

Gometra (Loch Tuath) Location Plans



Key

Proposed Site:

 Feedbarge

 Cage Grid

 Planning Area



Argyll and Bute Council
Planning and Regulatory
Services

Application ref no: 12/01176/MFF

Date received: 22/5/12

Plan no: 1 of 17

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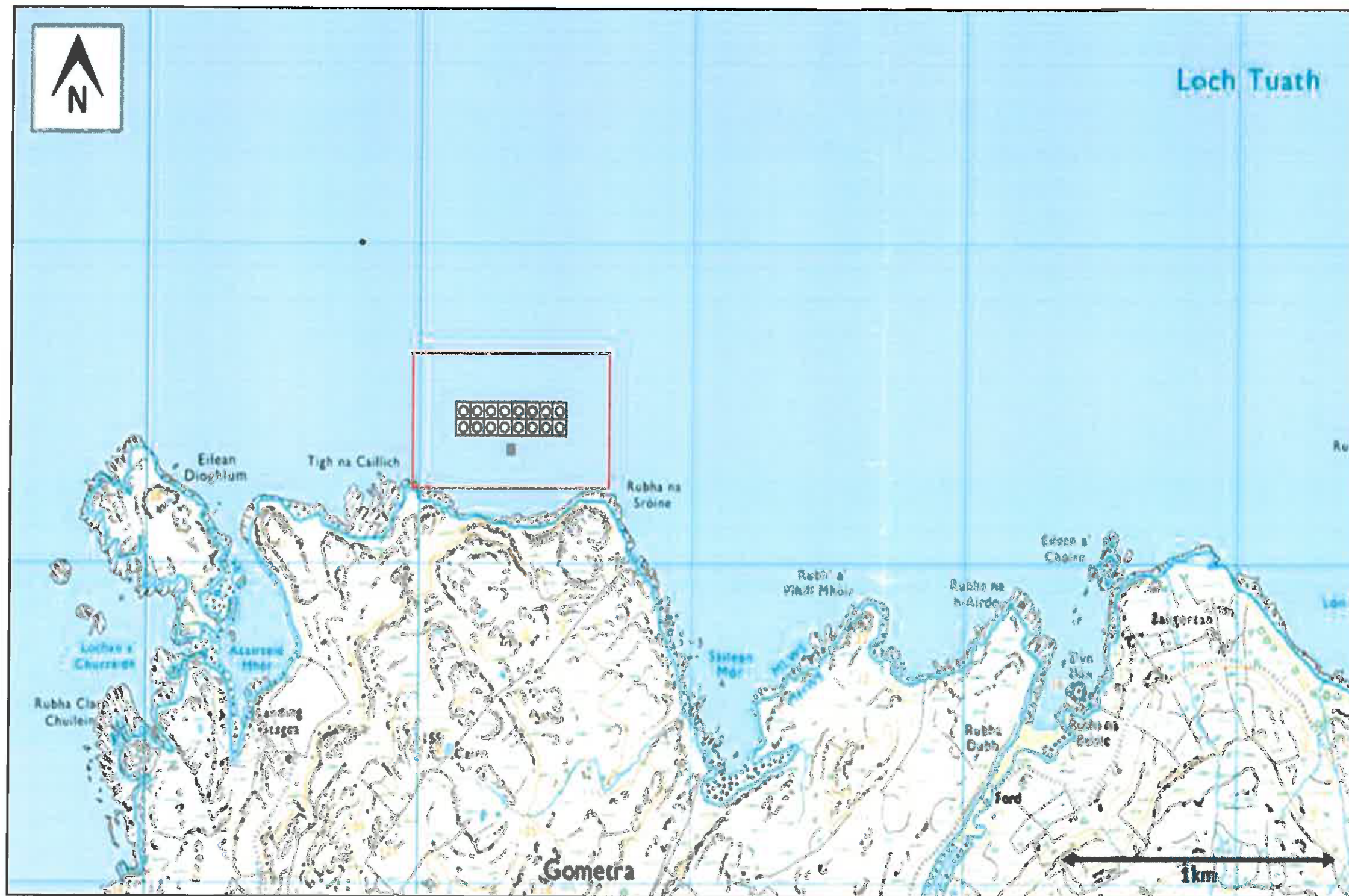
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Head of Planning and Regulatory Services

Date: 6.11.12

OS Map 1: 50,000 showing the proposed development at Gometra on Loch Tuath. Details of the grid layout, planning area and feedbarge are illustrated in this diagram.

Proposed Site: 16 x 100m circumference cages in a 16 x 50m grid.



Key

Proposed Site:



56° 30.024 N
06° 17.020 W
(NM 36485 42585)



