



**SERAPHIM**  
SPACE INVESTMENT TRUST PLC

# SERAPHIM SPACE INVESTMENT TRUST PLC

Q1 REPORT – Three months ended 30 September 2022

# QUARTER TO 30 SEPT 2022

## HEADLINES

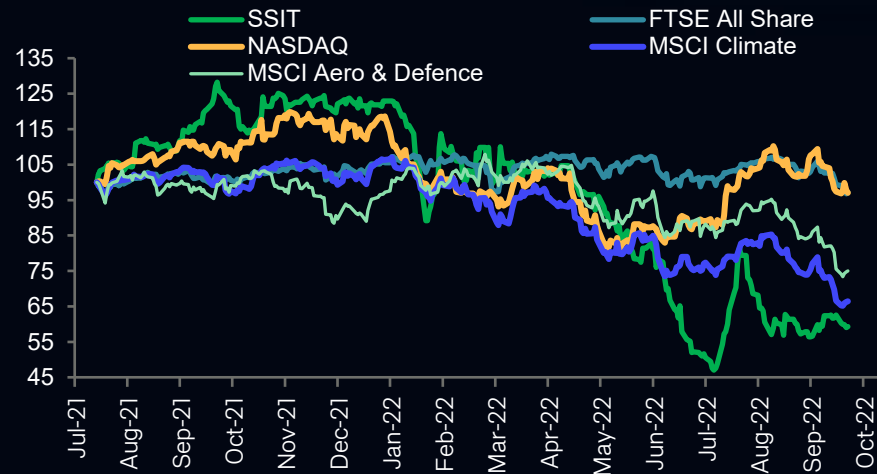
- Portfolio valuation increased by £21m to £207m, driven by FX gains (£13.8m) and investments in the quarter (£8.9m), partially offset by limited underlying fair value reduction (£1.7m)
- 3 new investments and 4 follow-on transactions totalling £8.9m
- As at 30 Sept 2022, Net Assets of £250m and market capitalisation of £145m
- Liquid resources available of £44m (18% of NAV)
- Portfolio fair value at 111% of cost
- Launched proprietary ESG Monitoring Tool for the Space Sector
- Generation Space, the US arm of Seraphim Space, commenced its Space Accelerator programme in the US



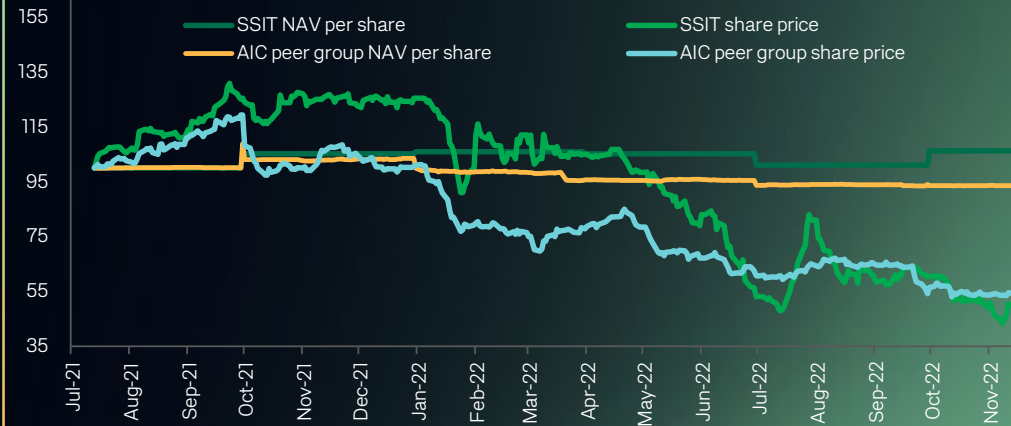
# FINANCIAL HIGHLIGHTS AS AT 30 SEPT 2022



SSIT share price since IPO vs indices (rebased to 100)

