-3 pumice floats. The upper siltstone is strongly silicified with an almost hornfelsed appearance. From 285-330m, the rock is very well graded, moving from a siliceous siltstone with a gradual increase of white Fd and Qz crystals. At 30m onwards is generally similar grain sized. Compositionally; 20-25% Fd, 5-10% Qz, with clasts composed of common fiamme, mudstone clasts typically <5cm (only 1 large clast up to ~25cm unlike WSP16), common rhyolitic clasts and common aphyric textured/siliceous clasts. This unit is easily correlated to that of WSP16. Common milky white Qz veins up to 6cm thick in parts.
360								
370								
380								
390								
400								

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■ Vein quartz	■ Quartz Porphyry	■ Shale	▲ Dacite Lapilli Tuff	■ Rhyolite	○ Volcanic Siltstone
■ Vein Carbonate	■ Schist	■ Siltstone	■ Felsic tuff	■ Rhyolite Breccia	■ Not logged or recorded
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Strat	Colour	Lithology	Genetic Text	Litho Facies	Texture	Alt	Min	Summary
400	HW	GRY	VBX	VolClas	brc	qfp fia	si cb qt	Unit 4 of the WSF (crystal rich mass flow.). Conformable and gradational upper contact - moving from the above mudstone/sandstone into a siltstone containing 2-3 pumice floats. The upper siltstone is strongly silicified with an almost hornfelsed appearance. From 285-330m, the rock is very well graded, moving from a siliceous siltstone with a gradual increase of white Fd and Qz crystals. At 30m onwards is generally similar grain sized. Compositionally; 20-25% Fd, 5-10% Qz, with clasts composed of common fiamme, mudstone clasts typically <5cm (only 1 large clast up to ~25cm unlike WSP16), common rhyolitic clasts and common aphyric textured/siliceous clasts. This unit is easily correlated to that of WSP16. Common milky white Qz veins up to 6cm thick in parts.
410	HW	BLK-GRY	VSM	VolClas	bed	sla san	cb py	Mudstone with thin siltstone interbeds and a coarser sandstone interval around 435m but moves back into a mudstone. One pumice float is noted.
420								
430								
440	HW	GRY	VBX	VolClas	brc	pol pum	cb si sp py	Unit 3 of the WSF (Polymict lithic rich mass flow). From the above mudstone, the unit conformable coarsens down-hole into 2-4m of siltstone. This brief interval of siltstone contains 3-4 nice examples of phyllosilicate altered pumice floats yet still preserving their wispy tube textures. Subsequently, the unit rapidly coarsens down-hole into a very coarse grained (>30cm) polymict breccia. Unit is comprised of 5-10% Fd>>Qz crystals in the finer top of the unit, whereas the coarse basal part of the flow is dominated by common Fd-Qz phyrhic rhyolite clasts, mudstone clasts, pumice, occasional limestone clasts and rare 2-4cm clasts of sulphide - typically massive Py +/- Sp. Occasionally rhyolite clasts, for example, are rimmed by red Sp. This is presumed to be a "secondary" style replacement. However, the sulphide clasts are interpreted to be primary. Better examples are present further down hole.
450								

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460									
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490									
500									

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DrillCompany: BLY

Strat	Colour	Lithology	Genetic Text	Litho Facies	Texture	Alt	Min	Summary	
500	HW	GRY	VBX	VolClas	brc	pol pum	cb si	sp py	Unit 3 of the WSF (Polymict lithic rich mass flow). From the above mudstone, the unit conformable coarsens down-hole into 2-4m of siltstone. This brief interval of siltstone contains 3-4 nice examples of phyllosilicate altered pumice floats yet still preserving their wispy tube textures. Subsequently, the unit rapidly coarsens down-hole into a very coarse grained (>30cm) polymict breccia. Unit is comprised of 5-10% Fd>>Qz crystals in the finer top of the unit, whereas the coarse basal part of the flow is dominated by common Fd-Qz phyric rhyolite clasts, mudstone clasts, pumice, occasional limestone clasts and rare 2-4cm clasts of sulphide - typically massive Py +/- Sp. Occasionally rhyolite clasts, for example, are rimmed by red Sp. This is presumed to be a "secondary" style replacement. However, the sulphide clasts are interpreted to be primary. Better examples are present further down hole.
510									
520									
530									
540									
550									