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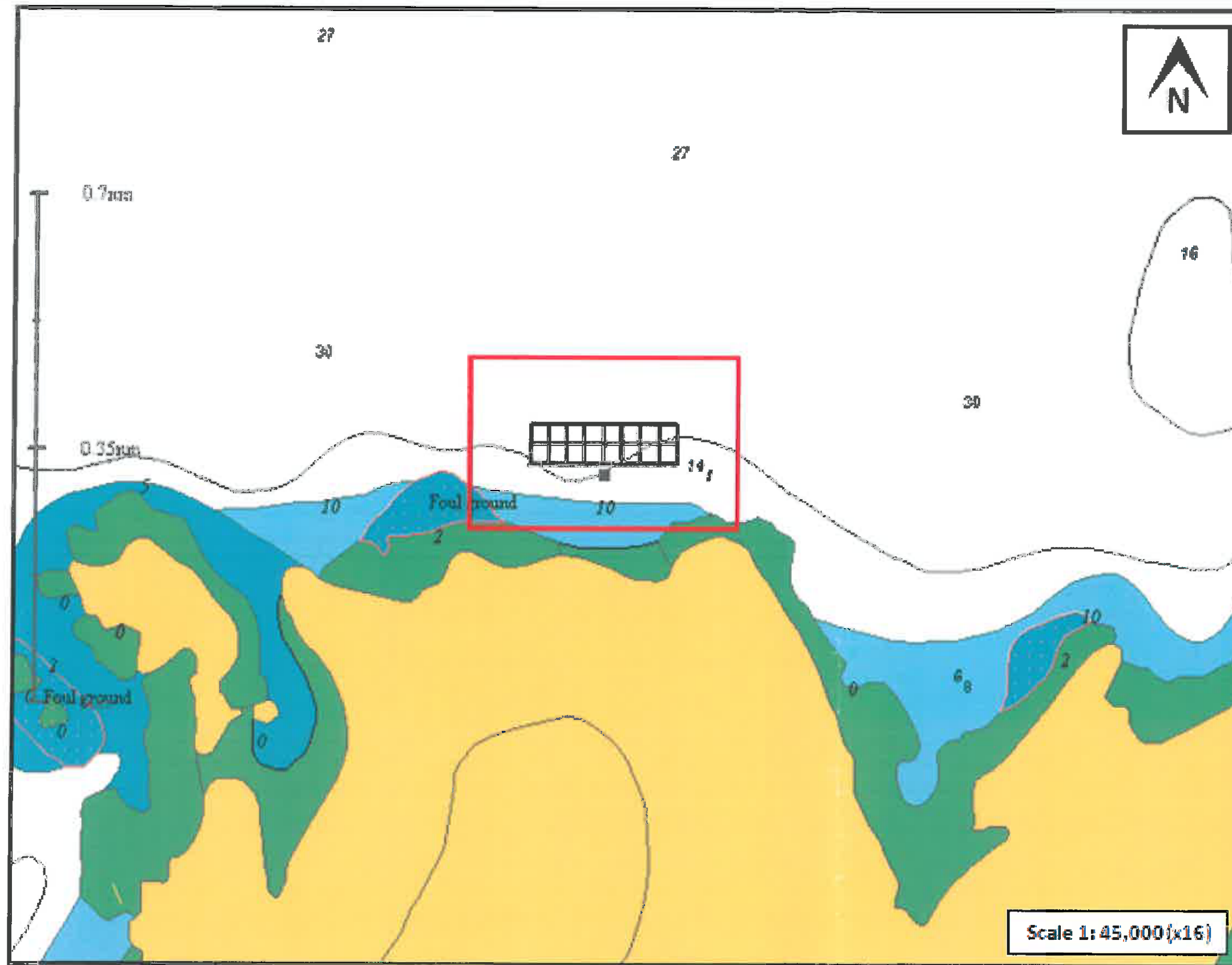
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Date: 6-11-12

(A2)



Key

Proposed Site:

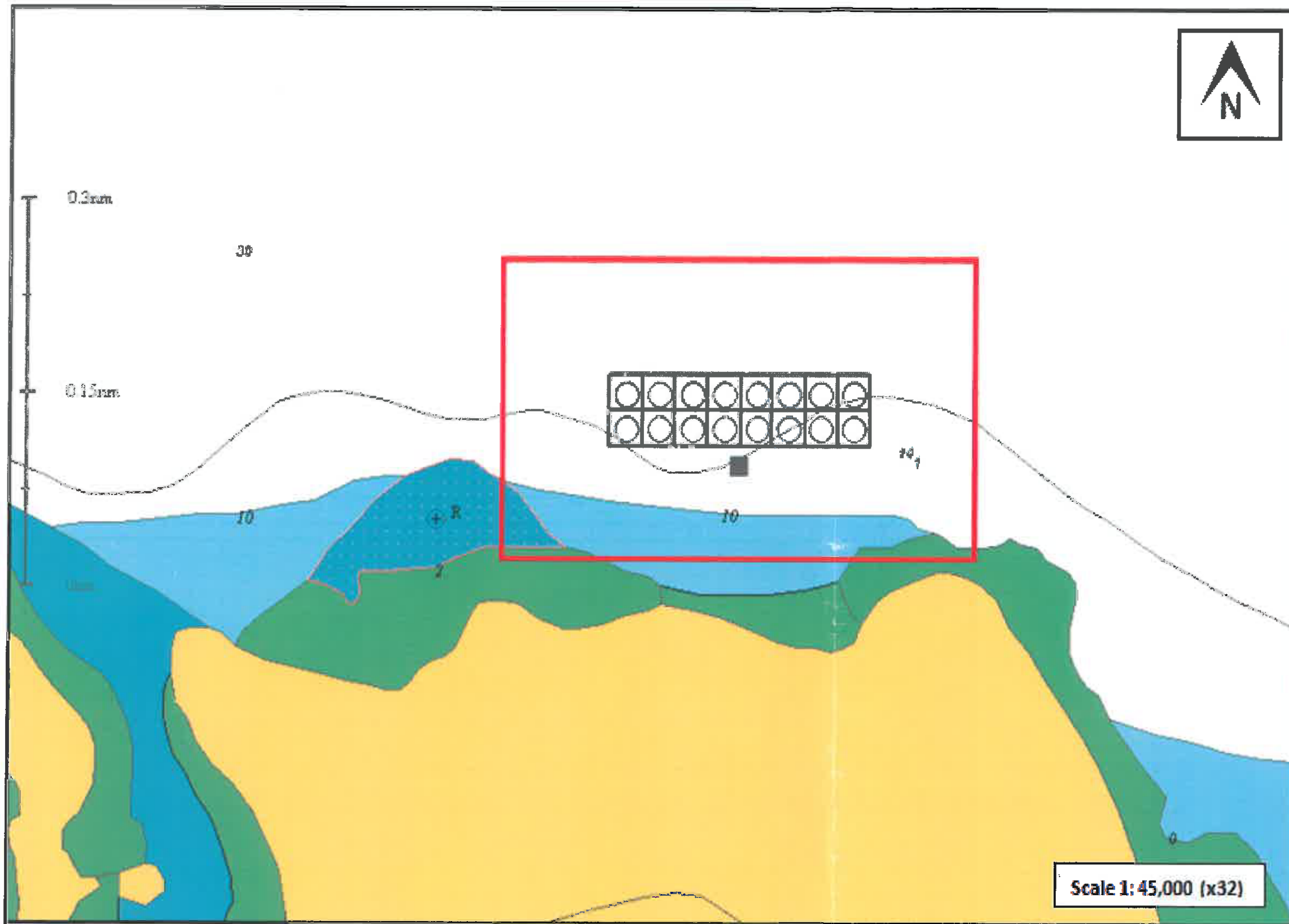
-  Feedbarge
-  Cage Grid
-  Planning Area

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Admiralty Chart 1: 45,000 (x16): displaying the proposed grid and planning area including the feedbarge

Proposed Site: 16 x 100m circumference cages in a 16 x 50m grid.



