

## Orroroo Project Update

**Date:** 18<sup>th</sup> November 2024

**ASX Code:** NFL

### Capital Structure

Ordinary Shares: 40,915,932  
 Unlisted Options: 9,990,000  
 Listed Options: 10,999,808  
 Performance Shares: 1,400,000  
 Current Share Price: 11.0c  
 Market Capitalisation: \$4.50M  
 Cash: \$2.86m (30 Sep 2024)  
 Debt: Nil

### Directors

Ben Phillips  
 Executive Chairman

Leo Pilapil  
 Technical Director

Patrick Holywell  
 Non-Executive Director

Arron Canicais  
 Company Secretary

### Contact Details

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- Norfolk engaged Pacific Consultants to build a data base providing for a more model driven approach to further exploration in the expanded tenement package.
- Previously identified gamma anomalies at around 120m depth confirmed reduced sediments (redox environment) developed around this target horizon.
- Structural reinterpretation of the gravity data and phreatic uranium flow model generates new targets.
- Norfolk progressing exploration towards regional approach with focus on broad spaced drilling over possible controlling structures.

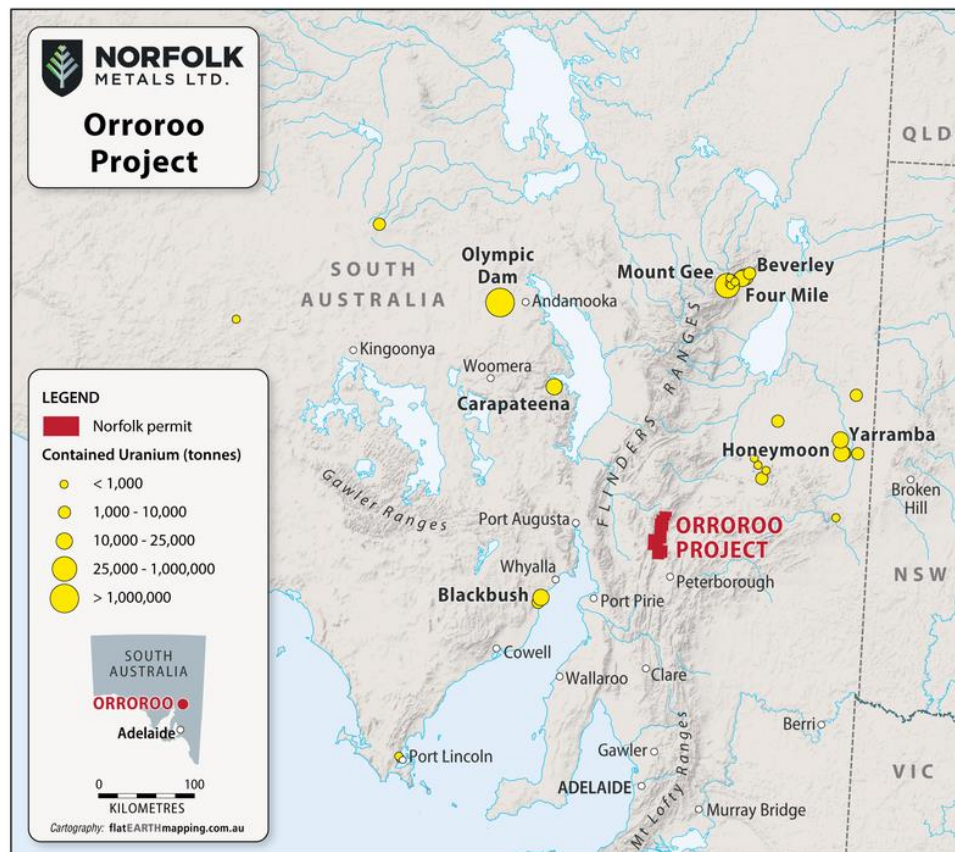


Figure 1: Orroroo Project Location Plan

Commenting on Norfolk Metals, Executive Chairman, Ben Phillips, states:

"Norfolk is extremely pleased with the outcomes of Pacific Consultants and our technical team increasing our understanding on the regional prospectivity of the Orroroo Project. The Company expects to conduct a subsequent drilling campaign which must consider all the structurally hosted contributions along with any low cost pre-drilling targeting techniques to be completed prior. We now have additional information to proceed forward with stakeholder engagements and required contractors"

### Drill core and drill chips Investigation

Drill core, drill cuttings and muds from holes drilled in the Walloway Basin to the north of Orroroo were recently reviewed at the South Australian (SA) Government core facility in Adelaide.



**Figure 2: Spectrometer 153 cps Orroroo 2A reduced sediment margin.**

Pacific Consulting was engaged to build a data base providing for a more model driven approach to further exploration across the tenement package. Data includes drill data from Linc Energy drilling as well as numerous water bores in the district.

A digital data base has been built in Micromine using open file data from the SA Government. A number of water bores and coal exploration holes are located within the Norfolk tenement package. Radiometric logs show a wide spread anomaly in the upper Tertiary at ~ 120m below current surface. The Walloway Coal (lignite) Seam occurs in the lower Tertiary stratigraphy of the basin and is associated with low radiometric anomalism marginal to the lignite.

In borehole Orroroo 2A (Figure 2), the carbonaceous silty clay at ~ 112-114m has an elevated radiometric reading on the margin with oxidized sediments above and below. A clear

demonstration that, at least locally, reduced sediments were developed at this target sedimentary horizon and that uranium was deposited on the redox margin. The drill core generally shows large intervals of silt / clayey silt with medium to coarse sand bands now silted up. The current drainage shows a similar and expected pattern in cross section with narrow cobble strewn high energy channels and silty alluvial fans with sandy beds.

The Walloway Basin contains sediment at the base which includes fine-grained sands, clayey sands and clays with minor lignite, of middle to late Eocene age. The overlying sediments include up to 70m of clays with coarse gravel beds, often lenticular. These overlying sediments range in age from mid-Tertiary to Quaternary. Obscuring the Quaternary are older deposits of recent alluvium and outwash material, derived from the surrounding Pre-Cambrian rocks.

While the paleoenvironment has not been reconstructed it can be expected that oxidized groundwater has percolated down gradient into the Walloway Basin carrying uranium which has interacted with either reduced sediments or sediments bearing reduced fluids. The source of the uranium remains uncertain (possibly from the west/northwest), but the coarse (sandy) beds at the target horizon are the clear exploration targets.

## Seismic Data

In March 1980, the Department of Mines and Energy South Australia (DME SA) conducted several seismic lines over the Walloway Basin, in particular around the central portion of EL 6552 (Orroroo Project) and the northern portion of EL 6814 (Black Rock Project) (Figure 3).

The purpose of the study was to identify the depth and lithological layers of the Walloway Basin and identify possible structural features that may influence the water intake/flow of the basin.

The results of the seismic survey showed that the Walloway Basin can be divided into different layers based on the different seismic velocities. The layers were then correlated with the lithological units identified in the NFL and Linc Energy drill holes (Figure 4): -

- Quaternary to Recent – Layers 2, 2A and 3
- Upper Tertiary – Layer 3
- Lower Tertiary – Layer 4
- Basement – Layer 5

As confirmed in the drill core and drill chips investigation, Layer 4 (Lower Tertiary unit) consists of interbedded sand, silt and clay which is overlain by Layer 3 (Upper Tertiary), generally thick clay unit. The Lower Tertiary unit predominates and thickens along the deeper troughs of the basin and its sandy nature suggest deposition in a fluvial environment. The overlying Upper Tertiary unit is a more extensive and continuous unit of grey, brown and black clay, with kaolinite bands indicating deposition in a lacustrine environment.

The general shape of the valley is asymmetrical with western margins steeper than east and bedrock depth up to 350m deep at the observed deepest point on line WB-79-1.

Several sections were constructed from the seismic survey but the two main seismic section lines WB-79-1 and WB-79-2 coincides with the drilling conducted by NFL along the Walloway Creek and Rankin Rd Targets respectively (see ASX announcement: 7 February 2024).