▲ Breccia - Undifferentiated	■ Felsic Flow	■ Disseminated Sulphides	● Interbedded sandstone/siltstone	■ Intermediate flow	■ Undifferentiated Volcaniclastic
▲ Fault Zone	■ Feldspathic porphyry	■ Quartz	▲ Andesite	■ Intermediate Volcaniclastic	▽ Volcanic Breccia
○ Hyaloclastite Breccia	■ Mafic Dyke	■ Limestone	▲ Crystal Tuff	■ Lapilli Tuff	○ Volcanic Conglomerate
▲ Pyroclastic Breccia	■ Quartz Feldspar Porphyry	■ Dolomite	▲ Dacite	■ Lithic Tuff	○ Volcanic Sandstone
■ Vein quartz	■ Quartz Porphyry	■ Shale	▲ Dacite Lapilli Tuff	■ Rhyolite	○ Volcanic Siltstone
■ Vein Carbonate	■ Schist	■ Siltstone	■ Felsic tuff	■ Rhyolite Breccia	○ Not logged or recorded
■ Quartz Carbonate Vein	■ Slate	■ Chert	■ Felsic Volcaniclastic	■ Tuff Siltstone	
▲ Andesite Flow	■ Massive sulphide	■ Greywacke	■ Feldspathic (ash) tuff	■ Undifferentiated Tuff	
▲ Dacite Flow	■ Semi-massive Sulphides	■ Sandstone	■ Interbedded VSS/VSL/VSM &	■ Undifferentiated Volcanic	

ROSEBERY LITHOLOGY_VMS LOG

Hole ID: WSP17



Project: WSP

White Spur

Prospect: WSP

Whitespur

Northing: 5360970.0 mN

Dip: -85.00

Easting: 376540.0 mE

MAG_Azim: 77.00

RL: 630.0 mRL

Total Depth: 881.4 m

CoordSys: MGA55 (GDA94)

DrillCompany: BLY

Strat	Colour	Lithology	Genetic Text	Litho Facies	Texture	Alt	Min	Summary	
550	HW	GRY	VBX	VolClas	brc	pol pum	cb si	sp py	Unit 3 of the WSF (Polymict lithic rich mass flow). From the above mudstone, the unit conformable coarsens down-hole into 2-4m of siltstone. This brief interval of siltstone contains 3-4 nice examples of phyllosilicate altered pumice floats yet still preserving their wispy tube textures. Subsequently, the unit rapidly coarsens down-hole into a very coarse grained (>30cm) polymict breccia. Unit is comprised of 5-10% Fd>>Qz crystals in the finer top of the unit, whereas the coarse basal part of the flow is dominated by common Fd-Qz phyrlic rhyolite clasts, mudstone clasts, pumice, occasional limestone clasts and rare 2-4cm clasts of sulphide - typically massive Py +/- Sp. Occasionally rhyolite clasts, for example, are rimmed by red Sp. This is presumed to be a "secondary" style replacement. However, the sulphide clasts are interpreted to be primary. Better examples are present further down hole.
560	HW	BUF-YEL	VBX	VolClas	brc	pum xlt	se si	py	Mottled olive green to straw yellow, intensely phyllosilicate (sericite) altered, pumice shard and Fd xtal rich breccia. The alteration gives a distinct look to this interval, as do the common Ser-replaced shards of pumice up to 20mm. Feldspar xtals with minor Qz xtals are the dominant lithic type and are typically <1mm in size. Other lithic types include a siltstone/shale and a siliceous type lithic. All lithics are no larger than 10mm and are typically elongate with the dominant fabric in the rock. The upper contact appears to be conformable, although it is angular with no clear "top". The lower contact is marked by a ratty Qz vein over 10cm, possibly indicating a structure.
570	HW	GRN-BLK	VBX	VolClas	brc	pol pum	se si cb		Unit 3: Sulphide clast bearing polymict mass flow breccia. Very similar interval to the last ~10m of the previous unit 3 (555m-563m). The mass flow is composed of rhyolite clasts, either pale olive green or grey-white which are Fd-Qz phyrlic up to 25cm; Fd-Qz phyrlic rafts of pumice up to 10cm; mudstone clasts >50cm and occasional limestone clasts >40cm (NOTE: the apparent very large size of these clasts are likely amplified by the hole drilling sub-parallel to the dip/cleavage of the package of rocks). Importantly, sulphide clasts are also present, with the best examples occurring at 574m, 580.8m, 590.4m, 591.3m and 594.95m. These clasts are generally massive - however are pyrrhotite dominant with variable amounts of red/brown Sp present. See pXRF spot analysis for more grade details. All the clasts within this mass flow occur within a grey to black mudstone matrix. At around 570m, there appears to be polymict clasts occurring within a conformable mudstone. However, I interpret this "conformable" mudstone to be a large raft and the clasts to be occurring within the matrix. Regardless - these relationships indicate the mass flow deposited within close proximity to a semi-lithified mudstone.
580									
590									
600									