Key

Proposed Site:

-  Feedbarge
-  Cage Grid and Pens
-  Planning Area



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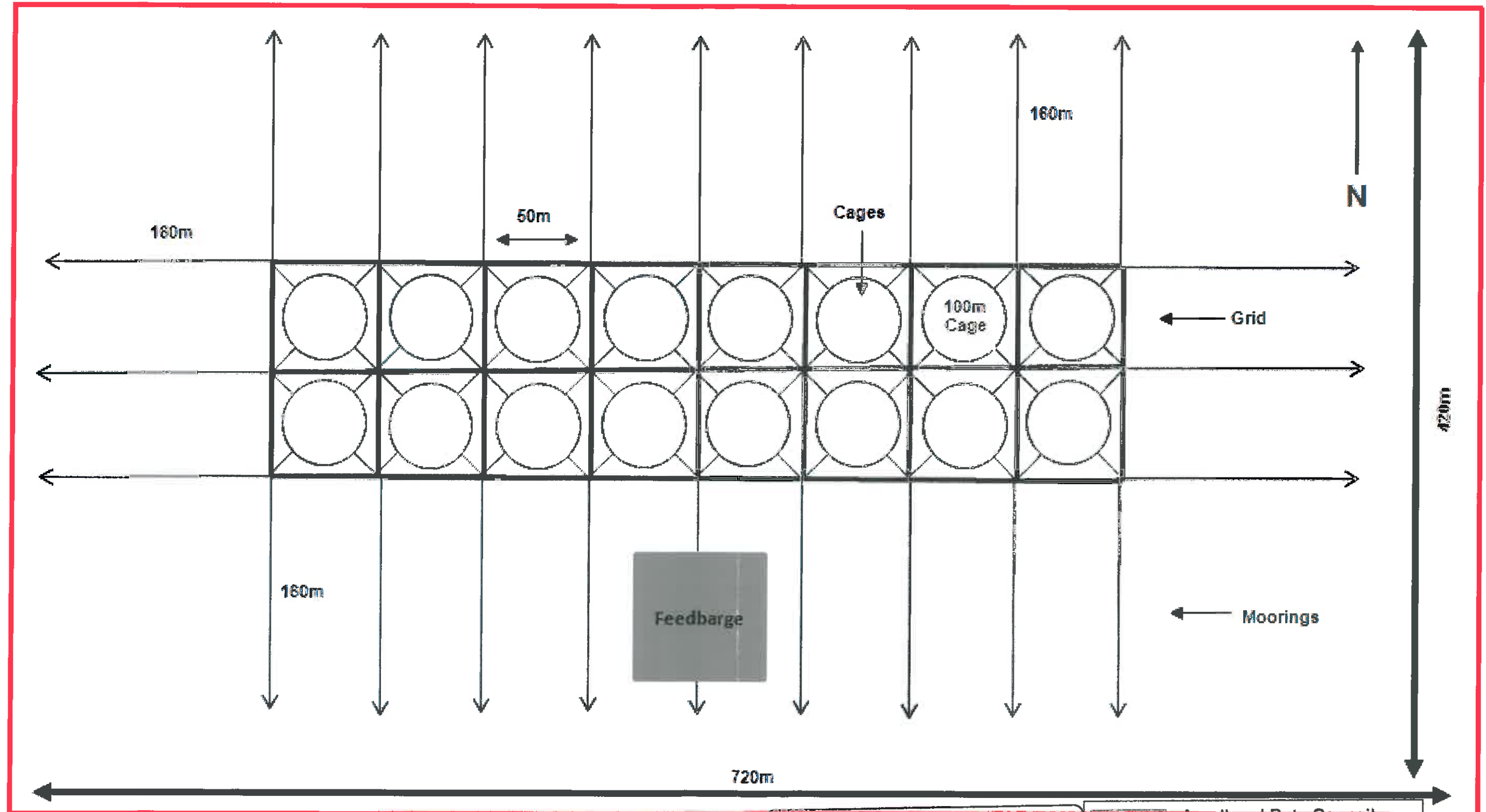
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Admiralty Chart 1: 45,000 (x32): displaying the proposed grid with cage pens and the feedbarge within the planning area.

Proposed Site: 16 x 100m circumference cages in a 16 x 50m grid.

Gometra: Detailed Site Plans (not to scale)



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Gometra Proposed Site Co-ordinates

<u>Grid/Cage Area Co-Ordinates</u>			
	<u>Latitude</u>	<u>Longitude</u>	<u>OSGB36 Grid Ref:</u>
NW Corner	56° 30.024 N	06° 17.414 W	NM 36081 42511
NE Corner	56° 30.024 N	06° 17.020 W	NM 36485 42585
SE Corner	56° 29.970 N	06° 17.020 W	NM 36478 42383
SW Corner	56° 29.970 N	06° 17.414 W	NM 36074 42408
<u>Mooring/Proposed Lease Area</u>			
NW Corner	56° 30.113 N	06° 17.574 W	NM 35927 42685
NE Corner	56° 30.113 N	06° 16.860 W	NM 36659 42640
SE Corner	56° 29.881 N	06° 16.860 W	NM 36632 42210
SW Corner	56° 29.881 N	06° 17.574 W	NM 35900 42256
Site mid-point	56° 29.997 N	06° 17.217 W	NM 36279 42448
Feedbarge	56° 29.954 N	06° 17.217 W	NM 36274 42368

- **Proposed Grid Area:** 400m x 100m = 40,000m²
- **Proposed Mooring Area:** 720m x 420m = 302,400m²