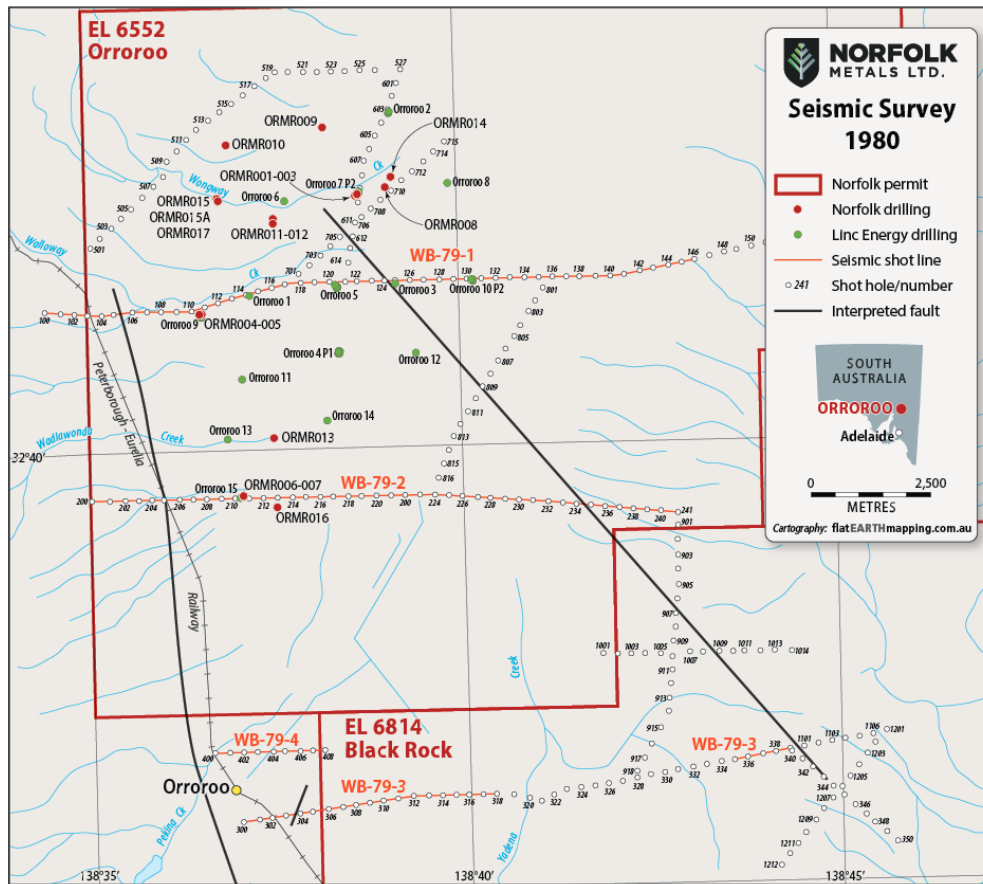


Figure 3: Seismic Survey DME SA March 1980

It was also noted from the seismic study that structurally, the Wallawarra Basin is fault controlled to the west and the major northwest-southeast fault identified to the east may be a zone of diapiric activity. These faults have also been observed in the interpretation of the regional gravity data.

It is important to note that historical water well drill holes have been included in the seismic sections but no data has been sighted on the public domain database of the DME SA.

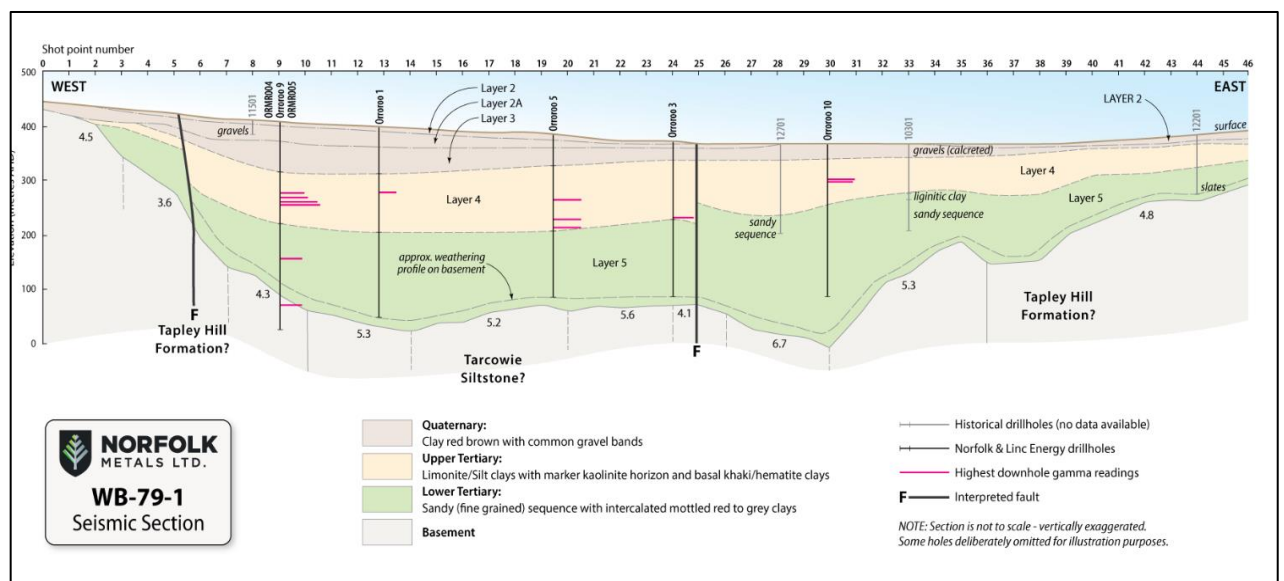
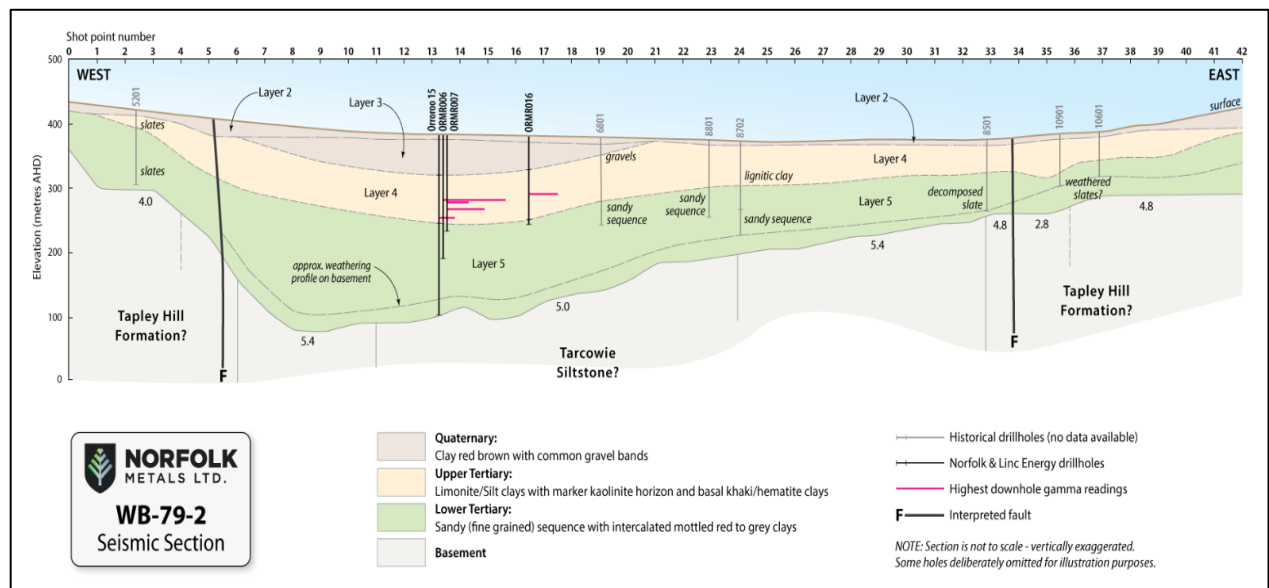


Figure 4: Seismic Section WB-79-1 with corresponding lithologies and drill holes



**Figure 5: Seismic Section WB-79-2 with corresponding lithologies and drill holes**

As previously reported, the highest gamma peaks in the NFL and Linc Energy holes appear to mainly occur near the base of the Upper Tertiary Unit or near the contact between the Upper Tertiary Unit and Lower Tertiary Unit (see ASX announcement: 7 February 2024).

## Gravity Data

In July 2023, Norfolk conducted a ground gravity survey on a 250 x 250m grid (1,596 stations) (see ASX announcement: 6 July 2023). The survey identified two main channels (the Western and Eastern Channels) and some major structural features. The same data has been used to create gravity profiles over the same seismic sections for 2 reasons:

1. Identify subtle (localized) changes of basement profile.
2. Improve the structural Interpretation.

### 1. Gravity Profile

Using the Norfolk gravity data, three basement profiles were constructed over the seismic section (Figure 5):

The **RED** profile (SCBA267) will include a regional trend that needs to be removed before local (residual) variations become clearer.

The **GREEN** profile (SCBA267 minus the smoothed SCBA267 (**RED**)) is a way to remove a regional trend, and what remains will be a general indication of basement topography – but there remain the effects of density variations, and there are different ways to estimate a regional trend so different methods of regional removal will likely result in minor to mild variations in the profile's shape.

The **BLUE** profile (1VD of SCBA267) emphasises subtle bumps/variations in the SCBA267 (**GREEN**), generally regarded as “shallower sources”. It removes the regional trend and is magnifying the subtle variations seen in the GREEN profile.

It is important to note that the three profiles are not exact and can be improved by 2D gravity modelling but nevertheless, they do confirm the general basement profile suggested by the seismic survey but with some subtle changes.

These subtle changes in the basement profile are of importance as they may also represent subtle changes in the overlying sediments (paleosurface) during the fault activation. The troughs generated by the major fault are important in possibly trapping or concentrating reductants to create a reduced environment.