Breccia - Undifferentiated	Felsic Flow	Disseminated Sulphides	Interbedded sandstone/siltstone	Intermediate flow	Undifferentiated Volcaniclastic
Fault Zone	Feldspathic porphyry	Quartz	Andesite	Intermediate Volcaniclastic	Volcanic Breccia
Hyaloclastite Breccia	Mafic Dyke	Limestone	Crystal Tuff	Lapilli Tuff	Volcanic Conglomerate
Pyroclastic Breccia	Quartz Feldspar Porphyry	Dolomite	Dacite	Lithic Tuff	Volcanic Sandstone
Vein quartz	Quartz Porphyry	Shale	Dacite Lapilli Tuff	Rhyolite	Volcanic Siltstone
Vein Carbonate	Schist	Siltstone	Felsic tuff	Rhyolite Breccia	Not logged or recorded
Quartz Carbonate Vein	Slate	Chert	Felsic Volcaniclastic	Tuff Siltstone	
Andesite Flow	Massive sulphide	Greywacke	Feldspathic (ash) tuff	Undifferentiated Tuff	
Dacite Flow	Semi-massive Sulphides	Sandstone	Interbedded VSS/VSL/VSM &	Undifferentiated Volcanic	

ROSEBERY LITHOLOGY_VMS LOG

Hole ID: WSP17



Project: WSP

White Spur

Prospect: WSP

Whitespur

Northing: 5360970.0 mN

Dip: -85.00

Easting: 376540.0 mE

MAG_Azim: 77.00

RL: 630.0 mRL

Total Depth: 881.4 m

CoordSys: MGA55 (GDA94)

DrillCompany: BLY

Strat	Colour	Lithology	Genetic Text	Litho Facies	Texture	Alt	Min	Summary
600	HW	GRN-BLK	VBX	VolClas	brc	pol pum	se si cb	<p>Unit 3: Sulphide clast bearing polymict mass flow breccia. Very similar interval to the last ~10m of the previous unit 3 (555m-563m). The mass flow is composed of rhyolite clasts, either pale olive green or grey-white which are Fd-Qz phyruc up to 25cm; Fd-Qz phyruc rafts of pumice up to 10cm; mudstone clasts >50cm and occasional limestone clasts >40cm (NOTE: the apparent very large size of these clasts are likely amplified by the hole drilling sub-parallel to the dip/cleavage of the package of rocks). Importantly, sulphide clasts are also present, with the best examples occurring at 574m, 580.8m, 590.4m, 591.3m and 594.95m. These clasts are generally massive - however are pyrrhotite dominant with variable amounts of red/brown Sp present. See pXRF spot analysis for more grade details. All the clasts within this mass flow occur within a grey to black mudstone matrix. At around 570m, there appears to be polymict clasts occurring within a conformable mudstone. However, I interpret this "conformable" mudstone to be a large raft and the clasts to be occurring within the matrix. Regardless - these relationships indicate the mass flow deposited within close proximity to a semi-lithified mudstone.</p> <p>Rhyolite clast rich; graded mass flow breccia. Top contact is sharp and apparently conformable, however there is no fine siltstone/mudstone top to this unit (disregarding the mudstone "matrix" in the above unit 3 mass flow). The first ~5m of this new unit is identical in composition to the previous interval uphole (563.1-568.1m) - that is; predominantly a pumice shard rich and pervasively Se (phyllosilicate) altered breccia. However, in this instance it is clearly coarsening down hole. Clast and shard rich breccia, with only 5-10% matrix composed of a pale grey siliceous material (no longer the distinct mudstone matrix of above unit 3 mass flows). Clast composition is dominated by green to white/grey Fd-Qz phyruc rhyolite clasts, and rafts and shards of Se replaced pumice. Only rare mudstone clasts have been observed and no sulphide clasts are present. Therefore, unclear on what unit of the WSF to classify this as, maybe Unit 2?</p>
	HW	GRY	VBX	VolClas	brc	qfp pum	se si cb	
610								
620								
630								
640								
650	F	GRY-GRN	FTZ	VolClas	brc	qfp pum	se cb si	<p>Broken fault zone with 2-3 5cm zones of puggy material. Although quite a broken interval, fault appears to occur wholly within the same breccia, and also occurs on the lower side of the fault. Thus no significant movement is interpreted to have taken place.</p>

