SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549

SCHEDULE 13D

Under the Securities Exchange Act of 1934

Radiopharm Theranostics Limited

(Name of Issuer)

Ordinary Shares, no par value per share

(Title of Class of Securities)

(CUSIP Number)

Eric M. Green
c/o Lantheus Holdings, Inc., 201 Burlington Road, South Building
Bedford, MA, 01730
(978) 671-8001

(Name, Address and Telephone Number of Person Authorized to Receive Notices and Communications)

11/27/2024

(Date of Event Which Requires Filing of This Statement)

If the filing person has previously filed a statement on Schedule 13G to report the acquisition that is the subject of this Schedule 13D, and is filing this schedule because of §§ 240.13d-1(e), 240.13d-1(f) or 240.13d-1(g), check the following box. ☐

The information required on the remainder of this cover page shall not be deemed to be “filed” for the purpose of Section 18 of the Securities Exchange Act of 1934 (“Act”) or otherwise subject to the liabilities of that section of the Act but shall be subject to all other provisions of the Act (however, see the Notes).

SCHEDULE 13D

CUSIP No.

1	Name of reporting person Lantheus Omega, LLC
2	Check the appropriate box if a member of a Group (See Instructions) ☐ (a) ☐ (b)
3	SEC use only

4	Source of funds (See Instructions) AF		
5	Check if disclosure of legal proceedings is required pursuant to Items 2(d) or 2(e) ☐		
6	Citizenship or place of organization DELAWARE		
Number of Shares Beneficially Owned by Each Reporting Person With:	7	Sole Voting Power 0.00	
	8	Shared Voting Power 792,958,513.00	
	9	Sole Dispositive Power 0.00	
	10	Shared Dispositive Power 792,958,513.00	
11	Aggregate amount beneficially owned by each reporting person 792,958,513.00		
12	Check if the aggregate amount in Row (11) excludes certain shares (See Instructions) ☐		
13	Percent of class represented by amount in Row (11) 20.9 %		
14	Type of Reporting Person (See Instructions) OO		

Comment for Type of Reporting Person: Aggregate amount beneficially owned consists of (i) 149,625,180 ordinary shares, no par value ("Ordinary Shares"), of the Issuer (as defined below) issued to Lantheus Omega, LLC on August 23, 2024, (ii) 133,333,333 Ordinary Shares issued to Lantheus Omega, LLC on January 20, 2025, (iii) 255,000,000 Ordinary Shares issued to Lantheus Omega, LLC on December 9, 2025 (the "December Issuance") and (iv) options to purchase 255,000,000 Ordinary Shares issued to Lantheus Omega, LLC on December 9, 2025 in connection with the December Issuance, with an exercise price of AUD$0.039 per share and expiring on October 31, 2027 (the "Options"). Lantheus Medical Imaging, Inc. is the sole member of Lantheus Omega, LLC and a wholly-owned subsidiary of Lantheus Holdings, Inc. Lantheus Holdings, Inc., Lantheus Medical Imaging, Inc. and Lantheus Omega, LLC may each be deemed to have shared voting and dispositive power over all of the shares of Common Stock held by Lantheus Omega, LLC. Percent of class represented by amount in Row (13) is based on 3,544,216,160 Ordinary Shares of the Issuer reported to be outstanding by the Issuer as of June 30, 2026 in the Issuer's Appendix 4E and Preliminary Final Report for the Year Ended June 30, 2026 filed with the Issuer's 6-K on August 28, 2026 and the 255,000,000 Ordinary Shares issuable upon conversion of the Options.

SCHEDULE 13D

CUSIP No.