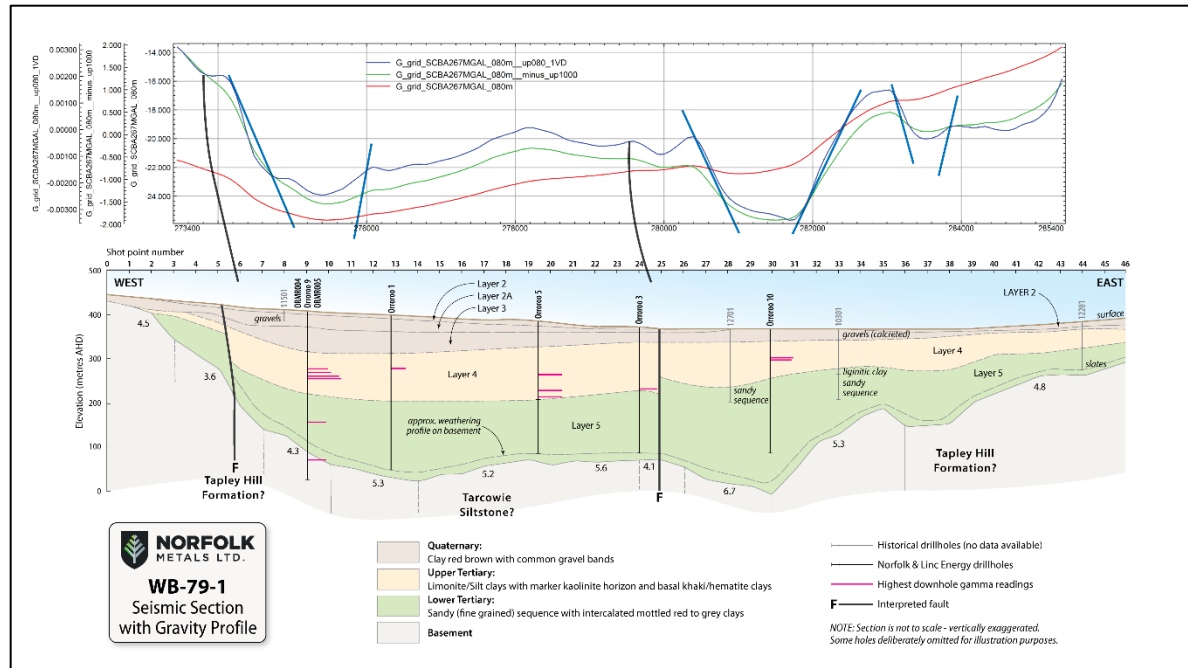


Figure 5: Seismic Section WB-79-1 with corresponding gravity profiles

Norfolk's gravity survey does not cover the entire seismic section for WB\_79\_2 but the profiles show similar results whereby the highest gamma peaks appear to be located in interpreted trough positions generated by faulting (Figure 6).

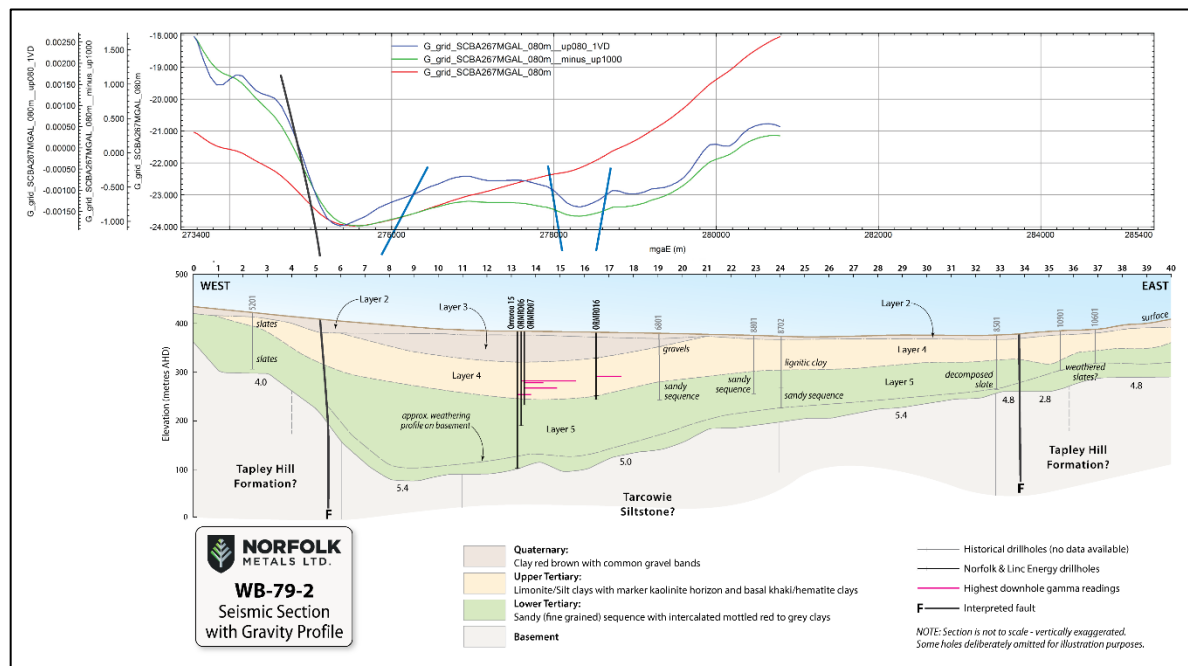


Figure 6: Seismic Section WB-79-2 with corresponding gravity profiles



## 2. Structural Interpretation

As previously mentioned, the regional gravity and seismic surveys identified a major fault on the western side of the Walloway Basin and one major NW structure to the east. Interpretation of the gravity data collected by Norfolk on EL6552 on the closer spaced grid (250mx250m) suggests three subparallel NW structures with the northernmost correlating with the regional NW structure. The NW structures may be the result of NE-SW compression and subsequent uplift along the NW structures lead to extension and consequently the formation of localized NNE-SSW trending horst and graben style structures (Figure 7).