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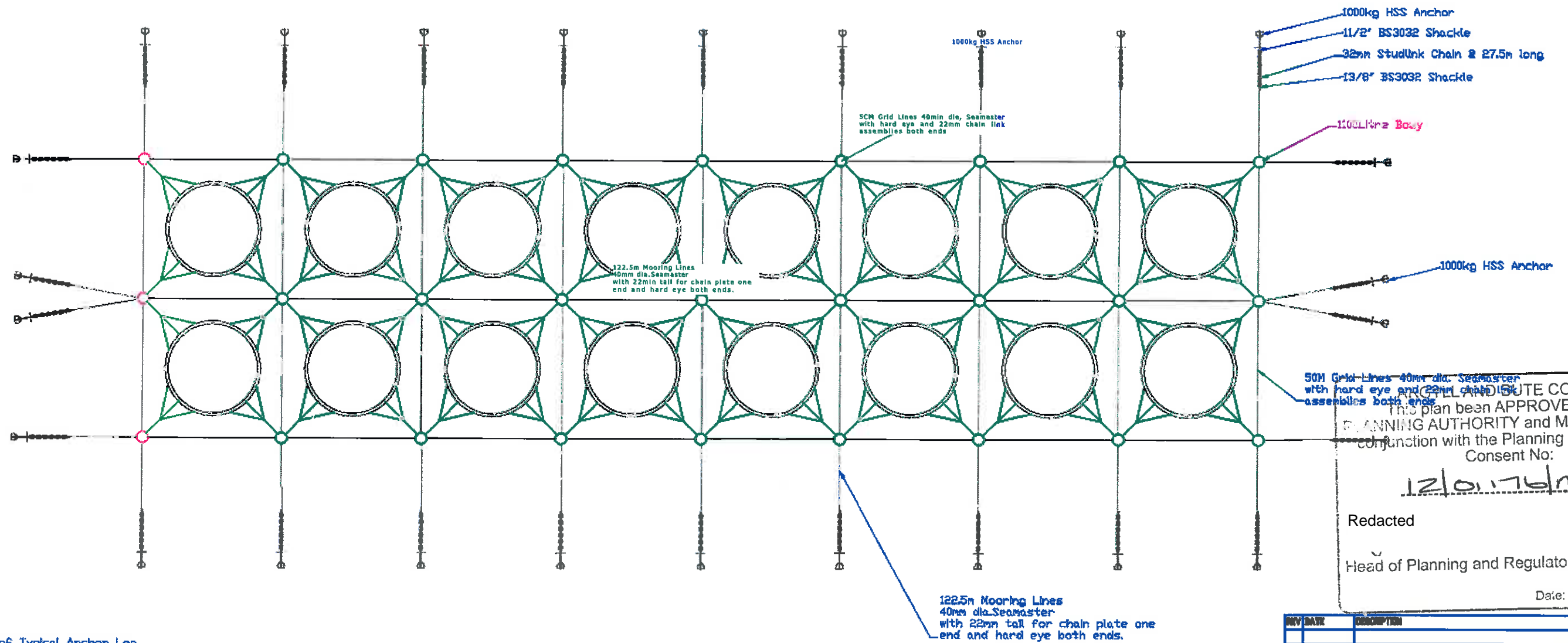
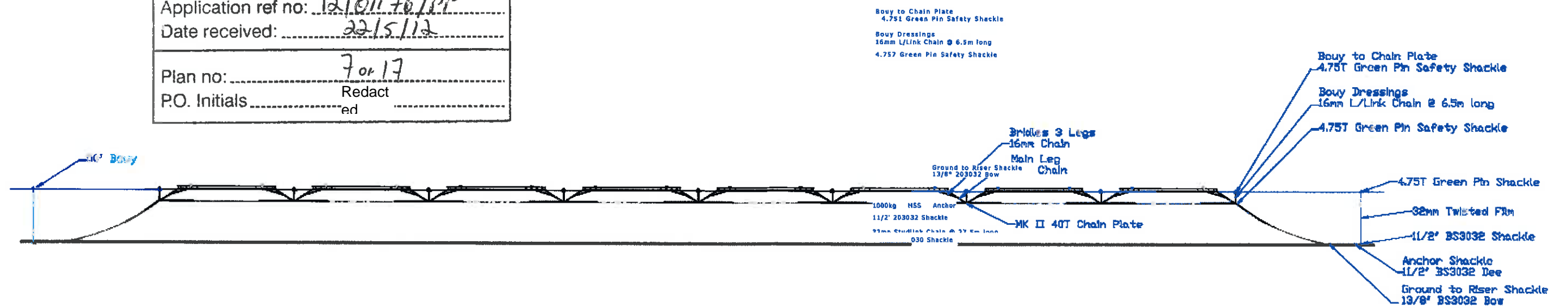
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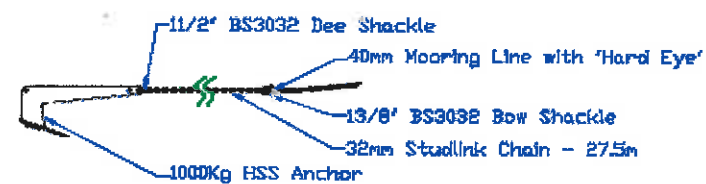
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INDICATIVE ONLY DO NOT USE ANY DETAILS FROM THIS DRAWING.

NOTE:
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Detail of Typical Anchor Leg



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REV	DATE	DESCRIPTION

Redacted

Annex 5 – Cage and Feed Barge Technical Information

Cage – 100m circumference (32m diameter)

3rd Angle Projection

If in Doubt Ask - Do Not Scale

Dimensions are in mm

Date

Rev

Details of Revision

Job Number

Customer

Date

No. of Cages

Uprights per Cage

40

Item No	Description	Qty.
1	Pipe Inner Ring \varnothing 315sdr17 x 100.000m	1
2	Pipe Middle Ring \varnothing 315sdr17 x 102.150m	1
3	Pipe Outer Ring \varnothing 315sdr26 x 104.360m	1
4	315 Base unit	40
5	Pipe Upright \varnothing 125sdr11 x 800mm	40
6	Handrail \varnothing 125sdr11 x 100m	1
7	Stanchion Tee FCST125	40
8	Pin FCP	40
9	Stop FCS250	80
10	Deck FCD315	200
11	Retainer pipe \varnothing 50sdr17 x 6m	34
12	Coupler CBKHA50	36
13	Pipe Spacer \varnothing 63sdr17 x 140mm	320
14	Mooring Strap Red/4.3m/5 ton	8

Mooring strap to make full turn around inner ring, to pass over and under the middle ring and one end to make full turn around outer ring as shown.