▲ Breccia - Undifferentiated	■ Felsic Flow	■ Disseminated Sulphides	● Interbedded sandstone/siltstone	■ Intermediate flow	▼ Undifferentiated Volcaniclastic
⊖ Fault Zone	■ Feldspathic porphyry	■ Quartz	▲ Andesite	■ Intermediate Volcaniclastic	▼ Volcanic Breccia
⊖ Hyaloclastite Breccia	■ Mafic Dyke	■ Limestone	▲ Crystal Tuff	■ Lapilli Tuff	○ Volcanic Conglomerate
▲ Pyroclastic Breccia	■ Quartz Feldspar Porphyry	■ Dolomite	▲ Dacite	■ Lithic Tuff	○ Volcanic Sandstone
▲ Vein quartz	■ Quartz Porphyry	■ Shale	▲ Dacite Lapilli Tuff	■ Rhyolite	○ Volcanic Siltstone
▲ Vein Carbonate	■ Schist	■ Siltstone	▲ Felsic tuff	■ Rhyolite Breccia	○ Not logged or recorded
▲ Quartz Carbonate Vein	■ Slate	■ Chert	▲ Felsic Volcaniclastic	■ Tuff Siltstone	
▲ Andesite Flow	■ Massive sulphide	■ Greywacke	▲ Feldspathic (ash) tuff	■ Undifferentiated Tuff	
▲ Dacite Flow	■ Semi-massive Sulphides	■ Sandstone	▲ Interbedded VSS/VSL/VSM &	■ Undifferentiated Volcanic	

ROSEBERY LITHOLOGY_VMS LOG

Hole ID: WSP17



Project: WSP

White Spur

Prospect: WSP

Whitespur

Northing: 5360970.0 mN

Dip: -85.00

Easting: 376540.0 mE

MAG_Azim: 77.00

RL: 630.0 mRL

Total Depth: 881.4 m

CoordSys: MGA55 (GDA94)

DrillCompany: BLY

Strat	Colour	Lithology	Genetic Text	Litho Facies	Texture	Alt	Min	Summary
650	HW	GRY	VBX	VolClas	brc	qph pum	se si cb	Rhyolite clast rich; mass flow breccia. Same unit as above fault.
660								
670	HW	GRY	VBX	VolClas	brc	pum pol	se si cb	Graded mass flow breccia. Very low angle upper contact (<5 degrees to LCA). Unit composed of a fine grained sandstone that coarsens down hole into a <20-25mm lithic rich breccia, dominated by pumice, common rhyolite lithics, occasional mudstone lithics and Qz xtal rich - Fd poor to absent. Matrix is <10% composed of a grey to white siliceous material. Similar to above mass flow, however, the above mass flow is pumice and feldspar rich whereas the current interval is feldspar poor to absent with less pumice - perhaps the feldspar is being introduced in the pumice in the above flow. Also, this mass flow doesn't reach the course base that the above flow does.
680								
690	HW	BLK-GRY	VSM	VolClas	bed	slt fol	cb py	Mega-clast of mudstone!? Sharp and disconformable contacts at 618.3m and 710.0m. Smaller mudstone clasts occur either side of the mega-clast within a mass flow, however, the clasts below are noticeably larger, up to 20cm, whereas above, they are rare and typically <2cm. Bedding within the mega-clast changes rapidly - to being parallel with core axis at 689-690m. The other interpretation is that the hole has gone through a small hinge, however I don't think this works (haters gonna to hate). In fact, the change in bedding orientation including the parallel angles are more likely to be due to the drill hole drilling down the elongate side of the mega-clast, and also a form of soft-sediment deformation due to the clast being semi-lithified upon it being rafted into the mass flow (thus the mega-clast may not be as big as the interval would suggest).
700								