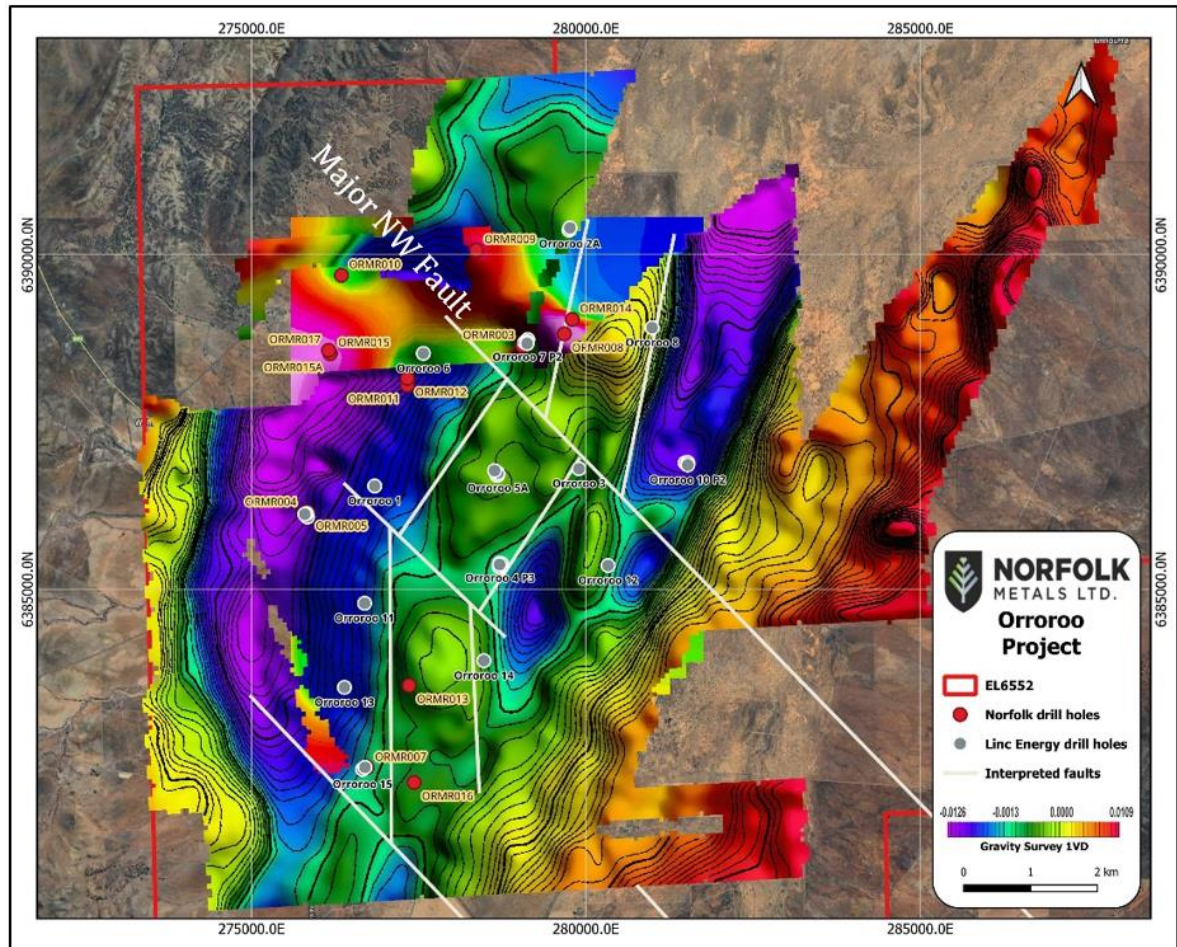
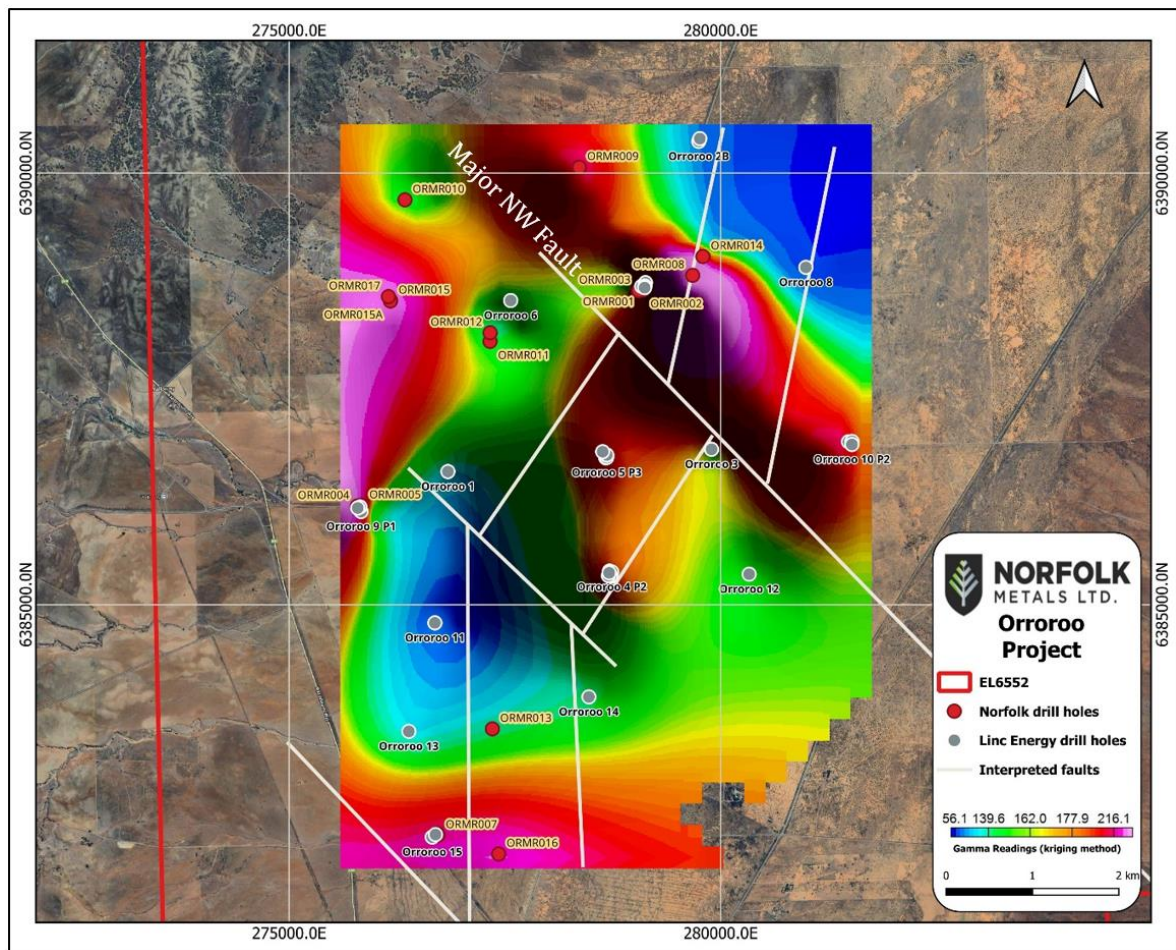


Figure 7: Norfolk gravity contours and structural interpretation

### Highest Gamma Count Contour (Kriging)

The highest gamma counts from the historical Linc Energy and NFL drill holes were extracted (see ASX announcement: 7 February 2024; Appendix A: Table 1) and contoured using a Kriging method (Figure 8). The purpose of the study was to determine if there was any possible relationship between the relative positions of the high gamma counts and the structures interpreted from the gravity data.



**Figure 8: Highest Gamma in drill hole contour (kriging method).**

The contour suggests that there is elevated concentration of the gamma along/near the position of the major NW fault zone. It is possible that period of uplift led to the development of fluvial channels from the west or north west with the downward movement of uranium bearing ground waters (Figure 9). The phreatic flow caused by the elevation of the basement caused the oxidized U fluids to be funneled through groundwater flow possibly into chemical trap sites that maybe relatively rich in reductants.

Porous sandy host rocks along with confining impermeable clays are important for focusing fluid flow bringing uranium bearing, oxidizing ground waters into the sedimentary sequence and the development of redox fronts.

The relative position of the anomaly next to a major NW structure is similar to the structural setting of the Beverly uranium deposit whereby the mineralization is bounded to the west by the major NNE trending Poontana Fault zone (Figure 10).

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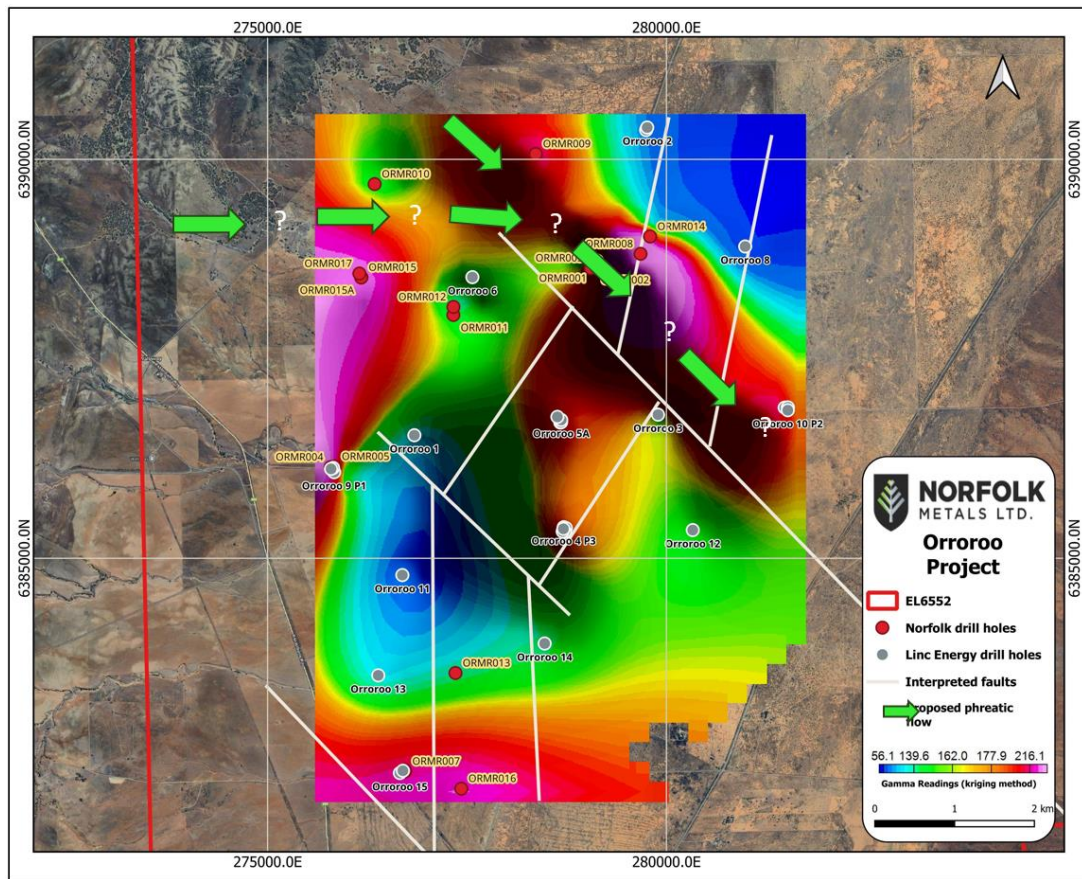


Figure 9: Proposed phreatic flow (green arrow) of the uranium bearing ground water