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Fusion Marine Limited
Marine Resource Centre
Barcaldine
By Oban
Argyll PA37 1SH
www.fusionmarine.co.uk

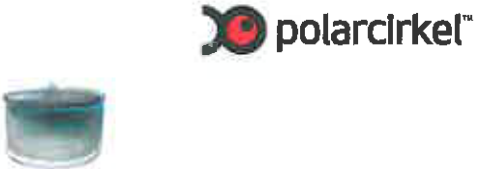
Tolerances
Unless otherwise specified
X = \pm 0.50 X' = \pm 0'30"
X.X = \pm 0.20 X'X' = \pm 0'10"
X.XX = \pm 0.10

Title		OP1003D/40	
Material	PE 100	Finish	
Drawn	R Macdonald	Scale	1:300
09/09/2009		Reference Drgs	
Checked		OP1003D/40 (2)	OP1003D/40 (1)
Verified			

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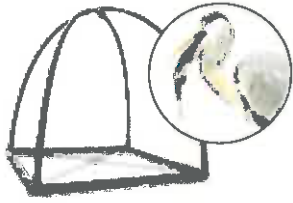
Polarcirkel Plastic Cages Specifications



Cage Models:	225/250	315	400	450	500	Comments
Cage sizes – Floating pipe diameter:	225/250mm (9"/10")	315mm (12")	400mm (16")	450mm (18")	500mm (20")	Imperial sizes to be confirmed.
Cage sizes – Standard circumferences:	40 - 90m (130 - 300')	60 - 100m (200 - 330')	90 - 160m (300 - 530')	120 - 160m (400 - 530')	130 - 200m (430 - 660')	At centre of inner floating pipe
Cage sizes – Standard diameters:	13 - 29m (42 - 94')	19 - 32m (63 - 104')	29 - 51m (94 - 167')	38 - 51m (125 - 167')	41 - 64m (136 - 209')	At centre of inner floating pipe
Center - center distance between floating pipes:	55/52cm (20"/20")	66cm (26")	85cm (33")	100cm (39")	110cm (43")	
Bracket – PE Injection Moulded (new PIM Type):	-	Yes	Yes	Yes	Yes	PIM Bracket (Plastic Injection Moulded Bracket) with plastic uprights.
Bracket – PE Welded (original "Nova" type)	-	Yes	Yes	-	-	Original welded NOVA bracket
Bracket – PE Injection Moulded (original type):	Yes	Yes	-	-	-	Original injection moulded bracket
Standard distance between brackets:	2m (6' 7")	2m (6' 7")	2.5m (8' 2")	2.5m (8' 2")	2.6m (8' 6")	Can be customized to fit nets
Dimension – HDPE Handrail Upright:	125mm	125mm	160mm	160mm	160mm	Not applicable for steel brackets.
Dimension – Handrail Pipe:	110mm	110mm	140mm	140mm	140mm	Applies for both PE and steel brackets
Net hook on uprights:	PE (SS opt.)	PE (SS opt.)	Stainless Steel (12mm)	Stainless Steel (12mm)	Stainless Steel (12mm)	One single hook per upright included. Custom hooks available
Polystyrene Safety Floatation added:	Only inner pipe	Only inner pipe	Only inner pipe	Only inner pipe	Only inner pipe	Available in all floating pipes on request
Available with – Secondary Safety Chain (redundancy):	Inside outer pipe	Inside outer pipe	Inside outer pipe	Inside outer pipe	Inside outer pipe	Continuous internal safety chain inside the outer floating pipe for an extra safety
Materials used – PE80 & PE100:	Yes	Yes	Yes	Yes	Yes	Applies to plastic components
NS-EN ISO 9001:2000 Certification:	Yes	Yes	Yes	Yes	Yes	The Polarcirkel factory is ISO certified.
Norwegian Standard – NS9415 Certified:	-	Yes	Yes	Yes	Yes	Mandatory for Norway only
Available as Two-Ring Cage:	Yes	Yes	Yes	Yes	Yes	Standard Cage
Available as Three-Ring Cage:	Yes	-	-	-	-	With original injection moulded bracket only.
Avail. with Walkway Decking:	Yes	Yes	Yes	Yes	Yes	
Available with Sinkers Tube:	Yes	Yes	Yes	Yes	Yes	Mainly used for 400 model and up
Avail. as Submergible Cage:	Yes	Yes	Not yet	Not yet	Not yet	Ask for specific details.
Avail. with Mooring Analysis:	Yes	Yes	Yes	Yes	Yes	Available in most markets
Polarcirkel Square Cages - Standard sizes available:	3x3m (10x10') / 5x5m (17x17') / 7x7m (23x23') / 9x9m (30x30') / 11x11m (37x37') 13x13m (43x43')					Available outside Norway only – as individual cages or cage systems.



A wide range of high quality and durable Polarcirkel Feeding Pipes are available in various dimensions, wall thicknesses and coil lengths.



Two different types of Center Support Stands are available. These are placed in the center of the cage to keep the bird nets high off the water. Standard sizes from 1.5m to 5m high.



A wide range of strong, high quality mooring systems are available to suit you site.

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Consent No: **AKVA GROUP**

Cages

12/01176/MFF

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Head of Planning and Regulatory Services

Date: 6.11.12

- the world's leading cage supplier

AKVA group is the world's leading supplier of both plastic and steel cages. Polarcirkel, the most recognized brand in aquaculture, invented the plastic cage concept in Norway in 1974, and has since supplied more than 40,000 cages worldwide. The renowned Wavemaster steel cages originated in Ireland in 1985, and close to 10,000 cages have since been delivered globally.

In order to ensure the highest possible quality, competitive pricing and on-time deliveries, the cages and components are manufactured in many different regions. All cages are installed by professional installation teams, and serviced by professional AKVA group service technicians.

AKVA group invests heavily in innovative and professional R&D in order to remain the leading supplier of cages; not only to improve products in the short term, but also to look into the future of tomorrow's demands for cage technology.