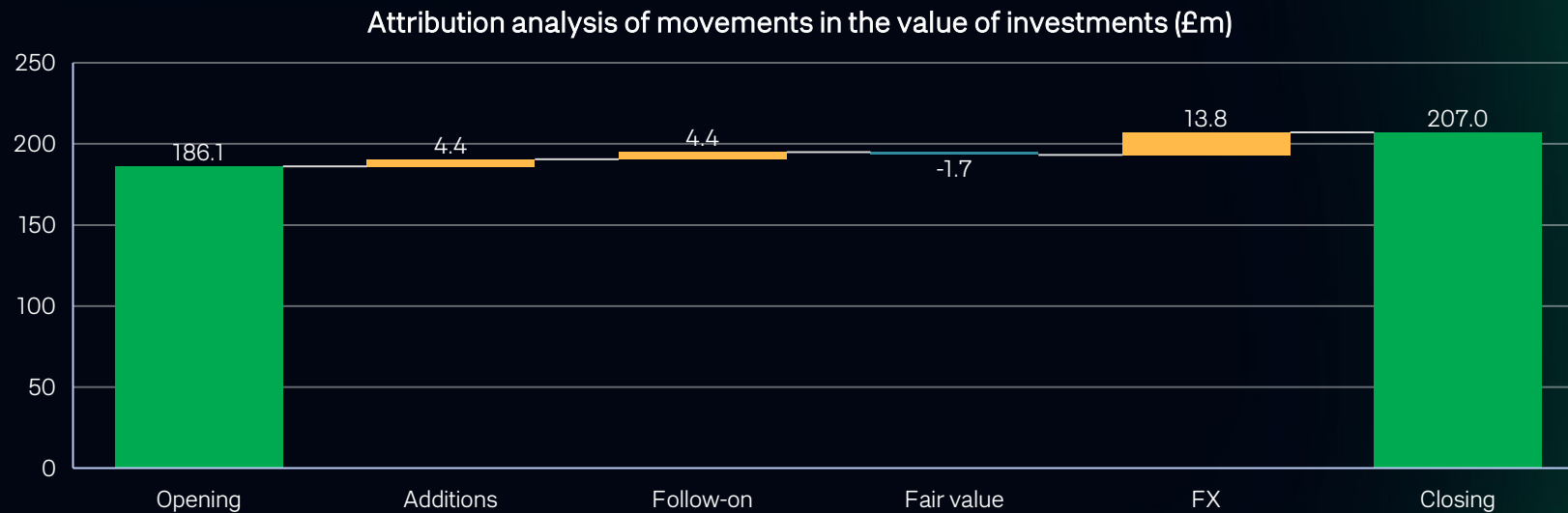


SSIT NAV/share and share price vs. AIC peer group (£, total return rebased to 100)



# Q3 ATTRIBUTION ANALYSIS

## AS AT 30 SEPT 2022



The value of the portfolio increased from £186.1m to £207.0m during the period. A total of £8.9m of additional capital was deployed, split between £4.4m in new investments and £4.4m in follow-on investments.

Underlying fair value fell slightly by £1.7m, offset by £13.8m in FX gains from continued Sterling weakness (GBP/USD = 1.116), resulting in a net fair value gain of £12.1m.

# 101%

Underlying portfolio fair value vs. cost (excluding impact of FX)

# £207M

Fair value of portfolio as at 30 Sept 22

# £8.9M

Aggregate cost of investments during period

# BALANCE SHEET

## AS AT 30 SEPT 2022

£11M

increase in NAV  
(5% increase)

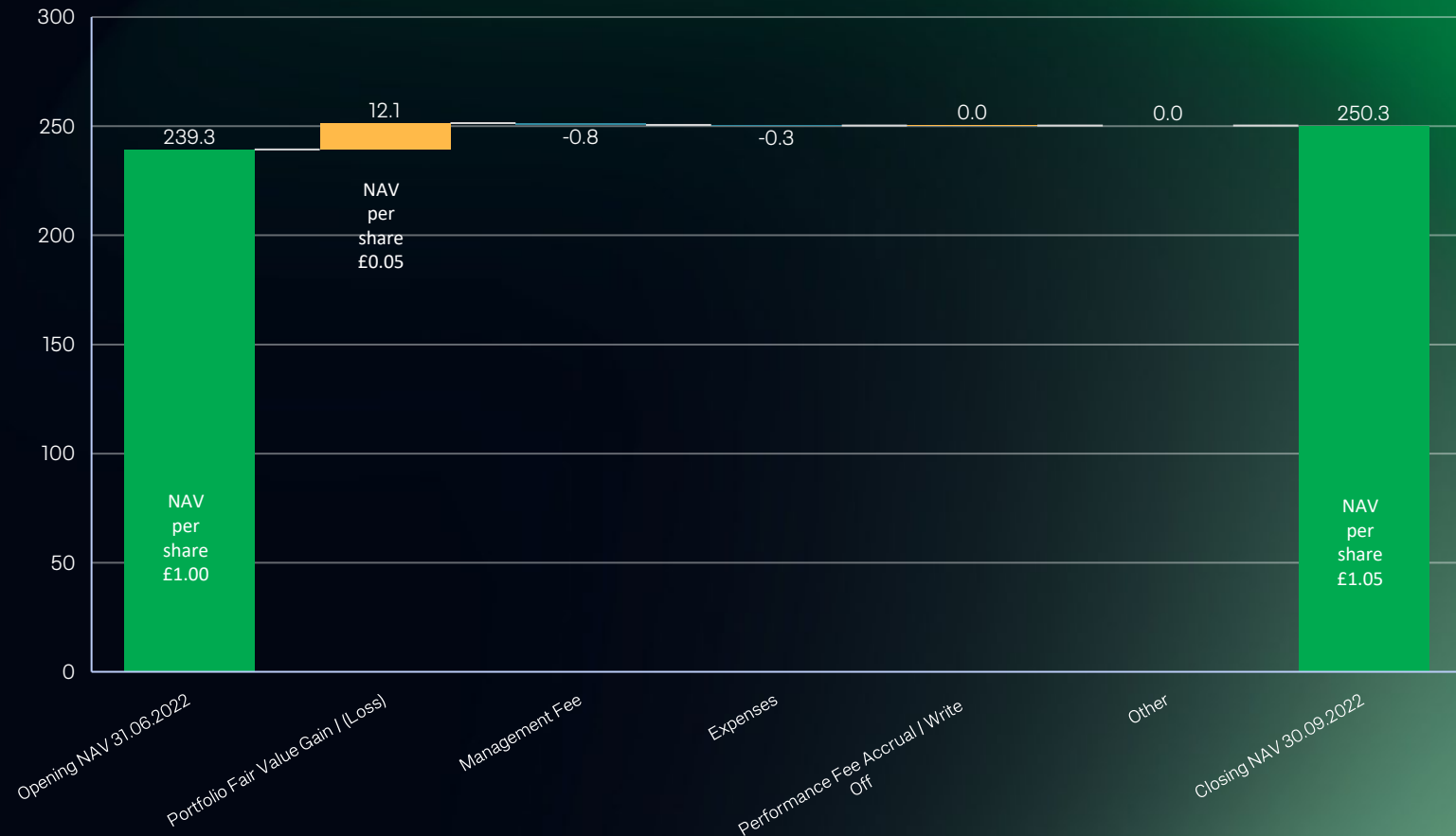
£44M

liquid resources  
(18% of NAV)

£0M

equity issued

NAV Bridge (£m)



NAV increased over the period at £250.3m (versus £239.3m opening position). Besides the £12.1m increase in fair value of the portfolio, other contributing factors were management fees and expenses (-£1.1m).