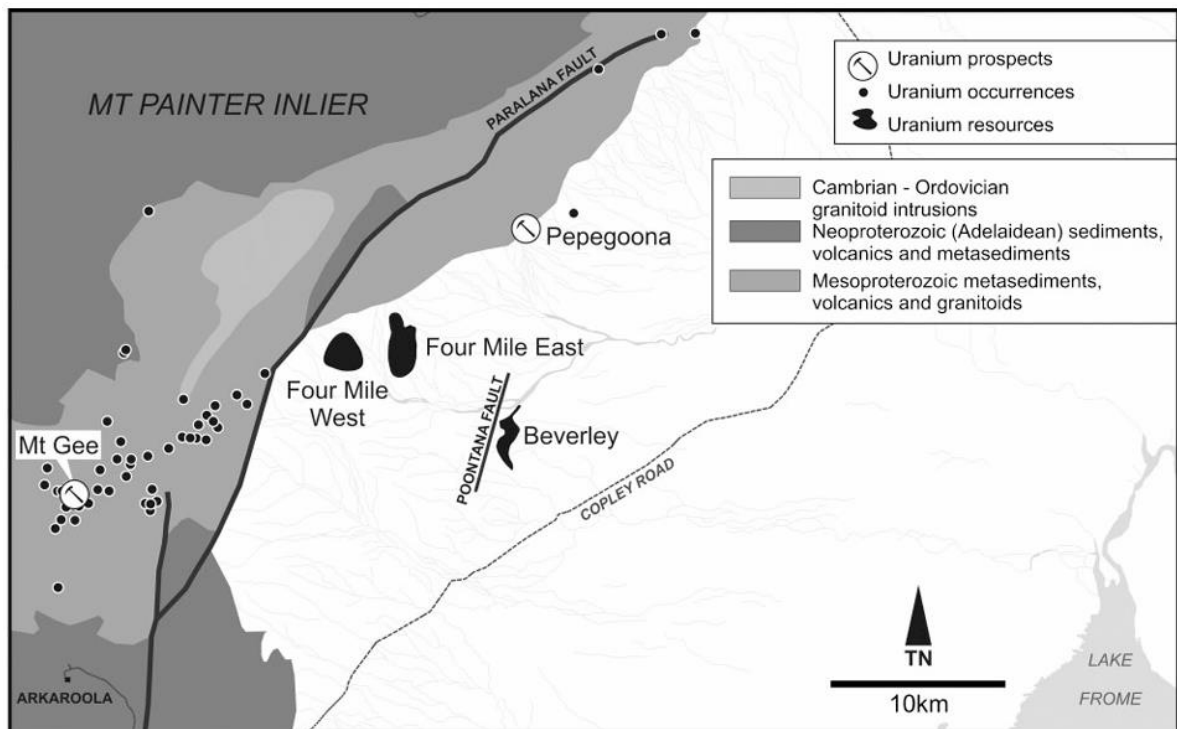


Figure 10: Location of Poontana Fault Zone and Beverley uranium deposit

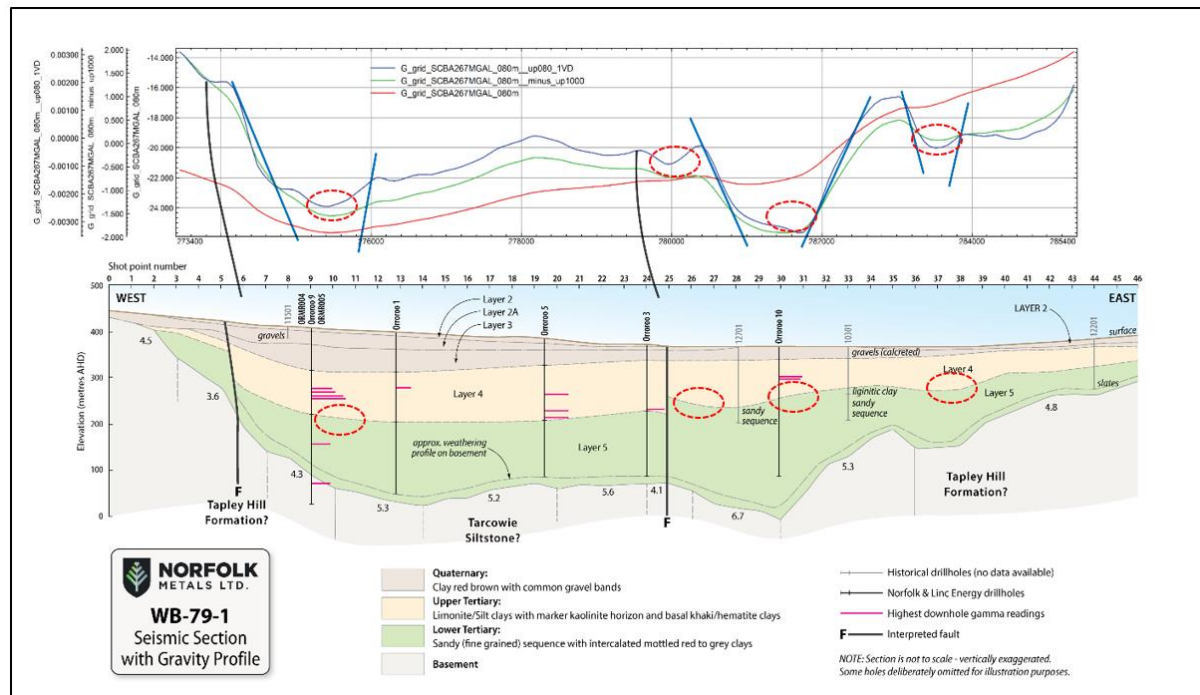
The high precipitation level of uranium in the trough section near the major structures may also occur as a result of the increased concentration/accumulation of reductant materials caused by the same uplift movement in these areas.

## Target Generation

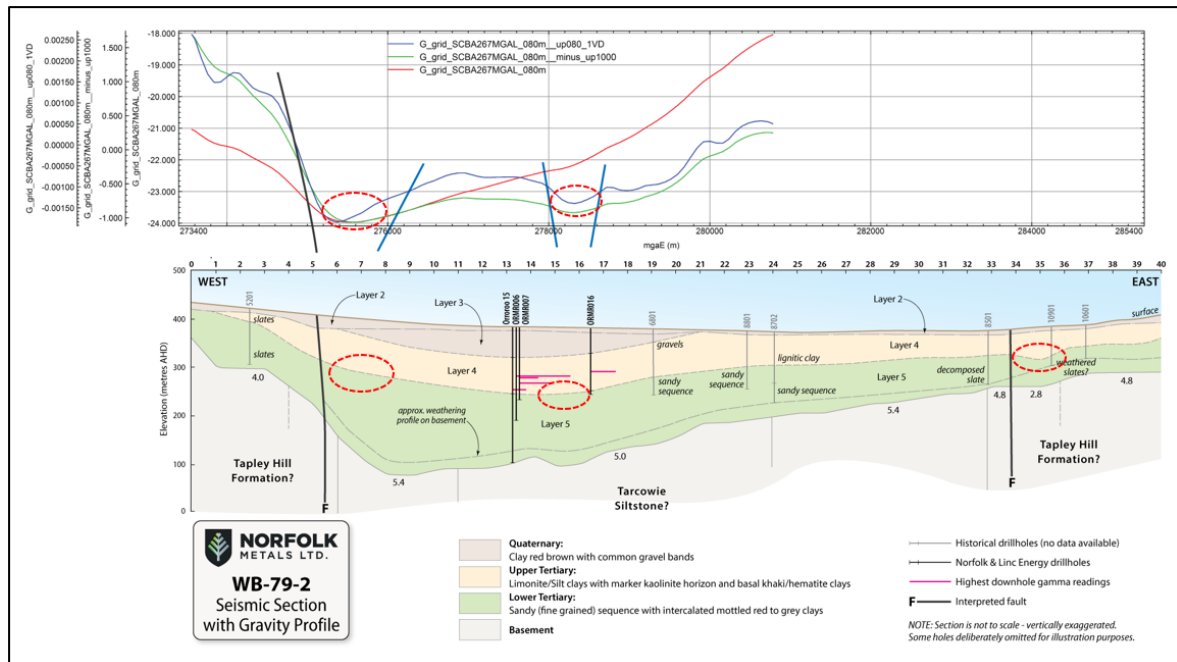
Norfolk identified four targets located along the Walloway Creek Target (WB\_79\_1 section, Figure 11). The targets are based on the following:

1. During the Miocene Period, reactivation of the NW faults caused uplift and tilting of the Tertiary sedimentary units of the Walloway Basin. The uplift movement and extension of the basin led to formation of trough positions
2. Accumulation of reductant materials such as carbonaceous material and hydrocarbons such as lignite along the troughs
3. Activation of low phreatic levels on the western/northwestern areas and U leaching by oxidation
4. Subsequent phreatic flow of uranium bearing fluids from the higher levels (downgradient) to the trough positions and
5. Favourable sandy (coarse) sedimentary redox environment within the trough acting as chemical uranium traps.

For the same reasons above, three targets have been identified on the Rankin Rd Target (WB\_79\_2, Figure 12). There is limited gravity data on the eastern side of this section but the NW fault position and subsequent target has been considered based on the seismic data interpretation.



**Figure 11: Proposed targets (red) WB\_79\_1 based on the trough generation related to uplift caused by NW fault structure and uranium phreatic flow into sandy reduced environment**



**Figure 12: Proposed targets (red) WB\_79\_2 based on the trough generation related to uplift caused by NW fault structure and uranium phreatic flow into sandy reduced environment**

The higher priority targets are located on the eastern side of the major NW fault whereby lignite clays have been logged (historical water well holes) near the sandy sequence of the Upper and Lower Tertiary contact, approximately 120-140m from the surface.