▲ Breccia - Undifferentiated	■ Felsic Flow	■ Disseminated Sulphides	● Interbedded sandstone/siltstone	■ Intermediate flow	■ Undifferentiated Volcaniclastic
⚡ Fault Zone	■ Feldspathic porphyry	■ Quartz	▲ Andesite	■ Intermediate Volcaniclastic	▽ Volcanic Breccia
⊖ Hyaloclastic Breccia	■ Mafic Dyke	■ Limestone	▲ Crystal Tuff	■ Lapilli Tuff	○ Volcanic Conglomerate
▲ Pyroclastic Breccia	■ Quartz Feldspar Porphyry	■ Dolomite	▲ Dacite	■ Lithic Tuff	○ Volcanic Sandstone
■ Vein quartz	■ Quartz Porphyry	■ Shale	▲ Dacite Lapilli Tuff	■ Rhyolite	○ Volcanic Siltstone
■ Vein Carbonate	■ Schist	■ Siltstone	■ Felsic tuff	■ Rhyolite Breccia	■ Not logged or recorded
■ Quartz Carbonate Vein	■ Slate	■ Chert	■ Felsic Volcaniclastic	■ Tuff Siltstone	
▲ Andesite Flow	■ Massive sulphide	■ Greywacke	■ Feldspathic (ash) tuff	■ Undifferentiated Tuff	
▲ Dacite Flow	■ Semi-massive Sulphides	■ Sandstone	■ Interbedded VSS/VSL/VSM &	■ Undifferentiated Volcanic	

ROSEBERY LITHOLOGY_VMS LOG

Hole ID: WSP17



Project: WSP

White Spur

Prospect: WSP

Whitespur

Northing: 5360970.0 mN

Dip: -85.00

Easting: 376540.0 mE

MAG_Azim: 77.00

RL: 630.0 mRL

Total Depth: 881.4 m

CoordSys: MGA55 (GDA94)

DrillCompany: BLY

Strat	Colour	Lithology	Genetic Text	Litho Facies	Texture	Alt	Min	Summary
700	HW	BLK-GRY	VSM	VolClas	bed	slt	cb	Mega-clast of mudstone!? Sharp and unconformable contacts at 618.3m and 710.0m. Smaller mudstone clasts occur either side of the mega-clast within a mass flow, however, the clasts below are noticeably larger, up to 20cm, whereas above, they are rare and typically <2cm. Bedding within the mega-clast changes rapidly - to being parallel with core axis at 689-690m. The other interpretation is that the hole has gone through a small hinge, however I don't think this works (haters gonna to hate). In fact, the change in bedding orientation including the parallel angles are more likely to be due to the drill hole drilling down the elongate side of the mega-clast, and also a form of soft-sediment deformation due to the clast being semi-lithified upon it being rafted into the mass flow (thus the mega-clast may not be as big as the interval would suggest).
	HW	GRY	VBX	VolClas	brc	fol	py	
						pum	cb	Same breccia as above the mega-clast (interpreted as all one whole mass flow). However, this part of the breccia clearly contains a coarser clast size to it, including 2-3 mudstone rafts up to 15cm, Qz-phyric rhyolite clasts up to 5cm and Fd phytic Se altered pumice. Unit becomes finer grained at around 715m onwards but appears to be the same unit still with common Qz xtals and other lithics.
						qph		
	HW	GRY	VSL	VolClas	bed	slt	si	Clear contact with above breccia at 717m, generally sharp contact but some minor foliation through it. Lithology is a strongly silicified siltstone.
	F	GRY	FTZ	Clastic	ftz	slt	cb	
	HW	GRY	VSL	VolClas	bed	slt	si	Re-healed fault. Not the defining contact as this is clear at 717.0m, however this has seen some movement.
	HW	GRY-BLK	VBX	VolClas	brc	pol	py	
						pum	cb	Silicified siltstone with thin bedding in parts. Polymict, sulphide clast bearing breccia within a mudstone matrix. This appears to be THE SAME unit as seen from 568.1-608.1m. The sulphide clasts are rare and generally <2cm and deformed, with the margins more diffuse than the previous Unit 3. Includes one large pale olive green rhyolite clast up to 65cm. Upper contact is irregular but occurs over ~5cm, there is also an accumulation of disseminated Py in the 10-15cm leading up to the contact. This could potentially be faulted however it does not jump out at me as one. Volcanologically speaking I find it difficult to explain how this unit can occur with-out the previous Unit 3 mass flow being a structural repeat.
	HW	BLK-GRY	VSM	VolClas	bed	slt	cb	Black mudstone - fine top of the subsequent mass flow breccia below. Upper contact appears conformable, with the above breccia scouring into it. At first, there appears to be a sharp contact with the below siltstone/sandstone. However, it is accentuated by a 5mm Cb vein occurring 10mm before the transition from mudstone into siltstone, and thus this is interpreted to be all one mass flow unit.
730	HW	BUF-GRY	VBX	VolClas	brc	slt	si	Siltstone to sandstone which conformably coarsens down hole into a Fd-Qz phytic rhyolite clast rich breccia with minor to occasional pumice.
						qfp	qt	