NAV per share increased during the period from £1.00 to £1.05.





## Q1 FY22-23 INVESTMENTS

### Investments made during the quarter

Company	Segment / Sub Sector	HQ	Type	Cost £m
Voyager Space	Beyond Earth	US	New Investment	2.1
Taranis	Data/Satellites	Israel	New Investment	2.1
PlanetWatchers	Analyse/Platform	UK	Follow-On	2.5
1 seed investment			New Investment	0.2
3 seed investments			Follow-On	1.9
Total				8.9

7

Transactions Completed

3

New Investments

£8.9M

Cash Deployed

# NEW INVESTMENTS



## VOYAGER SPACE

Voyager has designed and developed Starlab, a next generation free flying space station. Starlab provide the facilities to host public and private astronauts, as well forming the critical infrastructure required to support research, development & manufacturing in space.

Seraphim completed a \$2.5m (£2.1m) Investment into Voyager's Series B in July 2022. With this investment, Voyager seeks to continue to finance the development of Starlab, and continue to expand their capabilities through strategic M&A.



## TARANIS

Taranis is improving agricultural efficiency by providing insights to growers on field health. Taranis uses satellite and drone imagery in combination with their extensive library of crop health indicators, for early detection of disease or nutrient deficiencies. These accurate and local assessments improve crop yields by better tailoring the use of fertilisers and pesticides.

In August 2022, Seraphim completed a \$2.5m (£2.1m) investment into Taranis' Series B investment round. Taranis received investment from numerous top Israeli venture & growth investors. With this round, Taranis will build out their US sales capability, and gain early traction with their new carbon monitoring product.

# FOLLOW-ON INVESTMENTS



## PLANETWATCHERS

PlanetWatchers provides global scale information to the crop insurance industry, including acreage reports, crop classifications, planting dates, and details the damage of flood & wind events. These services are becoming increasingly relevant for sustainable agriculture in light of the climate change crisis.

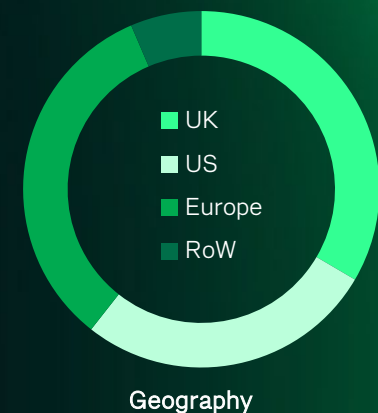
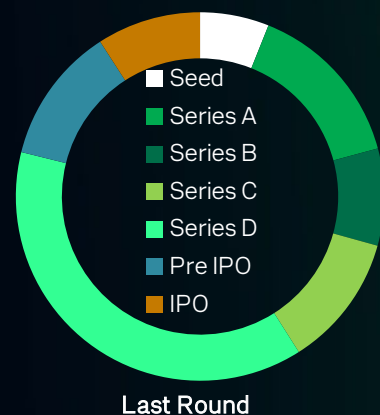
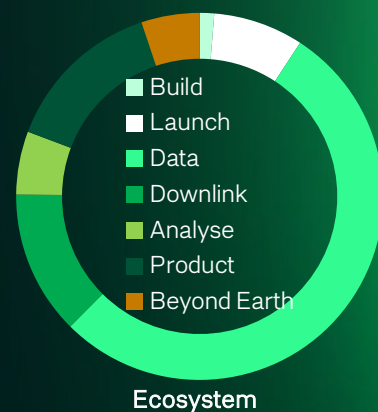
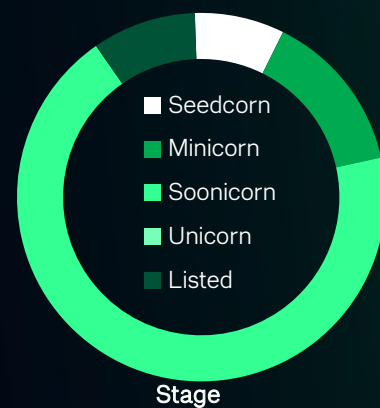
In August 2022, Seraphim completed a \$3m (£2.5m) follow on investment, acting as co-lead alongside Creative Ventures as part of Planet Watchers' \$11m Series A. With this round, Planet Watchers looks to invest in automation, and fuel their commercial growth through expanded sales efforts.



