

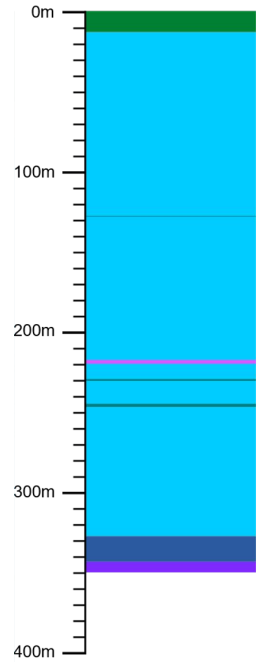
# 00232 Validation Report

In order to validate the ADR results from project 00232, in terms of interpreting the locations and depths of sulphides and lithology, they will be compared with the following existing data:

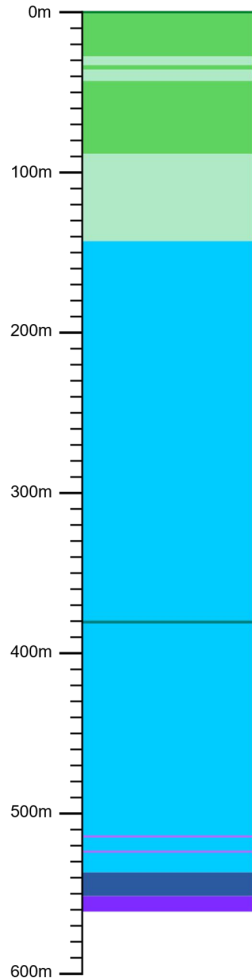
- Lithological Drill Hole Data for 4 V-Bores
- Assay/Mineralogy Data for 4 V-Bores
  - 2 Cross-Sections from literature

# Lithology

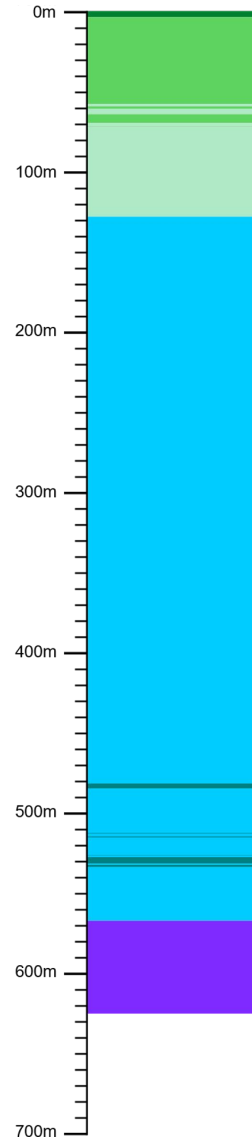
tc2638-026 (H6)



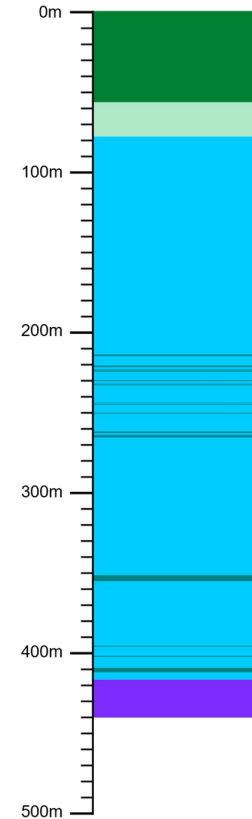
tc2638-030 (H9)



tc2638-009 (H10)



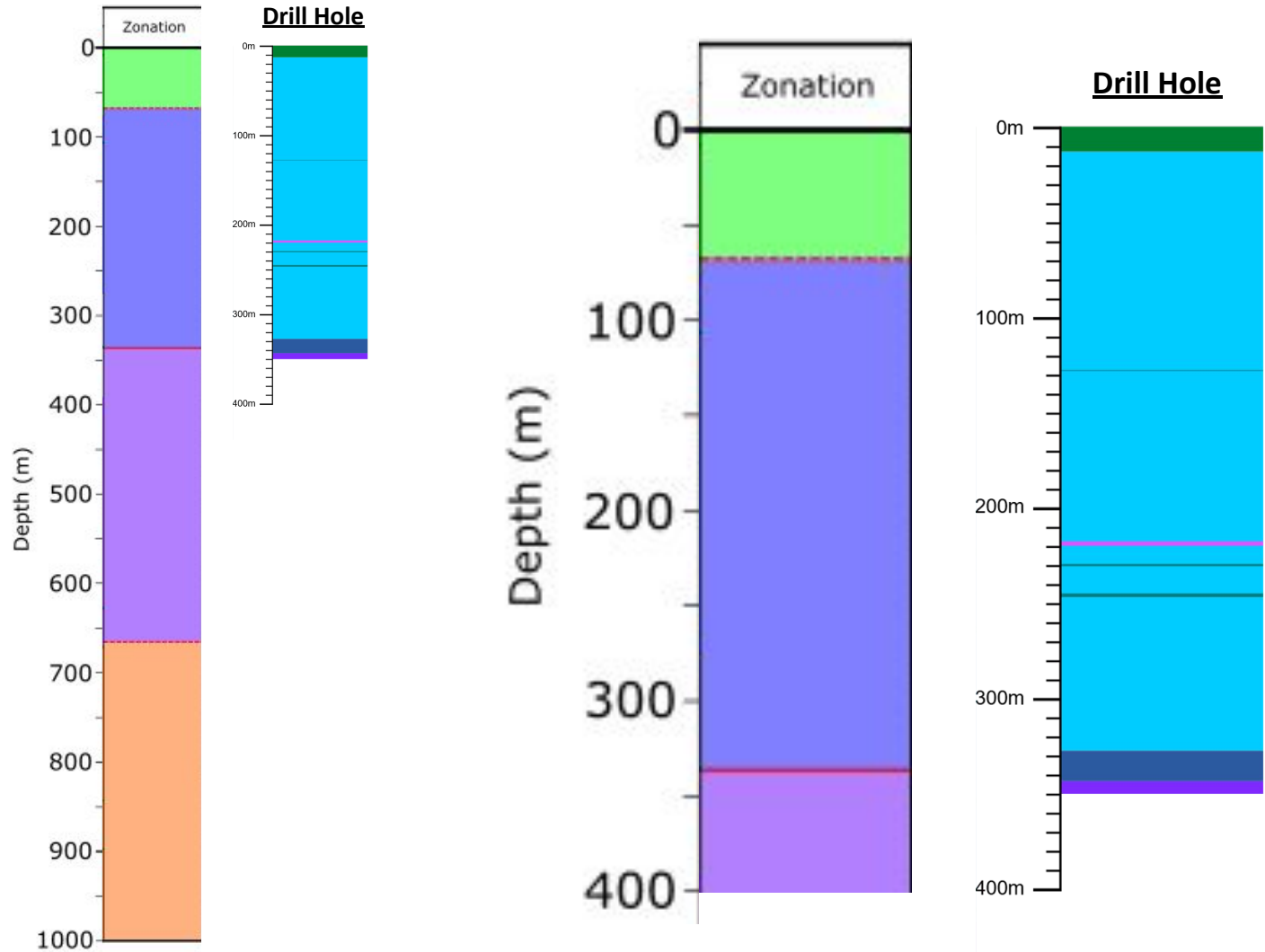
tc2638-004 (H11)



- Lithology Drill Hole data available for 4 sites from project 00116.
- Data is digitized into the form of Lithology Logs as seen in the adjacent figures.



# Lithology: tc2638-026



Boundary	Zonation Depth (m)	Drill Hole Depth (m)	Depth Deviation (m)
Waulsortian Top	69	12	+57
Waulsortian Base	337	342	-5

- High depth deviation in the Waulsortian Top, however, this boundary is difficult to interpret due to beam saturation in the ADR data.
- Only 5m deviation in the Waulsortian Base, which shows strong validation with the drill hole data.