1	Name of reporting person Lantheus Medical Imaging, Inc.
2	Check the appropriate box if a member of a Group (See Instructions) ☐ (a) ☐ (b)
3	SEC use only
4	Source of funds (See Instructions)

	AF
5	Check if disclosure of legal proceedings is required pursuant to Items 2(d) or 2(e) ☐
6	Citizenship or place of organization DELAWARE

Number of Shares Beneficially Owned by Each Reporting Person With:	7	Sole Voting Power 0.00
	8	Shared Voting Power 792,958,513.00
	9	Sole Dispositive Power 0.00
	10	Shared Dispositive Power 792,958,513.00

11	Aggregate amount beneficially owned by each reporting person 792,958,513.00
12	Check if the aggregate amount in Row (11) excludes certain shares (See Instructions) ☐
13	Percent of class represented by amount in Row (11) 20.9 %
14	Type of Reporting Person (See Instructions) CO

Comment for Type of Reporting Person: Aggregate amount beneficially owned consists of (i) 149,625,180 Ordinary Shares issued to Lantheus Omega, LLC on August 23, 2024, (ii) 133,333,333 Ordinary Shares issued to Lantheus Omega, LLC on January 20, 2025, (iii) 255,000,000 Ordinary Shares issued to Lantheus Omega, LLC on December 9, 2025 and (iv) options to purchase 255,000,000 Ordinary Shares issued to Lantheus Omega, LLC on December 9, 2025 in connection with the December Issuance, with an exercise price of AUD$0.039 per share and expiring on October 31, 2027. Lantheus Medical Imaging, Inc. is the sole member of Lantheus Omega, LLC and a wholly-owned subsidiary of Lantheus Holdings, Inc. Lantheus Holdings, Inc., Lantheus Medical Imaging, Inc. and Lantheus Omega, LLC may each be deemed to have shared voting and dispositive power over all of the shares of Common Stock held by Lantheus Omega, LLC. Percent of class represented by amount in Row (13) is based on 3,544,216,160 Ordinary Shares of the Issuer reported to be outstanding by the Issuer as of June 30, 2026 in the Issuer's Appendix 4E and Preliminary Final Report for the Year Ended June 30, 2026 filed with the Issuer's 6-K on August 28, 2026 and the 255,000,000 Ordinary Shares issuable upon conversion of the Options.

SCHEDULE 13D

CUSIP No.

1	Name of reporting person Lantheus Holdings, Inc.
2	Check the appropriate box if a member of a Group (See Instructions) ☐ (a) ☐ (b)
3	SEC use only
4	Source of funds (See Instructions) WC

5	Check if disclosure of legal proceedings is required pursuant to Items 2(d) or 2(e) ☐		
6	Citizenship or place of organization DELAWARE		
Number of Shares Beneficially Owned by Each Reporting Person With:	7	Sole Voting Power 0.00	
	8	Shared Voting Power 792,958,513.00	
	9	Sole Dispositive Power 0.00	
	10	Shared Dispositive Power 792,958,513.00	
11	Aggregate amount beneficially owned by each reporting person 792,958,513.00		
12	Check if the aggregate amount in Row (11) excludes certain shares (See Instructions) ☐		
13	Percent of class represented by amount in Row (11) 20.9 %		
14	Type of Reporting Person (See Instructions) CO		

Comment for Type of Reporting Person: Aggregate amount beneficially owned consists of (i) 149,625,180 Ordinary Shares issued to Lantheus Omega, LLC on August 23, 2024, (ii) 133,333,333 Ordinary Shares issued to Lantheus Omega, LLC on January 20, 2025, (iii) 255,000,000 Ordinary Shares issued to Lantheus Omega, LLC on December 9, 2025 and (iv) options to purchase 255,000,000 Ordinary Shares issued to Lantheus Omega, LLC on December 9, 2025 in connection with the December Issuance, with an exercise price of AUD$0.039 per share and expiring on October 31, 2027. Lantheus Medical Imaging, Inc. is the sole member of Lantheus Omega, LLC and a wholly-owned subsidiary of Lantheus Holdings, Inc. Lantheus Holdings, Inc., Lantheus Medical Imaging, Inc. and Lantheus Omega, LLC may each be deemed to have shared voting and dispositive power over all of the shares of Common Stock held by Lantheus Omega, LLC. Percent of class represented by amount in Row (13) is based on 3,544,216,160 Ordinary Shares of the Issuer reported to be outstanding by the Issuer as of June 30, 2026 in the Issuer's Appendix 4E and Preliminary Final Report for the Year Ended June 30, 2026 filed with the Issuer's 6-K on August 28, 2026 and the 255,000,000 Ordinary Shares issuable upon conversion of the Options.