# PORTFOLIO

## AS AT 30 SEPT 2022

Summary By Value



## NET ASSET VALUE

Company	FV £m	NAV
ICEYE	47.1	18.8%
ALL.SPACE	24.2	9.7%
HawkEye 360	22.4	9.9%
D-Orbit	16.5	6.6%
LeoLabs	14.9	6.0%
Arqit (listed NASDAQ)	13.6	5.4%
Altitude Angel	9.9	3.9%
PlanetWatchers	9.3	3.7%
Astroscale	8.4	3.4%
SatelliteVu	7.8	3.1%
<b>Sub Total Top 10</b>	<b>174.0</b>	<b>69.5%</b>
Other Investments	33.0	13.2%
<b>Total Investments</b>	<b>207.0</b>	<b>82.7%</b>
Cash	43.8	17.5%
Performance Fee Provision	-	-
Net Current Assets / (Liabilities)	-0.6	-0.2%
<b>Net Asset Value</b>	<b>250.3</b>	<b>100.0%</b>

# SPOTLIGHT ON STRUCTURE

## DOWNSIDE PROTECTIONS

### PREFERENCE SHARES

#### *What Is It?*

- Class of shares that rank senior to ordinary shares / common stock.
- 'Liquidation preference' provides for priority return ahead of other classes of shares

#### *What Is Its Purpose?*

- Protect the value of an investment

#### *How Does It Work?*

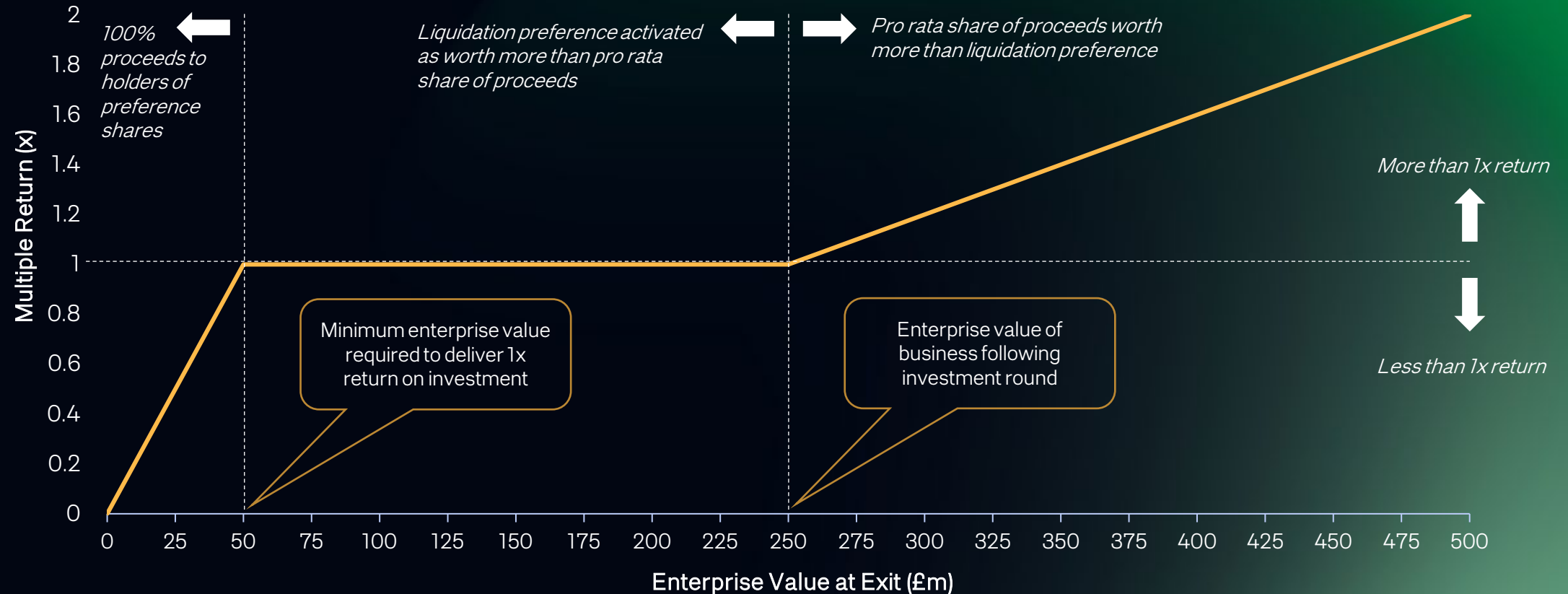
- At exit receive an amount – normally equivalent to a 1x return - ahead of any other proceeds being distributed
- Ranks junior to debt, but senior to ordinary shares / other classes of shares

#### *What Does It Do?*

- Provides downside protection by potentially delivering 1x return in low exit scenarios

# WORKED EXAMPLE

## LIQUIDATION PREFERENCE



### Assumptions

- £50m invested at £200m valuation
- New class of preference shares ranking senior to all other share classes
- Preference shares have 1x return non-participating liquidation preference

# SPOTLIGHT ON STRUCTURE

## DOWNSIDE PROTECTIONS

### ANTI DILUTION

#### *What Is It?*

- Mechanism to adjust price paid / shares owned where a subsequent funding round is done at a lower valuation (also known as a 'down round')