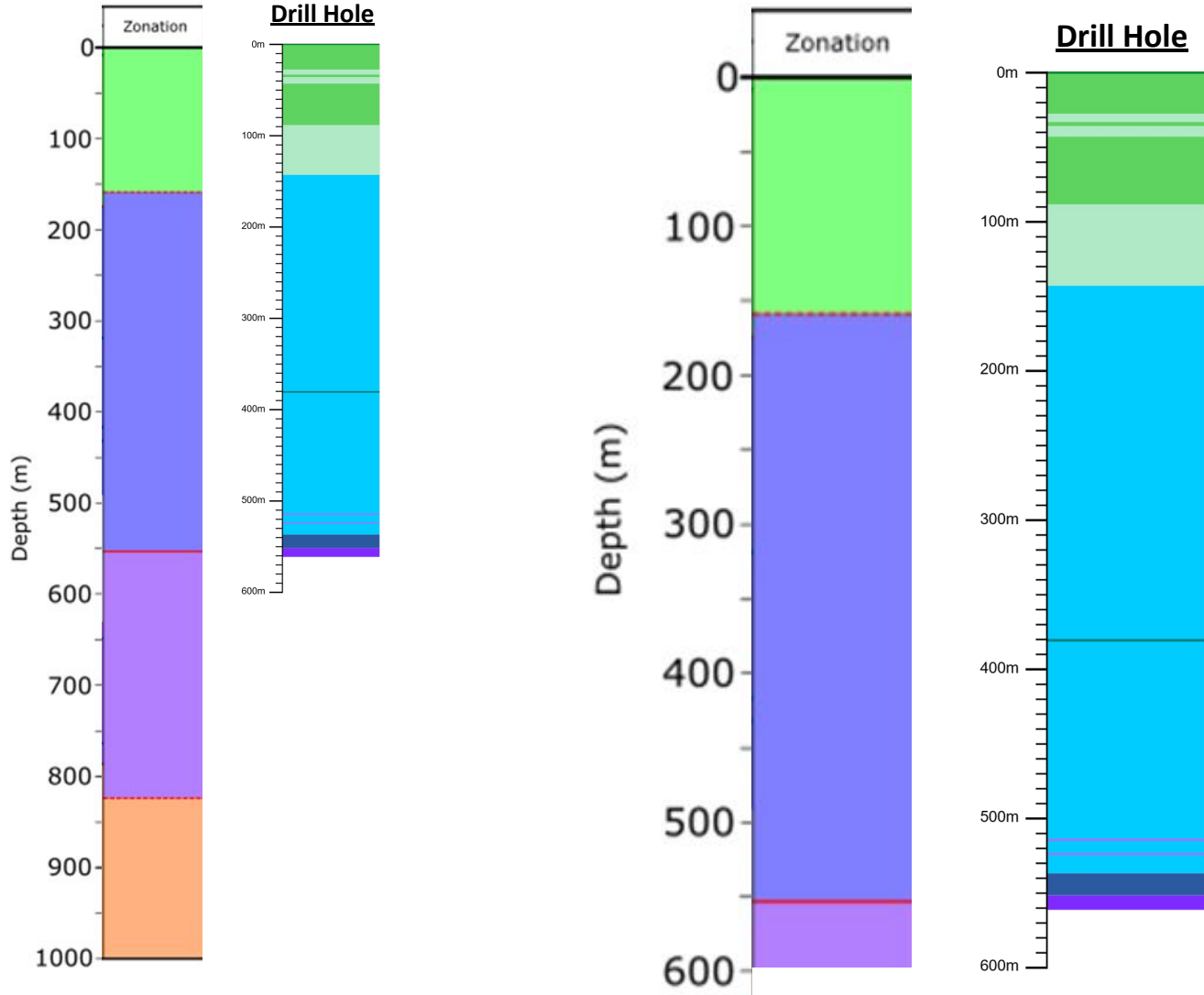
**Zonation Lithology Key:**

- Green = Overburden/Lough Gur
- Blue = Waulsortian Limestone
- Purple = Lower Argillaceous Bioclastic Limestone
- Orange = Lower Silliclastic Units

**Drill Hole Lithology Key:**

- Dark Green = Overburden
- Light Green = Knockroe Basalt
- Cyan = Waulsortian Limestone
- Dark Blue = Sub-Waulsortian
- Purple = Bioclastic Limestone
- Teal = Dolomite
- Pink = Massive Sulphides

# Lithology: tc2638-030



Boundary	Zonation Depth (m)	Drill Hole Depth (m)	Depth Deviation (m)
Waulsortian Top	169	142.4	+26.6
Waulsortian Base	558	551.4	+6.6

- 26.6m depth deviation in the Waulsortian Top, however, this boundary is difficult to interpret due to beam saturation in the ADR data.
- Only 6.6m deviation in the Waulsortian Base, which shows strong validation with the drill hole data.

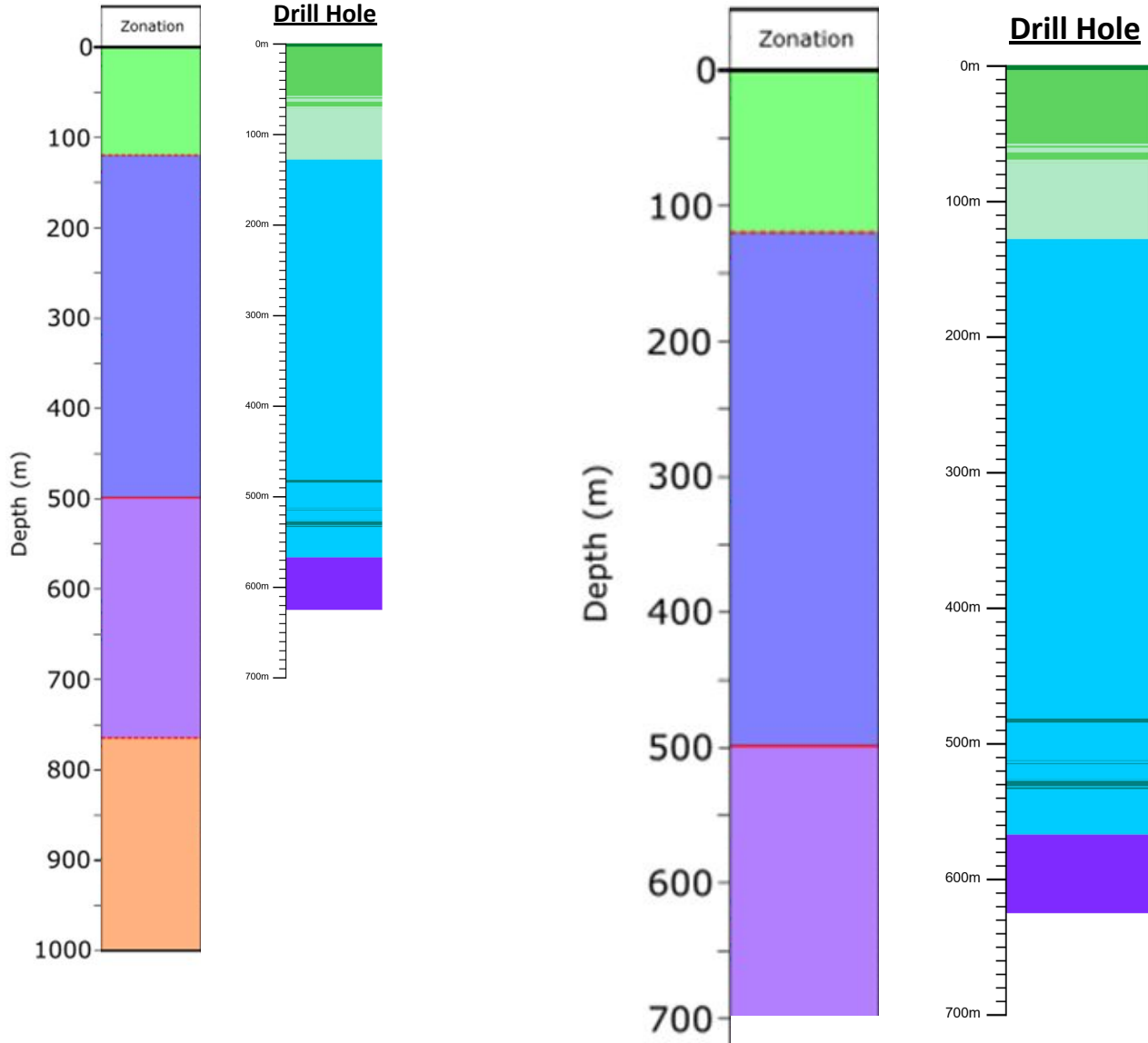
**Zonation Lithology Key:**

- Overburden/Lough Gur
- Waulsortian Limestone
- Lower Argillaceous Bioclastic Limestone
- Lower Silliclastic Units

**Drill Hole Lithology Key:**

- Overburden
- Knockroe Basalt
- Lough Gur
- Waulsortian Limestone
- Sub-Waulsortian
- Bioclastic Limestone
- Dolomite
- Massive Sulphides

# Lithology: tc2638-009



Boundary	Zonation Depth (m)	Drill Hole Depth (m)	Depth Deviation (m)
Waulsortian Top	120	128.1	-8.1
Waulsortian Base	499	567.6	-68.6

- Only 8.1m deviation in the Waulsortian Top, however, this boundary is difficult to interpret due to beam saturation in the ADR data.
- High depth deviation of 68.6m in the Waulsortian Base, meaning this boundary has been poorly defined by the ADR data.