SCHEDULE 13D

Item 1.	Security and Issuer	
(a)	Title of Class of Securities: Ordinary Shares, no par value per share	
(b)	Name of Issuer: Radiopharm Theranostics Limited	
(c)	Address of Issuer's Principal Executive Offices: Level 3, 62 Lygon Street, Carlton South, Victoria, AUSTRALIA , 3053.	
Item 2.	Identity and Background	
(a)	This Schedule 13D (this "Statement") is being filed by (i) Lantheus Omega, LLC, a Delaware limited liability company ("Lantheus Omega"), (ii) Lantheus Medical Imaging, Inc., a Delaware corporation ("Lantheus Medical") and (iii) Lantheus Holdings, Inc., a Delaware corporation ("Lantheus Holdings" and, collectively with Lantheus Omega and Lantheus Medical, the "Reporting Persons").	
(b)	The address of the principal business and the principal office of each of the Reporting Persons is 201 Burlington	

Road, South Building, Bedford, MA 01730.

(c) The principal business of each of Lantheus Holdings and Lantheus Medical is the development, manufacturing, and commercialization of innovative diagnostic medical imaging diagnostics, radiotherapeutics and artificial intelligence solutions. The principal business of Lantheus Omega is to enter into the transactions contemplated by the Subscription Agreements and the Purchase and Development Agreement (each as defined below). The name, business address, present principal occupation or employment and citizenship of each director and executive officer of Lantheus Holdings and Lantheus Medical are set forth on Schedule A to this Statement, and are incorporated herein by reference. Lantheus Medical is the sole member of Lantheus Omega and a wholly-owned subsidiary of Lantheus Holdings.

(d) During the last five years, none of the Reporting Persons nor, to the knowledge of each of the Reporting Persons, any of the persons named on Schedule A attached hereto, has been convicted in a criminal proceeding (excluding traffic violations or similar misdemeanors).

(e) During the last five years, none of the Reporting Persons nor, to the knowledge of each of the Reporting Persons, any of the persons named on Schedule A attached hereto, has been a party to a civil proceeding of a judicial or administrative body of competent jurisdiction and as a result of such proceeding was or is subject to a judgment, decree, or final order enjoining future violations of, or prohibiting or mandating activities subject to, federal or state securities laws or finding any violation with respect to such laws.

(f) Lantheus Holdings and Lantheus Medical were each incorporated, and Lantheus Omega was organized, in Delaware, United States.

Item 3. Source and Amount of Funds or Other Consideration

On August 23, 2024, pursuant to a Share Subscription Agreement dated June 2024 (the "2024 Subscription Agreement"), Lantheus Omega purchased from the Issuer, in a private placement, (i) 149,625,180 Ordinary Shares at AUD$0.05 per Ordinary Share (the "August Subscription Shares") and (ii) 149,625,180 options, each to acquire one Ordinary Share per option at an exercise price of AUD$0.05 per Ordinary Share, with such options set to expire on February 24, 2025 (the "August Subscription Options") for an aggregate purchase price of $5.0 million USD. The August Subscription Shares and August Subscription Options were issued following the Issuer's receipt of shareholder approval for such transaction under applicable ASX Listing Rules. Pursuant to the 2024 Subscription Agreement, the August Subscription Shares were subject to a lock-up and escrow on standard market terms through August 23, 2025. On January 20, 2025, pursuant to a Subscription Agreement dated January 3, 2025 (the "January 2025 Subscription Agreement"), Lantheus Omega purchased from the Issuer, in a private placement, 133,333,333 additional Ordinary Shares (the "January 2025 Shares") at an issue price of AUD$0.06 per Ordinary Share, for an aggregate purchase price of $5.0 million USD (the "January 2025 Placement"). The January 2025 Placement replaced the August Subscription Options, which options became null and void upon completion of the January 2025 Placement. On December 9, 2025, pursuant to a Subscription Agreement dated October 15, 2025 (the "October 2025 Subscription Agreement"), Lantheus Omega purchased from the Issuer, in a private placement, (i) 255,000,000 additional Ordinary Shares (the "December 2025 Shares") at an issue price of AUD$0.03 per Ordinary Share, and (ii) 255,000,000 options, each to acquire one Ordinary Share per option at an exercise price of AUD$0.039 per Ordinary Share and expiring on October 31, 2027, for an aggregate purchase price of $5.0 million USD. The December 2025 Shares and the Options were issued following the Issuer's receipt of shareholder approval for such transaction under applicable ASX Listing Rules. The source of funds for the transactions described in this Item 3 was general working capital and cash on hand of the Reporting Persons.