#### *What Is Its Purpose?*

- Protect % ownership of an investment

#### *How Does It Work?*

- Additional shares issued at par in the event of a down round

#### *What Does It Do?*

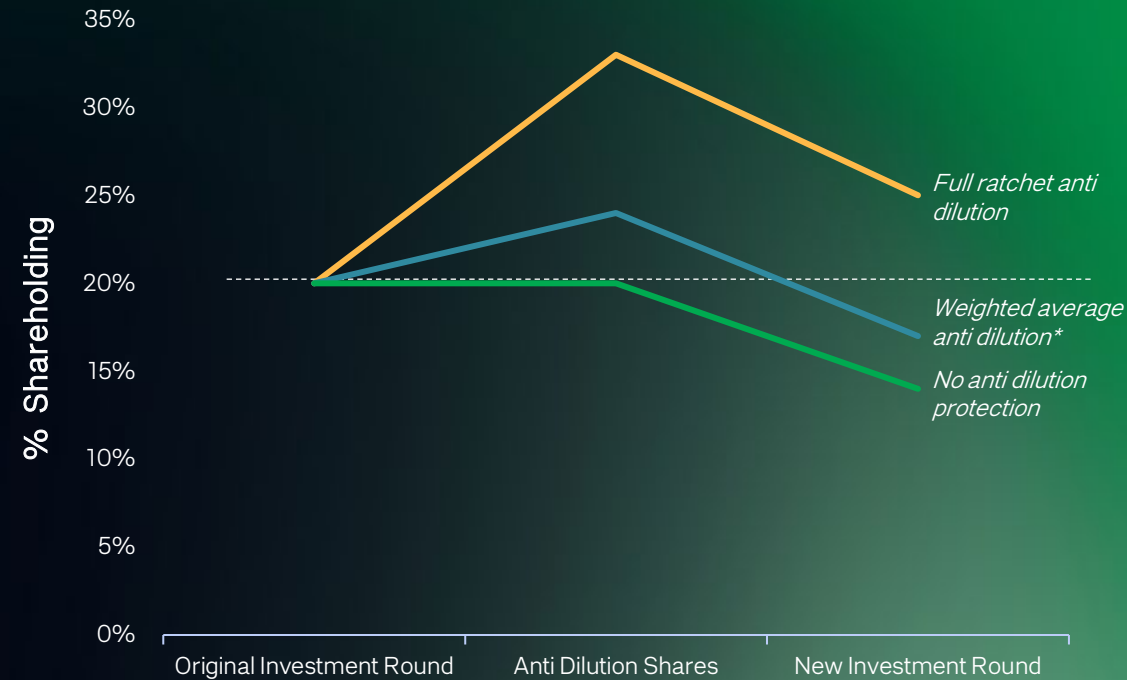
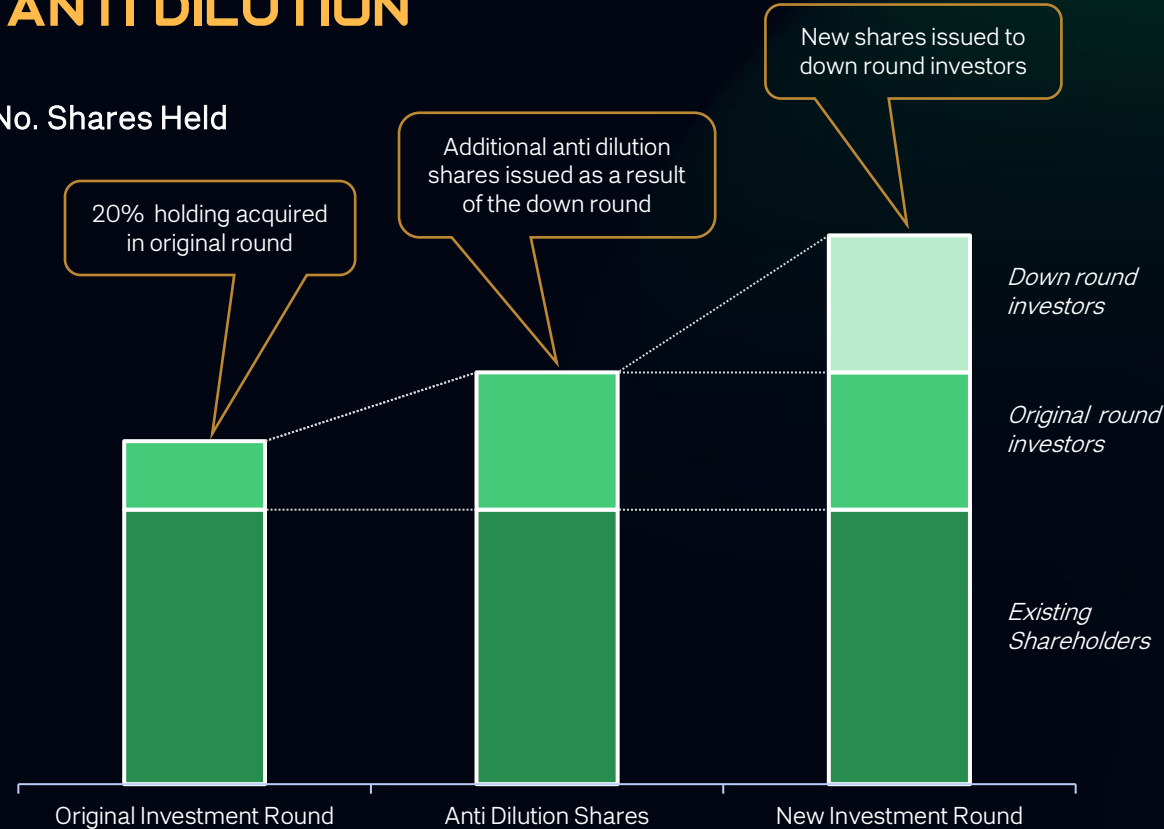
- Provides downside protection by reducing the amount of dilution in lower priced rounds



# WORKED EXAMPLE

## ANTI DILUTION

No. Shares Held



### Assumptions

- £50m invested at £200m valuation to acquire 20% stake
- Subsequent down round of additional £50m at 50% share price of original round
- Full ratchet anti dilution protection