Only one more recent hole (Orroroo 10) has potentially tested one of the targets on section WB\_79\_1 with no significant gamma reading. However, the illustrated target size does not reflect the true width of the trough (seismic shot positions approximately 300m apart) and continuity/homogeneity of the uranium mineralisation. Historical water well hole 10901 may have tested the eastern target on section WB\_79\_2 but as previously mentioned, no data is available for review.

It is important to note that the above targets and model have been generated from reasonable level of drill hole information and gravity data available. It is therefore the intention of the company to further increase the gravity survey areas to the north and south of EL6552 into the adjacent northern and southern NFL tenements EL6814. This will lead to better interpretation, target generation and subsequent regional drilling.

END

This announcement has been authorised by the board of directors of Norfolk.

### About Norfolk Metals

The Orroroo Uranium Project comprises three granted exploration licenses, EL6552, EL6814 and EL6948, which together cover 723km<sup>2</sup>, located approximately 274km northwest of the capital city of Adelaide, South Australia within the Walloway Basin, which is an elongate Tertiary Basin approximately 50km long and up to 15km wide. It consists of Tertiary and Quaternary sediments unconformably underlain by Adelaiddian basement.



The Roger River Project comprises two granted exploration licenses, EL20/2020, and EL17/2021, which together cover 74km<sup>2</sup>, located 410km northwest of the capital city of Hobart, Tasmania. The Project is prospective for gold and copper as indicated by the intense silicification, argillisation and diatreme breccias in close proximity to the Roger River Fault along with carbonate-rich host rocks.

For further information please visit [www.norfolkmetals.com.au](http://www.norfolkmetals.com.au).

### Competent Persons Statement

The information in this announcement that relates to exploration results, is based on, and fairly represents, information and supporting documentation prepared by Mr Leo Pilapil, a competent person who is a member of the Australasian Institute of Mining and Metallurgy. Mr Pilapil has a minimum of five years' experience which is relevant to the style of mineralisation and type of deposit under consideration and to the activity which he is undertaking to qualify as a competent person as defined in the 2012 Edition of the Joint Ore Reserves Committee Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves. Mr Pilapil is a related party of the Company, being the Technical Director, and holds securities in the Company. Mr Pilapil has consented to the inclusion in this announcement of the matters based on his information in the form and context in which it appears

## Appendix A

OPERATOR	Well_Name	Easting	Northing	Depth(m)	Gamma peak		Lithology
						within (cps)	
Linc Energy	Orroroo 1	276840	6386542	122.00	<div></div>	125	Upper Tertiary unit
Linc Energy	Orroroo 10	281483	6386888	66.00	<div></div>	225	Upper Tertiary unit
Linc Energy	Orroroo 10 P1	281523	6386891	70.00	<div></div>	180	Upper Tertiary unit
Linc Energy	Orroroo 11	276690	6384789	185.00	<div></div>	90	Lower Tertiary unit
Linc Energy	Orroroo 12	280331	6385353	221.00	<div></div>	150	Lower Tertiary unit
Linc Energy	Orroroo 13	276388	6383532	114.00	<div></div>	125	Upper Tertiary unit
Linc Energy	Orroroo 14	278474	6383931	93.00	<div></div>	140	Upper Tertiary unit
Linc Energy	Orroroo 15	276659	6382307	130.00	<div></div>	100	Upper Tertiary
Linc Energy	Orroroo 15 P1	276697	6382336	102.00	<div></div>	400	Upper Tertiary
Linc Energy	Orroroo 2	279760	6390399	145.00	<div></div>	135	Lower Tertiary unit
Linc Energy	Orroroo 2B	279747	6390367	227.00	<div></div>	70	Lower Tertiary unit
Linc Energy	Orroroo 3	279896	6386800	140.00	<div></div>	160	Upper Tertiary unit
Linc Energy	Orroroo 4	278709	6385369	105.00	<div></div>	180	Upper Tertiary unit
Linc Energy	Orroroo 4 P1	278700	6385336	102.00	<div></div>	200	Upper Tertiary unit
Linc Energy	Orroroo 4 P2	278739	6385378	102.00	<div></div>	160	Upper Tertiary unit
Linc Energy	Orroroo 4 P3	278713	6385389	104.00	<div></div>	180	Upper Tertiary unit
Linc Energy	Orroroo 4 P4	278728	6385331	146.00	<div></div>	200	Upper Tertiary unit
Linc Energy	Orroroo 5	278633	6386772	155.00	<div></div>	160	Upper Tertiary unit
Linc Energy	Orroroo 5 P1	278671	6386732	119.00	<div></div>	200	Upper Tertiary unit
Linc Energy	Orroroo 5 P2	278670	6386701	168.00	<div></div>	200	Upper Tertiary unit
Linc Energy	Orroroo 5A	278682	6386734	153.00	<div></div>	190	Upper Tertiary unit
Linc Energy	Orroroo 6	277568	6388523	260.00	<div></div>	160	Lower Tertiary unit
Linc Energy	Orroroo 7	279085	6388688	227.00	<div></div>	90	Lower Tertiary unit
Linc Energy	Orroroo 7 P1	279130	6388731	105.00	<div></div>	200	Upper Tertiary unit
Linc Energy	Orroroo 7 P2	279122	6388692	195.00	<div></div>	140	Lower Tertiary unit
Linc Energy	Orroroo 7 P3	279120	6388672	112.00	<div></div>	200	Upper Tertiary unit
Linc Energy	Orroroo 8	280988	6388908	116.00	<div></div>	60	Upper Tertiary unit
Linc Energy	Orroroo 9	275821	6386094	332.00	<div></div>	160	Lower Tertiary unit
Linc Energy	Orroroo 9 P1	275835	6386079	249.00	<div></div>	150	Lower Tertiary unit
Linc Energy	Orroroo 9 P2	275821	6386131	148.00	<div></div>	280	Upper Tertiary unit
Linc Energy	Orroroo 9 P3	275795	6386120	140.00	<div></div>	225	Upper Tertiary unit
NFL	ORMR001	279095	6388669	104.91	<div></div>	160	Upper Tertiary unit
NFL	ORMR002	279097	6388646	112.42	<div></div>	189.4	Upper Tertiary unit
NFL	ORMR003	279051	6388636	125.09	<div></div>	140	Upper Tertiary unit
NFL	ORMR004	275791	6386143	153.80	<div></div>	321.053	Upper Tertiary unit
NFL	ORMR005	275840	6386150	132.12	<div></div>	165	Upper Tertiary unit
NFL	ORMR006	276719	6382347	105.18	<div></div>	145	Upper Tertiary unit
NFL	ORMR007	276725	6382330	116.28	<div></div>	242.105	Upper Tertiary unit
NFL	ORMR008	279676	6388816	99.99	<div></div>	510	Upper Tertiary unit
NFL	ORMR009	278363	6390067	122.25	<div></div>	225	Upper Tertiary unit
NFL	ORMR010	276342	6389690	117.42	<div></div>	145	Upper Tertiary unit
NFL	ORMR011	277329	6388049	129.50	<div></div>	155	Upper Tertiary unit
NFL	ORMR012	277330	6388150	143.34	<div></div>	126.316	Upper Tertiary unit
NFL	ORMR013	277356	6383561	107.29	<div></div>	140	Upper Tertiary unit
NFL	ORMR014	279795	6389033	91.84	<div></div>	135	Upper Tertiary unit
NFL	ORMR015A	276173	6388518	139.59	<div></div>	290	Upper Tertiary unit
NFL	ORMR016	277429	6382111	89.67	<div></div>	242.105	Upper Tertiary unit
NFL	ORMR017	276151	6388569	132.47	<div></div>	225	Upper Tertiary unit

**Table 1: Highest Gamma in drill holes**

# JORC Code, 2012 Edition – Table 1 Report Template

## Section 1 Sampling Techniques and Data

(Criteria in this section apply to all succeeding sections.)