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Polarcirkel Cages

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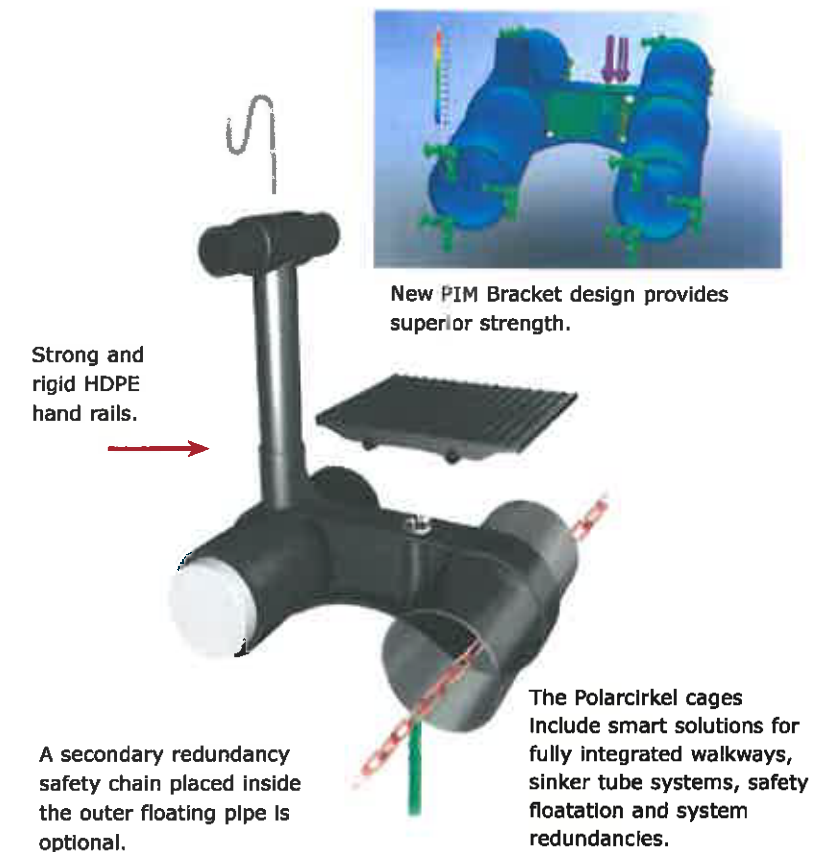
All-Plastic-Cages: A well proven concept in flexible cage design for extreme conditions...

Experience is a crucial success factor in the fish farming business. AKVA group (Polarcirkel) invented the plastic cage in 1974, and has since supplied more than 40.000 Polarcirkel Cages and 1.000 Polarcirkel Boats. The cages are made from raw materials especially suited for the dynamic loads of the sea, and are available in a wide range of models, shapes and sizes to suit individual needs.

Many have tried to copy these products, but none have managed to match the genuine Polarcirkel designs and quality builds. Plastic cages started out as small single pipe circles, but now our largest models approach 200m circumference, and with floating pipes of 500mm diameter. Both circular and square cage systems are available. Combined with AKVA group's global sales and service network, the Polarcirkel Cage is well proven and recognized worldwide.

Safe Polarcirkel walkways

In order to increase crew safety on fish farms, another Polarcirkel innovation was launched in 1999; the integrated Polarcirkel Walkways. The anti-skid walkway panels fit securely between the two floating pipes, forming a stable and safe working surface. The PE pressure moulded panels are held in place with strong and flexible continuous PE tubing inter-locking the panels to the PIM brackets.



Polarcirkel quality and certification

All Polarcirkel Cages are manufactured and assembled in accordance with AKVA group's Quality Assurance System (ISO 9001) which is certified by DNV (Det Norske Veritas).

All cages in Norway are designed in accordance with NS9415 (Norwegian Standard 9415) for cage farming equipment. This plan must be read in conjunction with the Planning Conditions of Consent No:

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Polarcirkel Cage History



Newspaper photo presenting the first Polarcirkel cage in 1974.



Photos showing today's large 500mm cages compared to the 225mm "Gigante" cage 15 years ago!



Polarcirkel 500mm cage - a safe and stable platform designed for extreme weather conditions.

Polarcirkel Cages - designed for rough conditions...

Strong Polarcirkel PIM Brackets

Extensive use of PE (Polyethylene) in our PIM (Pressure Injection Moulded) brackets eliminates corrosion, minimizes expensive and difficult maintenance, and substantially increases cage lifespan compared to steel brackets. This is especially important in areas with high salinity, warm water temperatures and choppy seas.

Only strong and high quality PE is used for Polarcirkel brackets, while many suppliers use weak and low quality rotationally moulded Medium and Low Density Polyethylene. This makes the Polarcirkel brackets superior in terms of structural strength, durability and UV resistance. This is especially important in high energy offshore farm sites and areas with high UV radiation from the sun.



Polarcirkel Nova-315/Nova-400 Bracket Polarcirkel PIM-500 Bracket

For areas prone to icing, such as Norway and Canada, another critical advantage of the Polarcirkel HDPE brackets is that they will not ice up as steel brackets do. Icing is a dangerous safety problem for all floating structures, including cages. Heavy ice overloads the cage, reduces stability and jeopardizes overall cage integrity. As the name indicates, the Polarcirkel cages are well suited for extreme arctic conditions!

All Polarcirkel Cage designs are carried out by our professional R&D department. Independent marine engineering consultants are also involved in advanced static and dynamic load calculations to ensure all designs meet or exceed expected real life loads as well as applicable industry standards.

Long life - built to withstand extreme conditions above and below the surface



Forget corrosion! Photo showing a Polarcirkel bracket after ten years in saltwater!