▲ Breccia - Undifferentiated	■ Felsic Flow	■ Disseminated Sulphides	● Interbedded sandstone/siltstone	■ Intermediate flow	■ Undifferentiated Volcaniclastic
⊖ Fault Zone	■ Feldspathic porphyry	■ Quartz	■ Andesite	■ Intermediate Volcaniclastic	▽ Volcanic Breccia
○ Hyaloclastite Breccia	■ Mafic Dyke	■ Limestone	■ Crystal Tuff	■ Lapilli Tuff	○ Volcanic Conglomerate
▲ Pyroclastic Breccia	■ Quartz Feldspar Porphyry	■ Dolomite	■ Dacite	■ Lithic Tuff	○ Volcanic Sandstone
▲ Vein quartz	■ Quartz Porphyry	■ Shale	■ Dacite Lapilli Tuff	■ Rhyolite	○ Volcanic Siltstone
■ Vein Carbonate	■ Schist	■ Siltstone	■ Felsic tuff	■ Rhyolite Breccia	○ Not logged or recorded
■ Quartz Carbonate Vein	■ Slate	■ Chert	■ Felsic Volcaniclastic	■ Tuff Siltstone	
▲ Andesite Flow	■ Massive sulphide	■ Greywacke	■ Feldspathic (ash) tuff	■ Undifferentiated Tuff	
▲ Dacite Flow	■ Semi-massive Sulphides	■ Sandstone	■ Interbedded VSS/VSL/VSM &	■ Undifferentiated Volcanic	

ROSEBERY LITHOLOGY_VMS LOG

Hole ID: WSP17



Project: WSP

White Spur

Prospect: WSP

Whitespur

Northing: 5360970.0 mN

Dip: -85.00

Easting: 376540.0 mE

MAG_Azim: 77.00

RL: 630.0 mRL

Total Depth: 881.4 m

CoordSys: MGA55 (GDA94)

DrillCompany: BLY

Strat	Colour	Lithology	Genetic Text	Litho Facies	Texture	Alt	Min	Summary
750	HW	BUF-GRY	VBX	VolClas	brc	slt	si	Siltstone to sandstone which conformably coarsens down hole into a Fd-Qz phyrlic rhyolite clast rich breccia with minor to occasional pumice.
	HW	WHT	VQ		mas	qfp	qt	
	HW	GRY	VBX	VolClas	brc	sil	qt	
						qfp	si	White Qz vein. Appear to be increasing in abundance from this depth.
							qt	Same breccia as above Quartz vein. Common 5-20mm white Qz veins now present.
	HW	BUF	VBX	VolClas	brc	pol	si	Distinct change in colour and presumably alteration from a dark grey to a buff/cream. Contact at 753.8m also represent a change in lithology. A 10cm band of bedded sandstone rapidly coarsens into a rhyolite-pumice rich breccia. Rare black mudstone clasts are also present. Thus I am confident in distinguishing this as a separate unit from the above breccia. Could this be Unit 2 of the White Spur Formation? Unit is coarsening down-hole, with common rhyolite clasts up to 15cm occurring towards 772.7m.
						pum	se	
	HW	BUF-GRY	VBX	VolClas	ftz	qph	si	Fault zone within the same above breccia, generally broken core with only a small amount of pug present of fractures. Not a significant fault.
	HW	BUF-GRY	VBX	VolClas	brc	qph	si	Similar unit to above minor fault zone, rhyolite clast dominant breccia with pumice. Lower contact placed at 781m, however there is no clear contact here, but appears to mark the depth where the unit moves from a rhyolite pumice breccia into a dominantly Qz phyrlic rhyolite.
						pum	qt	
	POR	GRY	VRY	Extrusv	brc	qph	si	Rhyolite auto-breccia or rhyolite porphyry with pseudo-breccia textures? Arguably both and possible this is because it represents a combination of the two. Regardless this is a very siliceous Qz phyrlic unit with variable alteration throughout. Significant white Qz veins occur at; 785.2-785.5m, 794.7-795.3m and 815.4-815.7m.
						abx	qt	