Item 4. Purpose of Transaction

Item 3 of this Statement is incorporated herein by reference. The acquisitions by the Reporting Persons of the Issuer's securities as described herein were effected pursuant to the 2024 Subscription Agreement, the January 2025 Subscription Agreement and the October 2025 Subscription Agreement (collectively, the "Subscription Agreements"). The Reporting Persons acquired their securities for strategic investment purposes and in connection with (i) the purchase by Lantheus Holdings of all of the Issuer's rights to two licensed preclinical assets, a leucine-rich repeat-containing protein 15-targeted radiotherapeutic and a Trophoblast cell surface antigen-2-targeted radiodiagnostic on June 15, 2024 (the "June 2024 Purchase"), and (ii) strategic co-development partnerships with the Issuer to advance the clinical development of innovative radiopharmaceuticals in Australia (together with the June 2024 Purchase, the "Transfer and Development Transactions"). The June 2024 Purchase was effected pursuant to a Purchase and Development Agreement, dated May 23, 2024, between the Issuer, Radiopharm Theranostics (USA), Inc. and Lantheus Holdings (the "Purchase and Development Agreement"). Pursuant to the Purchase and Development Agreement, Lantheus Holdings paid an upfront payment of $2.0 million USD. In connection with this acquisition, Lantheus Holdings assumed the underlying license agreements related to the two preclinical assets, together with their respective milestone and royalty payment obligations. The Reporting Persons intend to continue to review their investment in the Issuer on an ongoing basis and, depending on various factors, including, without limitation, the Issuer's business, results of operations and financial position, the trading price of the Ordinary Shares, conditions in the capital markets and general economic, political and industry conditions, the Reporting Persons may, in the future, take such actions with respect to their Ordinary Shares as they deem appropriate, including, without limitation: purchasing additional Ordinary Shares; selling Ordinary Shares; or taking any other action with respect to the Issuer or any of its securities in any manner permitted by law or with respect to any and all matters referred to in subparagraphs (a) through (j) of Item 4 of Schedule 13D. The Reporting Persons are authorized to sell their Ordinary Shares subject to certain market conditions from time to time, in each case whether through privately negotiated transactions, open market transactions, block trades, registered offerings, underwritten transactions, accelerated transactions, derivative transactions, collars, prepaid forward transactions, swaps, exchange transactions, brokerage transactions or otherwise. Except as described in this Statement, neither of the Reporting Persons has any present plans or proposals that relate to or would result in any of the actions described above and in subparagraphs (a) through (j) of Item 4 of Schedule 13D. However, the Reporting Persons, at any time and from time to time, may review, reconsider and change their position or their purpose or develop such plans.

Item 5. Interest in Securities of the Issuer

(a) The percentage of beneficial ownership reported in this Item 5, and on each Reporting Person's cover page to this Statement, is based on 3,544,216,160 Ordinary Shares of the Issuer reported to be outstanding by the Issuer as of June 30, 2026 in the Issuer's Appendix 4E and Preliminary Final Report for the Year Ended June 30, 2026 filed with the Issuer's 6-K on August 28, 2026 and the 255,000,000 Ordinary Shares issuable upon conversion of the Options. All of the Ordinary Shares reported herein, and on each Reporting Person's cover page to this statement, are as of July 27, 2026. The cover pages to this Statement are incorporated by reference in their entirety into this Statement.