Criteria	JORC Code Explanation	Commentary
<b>Sampling techniques</b>	<ul style="list-style-type: none"> <li>Nature and quality of sampling (e.g. cut channels, random chips, or specific specialised industry standard measurement tools appropriate to the minerals under investigation, such as down hole gamma sondes, or handheld XRF instruments, etc). These examples should not be taken as limiting the broad meaning of sampling.</li> <li>Include reference to measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used.</li> <li>Aspects of the determination of mineralisation that are Material to the Public Report.</li> <li>In cases where 'industry standard' work has been done this would be relatively simple (e.g. 'reverse circulation drilling was used to obtain 1 m samples from which 3 kg was pulverised to produce a 30 g charge for fire assay'). In other cases, more explanation may be required, such as where there is coarse gold that has inherent sampling problems. Unusual commodities or mineralisation types (e.g. submarine nodules) may warrant disclosure of detailed information.</li> </ul>	<p><b>Seismic Study</b></p> <p><a href="https://sarigbasis.pir.sa.gov.au/WebtopEw/ws/samref/sarig1/image/DDD/RB8000033.pdf">https://sarigbasis.pir.sa.gov.au/WebtopEw/ws/samref/sarig1/image/DDD/RB8000033.pdf</a></p> <ul style="list-style-type: none"> <li>Detectors were laid at 50 m intervals in line with the energy source, the location of which relative to the detector array was designed to give continuous coverage of the basement refractor in forward and reverse directions.</li> <li>Information on near surface material was obtained from "weathering spreads" in which the detector interval was staggered in expanding intervals from 2.5 m to 70 m.</li> <li>These were shot on the eastern end of line WB-79-2 at 600 m separation, and elsewhere at 1200 m intervals.</li> <li>Records were examined as recorded and shooting routine adjusted as basement refractor depths altered.</li> </ul> <p><b>XRF Investigation</b></p> <ul style="list-style-type: none"> <li>The RS-125 Super-SPEC hand held XRF machine was used to check core point samples</li> <li>High sensitivity with auto-stabilizing on naturally - occurring radio elements</li> </ul>
<b>Drilling techniques</b>	<ul style="list-style-type: none"> <li>Drill type (e.g. core, reverse circulation, open-hole hammer, rotary air blast, auger, Bangka, sonic, etc) and details (e.g. core diameter, triple or standard tube, depth of diamond tails, face-sampling bit or</li> </ul>	<ul style="list-style-type: none"> <li>No new available drilling data to report</li> </ul>



Criteria	JORC Code Explanation	Commentary
	other type, whether core is oriented and if so, by what method, etc).	
<b>Drill sample recovery</b>	<ul style="list-style-type: none"> <li>• Method of recording and assessing core and chip sample recoveries and results assessed.</li> <li>• Measures taken to maximise sample recovery and ensure representative nature of the samples.</li> <li>• Whether a relationship exists between sample recovery and grade and whether sample bias may have occurred due to preferential loss/gain of fine/coarse material.</li> </ul>	<ul style="list-style-type: none"> <li>• No new available drilling data to report</li> </ul>
<b>Logging</b>	<ul style="list-style-type: none"> <li>• Whether core and chip samples have been geologically and geotechnically logged to a level of detail to support appropriate Mineral Resource estimation, mining studies and metallurgical studies.</li> <li>• Whether logging is qualitative or quantitative in nature. Core (or costean, channel, etc) photography.</li> <li>• The total length and percentage of the relevant intersections logged.</li> </ul>	<p><b>XRF Investigation</b></p> <ul style="list-style-type: none"> <li>• All samples used for the investigation have been previously logged.</li> </ul>
<b>Sub-sampling techniques and sample preparation</b>	<ul style="list-style-type: none"> <li>• If core, whether cut or sawn and whether quarter, half or all core taken.</li> <li>• If non-core, whether riffled, tube sampled, rotary split, etc and whether sampled wet or dry.</li> <li>• For all sample types, the nature, quality and appropriateness of the sample preparation technique.</li> <li>• Quality control procedures adopted for all sub-sampling stages to maximise representivity of samples.</li> <li>• Measures taken to ensure that the sampling is representative of the in situ material collected, including for instance results for field duplicate/second-half sampling.</li> <li>• Whether sample sizes are appropriate to the grain size of the</li> </ul>	<p><b>Seismic Study</b></p> <ul style="list-style-type: none"> <li>• Information extracted from seismic data measures depth to a refracting horizon relative to Australian Height Datum and velocity along the interface.</li> <li>• 'Time-distance' curves are constructed by plotting arrival times at individual detectors against their distance from an energy source. If the assumption is valid that velocities within seismic strata are constant, the plotted points fall on straight-line segments.</li> </ul>

Criteria	JORC Code Explanation	Commentary
	material being sampled.	<ul style="list-style-type: none"> <li>Depths to refracting horizons below detector locations, other than the near surface seismic events, were computed using a method described by Hawkins (1961).</li> </ul> <p>(REF: Hawkins, L.V. (1961). <i>The reciprocal method of routine shallow seismic refraction investigations</i>. <i>Geophysics</i>, 26, 806-819).</p> <ul style="list-style-type: none"> <li>In areas where velocity changes seemed apparent or rapid changes in depth occurred, the more involved method outlined by Palmer (1974) was used to give better resolution</li> </ul> <p>(REF: Palmer,.D. (1974). <i>An application of the time section in shallow seismic refraction studies</i>. M.Sc. Thesis, Univ. Sydney (Unpublished)).</p>
<b>Quality of assay data and laboratory tests</b>	<ul style="list-style-type: none"> <li>The nature, quality and appropriateness of the assaying and laboratory procedures used and whether the technique is considered partial or total.</li> <li>For geophysical tools, spectrometers, handheld XRF instruments, etc, the parameters used in determining the analysis including instrument make and model, reading times, calibrations factors applied and their derivation, etc.</li> <li>Nature of quality control procedures adopted (eg standards, blanks, duplicates, external laboratory checks) and whether acceptable levels of accuracy (ie lack of bias) and precision have been established.</li> </ul>	<p><b>Seismic Study</b></p> <p>Sources of error in the computation processes arise from:</p> <ol style="list-style-type: none"> <li>Errors in timing events on the seismic records. Record quality for the Orroroo survey was in general good, with occasionally poor records. Consequently, picked times are of fair reliability with an estimated error of +/- 2 milliseconds.</li> <li>Variations in elevation between detector stations. The survey area is mostly one of low, gentle topographic relief and differences between detector/ detector and detector/source elevations do not result in significant errors in most instances.</li> <li>Variations in thickness and velocity of near-surface layers. During computing of data, it became apparent that lateral variations of thickness and velocity resulting from changes in moisture and sand</li> </ol>

Criteria	JORC Code Explanation	Commentary
		<p>content etc., could account for large variations in computed depths to the deeper refracting horizon.</p> <p>4. Small-scale structure is expected on the high-speed refracting horizon as it represents an erosional surface. Computing procedures require an assumption of a planar surface between detecting points. This has probably resulted in the introduction of small errors in depths to basement computed along the seismic lines.</p> <p>5. The presence of velocity inversions and "blind zones" of insufficient thickness to appear as 'first breaks' on the seismic records are a problem in computing depths within the Walloway Basin. Both are present within the survey area and their total effect upon the computed depths cannot be accurately estimated (Appendix I).</p> <ul style="list-style-type: none"> <li>• The effects of 2) and 3) above on velocities are removed by "reciprocal coverage" techniques. These involve calculating velocities by the method of "differences" from data collected in opposite directions over the same detector array. The effects of 4) are minimized by the method outlined by Palmer, 1978, but not removed.</li> <li>• Depth calculations involve both velocity and time terms and are hence subject to greater errors than velocities. It is considered that the effects of 5) above will in this survey be greater than 1) to 4) combined.</li> <li>• Because of the velocity inversion which occurs between layers 3 and 4, calculated depths to the base of layer 4 are subject to an error of up to 240%, where this occurs. However, extrapolation from adjacent portions of the</li> </ul>



Criteria	JORC Code Explanation	Commentary
		<p>profile on line WB-79-2 together with interpretation of water well information indicates the calculated depths to the base of this layer are likely to be correct to within + 20% of their true position. Depths to basement where inversion occurs appear to be within + 13%. Elsewhere the errors mentioned would give an uncertainty in depths of close to+ 8%.</p> <ul style="list-style-type: none"> <li>Control of seismic depths (comparison) from water well log data is limited.</li> </ul> <p><b>XRF Investigation</b></p> <ul style="list-style-type: none"> <li>Hand held XRF machine RS-125 Super-SPEC made by Radiation Solution Inc. (RSI) based in Canada. RSI specializes in nuclear instrumentation for the detection, measurement and analysis of low-level ionizing radiation from both naturally- occurring and man-made sources.</li> </ul>
<b>Verification of sampling and assaying</b>	<ul style="list-style-type: none"> <li>The verification of significant intersections by either independent or alternative company personnel.</li> <li>The use of twinned holes.</li> <li>Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols.</li> <li>Discuss any adjustment to assay data.</li> </ul>	<p><b>Seismic Study</b></p> <ul style="list-style-type: none"> <li>The interpretation of the seismic data was correlated against the Bouguer gravity contour map published in 1975. This map is based on data from a helicopter survey flown for the Bureau of Mineral Resources -7- by Wongela Geophysical Pty. Ltd in 1970 (Tucker and Brown, 1973) with stations on a grid spacing of about 7.2 km and also on ground data from S.A. Department of Mines and Energy surveys.</li> </ul> <p><i>Tucker, D.H. and Brown, F.W. (1973). Reconnaissance helicopter survey in the Flinders Ranges, South Australia, 1970. Rec. Bur. Miner. Resour. Geol. Geophys. 1973/12 (Unpublished).</i></p>
<b>Location of data points</b>	<ul style="list-style-type: none"> <li>Accuracy and quality of surveys used to locate drill holes (collar and down-hole surveys), trenches, mine workings and other locations</li> </ul>	<p><b>Seismic Study</b></p> <ul style="list-style-type: none"> <li>It is noted that several Bench Mark location points BM(9)</li> </ul>