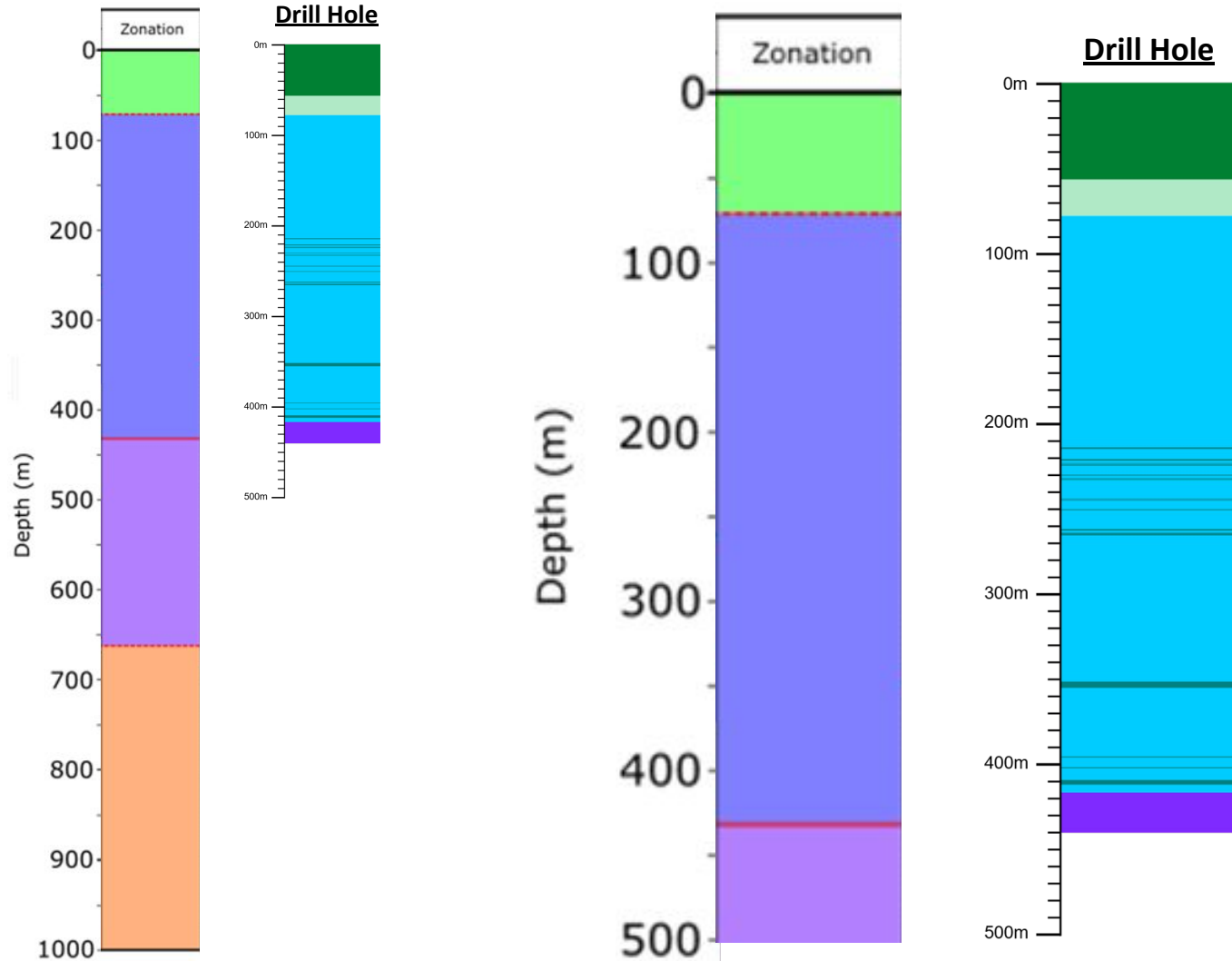
**Zonation Lithology Key:**

- Green = Overburden/Lough Gur
- Blue = Waulsortian Limestone
- Purple = Lower Argillaceous Bioclastic Limestone
- Orange = Lower Silliclastic Units

**Drill Hole Lithology Key:**

- Dark Green = Overburden
- Light Green = Knockroe Basalt
- Light Blue = Lough Gur
- Cyan = Waulsortian Limestone
- Dark Blue = Sub-Waulsortian
- Purple = Bioclastic Limestone
- Teal = Dolomite
- Pink = Massive Sulphides

# Lithology: tc2638-004



Boundary	Zonation Depth (m)	Drill Hole Depth (m)	Depth Deviation (m)
Waulsortian Top	72	78.8	-6.8
Waulsortian Base	432	417	+15

- Only 6.8m deviation in the Waulsortian Top, however, this boundary is difficult to interpret due to beam saturation in the ADR data.
- Depth deviation of 15m in the Waulsortian Base, which shows strong validation with the drill hole data.

**Zonation Lithology Key:**

- Green = Overburden/Lough Gur
- Blue = Waulsortian Limestone
- Purple = Lower Argillaceous Bioclastic Limestone
- Orange = Lower Silliclastic Units

**Drill Hole Lithology Key:**

- Dark Green = Overburden
- Light Green = Knockroe Basalt
- Light Green = Lough Gur
- Cyan = Waulsortian Limestone
- Dark Blue = Sub-Waulsortian
- Purple = Bioclastic Limestone
- Dark Blue = Dolomite
- Pink = Massive Sulphides

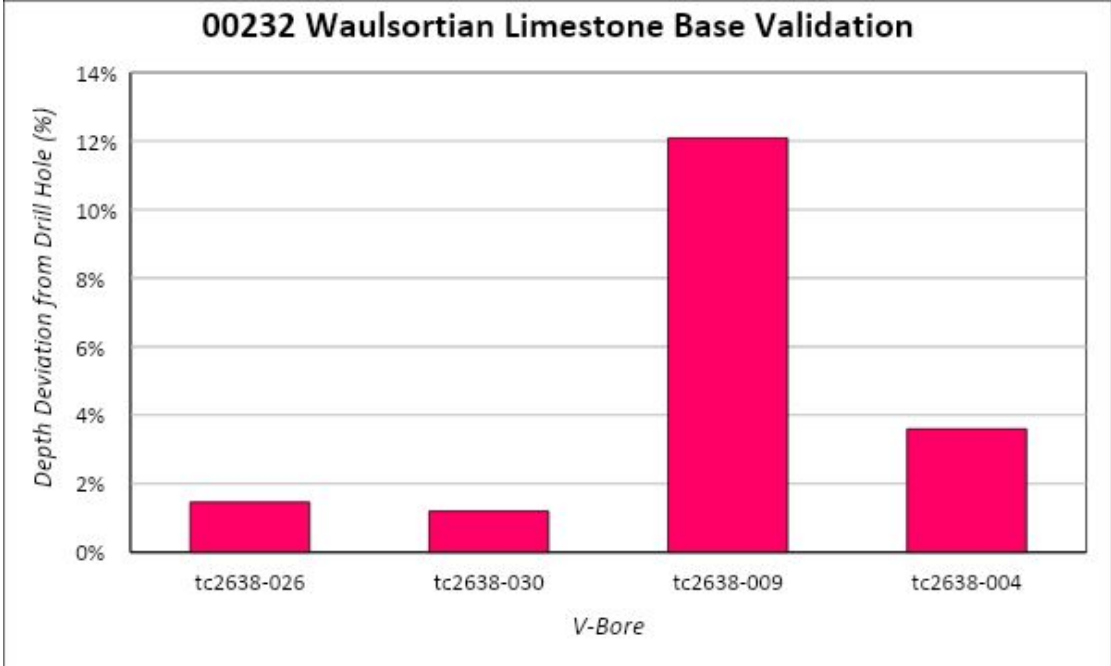
# Lithology Depth Deviation

## Waulsortian Limestone Base Quantitative Validation:

V-Bore	Zonation Depth (m)	Drill Hole Depth (m)	Depth Deviation (m)	Depth Deviation (%)
tc2638-026	337	342	-5	1.5%
tc2638-030	558	551.4	+6.6	1.2%
tc2638-009	499	567.6	-68.6	12.1%
tc2638-004	432	417	+15	3.6%