# DOWNSIDE PROTECTION PRIVATE COMPANIES IN TOP 10 HOLDINGS

Company	Equity?	Convertible Loan Notes?	Preference Shares?	Liquidation Preference?	Anti Dilution?	% FV in Top Rank Equity / CLNs
ICEYE	✓	✗	✓	N.P.	W.A.	100%
ALL.SPACE	✓	✗	✓	N.P.	W.A.	93%
HawkEye 360	✓	✗	✓	N.P.	W.A.	100%
LeoLabs	✓	✗	✓	N.P.	W.A.	18%
D-Orbit	✓	✗	✓	P	W.A.	0%
Altitude Angel	✓	✗	✓	N.P.	W.A.	100%
PlanetWatchers	✓	✗	✓	N.P.	W.A.	51%
Astroscale	✓	✗	✓	N.P.	W.A.	100%
Satellite Vu	✓	✗	✓	N.P.	W.A.	22%

## Legend

N.P. = Non participating      W.A. = Weighted Average  
P. = Participating              F.R. = Full Ratchet

# DOWNSIDE PROTECTION

## PRIVATE COMPANIES IN TOP 10 HOLDINGS (2)

Implied reduction in current Enterprise Value before fair value would fall below cost



# 62%

Mean valuation margin to maintain  
1x return on investment

# 53%

NAV-weighted average valuation  
margin to maintain 1x return on  
investment

# 69%

Median valuation margin to maintain  
1x return on investment

## MARKET COMMENTARY

The quarter to 30 Sept 2022 witnessed clear evidence that the wider challenges within the global economy have now started to manifest themselves in both SpaceTech and the broader venture capital market.

A muted exit environment and poorly performing public markets allied to concerns around the dual sceptres of high interest rates and inflation has now started to impact the later stage/ growth market. Although over the last quarter there has been a steep drop off in both later stage deal volumes and value, investment activity actually remains fairly high relative to historical / pre-pandemic levels. Moderation has therefore principally been in contrast against the excessive levels of 2021. Median valuations have remained robust whereas mean valuations – which are heavily influenced by outlier from very large funding rounds – have dropped somewhat.

Contrastingly, the early stage market remains buoyant, with both transactions and valuations continuing in-line with 2021's record-breaking levels. Although more investor-friendly terms are becoming more prevalent (in terms of both downside protections) and valuations, according to Pitchbook, just 8% of deals closed in North America in Q3 22 were down rounds. This may in part be a reflection on the record amounts of capital raised by venture funds in recent years that is now under some time pressure to be deployed.

This assessment of the wider venture ecosystem is consistent with our recent experience in SpaceTech. The Seraphim SpaceTech index showed a record number of transactions having closed in Q3 22, with year to date deal values on a par with 2021's record levels. Although the number of large, later stage deals has dropped considerably in recent quarters, early stage continues to see healthy levels of activity.



*Past performance is not a reliable indicator of future results. The value of shares and income from them can go up and down as a result of market and currency fluctuations.*

## ACTIVITY LEVELS

Having reacted swiftly to the first signs of the economic downturn in early 2022, investment activity levels have been very consistent over the last three quarters, with less than £10m deployed each quarter.

We have continued to make a handful of both new and follow-on investments each quarter. We remain heavily focused on supporting the existing portfolio, with further follow-on investments anticipated during the course of the next quarter. The cadence of high quality new investment opportunities we are receiving remains high and we expect to continue to expand the portfolio with select opportunities, with the nexus of the climate, insurance and Space sectors being an area of particular current focus.

**JAMES BRUEGGER**

Chief Investment Officer, Seraphim Space Manager LLP

## OUTLOOK

Overall, the portfolio is performing well, with most companies growing and capitalised through the next 12 months. The fundamentals of these companies remain robust, boosted by secular trends relating to global security, food security, climate change and sustainability.

Inevitably, the future prospects for the portfolio hinge to a greater or lesser extent on their ability to continue to access the capital they require in order to deliver on their potential. As a still largely unproven, capital-intensive segment of the venture capital market, SpaceTech could be vulnerable to the potential adverse effects of a diminished funding market, should the current economic downturn persist / increase in severity.

Having each worked in the venture capital ecosystem for c.20 years, the Seraphim partners have the experience of having navigated through three previous recessions. With capital reserves of £44m and a potential further £19m of liquidity available in the holdings of listed companies, we believe the Company is well positioned to ride out current macro-economic turbulence and deliver a strong return to investors.

**MARK BOGGETT**

Chief Executive Officer, Seraphim Space Manager LLP



# TOP 10 INVESTMENTS



<b>Web:</b>	iceye.com
<b>HQ:</b>	Finland
<b>Taxonomy:</b>	Platform/Earth Observation
<b>Status:</b>	Private; Soonicorn
<b>Stake Category:</b>	6-10%
<b>Fair Value / Cost:</b>	£47.1m / £39.6m
<b>Valuation Method:</b>	Calibrated Price of Recent Investment

ICEYE operates the world's first and largest constellation of miniaturised satellites that use radar to image the Earth both during the day and night, even through cloud. ICEYE's radar technology has the ability to monitor change in near real-time.

**Total estimated long term addressable market:** \$10bn+

**Key sectors addressed:** insurance, defence, climate

#### Recent Key developments:

- Contract announced with US regulatory agency
- National Oceanic Atmospheric Administration to tackle environmental hazards linked to climate change.
- Named on Fast Company's list of world's most innovative companies.
- Agreement signed with European Space Agency to support disaster response.
- Announced partnership with BAE Systems' new multi sensor constellation.
- Signed contract with Ukraine government to provide persistent capability.
- Delivers flood insights from recent hurricanes to US Federal Emergency Management Agency.



<b>Web:</b>	all.space
<b>HQ:</b>	UK
<b>Taxonomy:</b>	Downlink / Antennas
<b>Status:</b>	Private; Soonicorn
<b>Stake Category:</b>	11-15%
<b>Fair Value / Cost:</b>	£24.2m / £19.5m
<b>Valuation Method:</b>	Next Funding Rounding

ALL.SPACE is aiming to create a mesh network of satellite connectivity by developing an antenna capable of connecting to any satellite in any constellation in any orbit.