▲ Breccia - Undifferentiated	■ Felsic Flow	■ Disseminated Sulphides	● Interbedded sandstone/siltstone	■ Intermediate flow	■ Undifferentiated Volcaniclastic
⊖ Fault Zone	■ Feldspathic porphyry	■ Quartz	▲ Andesite	■ Intermediate Volcaniclastic	▽ Volcanic Breccia
○ Hyaloclastite Breccia	■ Mafic Dyke	■ Limestone	▲ Crystal Tuff	■ Lapilli Tuff	○ Volcanic Conglomerate
▲ Pyroclastic Breccia	■ Quartz Feldspar Porphyry	■ Dolomite	▲ Dacite	■ Lithic Tuff	○ Volcanic Sandstone
○ Vein quartz	■ Quartz Porphyry	■ Shale	▲ Dacite Lapilli Tuff	■ Rhyolite	○ Volcanic Siltstone
■ Vein Carbonate	■ Schist	■ Siltstone	■ Felsic tuff	■ Rhyolite Breccia	○ Not logged or recorded
■ Quartz Carbonate Vein	■ Slate	■ Chert	■ Felsic Volcaniclastic	■ Tuff Siltstone	
▲ Andesite Flow	■ Massive sulphide	■ Greywacke	■ Feldspathic (ash) tuff	■ Undifferentiated Tuff	
▲ Dacite Flow	■ Semi-massive Sulphides	■ Sandstone	■ Interbedded VSS/VSL/VSM &	■ Undifferentiated Volcanic	

ROSEBERY LITHOLOGY_VMS LOG

Hole ID: WSP17



Project: WSP

White Spur

Prospect: WSP

Whitespur

Northing: 5360970.0 mN

Dip: -85.00

Easting: 376540.0 mE

MAG_Azim: 77.00

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Total Depth: 881.4 m

CoordSys: MGA55 (GDA94)

DrillCompany: BLY

Strat	Colour	Lithology	Genetic Text	Litho Facies	Texture	Alt	Min	Summary
POR	GRY	VRY	Extrusv	brc	qph abx	si qt		Rhyolite auto-breccia or rhyolite porphyry with pseudo-breccia textures? Arguably both and possible this is because it represents a combination of the two. Regardless this is a very siliceous Qz phyruc unit with variable alteration throughout. Significant white Qz veins occur at; 785.2-785.5m, 794.7-795.3m and 815.4-815.7m.
HW	WHT	VQ		mas	sil	qt		Large, white Qz vein.
POR	GRY	VRY	Extrusv	brc	qph abx	si qt		Quartz phyruc rhyolite to rhyolite autobreccia (or pseudo-breccia?). Same unit as above Qz vein.
HW	WHT	VQ		mas	sil	qt		White Qz vein.
POR	GRY	VRY	Extrusv	brc	qph abx	si se		This appears to be the same Qz phyruc rhyolite/autobreccia as above the Qz vein. However, the Qz phenocrysts have become difficult to distinguish - possibly due to an increase in silicification? Again, it is debatable whether this is a pseudo-breccia rhyolite or an actual auto-breccia. Also increase in sericite or phyllosilicate alteration - or is this pumice (or pseudo pumice.....?).