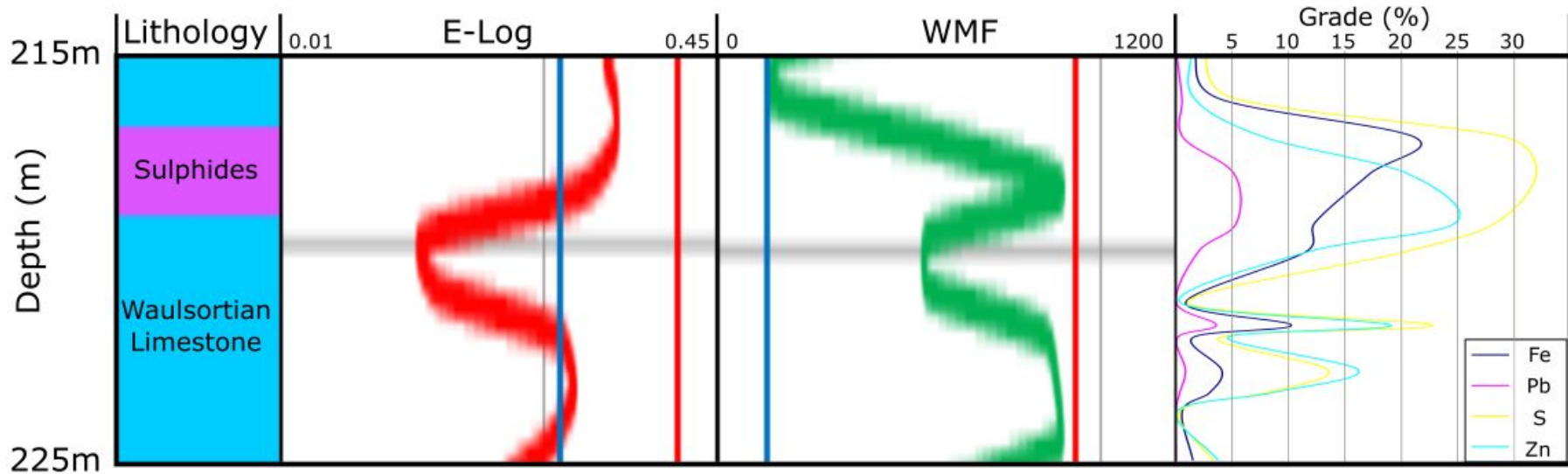
- The quantitative validation study of the zonation lithology interpretations shows that in most cases, Adrok’s lithological interpretations have a high degree of accuracy.
- tc2638-026, tc2638-030 and tc2638-004 all have depth deviations less than 4% for the Waulsortian Limestone base, showing strong validation in the lithological results.
- The depth deviation is much higher (12%) at tc2638-009 which indicates poor validation at this site.

- The top of the Waulsortian Limestone tends to be at shallow depths where the ADR data experiences beam saturation, making it difficult to interpret the boundary accurately.
- Therefore, a quantitative validation study for the Waulsortian Top would not be beneficial.





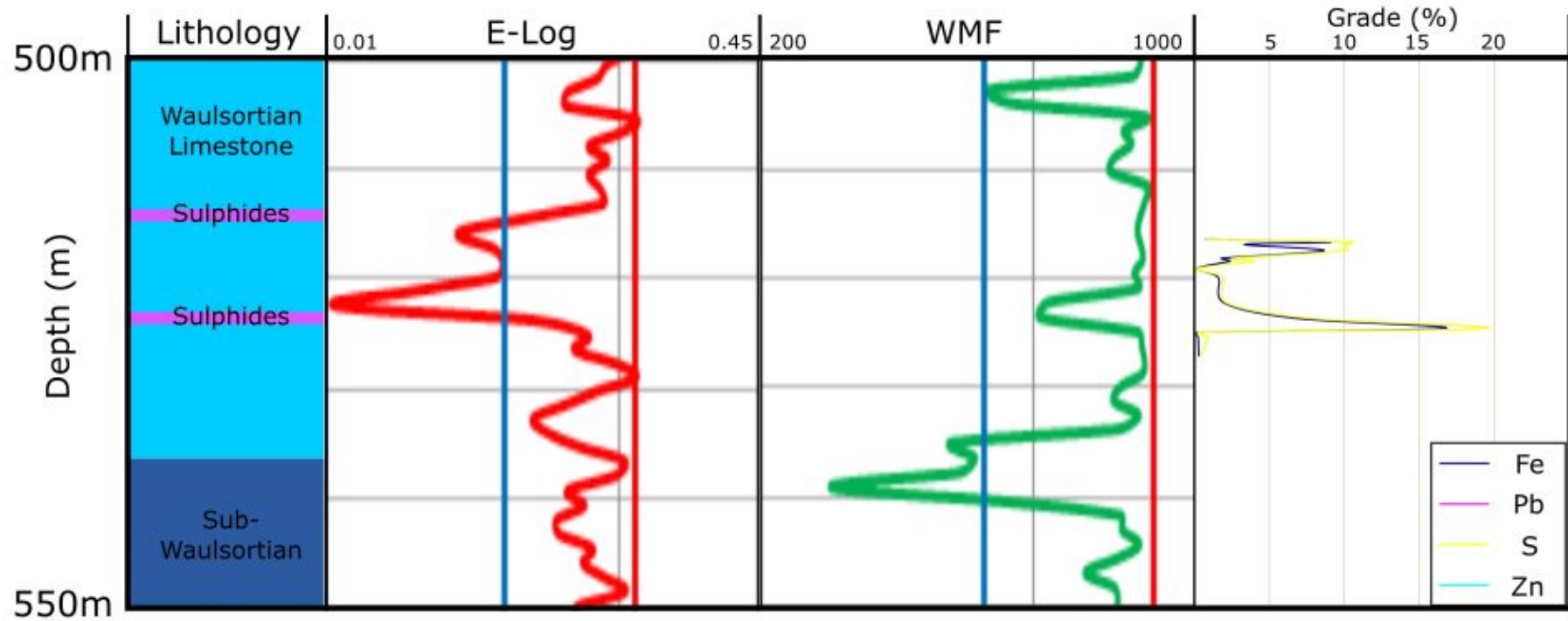
# Mineralogy: tc2638-026



Peak in Grade % depth (m)	E-Log Trough depth (m)	Depth Deviation (m)	Depth Deviation (%)
217.5	220	+2.5	1.1%

- Large peak in sulphide grade (30%) at 220m depth correlates with a significant trough in E% log below the baseline.
- This shows strong validation with the assay data.