**Total estimated long term addressable market:** \$10bn+

**Key sectors addressed:** communications, defence, transport

#### Recent Key developments:

- Partnered with SES to complete milestone trials to unlock next-generation connectivity for US Army and NATO.
- Completed trials with Telesat demonstrating multi-orbit connectivity.
- Joined UK Government and European Space Agency consortium led by CGI to develop hybrid satellite communications for trains.
- Announced partnerships on its new antenna with ST Engineering iDirect and Teledyne.
- Completed rebrand to ALL.SPACE.



<b>Web:</b>	he360.com
<b>HQ:</b>	US
<b>Taxonomy:</b>	Platform / EO
<b>Status:</b>	Private, Soonicorn
<b>Stake Category:</b>	0-5%
<b>Fair Value / Cost:</b>	£22.4m / £18.6m
<b>Valuation Method:</b>	Calibrated Price of Recent Investment

HawkEye 360 operates the world's largest satellite constellation collecting radio frequency signals to identify and geolocate previously invisible activities.

**Total estimated long term addressable market:** \$10bn+

**Key sectors addressed:** maritime, defence,

#### Recent Key developments:

- Awarded \$15.5m contract with US Air Force Research Laboratory and a new five-year contract with National Geospatial Intelligence Agency.
- Opened new satellite manufacturing facility to expedite innovation of its state-of-the-art RF satellites to satisfy the rigorous requirements for serving defence and intelligence customers.
- Awarded indefinite delivery, indefinite quantity contracts to compete for orders for US Department of Defense's Joint All Domain Command and Control.
- Announced a two-year cooperative research and development agreement with US Army Space.
- Awarded radio frequency contract by the National Reconnaissance Office.



<b>Web:</b>	dorbit.space
<b>HQ:</b>	Italy
<b>Taxonomy:</b>	Launch/ In Orbit Services
<b>Status:</b>	Private, Soonicorn
<b>Stake Category:</b>	6-10%
<b>Fair Value / Cost:</b>	£16.5m / £7.3m
<b>Valuation Method:</b>	Milestone Multiples

D-Orbit is the market leader in the Space logistics and orbital transportation services industry. It currently operates the world's only in-Space last mile delivery service.

**Total estimated long term addressable market:** \$1-5bn

**Key sectors addressed:** space logistics, datacentres

#### Recent Key developments:

- Successfully demonstrated in-orbit cloud computing and storage.
- Successfully launched and completed its fifth and six ION missions.
- Awarded \$3m contract for debris removal by European Space Agency.
- Signed contract with SpaceX for up to 11 launches in 2023/24
- Signed multi-year launch contract with Astrocass.
- Announced contract wins with 6 new customers for launch and payload activities.



<b>Web:</b>	leolabs.space
<b>HQ:</b>	US
<b>Taxonomy:</b>	Product / Data Platform
<b>Status:</b>	Private; Soonicorn
<b>Stake Category:</b>	0-5%
<b>Fair Value / Cost:</b>	£14.9m/ £11.7m
<b>Valuation Method:</b>	Calibrated Price of Recent Investment

LeoLabs is providing the mapping service for Space by deploying a network of ground-based antennas capable of detecting objects as small as 2cm as far as 1,000km away.

**Total estimated long term addressable market:** \$1-5bn

**Key sectors addressed:** space, insurance, defence

#### Recent Key developments:

- Committed to Australia as strategic site for its sixth Space radar.
- Signed multi-year agreement with New Zealand Government for Space regulatory and sustainability platform.
- Awarded contract to support Japan Air Self Defence
- Force with commercial Space domain awareness.
- Signed agreement with the UK Space Agency to provide real-time observation data from its global radar network for all UK-licensed satellites in lower Earth orbit.
- Awarded contract from the US Department of Commerce to support Space Traffic Management.

# TOP 10 INVESTMENTS

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ARQIT

Encryption reborn for the cloud era

Web:	arqit.uk
HQ:	UK
Taxonomy:	Platform / Satcoms
Status:	Listed; Unicorn
Stake Category:	0-5%
Fair Value / Cost:	£13.6m / £27.3m
Valuation Method:	Available Market Price

Arqit is developing encryption reborn for the cloud era. It is deploying a constellation of laser communications satellites that utilise quantum technology to distribute quantum-safe, unhackable encryption keys for securing any end device.

**Total estimated long term addressable market:** \$50bn+

**Key sectors addressed:** cybersecurity, communications, defence

#### Recent Key developments:

- Signed research and development contract with US Air Force to assess viability for Department of Defence infrastructure.
- Licensed QuantumCloud service to Virgin Orbit to protect its launch and space solutions businesses.
- Entered into technology alliance partnership agreement with Juniper Networks.
- Selected by UK Ministry of Defence to join its Multi-Domain Integrated Systems data transfer and data management project.
- Partners with Nine23 to provide secure cloud services for UK Government.
- AUCloud launch Australia's first sovereign quantum-safe encryption service powered by Arqit Quantum Cloud.

7

ALTITUDE  
ANGEL

Air traffic control for the drone economy

Web:	altitudeangel.com
HQ:	UK
Taxonomy:	Product / Data Platform
Status:	Private; Minicorn
Stake Category:	16-25%
Fair Value / Cost:	£3.7m / £9.9m
Valuation Method:	Milestone Multiples

Altitude Angel operates a cloud-based automated air traffic control platform for drones and flying taxis. Its software powers the world's first sky corridor for drones.