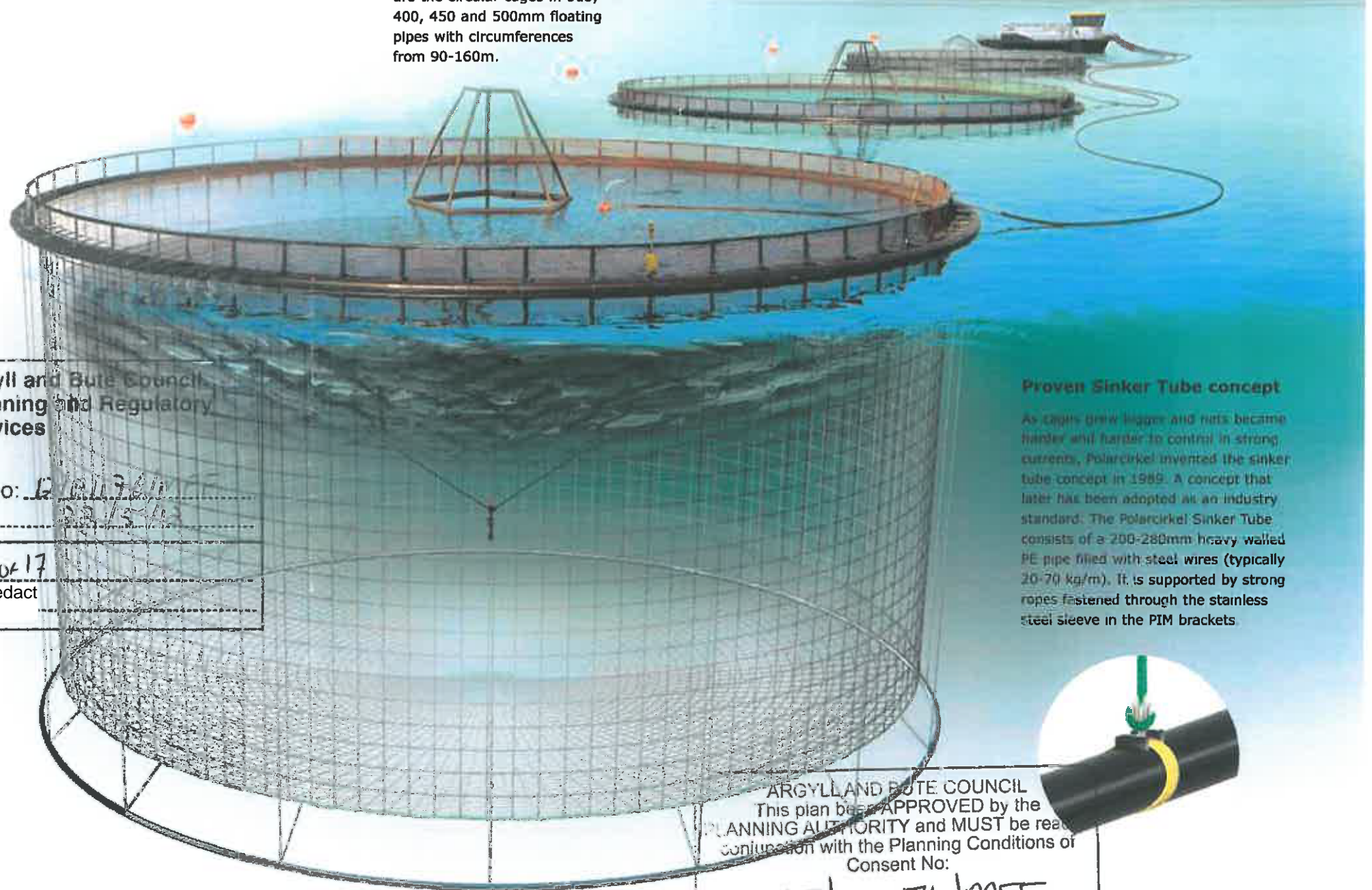
A wide range of flexible Polarcirkel cages are designed for extreme weather conditions, such as here on Norway's stormy coastline at 70° North.



Polarcirkel cages are known for their strong railings and high reserve buoyancy, which is crucial in case of sudden excessive net loads or icing.

Polarcirkel cage sizes

The most popular models are the circular cages in 315, 400, 450 and 500mm floating pipes with circumferences from 90-160m.

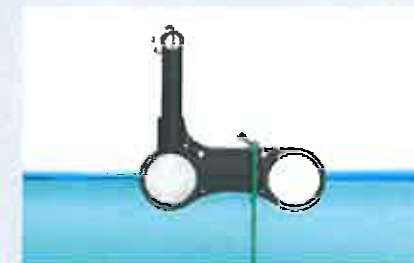


Proven Sinker Tube concept

As cages grew bigger and nets became harder and harder to control in strong currents, Polarcirkel invented the sinker tube concept in 1989. A concept that later has been adopted as an industry standard. The Polarcirkel Sinker Tube consists of a 200-280mm heavy walled PE pipe filled with steel wires (typically 20-70 kg/m). It is supported by strong ropes fastened through the stainless steel sleeve in the PIM brackets.



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AKVA groups proven sinker tube system uses a vertical rope. No metal parts, such as chain and shackles, can therefore cause damage to the net.



All the weight of the net and sinker tube system is supported by the floating pipe - NOT by the handrail.



When harvesting, the net volume is reduced by lifting vertical ropes of the sinker tube system. This leaves no load on the handrails.

Superiour stability - smart accessories...

Extra wide catamaran design

Polarcirkel's extra wide catamaran design ensures maximum cage stability and railing stiffness. Combined with strong stanchions and interlocked railing design, this make the Polarcirkel Cages safe and easy to work on without sacrificing seaworthiness and strength. Due to its low weight-to-strength ratio, the Polarcirkel Cages have very high reserve buoyancy compared to cages with other brackets. This easily results in our larger cages having up to 4-5 metric tons higher reserve buoyancy. This substantially increases cage safety margins in case of sudden operational problems that weigh down the cages (icing, mass mortality, storms, strong currents etc.).

Unique Polarcirkel redundancy systems

In addition to obvious redundancy safety factors such as individually secured brackets, individually secured anchoring connector and Styrofoam inside floating pipes, Polarcirkel also offer an optional secondary continous safety chain inside the outer floating pipe. This will serve as an unbreakable barrier in case the cages integrity is severely compromised. Keeping the chain inside the pipe leaves it out of the weather until needed and maintains a clean exterior cage layout. All of this makes the Polarcirkel Cages the safest and most escape proof cages on the market!

Net Hooks & Accessories

A wide range of integrated accessories are available for the Polarcirkel Cages, including:

- **Various types of Polarcirkel Net Hooks.** These systems simplify net handling on the cages and provide a secure attachment point for your nets.
- **Polarcirkel Center Support Stands.** These are placed in the center of the cage to keep the bird nets high off the water. Standard sizes from 1.5m to 5m high. Custom sizes are also available.
- **Feed systems, cameras and environmental sensors, wireless networks, cage lighting etc.**

New Polarcirkel Anchoring Connector

We are now introducing a new and innovative anchoring connector system that simplifies the anchoring process and improves the structural strength of the cage when anchored at the site. This anchoring connection is also NS9415 certified. (Norwegian Standard 9415).