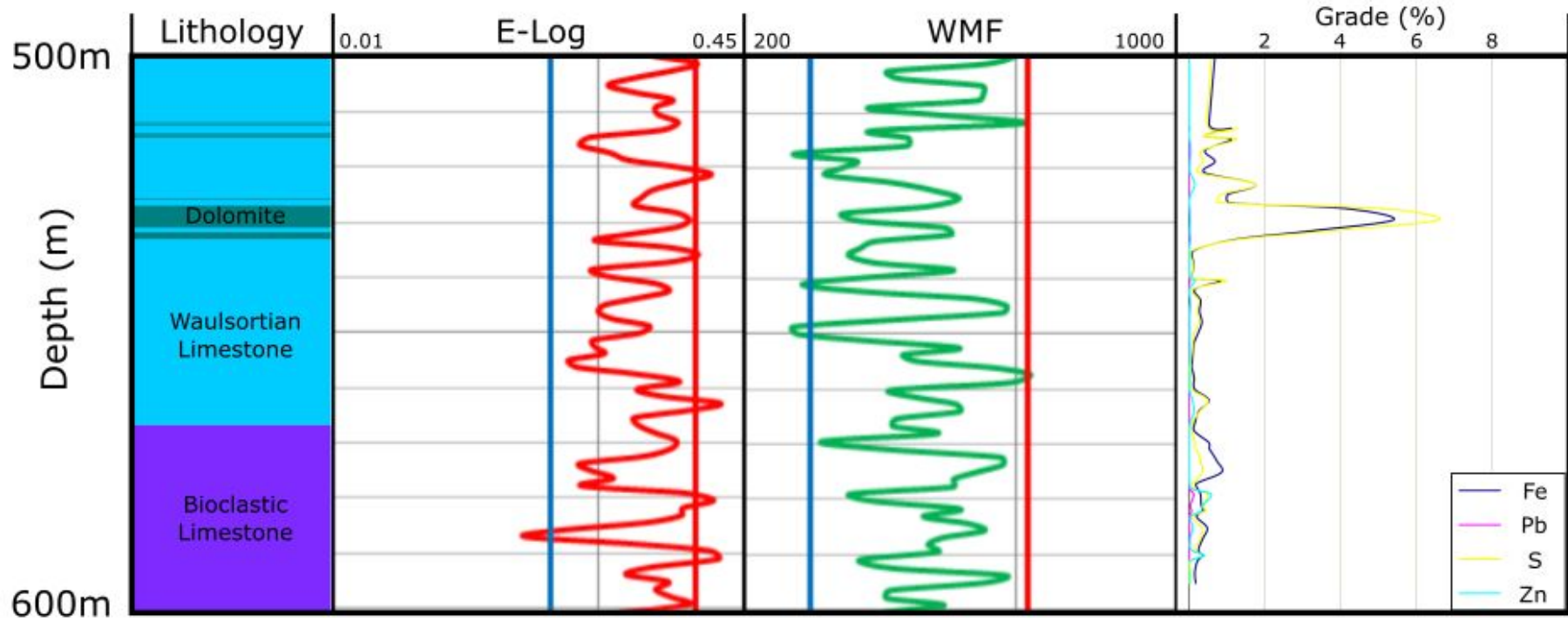
# Mineralogy: tc2638-030



Peak in Grade % depth (m)	E-Log Trough depth (m)	Depth Deviation (m)	Depth Deviation (%)
524.5	522	-2.5	0.5%

- Two large peaks in sulphide grade (10-20%) at depths of 515m and 525m correlates with a double trough in E% log below the baseline.
- This shows strong validation with the assay data.

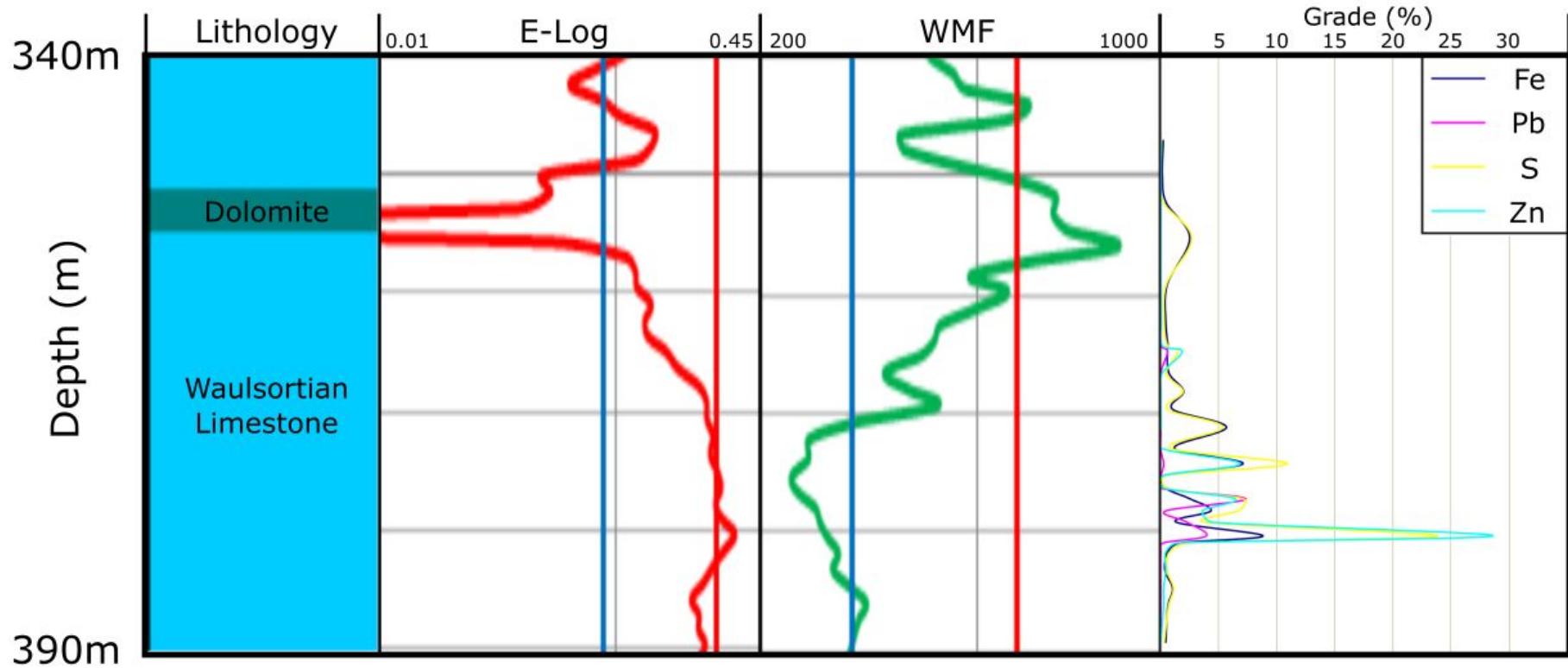
# Mineralogy: tc2638-009



Peak in Grade % depth (m)	E-Log Trough depth (m)	Depth Deviation (m)	Depth Deviation (%)
529.5	587	+57.5	10.9%

- Peak in sulphide grade (6%) at a depth of 530m does not correlate with any troughs in E% log below the baseline.
- This shows poor validation with the assay data.

# Mineralogy: tc2638-004



Peak in Grade % depth (m)	E-Log Trough depth (m)	Depth Deviation (m)	Depth Deviation (%)
380	354.5	-25.5	6.7%

- Large peak in sulphide grade (25%) at a depth of 380m does not correlate directly with any troughs in E% log below the baseline.
- There is a strong E% trough at a depth of 355m. This gives a depth deviation of 25m, however, this E% trough could be a response to the dolomite layer in the drill hole lithology log.

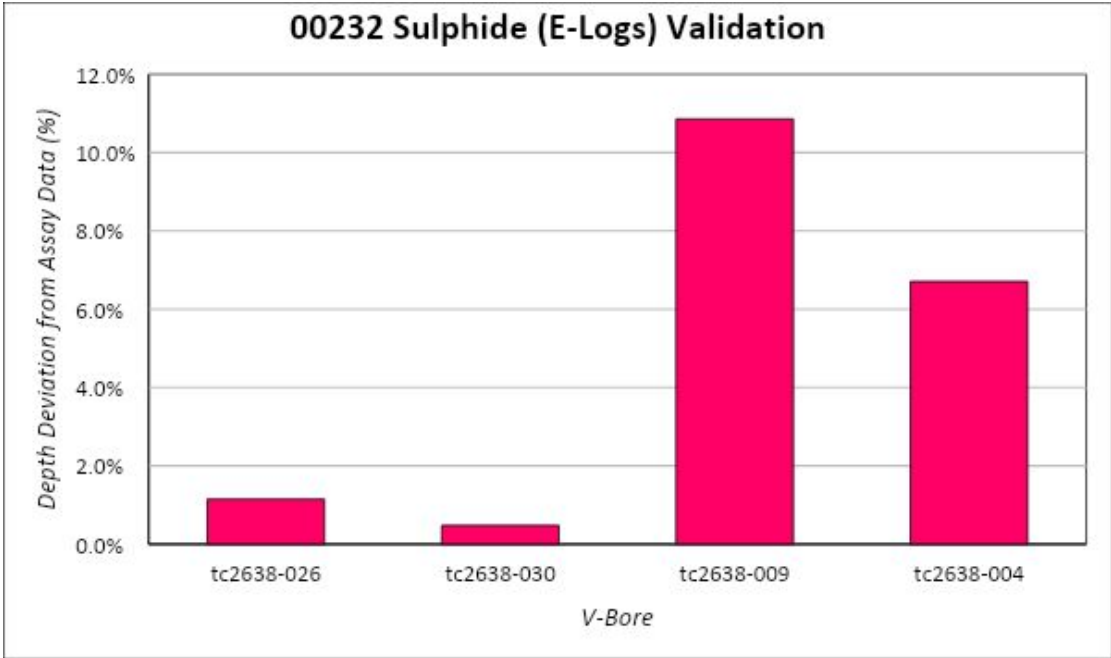
# Lithology Depth Deviation

## Sulphide Mineralisation Quantitative Validation:

V-Bore	Peak in Grade % depth (m)	E-Log Trough depth (m)	Depth Deviation (m)	Depth Deviation (%)
tc2638-026	217.5	220	+2.5	1.1%
tc2638-030	524.5	522	-2.5	0.5%
tc2638-009	529.5	587	+57.5	10.9%
tc2638-004	380	354.5	-25.5	6.7%