(b) The aggregate amount of Ordinary Shares beneficially owned by the Reporting Persons consists of (i) 149,625,180 Ordinary Shares issued to Lantheus Omega, LLC on August 23, 2024, (ii) 133,333,333 Ordinary Shares issued to Lantheus Omega, LLC on January 20, 2025, (iii) 255,000,000 Ordinary Shares issued to Lantheus Omega, LLC on December 9, 2025 and (iv) options to purchase 255,000,000 Ordinary Shares issued to Lantheus Omega, LLC on December 9, 2025 in connection with the December Issuance, with an exercise price of AUD$0.039 per share and expiring on October 31, 2027. This represents an aggregate beneficial ownership of 20.9% of the Ordinary Shares as of July 27, 2026.

(c) Except as set forth in this Statement, none of the Reporting Persons nor, to the best knowledge of the Reporting Persons, any of the persons set forth on Schedule A hereto, has engaged in any transaction in Ordinary Shares during the past 60 days.

(d) Except as set forth in this Statement, none of the Reporting Persons nor, to the knowledge of each of the Reporting Persons, any of the persons set forth on Schedule A hereto, has the right to receive or the power to direct the receipt of dividends from, or the proceeds from the sale of, the securities of Issuer reported herein.

(e) Not applicable.

Item 6. Contracts, Arrangements, Understandings or Relationships With Respect to Securities of the Issuer

Items 3 and 4 of this Statement are incorporated herein by reference. The foregoing descriptions of each of the 2024 Subscription Agreement, the January 2025 Subscription Agreement, the October 2025 Subscription Agreement and the Purchase and Development Agreement do not purport to be complete and each is qualified in its entirety by reference to the full text of such agreement, which is filed herewith as Exhibit 99.1, Exhibit 99.2, Exhibit 99.3, and Exhibit 99.4, respectively, and incorporated herein by reference.

Item 7. Material to be Filed as Exhibits.

Schedule A Exhibit 99.1 Share Subscription Agreement between the Issuer and Lantheus Omega, LLC, dated June 2024 (incorporated by reference to Exhibit 4.18 to the Issuer's Post-Effective Amendment to the Registration Statement on Form 20-F (File No. 001-41621) filed with the SEC on November 12, 2024). Exhibit 99.2 Subscription Agreement between the Issuer and Lantheus Omega, LLC, dated January 3, 2025. Exhibit 99.3 Subscription Agreement between the Issuer and Lantheus Omega, LLC, dated October 15, 2025. Exhibit 99.4 Purchase and Development Agreement, dated May 23, 2024, between the Issuer, Radiopharm Theranostics (USA), Inc. and Lantheus Holdings (incorporated by reference to Exhibit 4.19 to the Issuer's Post-Effective Amendment to the Registration Statement on Form 20-F (File No. 001-41621) filed with the SEC on November 12, 2024). Exhibit 99.5 Joint Filing Agreement as required by Rule 13d-1(k)(1) under the Securities Exchange Act of 1934, as amended.

SIGNATURE

After reasonable inquiry and to the best of my knowledge and belief, I certify that the information set forth in this statement is true, complete and correct.

Lantheus Omega, LLC

Signature: /s/ Eric M. Green
Name/Title: Eric M. Green, Assistant Corporate Secretary of Lantheus Medical Imaging, Inc., its sole member
Date: 09/04/2026

Lantheus Medical Imaging, Inc.

Signature: /s/ Eric M. Green
Name/Title: Eric M. Green, Assistant Corporate Secretary
Date: 09/04/2026

Lantheus Holdings, Inc.

Signature: /s/ Eric M. Green
Name/Title: Eric M. Green, Assistant Corporate Secretary
Date: 09/04/2026