Criteria	JORC Code Explanation	Commentary
	<p><i>used in Mineral Resource estimation.</i></p> <ul style="list-style-type: none"> <li>• <i>Specification of the grid system used.</i></li> <li>• <i>Quality and adequacy of topographic control.</i></li> </ul>	<p>were used in the survey to reconcile shot point positions.</p> <ul style="list-style-type: none"> <li>• In the reported sections of the survey (WB-79-1 and WB-79-2), BM (9) 911-914 were applied to the shot point positions.</li> <li>• Grid System: AGD 1966 converted to GDA94 Projection 53H</li> </ul>
<b>Data spacing and distribution</b>	<ul style="list-style-type: none"> <li>• <i>Data spacing for reporting of Exploration Results.</i></li> <li>• <i>Whether the data spacing and distribution is sufficient to establish the degree of geological and grade continuity appropriate for the Mineral Resource and Ore Reserve estimation procedure(s) and classifications applied.</i></li> <li>• <i>Whether sample compositing has been applied.</i></li> </ul>	<p><b>Seismic Study</b></p> <ul style="list-style-type: none"> <li>• Detectors were laid at 50 m intervals in line with the energy source, the location of which relative to the detector array was designed to give continuous coverage of the basement refractor in forward and reverse directions.</li> <li>• Information on near surface material was obtained from "weathering spreads" in which the detector interval was staggered in expanding intervals from 2.5 m to 70 m.</li> <li>• These were shot on the eastern end of line WB-79-2 at 600 m separation, and elsewhere at 1200 m intervals.</li> </ul> <p><b>XRF Investigation</b></p> <ul style="list-style-type: none"> <li>• The samples were randomly tested across the drill holes and rock chip</li> </ul>
<b>Orientation of data in relation to geological structure</b>	<ul style="list-style-type: none"> <li>• <i>Whether the orientation of sampling achieves unbiased sampling of possible structures and the extent to which this is known, considering the deposit type.</i></li> <li>• <i>If the relationship between the drilling orientation and the orientation of key mineralised structures is considered to have introduced a sampling bias, this should be assessed and reported if material.</i></li> </ul>	<p><b>Seismic Study</b></p> <ul style="list-style-type: none"> <li>• The sediments overlying the basement are flat and the seismic waves obtained from the shot points are projected vertically.</li> </ul>
<b>Sample security</b>	<ul style="list-style-type: none"> <li>• <i>The measures taken to ensure sample security.</i></li> </ul>	<ul style="list-style-type: none"> <li>• Not applicable.</li> </ul>

Criteria	JORC Code Explanation	Commentary
<b>Audits or reviews</b>	<ul style="list-style-type: none"> <li>The results of any audits or reviews of sampling techniques and data.</li> </ul>	<ul style="list-style-type: none"> <li>No known audits or reviews undertaken of the seismic survey.</li> </ul>

## Section 2 Reporting of Exploration Results

(Criteria listed in the preceding section also apply to this section.)

Criteria	JORC Code Explanation	Commentary
<b>Mineral tenement and land tenure status</b>	<ul style="list-style-type: none"> <li>Type, reference name/number, location and ownership including agreements or material issues with third parties such as joint ventures, partnerships, overriding royalties, native title interests, historical sites, wilderness or national park and environmental settings.</li> <li>The security of the tenure held at the time of reporting along with any known impediments to obtaining a licence to operate in the area.</li> </ul>	<ul style="list-style-type: none"> <li>The Orroroo Project is located on exploration licenses EL6552 and EL6814 which are held 100% by Norfolk</li> <li>Continual engagement with the Department of Mining and Energy in South Australia, local heritage groups and stake holders is required and overseen by Norfolk management</li> </ul>
<b>Exploration done by other parties</b>	<ul style="list-style-type: none"> <li>Acknowledgment and appraisal of exploration by other parties.</li> </ul>	<ul style="list-style-type: none"> <li>Linc Energy drilled a series of wells exploring for coal and gas in the Walloway Basin (EL6552). The company used downhole wireline gamma spectrometry to determine locations of possible hydrocarbon traps.</li> </ul>
<b>Geology</b>	<ul style="list-style-type: none"> <li>Deposit type, geological setting and style of mineralisation.</li> </ul>	<ul style="list-style-type: none"> <li>Walloway Basin, which is an elongate Tertiary Basin approximately 50km long and up to 15km wide. It consists of Tertiary and Quaternary sediments unconformably underlain by Adelaiddian basement.</li> <li>Within the Tertiary two lithological units have been recognised, a lower interbedded fluvial sand, silt and clay, and an upper, more extensive and continuous lacustrine unit of grey, brown and black clay. Both consist of unconsolidated sediments and multiple aquifers, one of which may be artesian. The lower unit contains a known coal seam (Walloway Seam) of Lignite B rank.</li> </ul>

Criteria	JORC Code Explanation	Commentary
		<ul style="list-style-type: none"> <li>The Walloway basin has no known uranium source defined in the nearby ranges and outcrops. However, the Walloway basin is underlain by granitic basement rocks which could possibly be the source of mobilized uranium. Another possible source may be the Brighton Limestone (known to have low levels of uranium) of the South Flinders Ranges located to the west of the tenement.</li> </ul>
<b>Drill hole Information</b>	<ul style="list-style-type: none"> <li>A summary of all information material to the understanding of the exploration results including a tabulation of the following information for all Material drill holes: <ul style="list-style-type: none"> <li>easting and northing of the drill hole collar</li> <li>elevation or RL (Reduced Level – elevation above sea level in metres) of the drill hole collar</li> <li>dip and azimuth of the hole</li> <li>down hole length and interception depth</li> <li>hole length.</li> </ul> </li> <li>If the exclusion of this information is justified on the basis that the information is not Material and this exclusion does not detract from the understanding of the report, the Competent Person should clearly explain why this is the case.</li> </ul>	<ul style="list-style-type: none"> <li>Drill hole information used in the kriging contour is shown in Appendix A (Table 1) of this announcement.</li> </ul>
<b>Data aggregation methods</b>	<ul style="list-style-type: none"> <li>In reporting Exploration Results, weighting averaging techniques, maximum and/or minimum grade truncations (e.g. cutting of high grades) and cut-off grades are usually Material and should be stated.</li> <li>Where aggregate intercepts incorporate short lengths of high-grade results and longer lengths of low grade results, the procedure used for such aggregation should be stated and some typical examples of such aggregations should be shown in detail.</li> <li>The assumptions used for any reporting of metal equivalent values should be clearly stated.</li> </ul>	<ul style="list-style-type: none"> <li>Not applicable.</li> </ul>



Criteria	JORC Code Explanation	Commentary
<b>Relationship between mineralisation widths and intercept lengths</b>	<ul style="list-style-type: none"> <li>These relationships are particularly important in the reporting of Exploration Results.</li> <li>If the geometry of the mineralisation with respect to the drill hole angle is known, its nature should be reported.</li> <li>If it is not known and only the down hole lengths are reported, there should be a clear statement to this effect (e.g. 'down hole length, true width not known').</li> </ul>	<ul style="list-style-type: none"> <li>Not applicable.</li> </ul>
<b>Diagrams</b>	<ul style="list-style-type: none"> <li>Appropriate maps and sections (with scales) and tabulations of intercepts should be included for any significant discovery being reported. These should include, but not be limited to a plan view of drill hole collar locations and appropriate sectional views.</li> </ul>	<ul style="list-style-type: none"> <li>All appropriate diagrams and illustrations have been included in this announcement.</li> </ul>
<b>Balanced reporting</b>	<ul style="list-style-type: none"> <li>Where comprehensive reporting of all Exploration Results is not practicable, representative reporting of both low and high grades and/or widths should be practised to avoid misleading reporting of Exploration Results.</li> </ul>	<ul style="list-style-type: none"> <li>The accompanying document is a balanced report with a suitable cautionary note.</li> </ul>
<b>Other substantive exploration data</b>	<ul style="list-style-type: none"> <li>Other exploration data, if meaningful and material, should be reported including (but not limited to): geological observations; geophysical survey results; geochemical survey results; bulk samples – size and method of treatment; metallurgical test results; bulk density, groundwater, geotechnical and rock characteristics; potential deleterious or contaminating substances.</li> </ul>	<ul style="list-style-type: none"> <li>All meaningful information provided.</li> </ul>
<b>Further work</b>	<ul style="list-style-type: none"> <li>The nature and scale of planned further work (e.g. tests for lateral extensions or depth extensions or large-scale step-out drilling).</li> <li>Diagrams clearly highlighting the areas of possible extensions, including the main geological interpretations and future drilling areas, provided this information is not commercially sensitive.</li> </ul>	<ul style="list-style-type: none"> <li>Further geophysics investigation and drilling will assist in delineating the potential paleochannels possibly containing uranium mineralization.</li> </ul>