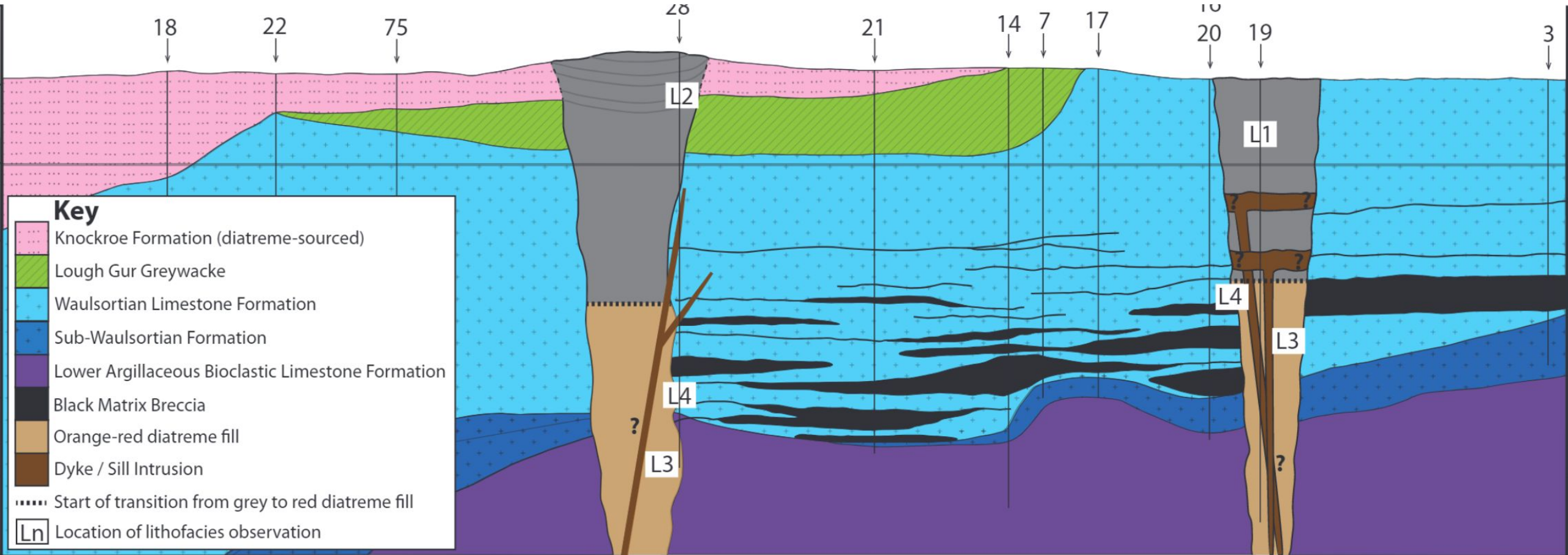
- The quantitative validation study of sulphide identification using E% Log troughs has a mixed set of results.
- Both tc2638-026 and tc2638-030 have <2% depth deviation, showing that the E% Logs have accurately targeted the sulphides.
- However, tc2638-009 and tc2638-004 both have >6% depth deviation which indicate poor validation in these holes. The E% trough at tc2638-004 seems to be responding to a Dolomite layer.

- A significant change in sulphide grade should correspond with a significant trough in the E% Log, beneath the baseline.
- All holes have assay indicating sulphide grades greater than 10%, apart from tc2638-009.



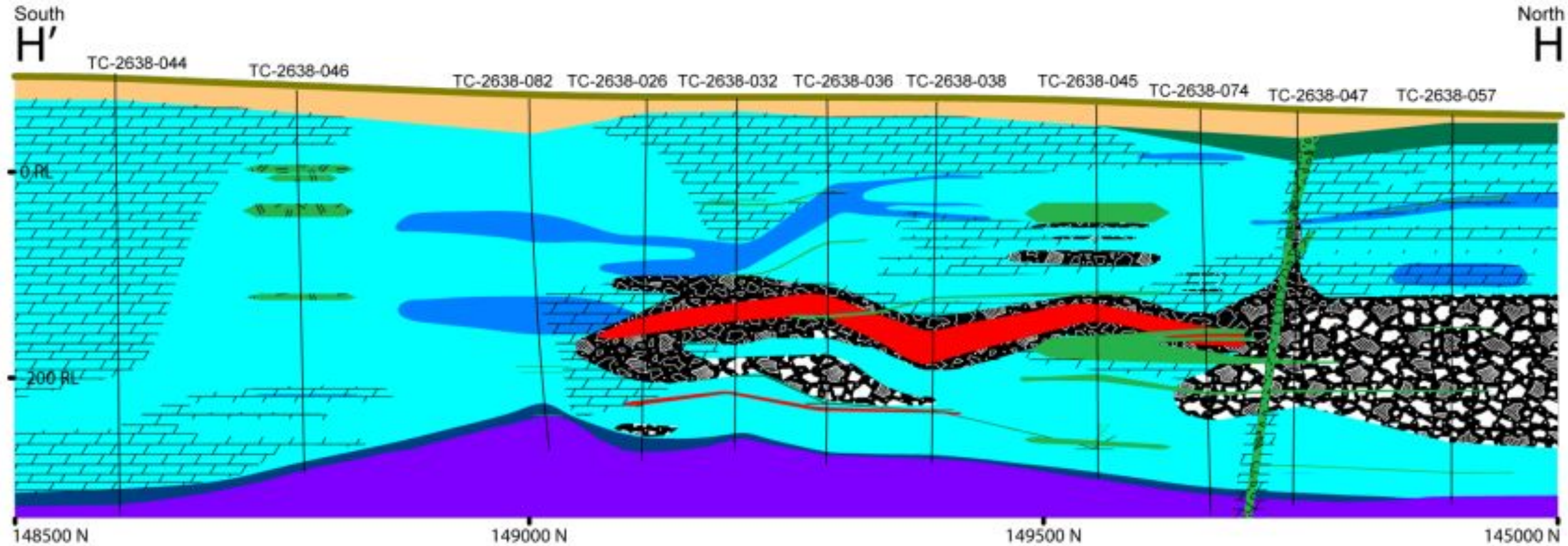


# Validation Material: Cross-Section 1



Elliott, H., 2015. *Pb-Zn mineralisation within the Limerick Basin (SW Ireland): a role for volcanism?* (Doctoral dissertation, University of Southampton).