Main design features include:

- **Practical and safe shackle point connection**
- **No corrosion**
- **No boat damage or obstruction from anchor lines**
- **Separates cage bracket from anchor load**
- **Allows for custom positioning to match anchor grid system**
- **Primary load to inner floating pipe that carries main net loads**
- **Secondary back-up connection to outer floating pipe**
- **Extra wide load distribution sleeve eliminates point loading**
- **Freely rotates anchor load perpendicular to the floating pipe**
- **PE sleeve on PE pipe minimizes pipe chafe**
- **Sideways locking system allows for safe angular loads**

The new Polarcirkel anchoring connector eliminates most of the weak points typical of steel brackets: Corrosion, damage to work boats, sideways jamming of brackets, chafe on floating pipes, need for chafe sleeves, point loading floating pipes, bending connection lugs, icing loads etc.



A flexible solution with a wide range of accessories



Polarcirkel Cages are used all over the world, such as here at a Vietnam cobia farm.



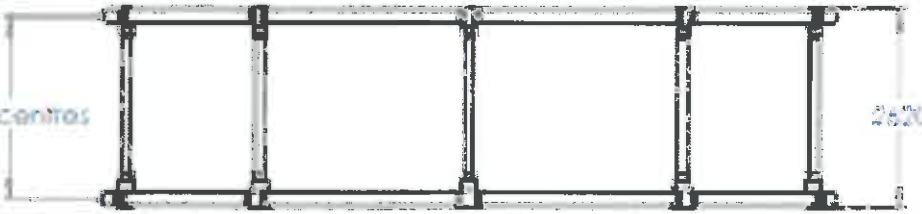
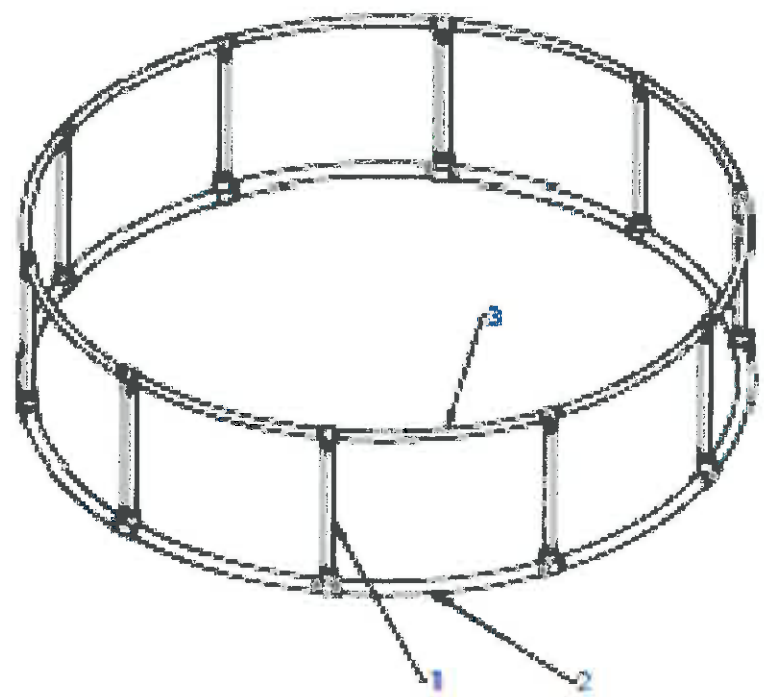
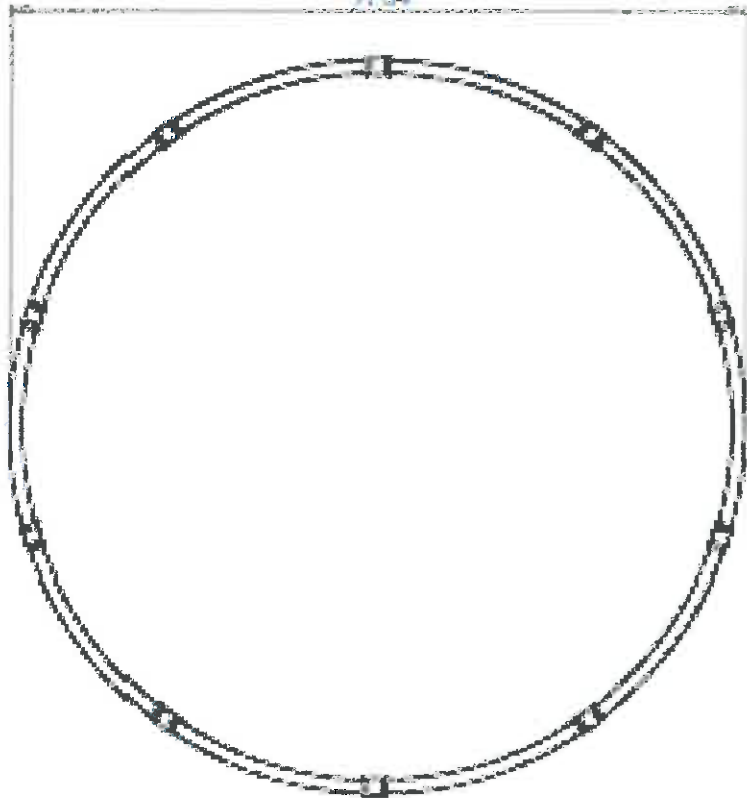
Most plastic cages are moored in a grid system and include sinker tube, center support stand, feed system/barge, cameras and sensors.




Various types of net hooks are available. The systems simplify net handling on the cages and provide a secure attachment point for your nets.

Bird Net Details
Bird Nets Supports

Net Angle Projection		Net Detail View - See Net Scale		Dimensions are in mm		Date	Rev	Details of Revision
Job Number	Customer	Date	No. of Units	Uprights per Unit				
				10				



Item	Qty per Unit	Description
1	10	Upright (see drawing BNS/UR2000)
2	10	Ø180xdr17 x 2970mm pipe
3	10	Ø125xdr17 x 3000mm pipe



Fusion Marine Limited
Marine Resource Centre
Barradine
By Oban
Argyll PA37 1SH
www.fusionmarine.co.uk

Technical
Unless otherwise specified

X = ±0.50	X* = ±0.50
XX = ±0.50	XX* = ±0.50
XXX = ±0.50	


201/0200
Checked
Verified

Reference Dwg
BNS/UR2000

BNSW30

File: Bird Net Support Wheel - 30m
Redacted

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View of Typical Sea Mate 220T Barge



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