**Total estimated long term addressable market:** \$10bn+

**Key sectors addressed:** logistics, aviation

#### Recent Key developments:

- Completion of successful two-year pilot of 8km drone super-highway.
- UK government provided contract to build out linear 256km autonomous drone highway connecting eight
- UK cities over the next two years – a world first.
- Closed investment from with major national telecoms company for significant investment and commercial partnership.
- Announced partnership with Inmarsat on solutions for flying drones beyond visual line of sight
- Altitude Angel & Mopliens Partner to Advance UTM Deployment across South Korea.
- Selected to provide the UTM services to the Middle East's first-ever test site for unmanned aerial systems in Jordan.

8

Planet  
Watchers

Insuring the uninsured

Web:	planetwatchers.com
HQ:	UK
Taxonomy:	Analyse / Data Analytics
Status:	Private; Seedcorn
Stake Category:	25%+
Fair Value / Cost:	£9.3m/£5.6m
Valuation Method:	Discount to Price of Recent Investment

PlanetWatchers has developed an AI enabled analytics platform using satellite radar imagery for crop monitoring, insurance and automated insurance claims assessments.

**Total estimated long term addressable market:** \$5-10bn

**Key sectors addressed:** agriculture, insurance, climate

#### Recent Key developments:

- Entered into contract with Canadian fertiliser company Nutrien Ag Solutions for digital transformation of agriculture.
- Entered into contract with leading US crop insurer AgriSompo for automated policy and claims analysis.
- Entered into contract with crop insurer ProAg for insights into planting, acreage, crop type and crop damage.

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Astroscale

Servicing the in-space economy

Web:	astroscale.com
HQ:	Japan
Taxonomy:	Beyond Earth/ In Orbit Services
Status:	Private; Soonicorn
Stake Category:	0-5%
Fair Value / Cost:	£8.4m/£9.4m
Valuation Method:	Discount to Price of Recent Investment

Astroscale is a global leader of Space sustainability solutions. It is currently developing a set of capabilities around satellite monitoring, refuelling, upgrading, repairing and disposal to enable a vibrant in-orbit economy.

**Total estimated long term addressable market:** \$1-5bn

**Key sectors addressed:** space, defence

#### Recent Key developments:

- Awarded UK Space Agency contract to study removal of two defunct satellites from Space.
- Entered into collaboration agreement with Mitsubishi Heavy Industries for removal from orbit of old rocket stage.
- Completed its Elsa-D mission, demonstrating some core technologies required for commercial operations of its end-of-life and active debris removal services.
- Awarded follow-on contract from European Space Agency and OneWeb to develop Elsa-D's successor mission, Elsa-M, which intends to demonstrate the capability to capture and remove multiple defunct satellites from orbit.
- Raises JPY 5 Billion (US\$35m) through a Term Loan Agreement with MUFG Bank, Ltd.
- Astroscale opens new UK facility to build world's first commercial space debris removal spacecraft.

10

SATELLITE VU

The Earth's Smart Energy Meter

Web:	satellitevu.com
HQ:	UK
Taxonomy:	Product/ Earth Observation
Status:	Private; Minicorn
Stake Category:	16-25%
Fair Value / Cost:	£7.8m / £4.6m
Valuation Method:	Calibrated Price of Recent Investment

Satellite Vu is aiming to monitor the temperature of any building on the planet in near real time to determine valuable insights into economic activity, energy efficiency and carbon footprint.

**Total estimated long term addressable market:** \$1-5bn

**Key sectors addressed:** energy, property, space

#### Recent Key developments:

- Signed deal with Surrey Satellite Technology to build high-resolution thermal imaging satellite constellation.
- At COP26 conference, UK Space Agency announced additional funding for Satellite Vu.
- Partnered with Landmark to provide climate change data to UK property sector.
- Selected SpaceX to launch first two satellites in 2023.
- Satellite Vu partners with Viasat to ensure rapid service to customers.



## FURTHER INFORMATION

### Company Information

#### Board of Directors

Will Whitehorn (Non-executive/Chair)  
Sue Inglis (Non-executive Director)  
Christina McComb (Non-executive Director / Audit Chair)  
Angela Lane (Non-executive Director)

#### Brokers

Deutsche Bank AG, Winchester House,, 1 Great Winchester Street, London, EC2N 2DB  
J.P. Morgan Securities plc, 25 Bank Street, Canary Wharf, London, E14 5JP

#### Manager

Seraphim Space Manager LLP, One Fleet Place, London, EC4M 7WS

#### Contact Details

Registered Office - 5th Floor 20 Fenchurch Street, London, EC3M 3BY

#### Key Financials as at 30 Sept 2022

NAV per share	105p
Share price (as at 30 Sept 2022)	60p
Share price premium/ (discount) to NAV	-42%

Net assets	£250m	Calendar	
Market capitalisation	£145m	Half year results	Mar 23
Ticker code	SSIT	Q3 results	May 23
Management fees	1.25% NAV	Full year results	Oct 23
Gearing	None	AGM	17 Nov 22

### Environmental social and governance matters

Seraphim Space Manager LLP is a signatory to the United Nations backed Principles of Responsible Investment. The PRI is the world's leading proponent of responsible investing <https://www.unpri.org/>

#### Website

<https://investors.seraphim.vc> is constantly being updated to ensure that you can always access Seraphim Space Investment Trust Plc latest data and information on your computer or mobile device in a transparent, convenient and intuitive manner.



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