▲ Breccia - Undifferentiated	■ Felsic Flow	■ Disseminated Sulphides	● Interbedded sandstone/siltstone	■ Intermediate flow	■ Undifferentiated Volcaniclastic
⊖ Fault Zone	■ Feldspathic porphyry	■ Quartz	▲ Andesite	■ Intermediate Volcaniclastic	▽ Volcanic Breccia
⊖ Hyaloclastite Breccia	■ Mafic Dyke	■ Limestone	▲ Crystal Tuff	■ Lapilli Tuff	○ Volcanic Conglomerate
▲ Pyroclastic Breccia	■ Quartz Feldspar Porphyry	■ Dolomite	▲ Dacite	■ Lithic Tuff	○ Volcanic Sandstone
■ Vein quartz	■ Quartz Porphyry	■ Shale	▲ Dacite Lapilli Tuff	■ Rhyolite	○ Volcanic Siltstone
■ Vein Carbonate	■ Schist	■ Siltstone	■ Felsic tuff	■ Rhyolite Breccia	○ Not logged or recorded
■ Quartz Carbonate Vein	■ Slate	■ Chert	■ Felsic Volcaniclastic	■ Tuff Siltstone	
▲ Andesite Flow	■ Massive sulphide	■ Greywacke	■ Feldspathic (ash) tuff	■ Undifferentiated Tuff	
▲ Dacite Flow	■ Semi-massive Sulphides	■ Sandstone	■ Interbedded VSS/VSL/VSM &	■ Undifferentiated Volcanic	

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White Spur

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Total Depth: 881.4 m

CoordSys: MGA55 (GDA94)

DrillCompany: BLY

Strat	Colour	Lithology	Genetic Text	Litho Facies	Texture	Alt	Min	Summary
850	POR	GRY	VRV	Extrusv	brc	qph abx	si se	This appears to be the same Qz phyric rhyolite/autobreccia as above the Qz vein. However, the Qz phenocrysts have become difficult to distinguish - possibly due to an increase in silicification? Again, it is debatable whether this is a pseudo-breccia rhyolite or an actual auto-breccia. Also increase in sericite or phyllosilicate alteration - or is this pumice (or pseudo pumice.....?).
	HW	GRY	VBX	VolClas	brc	pum qfp	si se	Rhyolitic and pumice bearing auto-breccia? Appears to be a change at approximately 852.5m but no clear contact - rock is almost certainly a breccia now and contains dark, sericite altered Fd xtal rich pumice.
	HW	WHT-GRY	VCB		bnd	fol	cb	Carbonate vein? Has a moderate white/grey banded texture. Sharp contacts. An alternative interpretation is that is a clast of limestone, however and vein or replacement style occurrence is favoured.
	HW	GRY	VBX	VolClas	brc	pum fph	se cb	Fd xtal bearing pumiceous volcanoclastic breccia. Probably same unit as above the carbonate zone, but an increase in pumice/phyllosilicate alteration and Fd xtal abundance (typically 2-3mm). However, this does not appear to be a CVC-esque pumice breccia.
	HW	WHT-GRY	VCB		bnd	fol	cb	Another Cb vein/replacement. Similar to the previously described occurrence. Sharp contacts and a light grey/white weakly banded texture in parts.
	HW	GRY	VBX	VolClas	brc	fph	se si	Strongly Se/phyllosilicate altered pumiceous, Fd xtal bearing breccia. Similar unit to above Cb vein but increase in pumiceous material? Some small intervals appear to be almost wholly replaced by sericite. This is not interpreted as CVC.
880								
890								
900								

▲ Breccia - Undifferentiated	■ Felsic Flow	■ Disseminated Sulphides	● Interbedded sandstone/siltstone	■ Intermediate flow	■ Undifferentiated Volcanoclastic
⊖ Fault Zone	■ Feldspathic porphyry	■ Quartz	▲ Andesite	■ Intermediate Volcanoclastic	▽ Volcanic Breccia
○ Hyaloclastite Breccia	■ Mafic Dyke	■ Limestone	▲ Crystal Tuff	■ Lapilli Tuff	○ Volcanic Conglomerate
▲ Pyroclastic Breccia	■ Quartz Feldspar Porphyry	■ Dolomite	▲ Dacite	■ Lithic Tuff	○ Volcanic Sandstone
▲ Vein quartz	■ Quartz Porphyry	■ Shale	▲ Dacite Lapilli Tuff	■ Rhyolite	○ Volcanic Siltstone
■ Vein Carbonate	■ Schist	■ Siltstone	■ Felsic tuff	■ Rhyolite Breccia	○ Not logged or recorded
■ Quartz Carbonate Vein	■ Slate	■ Chert	■ Felsic Volcanoclastic	■ Tuff Siltstone	
▲ Andesite Flow	■ Massive sulphide	■ Greywacke	■ Feldspathic (ash) tuff	■ Undifferentiated Tuff	
▲ Dacite Flow	■ Semi-massive Sulphides	■ Sandstone	■ Interbedded VSS/VSL/VSM &	■ Undifferentiated Volcanic	