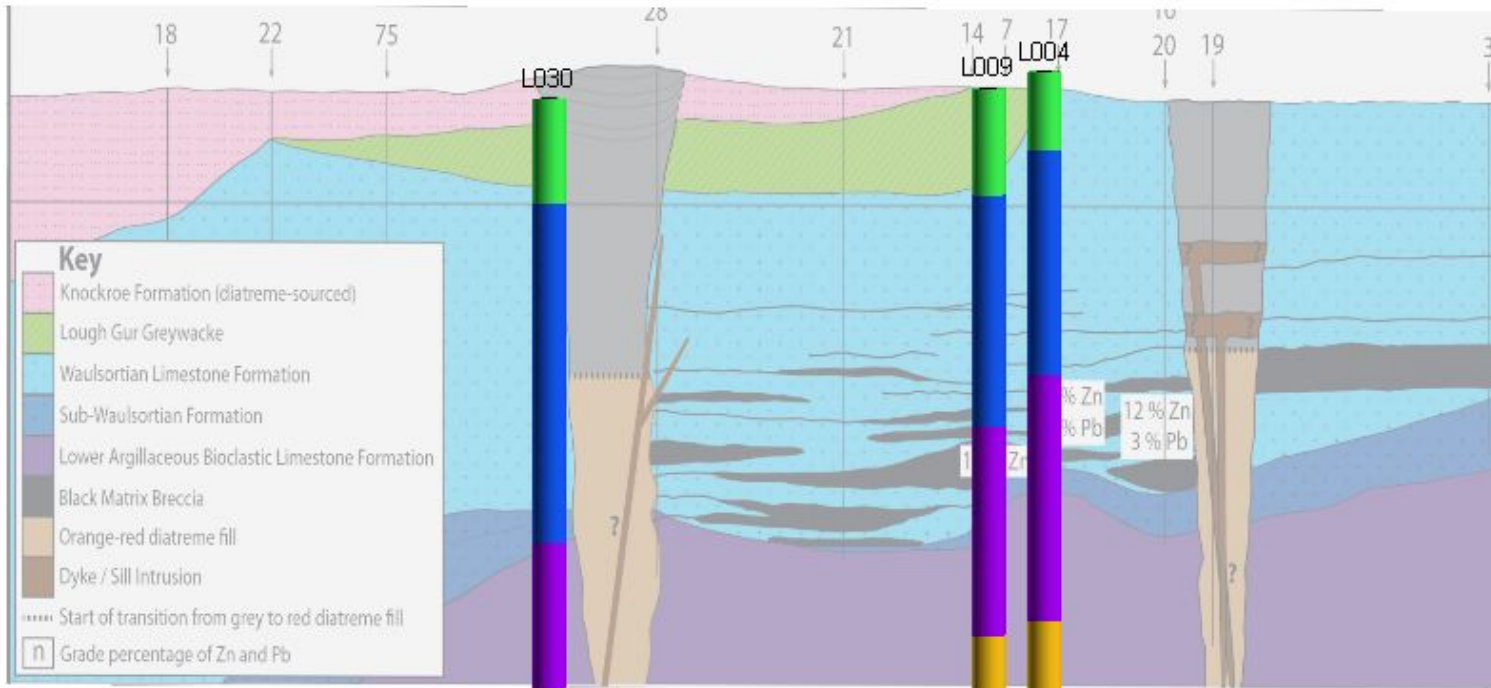
# Validation Material: Cross-Section 2



*Kerr, N., 2013. Geology of the Stonepark Zn-Pb prospects, County Limerick, Ireland (Doctoral dissertation, Colorado School of Mines. Arthur Lakes Library).*



# Cross-Section 1: Lithology



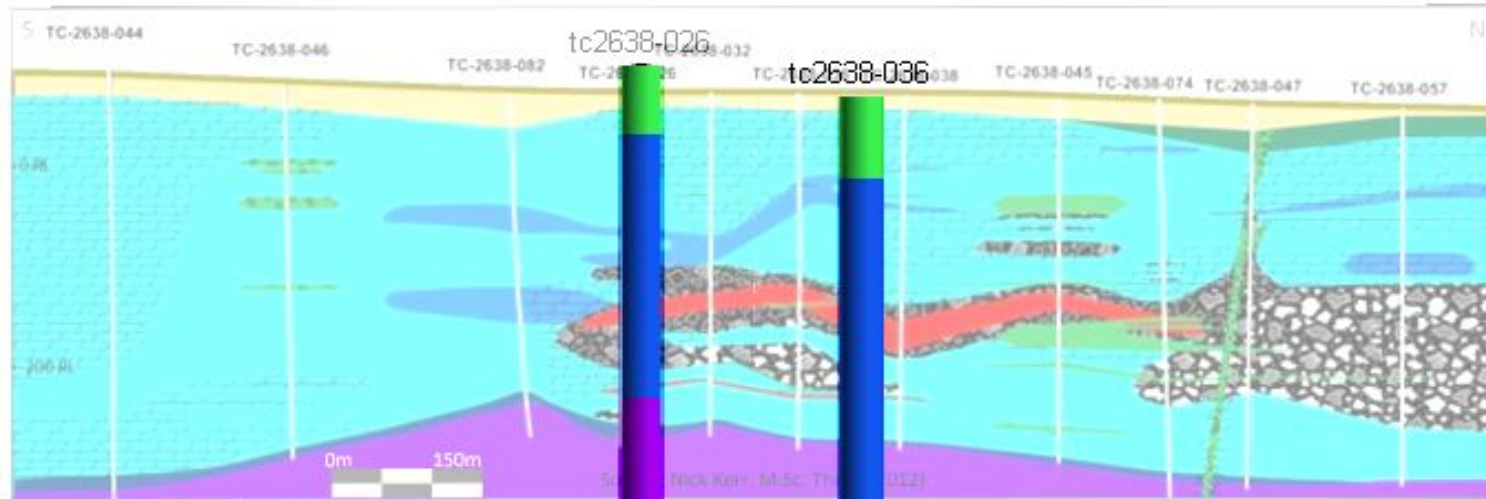
**Zonation Lithology Key:**

- Overburden/Lough Gur
- Waulsortian Limestone
- Lower Argillaceous Bioclastic Limestone
- Lower Siliclastic Units

- Cross-Section from a PhD study: Elliott, H., 2015. *Pb-Zn mineralisation within the Limerick Basin (SW Ireland): a role for volcanism?* (Doctoral dissertation, University of Southampton).
- Zonation Lithology for L004, L009 and L030 displayed in the coloured columns.
- The Waulsortian top correlates very well between all three scans and the interpreted cross-section.
- The Waulsortian base in L030 correlates very well with the interpreted cross-section, however, there is a greater depth deviation in L004 and L009.
- These scans are aligned with a stratigraphic high in the cross-section, which explains the shallower depth of the Waulsortian base in L004 and L009.



# Cross-Section 2: Lithology



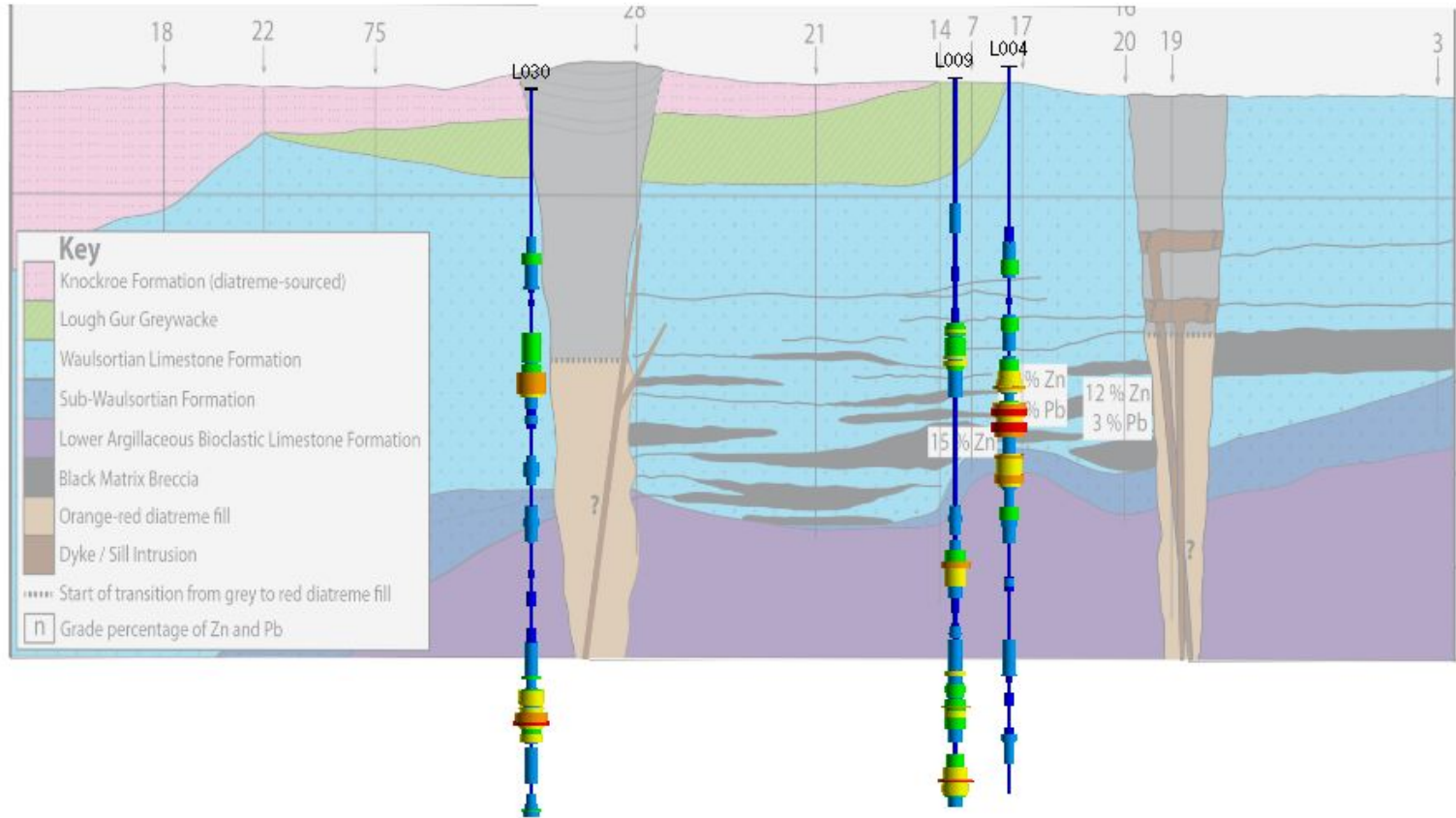
**Zonation Lithology Key:**

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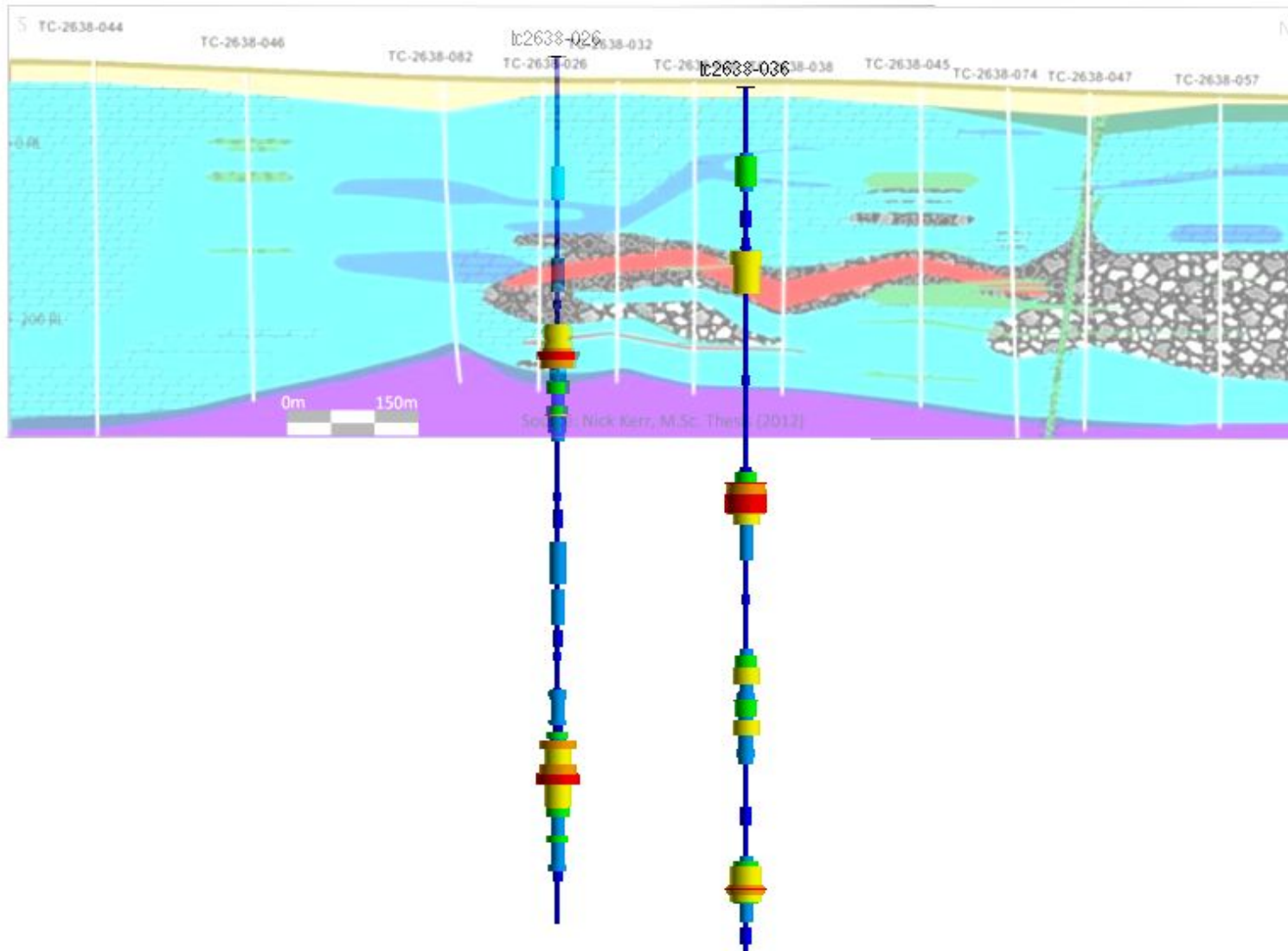
- Cross-Section from a PhD study: *Kerr, N., 2013. Geology of the Stonepark Zn-Pb prospects, County Limerick, Ireland (Doctoral dissertation, Colorado School of Mines. Arthur Lakes Library).*
- Zonation Lithology for tc2638-026 and tc2638-036 displayed in the coloured columns.
- In tc2638-026, the Waulsortian Limestone top and base correlates well with the interpreted cross-section.
- In tc2638-036, there is a slightly larger depth deviation in the Waulsortian top and base between the zonation lithology and the interpreted cross-section.

# Cross-Section 1: WSCC



- Cross-Section from a PhD study: Elliott, H., 2015. *Pb-Zn mineralisation within the Limerick Basin (SW Ireland): a role for volcanism?* (Doctoral dissertation, University of Southampton).
- WSCC displayed by coloured bars down the V-Bore. Warmer colours (red, orange and yellow) are high WSCC values and colder colours (green and blue) are low WSCC values.
- High WSCC values in L004 and L030 correlate well with inferred sulphides in the Waulsortian Limestone from the Interpreted cross-section.
- Less correlation in the L009 WSCC values.
- L009 and L030 both show high WSCC values at depths greater than the base of the cross-section so cannot be validated.

# Cross-Section 2: WSCC



- Cross-Section from a PhD study: *Kerr, N., 2013. Geology of the Stonepark Zn-Pb prospects, County Limerick, Ireland (Doctoral dissertation, Colorado School of Mines. Arthur Lakes Library).*
- WSCC displayed by coloured bars down the V-Bore. Warmer colours (red, orange and yellow) are high WSCC values and colder colours (green and blue) are low WSCC values.
- High WSCC values in tc2638-026 and medium/high WSCC values in tc2638-036 correlate well with the inferred sulphides in the Waulsortian Limestone from the Interpreted cross-section.
- There is a slight depth deviation in the tc2638-026 WSCC target.
- Both tc2638-026 and tc2638-036 show high WSCC values at depths greater than the base of the cross-section so cannot be validated.



# Validation Summary:

## Zonation Lithology vs Drill Hole Validation:

- tc2638-26, tc2638-30 & tc2638-004 = Strong Validation
- tc2638-009 = Weak Validation

## E% Log vs Assay Mineralogy Validation:

- tc2638-26 & tc2638-30 & = Strong Validation
- tc2638-009 & tc2638-004 = Weak Validation



## Zonation Lithology vs Cross-Sections Validation:

- L030, L009 & tc2638-26 = Strong Validation
- L004 & tc2638-036 = Weak Validation

## WSCC vs Cross-Section Validation:

- L030, L004 & tc2638-26 = Strong Validation
- L009 & tc2638-036 = Weak Validation

# Validation Summary:

- In general, the validation for the zonation lithology against the drill hole data and interpreted cross-sections is quite strong.
- The zonation method has found the depths of the top and base of the Waulsortian Limestone with relatively low deviation in most V-Bores, however, there are some sites (e.g., Waulsortian base in tc2638-009) where the depth deviation is up to 70m.
- It should also be noted that the Waulsortian top boundary tends to be at a shallow depth, where the ADR data experiences beam saturation, therefore, boundaries are difficult to identify.
- The validation for the sulphide zones by comparing the WSCC and E-Log results to assay data and cross-section had a mixed success.
- The E-Log has worked well in tc2638-026 and tc2638-030, but not in tc2638-009 and tc2638-004.
- The WSCC has worked well in tc2638-026 and L004, but not particularly well in some of the other V-Bores, e.g., the most significant WSCC target in tc2638-036 is too deep.